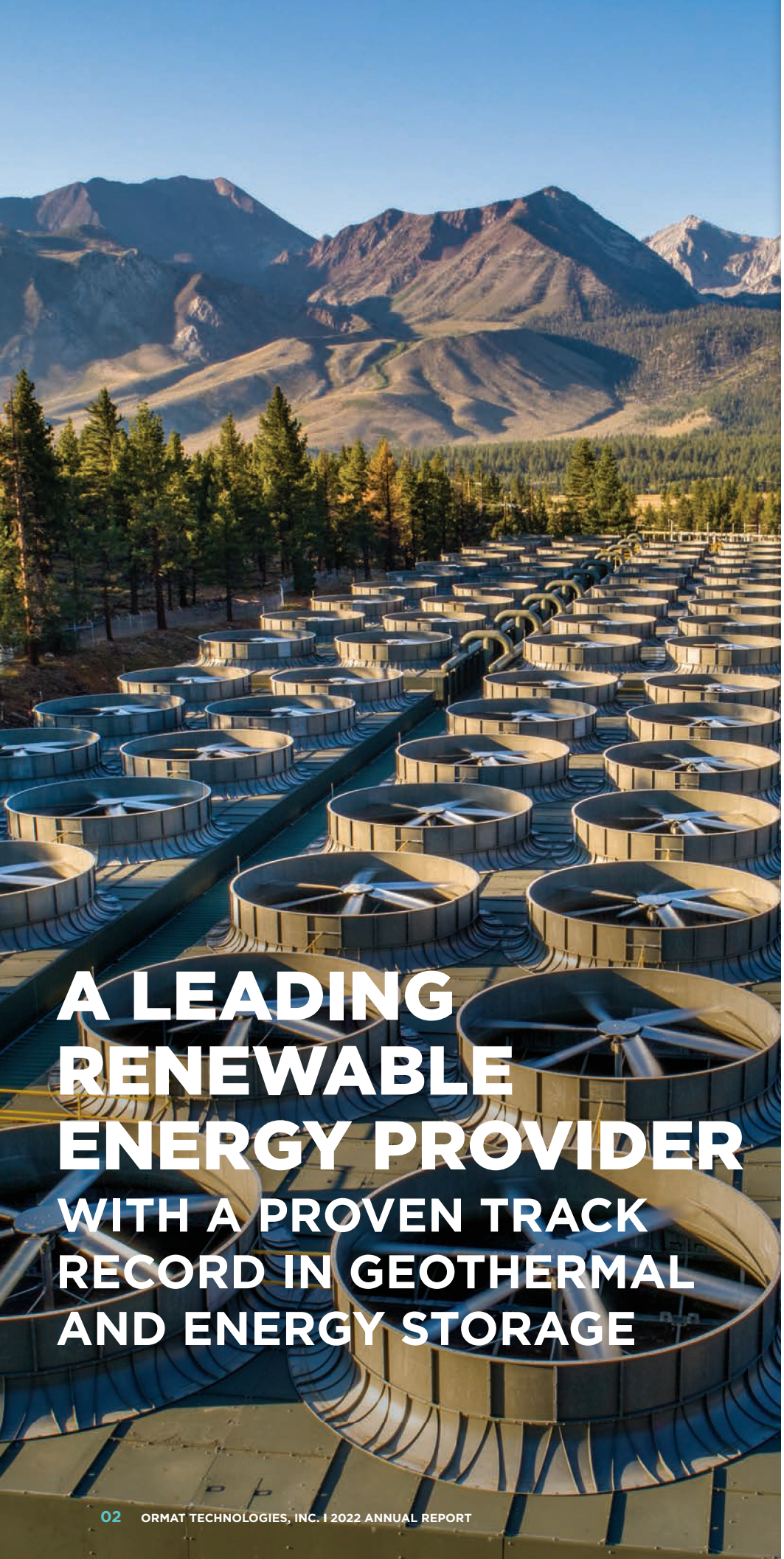
2022 ANNUAL REPORT
TO STOCKHOLDERS



A LEADING RENEWABLE ENERGY PROVIDER

WITH A PROVEN TRACK RECORD IN GEOTHERMAL AND ENERGY STORAGE

over

55

years of experience

Own & operate

~1.16GW

Geothermal, Storage, Solar & REG[1]

1,480

Employees

734$M

2022 revenues

66$M

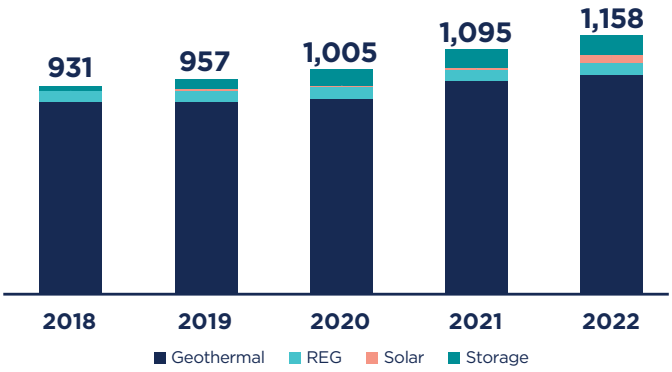
2022 Net income[2]

436$M

2022 adj. EBITDA[3]

(1) REG – Recovered Energy Generation
(2) Net income attributable to the company stockholders
(3) See appendix for reconciliation of non-GAAP financial measures.

Installed capacity growth (MW)



Vallecito Storage facility, 10 MW/40 MWh, CA, USA

DEAR FELLOW STOCKHOLDERS,

2022 was a significant buildup year for Ormat marked by growth in all three of our business segments. We had several significant milestones achieved in 2022, including 10.7% year-over-year increase in total revenue and 8.5% increase in adjusted EBITDA. We made progress toward our long-term goals and added 78MW of new generating capacity to our operating portfolio. We also signed up to 365MW of Power Purchase Agreements (PPAs) and a tolling agreement with improved economics in the Electricity and Storage segments.

Our Product segment backlog at year end stands at $148 million, a level that marks meaningful recovery in the segment. We are encouraged by this trajectory as we continue to see a pickup in demand and a simultaneous decline in raw material cost, which should drive higher margins for the segment going-forward.

We exited the year with significant momentum as a result of our solid operating performance combined with the strong global regulatory tailwinds for renewable energy. This momentum has been bolstered by the Inflation Reduction Act (IRA) and the significant demand growth for geothermal energy and storage driven we are seeing as a result of volatile fossil fuel prices and global decarbonization efforts. We expect the IRA to reduce our capital needs significantly over the coming years and expect that each completed project in the USA will be funded by up to 50% utilizing tax benefits.

Looking ahead in 2023, we expect to deliver meaningful revenue expansion, driving growth of roughly 14% to our total adjusted EBITDA, year-over-year. In 2023, we expect to add new 14 projects of 170MW with 104MW just in the Energy Storage and 67MW in the Electricity segment, progressing toward our new capacity target of over 1.8 gigawatts by 2025. We believe strongly that the regulatory tailwinds and the increased PPA prices we are seeing in the market, combined with our strategy, our assets, vertical integration, and our advantageous cost structure, position Ormat for success. We strongly believe that this success will yield meaningful shareholder value in 2023 and beyond.

Delivering Strong Financial Performance

Total revenue for 2022 was $734.1 million, up roughly 11% year-over-year, reflecting growth across all three of our operating segments. This revenue growth was supported by continued expansion in our Electricity segment through:

- The full-year inclusion of the Dixie Valley and Beowawe power plants that added 67.5 MW of total net generating capacity to our operating portfolio
- The start of commercial operation of our CD4 power plant facility in July 2022
- The start of commercial operations of Tungsten Mountain 2 in April 2022
- Higher generation and electricity rates in Puna

In addition, we saw a notable recovery in the Product segment with considerably higher revenues, improved margin capture and new product contracts that increased our backlog to pre-Covid-19 levels, demonstrating the growing global demand for geothermal energy.

Investor Day

On March 30, 2022, Ormat hosted an Investor Day in New York City. Several members of our management team were present to share the Company's long-term strategy and financial outlook with analysts and investors. We outlined clear, multi-year growth targets and the robust opportunity to capitalize on an expanding total addressable market in the U.S. and international markets including Indonesia.

Operational Update

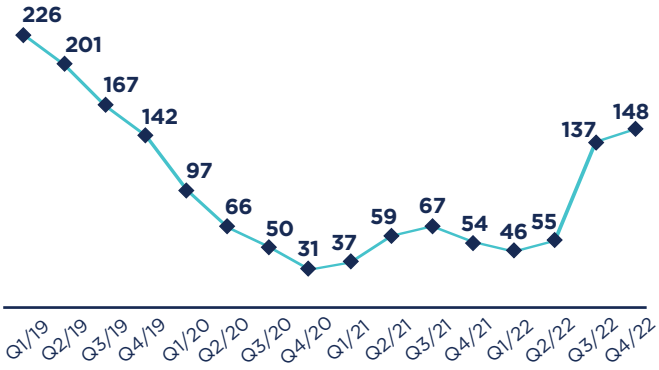
Our Puna geothermal power plant operated at a level of between 23 and 25 megawatts. In 2022 we received higher energy rates at the plant as a result of elevated oil prices globally. We are negotiating new amendments to the fixed price PPA we signed with HELCO that will allow us to continue with our plans to repower the Puna complex and increase its capacity to a total of 46MW.

At our Olkaria power plant in Kenya, the lower performance of the wellfield limited the generation of the power plant that is currently generating 125 MW. We are performing a drilling campaign and expect to increase plant capacity in 2023.

At our Electricity portfolio, we started the operation of Tungsten Mountain 2 and CD4 geothermal power plants that are operating at higher capacity than initially expected. Also, we added 30MW of Solar assets including the Wister Solar in California and 10MW of Hybrid Solar assets in Nevada.

At our Energy Storage portfolio, we connected the 5MW/20MWh Tierra Bueno facility to CAISO in California and are preparing for additional four facilities to start operation in the first quarter in 2023.

Increased Product segment backlog driven by growth in the demand for geothermal products



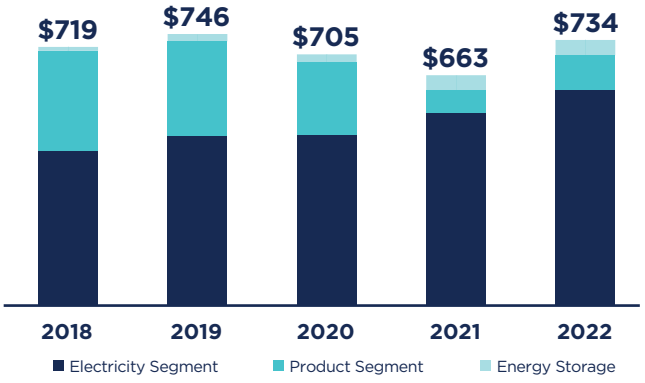
Commitment to a Sustainable Future

At Ormat, we recognize the importance of supplying sustainable, clean energy, in the fight against climate change particularly in areas that lack access to renewable power sources. We continue to view Geothermal energy as a means to reduce carbon emissions and the adverse effects of climate change. Our energy-generating and storage assets are helping create an alternate energy future, where greenhouse gas emissions are significantly reduced, and electricity grids are enabled to become more responsive and stable. We see significant long-term tailwinds for our business, supported by the increase in government mandates in support of the gradual long-term reduction in fossil fuel dependance, which has driven greater adoption of renewable sources of energy in the U.S. and abroad.

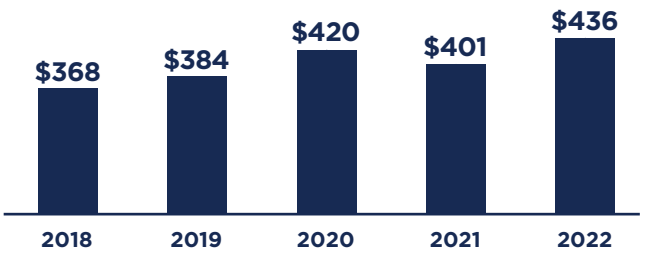
Ormat's School Students participating in a reforestation project in Honduras

REVENUES & ADJUSTED EBITDA

Revenue Growth ($M)



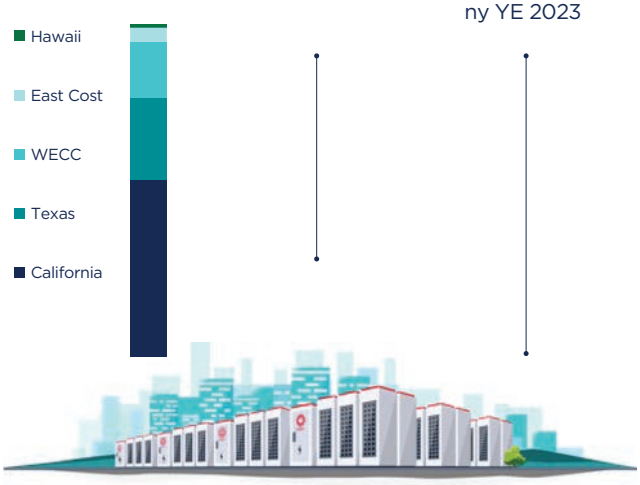
Adjusted EBITDA Growth ($M)



~3GW
potential capcity of U.S. storage pipeline

34
named prospects

104MW/ 124MWh
expected addition ny YE 2023



Ormat has been sustainably generating power since 1965, and we remain committed to providing renewable energy safely, economically, and in an environmentally responsible manner. This year, we made great strides to strengthen our commitment to ESG and focus our efforts on the most pertinent issues facing our planet. In 2022, we issued a comprehensive sustainability report, the fourth edition to be released in accordance with the GRI standards and the second according to the SASB framework. In addition, we have established a target of 5% annual average absolute reduction in Scope 1 and 2 greenhouse gas emissions measured against the 2019 base levels. These actions are representative of the responsibility we have taken, not only in our own geothermal and renewable energy recovery business, but also as a valuable partner as our assets and strategy will continue to play a role in helping businesses and governments facilitate the achievement of their sustainability goals.

In summary, 2022 was a very strong year, with growth across all our segments. In 2023, we look to continue this positive trajectory with the expectation that we drive a roughly 14% increase in revenue and adjusted EBITDA, while continuing to invest in and build out our portfolio. We are targeting to increase our Electricity and Energy Storage segments' capacity portfolio by over 20% and 450% by the end of 2025, respectively, expecting our total portfolio reaching between 1.8GW and 1.86GW. We continue to see strong tailwinds globally for renewable energy supported by the Inflation Reduction Act benefits, including the PTC for Geothermal and ITC for Storage, which are expected to reduce capital needs and boost our earnings in the years to come.

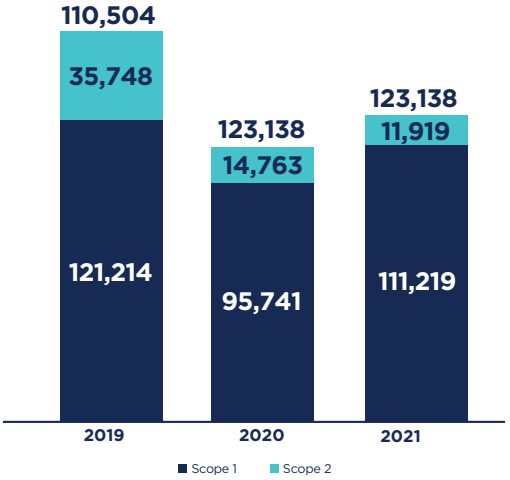
Before I conclude this letter, I would like to personally thank all our stakeholders and employees for their continued commitment and support. We look forward to achieving great things together, in 2023 and beyond.

Regards,

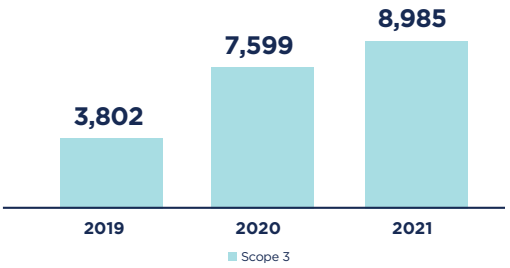
Doron Blachar
Chief Executive Officer

ORMAT'S CARBON FOOTPRINT

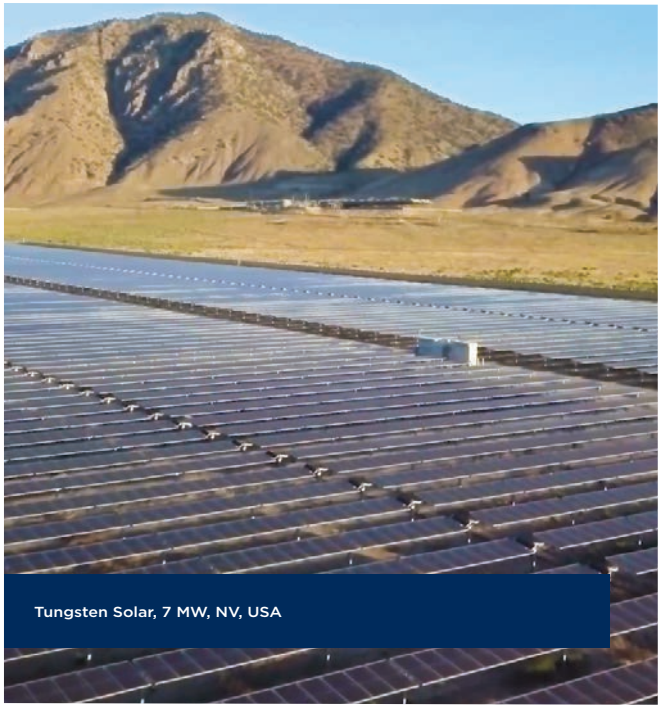
(TONS CO_2e)



Note: In 2021, we exceeded our goal, and reduced our annual average by over 11% in comparison to our 2019 baseline.



Note: Increase in Scope 3 emissions is due to constant improvement and expansion of our environmental data collection and measurement processes



Tungsten Solar, 7 MW, NV, USA

CD4 geothermal power plant, 35MW, CA, USA

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

Form 10-K

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

For the fiscal year ended December 31, 2022

or

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

Commission file number: 001-32347

ORMAT TECHNOLOGIES, INC.

(Exact name of registrant as specified in its charter)

Delaware	**88-0326081**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification Number)*
6140 Plumas Street, Reno, Nevada	**89519-6075**
(Address of principal executive offices)	*(Zip Code)*

(775) 356-9029

(Registrant's telephone number, including area code)

Securities Registered Pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol(s)	Name of Each Exchange on Which Registered
Common Stock $0.001 Par Value	ORA	New York Stock Exchange

Securities Registered Pursuant to Section 12(g) of the Act: None

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

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

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

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

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

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

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

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

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

As of June 30, 2022 the aggregate market value of the registrant's common stock held by non-affiliates was $3,521,801,708. As of February 22, 2023, the number of outstanding shares of common stock, par value $0.001 per share was 56,095,918.

Portions of the registrant's definitive proxy statement for its 2022 Annual Meeting of Stockholders are incorporated by reference into Part III of this Form 10-K.

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ORMAT TECHNOLOGIES, INC.

FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2022

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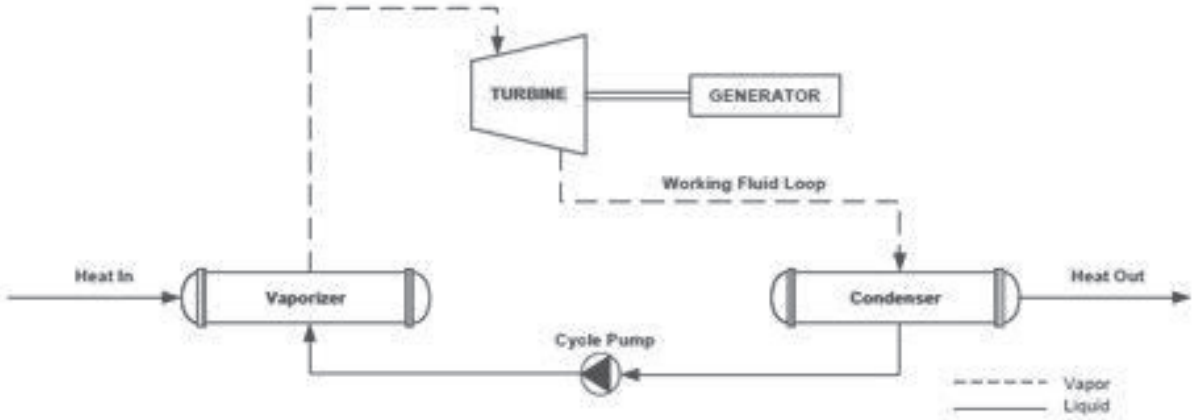
Glossary of Terms

Unless the context otherwise requires, all references in this Annual Report on Form 10-K (this "Annual Report") to "Ormat", "the Company", "we", "us", "our company", "Ormat Technologies", or "our" refer to Ormat Technologies, Inc. and its consolidated subsidiaries. A glossary of certain terms and abbreviations used in this annual report appears at the beginning of this Annual Report. When the following terms and abbreviations appear in the text of this report, they have the meanings indicated below:

Term	Definition
AC	Alternating Current
ACUA	Atlantic County Utilities Authority
Amatitlan Loan	$42,000,000 in initial aggregate principal amount borrowed by our subsidiary Ortitlan Limitada from Banco Industrial S.A. and Westrust Bank (International) Limited.
AMM	Administrador del Mercado Mayorista (administrator of the wholesale market — Guatemala)
ARRA	American Recovery and Reinvestment Act of 2009
Auxiliary Power	The power needed to operate a geothermal power plant's auxiliary equipment such as pumps and cooling towers
Availability	The ratio of the time a power plant is ready to be in service, or is in service, to the total time interval under consideration, expressed as a percentage, independent of fuel supply (heat or geothermal) or transmission accessibility
BESS	Battery Energy Storage Systems
BLM	Bureau of Land Management of the U.S. Department of the Interior
BOT	Build, operate and transfer
BPP	PLN's existing average cost of generation
CAISO	California Independent System Operator
CalGEM	California Geologic Energy Management
Capacity	The maximum load that a power plant can carry under existing conditions, less auxiliary power
Capacity Factor	The ratio of the actual MWh generated and the generating capacity times 8760 hours expressed as a percentage
CARES	Coronavirus Aid, Relief, and Economic Security Act
CCA	Community Choice Aggregator
CDC	Caisse des Dépôts et Consignations, a French state-owned financial organization
CEO	Chief Executive Officer
CFO	Chief Financial Officer
C&I	Refers to the Commercial and Industrial sectors, excluding residential
CNEE	National Electric Energy Commission of Guatemala
COD	Commercial Operation Date
Company	Ormat Technologies, Inc., a Delaware corporation, and its consolidated subsidiaries
CPA	Clean Power Alliance
CPI	Consumer Price Index
CPUC	California Public Utilities Commission
DEG	Deutsche Investitions-und Entwicklungsgesellschaft mbH
CREE	The Regulatory Commission of Electric Power in Honduras
DFC	U.S. International Development Finance Corporation (formerly OPIC)
DOE	U.S. Department of Energy
DSCR	Debt Service Coverage Ratio
EBITDA	Earnings before interest, taxes, depreciation, amortization and accretion

EDF	Electricite de France S.A.
EGS	Enhanced Geothermal Systems
EIB	European Investment Bank
Eligible Green Projects	Allocations made by the Company or any of its subsidiaries to any of the projects defined below in the 24 months prior to or 24 months following the issuance date of the bonds. Eligible Green Projects include the following (for illustrative purposes only): (i) renewable energy (new geothermal energy generation facilities with GHG emissions less than 100g CO2d/KWh; upgrades to existing geothermal energy generation facilities to increase efficiency, resiliency and reliability; energy storage systems; or solar PV systems); and (ii) eco-efficient and/or circular economy adapted products.
EMRA	Energy Market Regulatory Authority in Turkey
ENEE	Empresa Nacional de Energía Eléctrica
Enthalpy	The total energy content of a fluid; the heat plus the mechanical energy content of a fluid (such as a geothermal brine), which, for example, can be partially converted to mechanical energy in an Organic Rankine Cycle.
EPA	U.S. Environmental Protection Agency
EPC	Engineering, procurement and construction
ERCOT	Electric Reliability Council of Texas, Inc.
EPRA	Energy and Petroleum Regulatory Authority of Kenya
EU	European Union
EWG	Exempt Wholesale Generators
Exchange Act	U.S. Securities Exchange Act of 1934, as amended
FASB	Financial Accounting Standards Board
FERC	U.S. Federal Energy Regulatory Commission
FIT	Feed-in Tariff
FPA	U.S. Federal Power Act, as amended
GAAP	Generally accepted accounting principles
GCCU	Geothermal Combined Cycle Unit
GDC	Geothermal Development Company
Geothermal Power Plant	The power generation facility and the geothermal field
Geothermal Steam Act	U.S. Geothermal Steam Act of 1970, as amended
GERD	Grand Ethiopian Renaissance Dam
GHG	Greenhouse gas
GIS	Geographic Information Systems
Green bonds or green convertible bonds	Bonds, which the proceeds from, are used to finance and/or refinance, in whole or in part, new or on-going projects in accordance with the Ormat Green Finance Framework.
GW	Giga watt
GWh	Giga watt hour
HELCO	Hawaii Electric Light Company
IDWR	Idaho Department of Water
IFM	In Front of the Meter
IGA	International Geothermal Association
IID	Imperial Irrigation District
INDE	Instituto Nacional de Electrification
IOUs	Investor-Owned Utilities
IPPs	Independent Power Producers
IESO	The Independent Electricity System Operator (IESO) works at the heart of Ontario's power system.
ISO	Independent System Operator
ISONE	ISO New England
ITC	Investment Tax Credit

IRA	Inflation Reduction Act
JBIC	Japan Bank for International Cooperation
JOGMEC	Japan state-owned resources agency
John Hancock	John Hancock Life Insurance Company (U.S.A.)
JPM	J.P. Morgan Capital Corporation
KenGen	Kenya Electricity Generating Company Ltd.
Kenyan Energy Act	Kenyan Energy Act, 2006
KETRACO	Kenya Electricity Transmission Company Limited
KGRA	Known Geothermal Resource Area
KLP	Kapoho Land Partnership
KPLC	Kenya Power and Lighting Co. Ltd.
KRA	Kenya Revenue Authority
kW	Kilowatt - A unit of electrical power that is equal to 1,000 watts
kWh	Kilowatt hour(s), a measure of power produced
LCOE	Levelized Costs of Energy
Mammoth Pacific	Mammoth-Pacific, L.P.
MEMR	The Indonesian Minister of Energy and Mineral Resources
MW	Megawatt - One MW is equal to 1,000 kW or one million watts
MWh	Megawatt hour(s), a measure of energy produced
NIS	New Israeli Shekel
NOA	Notice of Assessments
NV Energy	NV Energy, Inc.
NYSE	New York Stock Exchange
NYISO	New York Independent System Operator, Inc.
OEC	Ormat Energy Converter
OFC	Ormat Funding Corp., a wholly owned subsidiary of the Company
OFC 2	OFC 2 LLC, a wholly owned subsidiary of the Company
OFC 2 Senior Secured Notes	Up to $350,000,000 Senior Secured Notes, due 2034 issued by OFC 2
Opal Geo	Opal Geo LLC
OPC	OPC LLC, a consolidated subsidiary of the Company
OrCal	OrCal Geothermal Inc., a wholly owned subsidiary of the Company
ORC	Organic Rankine Cycle - A process in which an organic fluid such as a hydrocarbon or fluorocarbon (but not water) is boiled in an evaporator to generate high pressure vapor. The vapor powers a turbine to generate mechanical power. After the expansion in the turbine, the low-pressure vapor is cooled and condensed back to liquid in a condenser. A cycle pump is then used to pump the liquid back to the vaporizer to complete the cycle. The cycle is illustrated in the figure below:



Ormat International	Ormat International Inc., a wholly owned subsidiary of the Company
Ormat Nevada	Ormat Nevada Inc., a wholly owned subsidiary of the Company
Ormat Systems	Ormat Systems Ltd., a wholly owned subsidiary of the Company
Ormat Green Finance Framework	A framework developed in alignment with the Green Bond Principles (2021), as published by the International Capital Markets Association, by which the proceeds of green bonds are used to finance and/or refinance, in whole or in part, one or more Eligible Green Projects.
ORIX	ORIX Corporation
ORPD	ORPD LLC, a holding company subsidiary of the Company in which Northleaf Geothermal Holdings, LLC holds a 36.75% equity interest
OrPower 4	OrPower 4 Inc., a wholly owned subsidiary of the Company
Ortitlan	Ortitlan Limitada, a wholly owned subsidiary of the Company
ORTP	ORTP, LLC, a consolidated subsidiary of the Company
Orzunil	Orzunil I de Electricidad, Limitada, a wholly owned subsidiary of the Company
PEC	Portfolio Energy Credits
PG&E	Pacific Gas and Electric Company
PGV	Puna Geothermal Venture, a wholly owned subsidiary of the Company
PJM	PJM Interconnection, LLC
PLN	PT Perusahaan Listrik Negara
Power plant equipment	Interconnection equipment, cooling towers for water cooled power plant, etc., including the generating units
PPA	Power purchase agreement
PTC	Production Tax Credit
PUC	Public Utilities Commission
PUCH	Public Utilities Commission of Hawaii
PUCN	Public Utilities Commission of Nevada
PUHCA	U.S. Public Utility Holding Company Act of 1935
PUHCA 2005	U.S. Public Utility Holding Company Act of 2005
PURPA	U.S. Public Utility Regulatory Policies Act of 1978
Qualifying Facility(ies)	Certain small power production facilities are eligible to be “Qualifying Facilities” under PURPA, provided that they meet certain power and thermal energy production requirements and efficiency standards. Qualifying Facility status provides an exemption from PUHCA 2005 and grants certain other benefits to the Qualifying Facility
RCEA	Redwood Coast Energy Authority
REC	Renewable Energy Credit

REG	Recovered Energy Generation
RER	Renewable Energy Resource certificate
RPS	Renewable Portfolio Standards
RTO	Regional Transmission Organization
SCE	Southern California Edison
SCPPA	Southern California Public Power Authority
SDG&E	San Diego Gas and Electric
SEC	U.S. Securities and Exchange Commission
Securities Act	U.S. Securities Act of 1933, as amended
SOL	Sarulla Operations Ltd.
Solar PV	solar photovoltaic
SOX Act	Sarbanes-Oxley Act of 2002
SRAC	Short Run Avoided Costs
TASE	Tel Aviv Stock Exchange
Tax Act	Tax Cuts and Jobs Act
UIC	Underground Injection Control
UN	United Nation
Union Bank	Union Bank, N.A.
U.S.	United States of America
U.S. Treasury	U.S. Department of the Treasury
USG	U.S. Geothermal Inc.
VAT	Value Added Tax
VCE	Valley Clean Energy
Viridity	Viridity Energy Solutions Inc., a wholly owned subsidiary of the Company
YTL	Turkish Lira

Cautionary Note Regarding Forward-Looking Statements and Risk Factor Summary

This Annual Report includes "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, included in this report that address activities, events or developments that we expect or anticipate will or may occur in the future, including such matters as our projections of annual revenues, expenses and debt service coverage with respect to our debt securities, future capital expenditures, business strategy, competitive strengths, goals, development or operation of generation assets, market and industry developments and the growth of our business and operations, are forward-looking statements. When used in this Annual Report, the words "may", "will", "could", "should", "expects", "plans", "anticipates", "believes", "estimates", "predicts", "projects", "potential", "target", "goal", or "contemplate" or the negative of these terms or other comparable terminology are intended to identify forward-looking statements, although not all forward-looking statements contain such words or expressions. The forward-looking statements in this Annual Report are primarily located in the material set forth under the headings Item 1 — "Business" contained in Part I of this Annual Report, Item 1A — "Risk Factors" contained in Part I of this Annual Report, Item 7 — "Management's Discussion and Analysis of Financial Condition and Results of Operations" contained in Part II of this Annual Report, and "Notes to Financial Statements" contained in Item 8 — "Financial Statements and Supplementary Data" contained in Part II of this Annual Report, but are found in other locations as well. These forward-looking statements generally relate to our plans, objectives and expectations for future operations and are based upon management's current estimates and projections of future results or trends. Although we believe that our plans and objectives reflected in or suggested by these forward-looking statements are reasonable, we may not achieve these plans or objectives. You should read this Annual Report completely and with the understanding that actual future results and developments may be materially different from what we expect attributable to a number of risks and uncertainties, many of which are beyond our control.

These forward-looking statements are made only as of the date hereof, and, except as legally required, we undertake no obligation to update or revise the forward-looking statements, whether as a result of new information, future events or otherwise.

A summary of the risks that may cause actual results to differ from our expectations include, but are not limited to the following:

Risks Related to the Company's Business and Operation

- Our financial performance depends on the successful operation of our geothermal, REG, Solar PV power plants under the Electricity segment as well as, our energy storage facilities, which are subject to various operational risks.
- Our exploration, development, and operation of geothermal energy resources are subject to geological risks and uncertainties, which may result in decreased performance or increased costs for our power plants.
- We may decide not to implement, or may not be successful in implementing, one or more elements of our multi-year strategic plan, and the plan may not achieve its goal of enhancing shareholder value.
- Concentration of customers, specific projects and regions may expose us to heightened financial exposure.
- Our international operations expose us to risks related to the application of foreign laws and regulations.
- Political, economic and other conditions in the emerging economies where we operate, including Israel, may subject us to greater risk than in the developed U.S. economy.
- Our investments in battery energy storage system (BESS) technology involves new technologies with relatively limited history with respect to reliability and performance and may not perform as expected. In addition, our investments may be negatively affected by a number of factors, including increases in storage costs, risk of fire and volatility in electricity pricing.
- Conditions in and around Israel, where the majority of our senior management and our main production and manufacturing facilities are located, may adversely affect our operations and may limit our ability to produce and sell our products or manage our power plants.
- Reduction in our Products backlog may affect our ability to fully utilize our main production and manufacturing facilities.
- Some of our leases will terminate if we do not extract geothermal resources in "commercial quantities", or if we fail to comply with the terms or stipulations of such leases or any of the provisions of the Geothermal Steam Act or if the lessor under any such lease defaults on any debt secured by the relevant property, thus requiring us to enter into new leases or secure rights to alternate geothermal resources, none of which may be available on terms as favorable to us as any such terminated lease, if at all.
- Reduced levels of recovered energy required for the operation of our REG power plants may result in decreased performance of such power plants.

- Our business development activities may not be successful and our projects under construction or facilities undergoing enhancement and repowering may encounter delays.
- Our future growth depends, in part, on the successful enhancement of a number of our existing facilities.
- We rely on power transmission facilities that we do not own or control.
- Our use of joint ventures may limit our flexibility with jointly owned investments.
- Our operations could be adversely impacted by climate change.
- We could be negatively impacted by regulatory and other responses to climate change
- Geothermal projects that we plan to develop in the future, may operate as "merchant" facilities without long-term PPAs and therefore such projects will be exposed to market fluctuations.
- We may not be able to successfully complete acquisitions, and we may not be able to successfully integrate, or realize anticipated synergies from, companies that we have acquired and may acquire in the future.
- We may not be able to successfully conclude transactions and integrate companies, which we acquired and may acquire in the future.
- We encounter intense competition from electric utilities, other power producers, power marketers, developers and third-party investors.
- Changes in costs and technology may significantly impact our business by making our power plants and products less competitive, resulting in our inability to sign new or recontracted PPAs for our Electricity segment and new supply and EPC contracts for our Products segment.
- Our intellectual property rights may not be adequate to protect our business.
- We may experience difficulties implementing and maintaining our new enterprise resource planning system.
- We may experience a cyber-incident, cyber security breach, severe natural event or physical attack on our operational networks and information technology systems.

Risks Related to Governmental Regulations, Laws and Taxation

- Our financial performance could be adversely affected by changes in the legal and regulatory environment affecting our operations.
- Pursuant to the terms of some of our PPAs with investor-owned electric utilities and publicly-owned electric utilities in states that have renewable portfolio standards, the failure to supply the contracted capacity and energy thereunder may result in the imposition of penalties.
- If any of our domestic power plants loses its current Qualifying Facility status under PURPA, or if amendments to PURPA are enacted that substantially reduce the benefits currently afforded to Qualifying Facilities, our domestic operations could be adversely affected.
- We may experience a reduction or elimination of government incentives.
- We are a holding company and our cash depends substantially on the performance of our subsidiaries and the power plants they operate, most of which are subject to restrictions and taxation on dividends and distributions.
- The costs of compliance with federal, state, local and foreign environmental laws and our ability to obtain and maintain environmental permits and governmental approvals required for development, construction and/or operation may result in liabilities, costs and delays in construction (as well as any fines or penalties that may be imposed upon us in the event of any non-compliance or delays with such laws or regulations).
- We could be exposed to significant liability for violations of hazardous substances laws because of the use or presence of such substances at our power plants.
- U.S. federal, state and foreign country income tax reform could adversely affect us.

Risks Related to Economic and Financial Conditions

- We may be unable to obtain the financing we need on favorable terms to pursue our growth strategy and any future financing we receive may be less favorable to us than our current financing arrangements.
- We have incurred substantial indebtedness that may decrease our business flexibility, access to capital, and/or increase our borrowing costs, and we may still incur substantially more debt, which may adversely affect our operations and financial results.
- Our debt obligations may adversely affect our ability to raise additional capital and will be a burden on our future cash resources, particularly if we elect to settle these obligations in cash upon conversion or upon maturity or required repurchase.
- The Capped Call Transactions may affect the value of the Notes and our common stock and we are subject to counterparty risk with respect to the Capped Call Transactions.

- Our foreign power plants and foreign manufacturing operations expose us to risks related to fluctuations in currency rates, which may reduce our profits from such power plants and operations.
- Our power plants have generally been financed through a combination of our corporate funds and limited or non-recourse project finance debt and lease financing. If our project subsidiaries default on their obligations under such limited or non-recourse debt or lease financing, we may be required to make certain payments to the relevant debt holders, and if the collateral supporting such leveraged financing structures is foreclosed upon, we may lose certain of our power plants.
- We may experience fluctuations in the cost of construction, raw materials, commodities and drilling.
- Our commodity derivative activity may limit potential gains, increase potential losses, result in earnings volatility and involve other risks.
- We are exposed to swap counterparty credit risk.
- We may not be able to obtain sufficient insurance coverage to cover damages resulting from any damages to our assets and profitability including, but not limited to, natural disasters such as volcanic eruptions, lava flows, wind and earthquakes.

Risks Related to Force Majeure

- The global spread of a public health crisis, including the COVID-19 pandemic may have an adverse impact on our business.
- The existence of a prolonged force majeure event or a forced outage affecting a power plant, or the transmission systems could reduce our net income.
- Threats of terrorism may impact our operations in unpredictable ways and could adversely affect our business, financial condition, future results and cash flow.

Risks Related to Our Stock

- Future equity issuances, including through our current or any future equity compensation plans, could result in dilution, which could cause the price of our shares of common stock to decline.
- A substantial percentage of our common stock is held by stockholders whose interests may conflict with the interests of our other stockholders.
- The price of our common stock may fluctuate substantially, and your investment may decline in value.
- We may issue additional shares of our common stock in connection with conversions of the Notes, and thereby dilute our existing stockholders and potentially adversely affect the market price of our common stock.
- The fundamental change provisions of the Notes may delay or prevent an otherwise beneficial takeover attempt of us.

Market and Industry Data

This Annual Report includes market and industry data and forecasts that we have derived from publicly available information, various industry publications, other published industry sources and internal data and estimates. Industry publications and other published industry sources generally indicate that the information contained therein was obtained from sources believed to be reliable. Internal data and estimates are based upon information obtained from trade and business organizations and other contacts in the markets in which we operate and our management's understanding of industry conditions. Any estimates underlying such market-derived information and other factors could cause actual results to differ materially from those expressed in the independent parties' estimates and in our estimates.

Company Contact and Sources of Information

Our website is www.ormat.com. Information contained on or accessible via our website, including our Sustainability Reports, is not part of or otherwise incorporated by reference into this Annual Report. Information that we furnish to or file with the U.S. Securities and Exchange Commission (the "SEC"), including our Annual Reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to, or exhibits included in, these reports are made available for download, free of charge, through our website as soon as reasonably practicable. Our SEC filings, including exhibits filed therewith, are also available directly on the SEC's website at www.sec.gov.

We may use our website as a distribution channel of material company information. Financial and other important information regarding the Company is routinely posted on and accessible through our website at www.ormat.com. Accordingly, investors should monitor this channel, in addition to following our press releases, SEC filings and public conference calls and webcasts.

PART I

ITEM 1. BUSINESS

Overview

We are a leading vertically integrated company that is primarily engaged in the geothermal energy power business. We leverage our core capabilities and global presence to expand our activity in recovered energy generation and into different energy storage services and solar PV (including hybrid geothermal and solar PV as well as Solar plus Energy Storage). Our objective is to become a leading global provider of renewable energy and help to mitigate climate change by providing replacement to carbon-intensive energy sources. We have adopted a strategic plan to focus on several key initiatives to expand our business.

We currently conduct our business activities in three business segments:

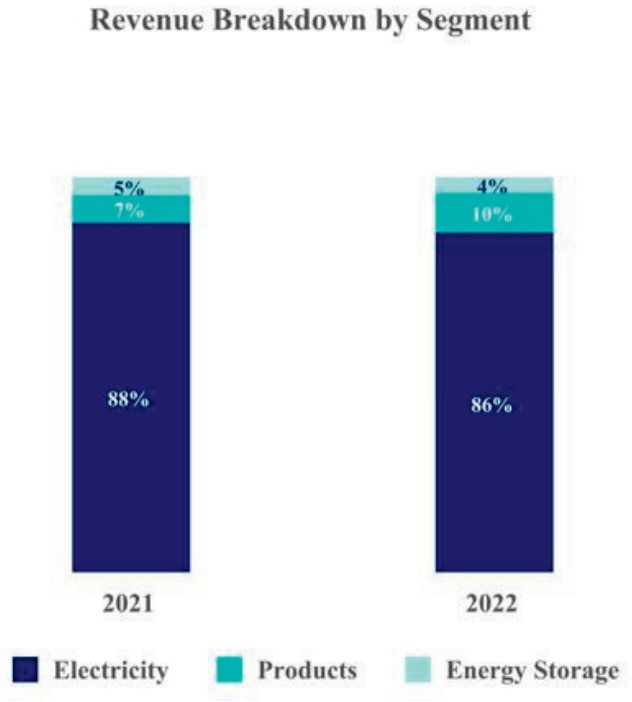
- *Electricity Segment.* In the Electricity segment, we develop, build, own and operate geothermal, solar PV and recovered energy-based power plants in the United States and geothermal power plants in other countries around the world and sell the electricity they generate. In 2022 we commenced commercial operation of 78 MW of geothermal power plants including the 35MW CD4 power plant in the Mammoth complex and the 13MW Tungsten 2 plant, both in the U.S. In addition, we commenced commercial operation of 30MW of Solar PV projects, including the 20MW Wister solar power plant as well as the 5MW Steamboat Hills and the 5MW Tungsten Solar power plants.

- *Product Segment.* In the Product segment, we design, manufacture and sell equipment for geothermal and recovered energy-based electricity generation and provide services relating to the engineering, procurement and construction of geothermal and recovered energy-based power plants. Since the beginning of 2022, we signed new contracts that were added to our backlog and secured $155.5 million of revenues to be recognized over the next two years.

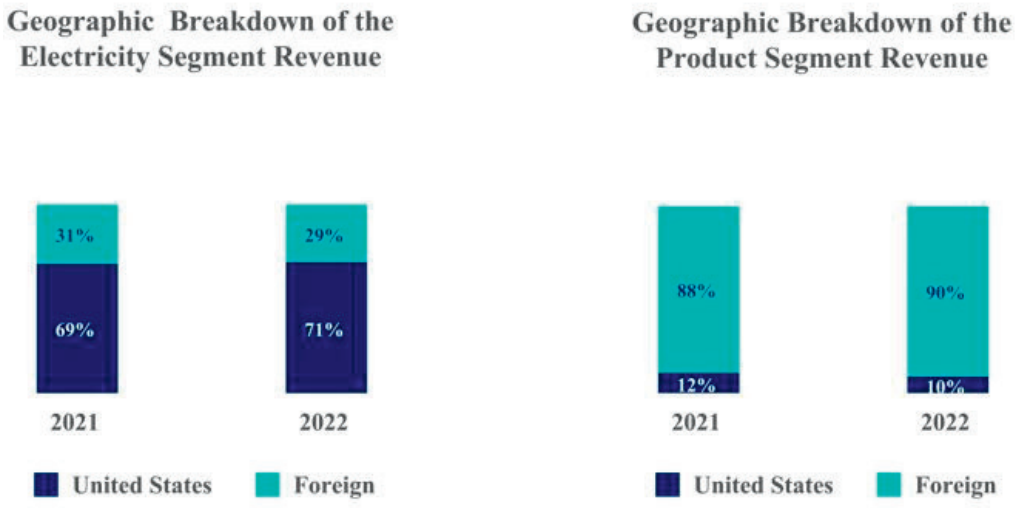
- *Energy Storage Segment*. In the Energy Storage segment, we own and operate grid connected In Front of the Meter (IFM) BESS facilities, which provide capacity, energy and ancillary services directly to the electric grid.In 2022, we commissioned one energy storage facility with a total of 5MW/20 MWh in California.

The charts below show the relative contributions of each of our segments to our consolidated revenues and the geographical breakdown of our segment revenues for the fiscal year ended December 31, 2022.

The following chart sets forth a breakdown of our revenues for each of the years ended December 31, 2021 and 2022:



The following chart sets forth the geographical breakdown of revenues attributable to our Electricity and Product segments for each of the years ended December 31, 2021 and 2022:



The revenues attributable to our Energy Storage segment for each of the years ended December 31, 2021 and 2022 were 100% generated in the United States.

Our Power Generation Business (Electricity Segment)

Our company-owned power plants include both power plants that we have built and power plants that we have acquired. The substantial majority of the power plants that we currently own or operate produce electricity from geothermal energy sources. Geothermal energy is a clean, renewable and generally sustainable form of energy derived from the natural heat of the earth. Unlike electricity produced by burning fossil fuels, electricity produced from geothermal energy sources is produced without emissions of certain pollutants such as nitrogen oxide, and with far lower emissions of other pollutants such as carbon dioxide. As a result, electricity produced from geothermal energy sources contributes significantly less to climate change and local and regional incidences of acid rain than energy produced by burning fossil fuels. In addition, compared to power plants that utilize other renewable energy sources, such as wind or solar, geothermal power plants are generally available all year-long and all day-long and can therefore provide base-load electricity services. Geothermal power plants can also be custom built to provide a range of electricity services such as baseload, voltage regulation, reserve and flexible capacity.

We own and operate geothermal and solar PV hybrid projects and have similar projects currently under construction, in which the electricity generated from a solar PV power plant is used to offset the equipment's energy use at the geothermal facility, thus increasing the geothermal energy delivered by the project to the grid. In 2022 we commenced operations in a 20MW stand-alone Solar PV project in California.

We also construct, own, and operate recovered energy-based power plants. We have built all of the recovered energy-based plants that we operate. Recovered energy comes from residual heat that is generated as a by-product of gas turbine-driven compressor stations, solar thermal units and a variety of industrial processes, such as cement manufacturing. Such residual heat, which would otherwise be wasted, may be captured in the recovery process and used by recovered energy power plants to generate electricity without burning additional fuel and without additional emissions.

Each of our current geothermal power plants sells substantially all of its output pursuant to long-term, and in most of the cases, fixed price PPAs to various counterparties denominated in or linked to the U.S. dollar or Euro. These contracts had a total weighted average remaining term, based on contributions to segment revenue, of approximately 15 years at December 31, 2022. In addition, the counterparties to our PPAs in the United States had a credit rating of between A3 to Baa2 by Moody's and BB- to A by S&P. The purchasers of electricity from our foreign power plants are mainly state-owned entities in countries with below investment grade rating.

Power Plants in Operation

We own and operate 28 geothermal, REG and solar sites globally with an aggregate generating capacity of 1,070 MW. Geothermal comprised 92% of our generating capacity. In 2022, our geothermal and REG power plants generated at a capacity factor of 83% and 66%, respectively, which is much higher than the 20%-30% capacity factor typically generated in wind and solar projects.

The table below summarizes certain key non-financial information relating to our power plants and complexes as of February 22, 2023. The generating capacity of certain of our power plants and complexes listed below has been updated from our 2021 disclosure to reflect changes in the resource temperature and other factors that impact resource capabilities:

Type	Region	Plant	Ownership[1]	Generating capacity (MW)[2]	PPA Tenor	Capacity Factor
Geothermal	California	Ormesa Complex	100%	36	20	
		Heber Complex	100%	81	11	83%[3]
		Mammoth Complex	100%	65[4]	14	
		Brawley	100%	7[5]	9	
	West Nevada	Steamboat Complex	100%	79	20	81%
		Brady Complex	100%	24	27	
	East Nevada	Tuscarora	100%	18	10	
		Jersey Valley	100%	8	10	
		McGinness Hills	100%	146[6]	16	
		Don A. Campbell	63.3%	32	13	88%
		Tungsten Mountain	100%	42[7]	21	
		Dixie Valley	100%	58	16	
		Beowawe	100%	14	32	
	North West Region	Neal Hot Springs	60%	24[8]	16	
		Raft River	100%	12	10	86%
		San Emidio	100%	11	16	
	Hawaii	Puna	63.3%	38[9]	30	62%
	International	Amatitlan (Guatemala)	100%	20	6	
		Zunil (Guatemala)	97%	20	12	
		Olkaria III Complex (Kenya)	100%	150	12	76%[10]
		Bouillante (Guadeloupe Island, France)	63.75%[11]	15	8	
		Platanares (Honduras)	100%	38	10	
Total Consolidated Geothermal				938		83%[12]
REG		OREG 1	63.3%	22	9	
		OREG 2	63.3%	22	12	
		OREG 3	63.3%	5.5	7	
		OREG 4	100%	3.5[13]	7	
Total REG				53		66%
Solar		Tungsten Mountain	100%	12	21	
		Wister	100%	20[14]	20	
		Steamboat Solar	100%	5[15]	21	
Total Solar				37		
Unconsolidated Geothermal	Indonesia	Sarulla Complex	12.75%	42	25	
Total Unconsolidated Geothermal				42		
Total				**1,070**		

1. We have a controlling interest and we operate all of our power plants, except for Sarulla. Financial institutions hold equity interests in four of our subsidiaries: (i) Opal Geo subsidiaries, which own the McGinness Hills Phases 1 and 2 geothermal power plants, the Tuscarora and Jersey Valley power plants and the second phase of the Don A. Campbell power plant, all located in Nevada; (ii) ORNI 41, which owns McGinness Hills Phase 3 located in Nevada; (iii) ORNI 43, which owns the Tungsten Mountain geothermal power plant located in Nevada; (iv) Steamboat Hills, LLC, which owns the Steamboat Hills power plant located in Nevada; and (v) CD4 partnership that owns the CD4 power plant, under Mammoth Complex, in California. In the table above, we list these power plants as being 100% owned because all of the generating capacity is owned by these subsidiaries and we control the operation of the power plants. The nature of the equity interests held by the financial institution is described below in Item 8 — "Financial Statements and Supplementary Data" under Note 13.

We own a 63.75% equity interest in the Bouillante power plant, a 60% equity interest in the Neal Hot Spring power plant and a 63.25% direct equity interest in each of the Puna plant, the first phase of Don A. Campbell, OREG 1, OREG 2 and OREG 3 power plants as well as the indirect interest in the second phase of the Don A. Campbell complex owned by our subsidiary, ORPD. We list 100% of the generating capacity of the Bouillante power plant, the Neal Hot Springs power plant and the power plants in the ORPD portfolio in the table above because we control their operations. We list our 12.75% share of the generating capacity of the Sarulla complex as we own a 12.75% minority interest. Revenues from the Sarulla complex are not consolidated and are presented under "Equity in earnings (losses) of investees, net" in our consolidated financial statements.

2. References to generating capacity generally refer to gross generating capacity less auxiliary power. We determine the generating capacity of these power plants by taking into account resource and power plant capabilities. In any given year, the actual power generation of a particular power plant may differ from that power plant's generating capacity due to variations in ambient temperature, the availability of the geothermal resource, and operational issues affecting performance during that year. In 2022 the capacity factors of Brawley, Olkaria, Puna, Heber and Sarulla complexes were significantly impacted by operational and resource issues, as discussed further under "Description of our power plants".

3. Capacity factor excludes the Heber 1 plant that was shutdown following a fire in early 2022, as discussed further under "Description of our power plants".

4. The Mammoth complex includes 35MW from CD4 that commenced commercial operation in July 2022.

5. The generating capacity of the Brawley complex is reduced due to lower performance of the wellfield.

6. Generating capacity reduced by 14MW to reflect the cooling we are experiencing in the resource. We are evaluating our alternatives to mitigate the cooling.

7. The Tungsten Mountain complex includes the 13MW second phase that commenced commercial operation in April 2022. Tungsten Mountain is a hybrid geothermal and solar power plant that uses the solar energy for geothermal power plant auxiliary power. The solar power plant's capacity increased in the third quarter of 2022 by 5MW to a total of 12 MW and is presented separately in the table above.

8. We own 60% and Enbridge owns 40% of the Neal Hot Springs power plant.

9. The Puna geothermal power plant shut down on May 3, 2018 when the Kilauea volcano erupted following a significant increase in seismic activity in the area. The Puna power plant resumed operations in November 2020 and during 2022 operated at a level of 23-25 MW. We are currently negotiating an amendment to the economic terms of the PPA.

10. Capacity factor was mainly impacted by lower performance of Olkaria complex, as further discussed below under "Description of our Power plants".

11. We own 63.75%, CDC owns 21.25% and Sageos owns 15.0% of the Bouillante power plant.

12. The total availability of the geothermal power plants excludes the Puna and Heber 1 power plants that are not in full operation, as discussed above.

13. The OREG 4 power plant is not operating at full capacity due to low run time of the compressor station that serves as the power plant's heat source. This has resulted in lower power generation.

14. The 20MW Wister Solar power plant commenced commercial operation in July 2022.

15. The 5MW Steamboat Solar project commenced commercial operation in the second half of 2022.

New Power Plants

We are currently in various stages of construction of new power plants and expansion of existing power plants. We have released for construction of 91 MW in generating capacity from geothermal and solar PV in the United States and Guatemala. In addition, we have several geothermal and solar PV projects in various stages of development. These projects are primarily located in the United States, Guadeloupe and Indonesia,

We hold substantial land positions across 28 prospects in the United States and 11 prospects in Ethiopia, Guatemala, Honduras, Indonesia, Madagascar and New Zealand that we expect will support future geothermal development. These land positions are comprised of various leases, exploration concessions for geothermal resources, and options to enter into leases. We have started or plan to start exploration activity on many of these prospects.

We expect to add between 230MW to 260MW by the end of 2025 and to reach a total generating capacity of approximately 1.3 GW in the Electricity Segment by that time.

Our Product Segment

We design, manufacture and sell products for electricity generation and provide the related services described below. In addition, we provide cementing services for well drilling to third parties. We primarily manufacture products to fill customer orders, but in some situations, we manufacture products as inventory for future projects that we will own or for future third party projects.

Power Units for Geothermal Power Plants

We design, manufacture and sell power units for geothermal electricity generation, which we refer to as OECs. In geothermal power plants using OECs, geothermal fluid (either hot water, also called brine, steam, or both) is extracted from the underground reservoir and flows from the wellhead to a vaporizer that heats a secondary working fluid, which is vaporized and used to drive the turbine. The secondary fluid is then condensed in a condenser, which may be cooled directly by air through an air cooling system or by water from a cooling tower and sent back to the vaporizer. The cooled geothermal fluid is then reinjected back into the reservoir. Our customers include contractors, geothermal power plant developers, owners and operators.

Power Units for Recovered Energy-Based Power Generation

We design, manufacture and sell power units used to generate electricity from recovered energy, or so-called "waste heat". This heat is generated as a residual by-product of gas turbine-driven compressor stations, solar thermal units, biomass facilities and a variety of industrial processes, such as cement manufacturing, and is not otherwise used for any purpose. Our existing and target customers include interstate natural gas pipeline owners and operators, gas processing plant owners and operators, cement plant owners and operators, and other companies engaged in other energy-intensive industrial processes.

EPC of Power Plants

We serve as an EPC contractor for geothermal and recovered energy power plants on a turnkey basis, using power units we design and manufacture. Our customers are geothermal power plant owners as well as our target customers for the sale of our recovered energy-based power units. Unlike many other companies that provide EPC services, we believe our competitive advantage is in using equipment that we manufacture, which allows us better quality and control over the timing and delivery of required equipment and its related costs.

Our Energy Storage Segment

Our Energy Storage segment has grown consistently since 2019 and we expect even stronger growth over the coming years. We have targeted the Energy Storage segment as one of our major segments for investment and growth.

In 2022, we successfully brought on line one new Ormat-owned BESS project, the 5 MW/20 MWh Tierra Buena project in California, which increased our operating portfolio at the end of 2022 to approximately 88 MW / 196 MWh within the footprint of 4 RTOs or ISOs: CAISO, PJM Interconnect, ERCOT and ISONE.

We are currently in the process of constructing eight energy storage projects with a total capacity of 204 MW / 464 MWh in California, Texas, New Jersey and Ohio.

In addition, we have an approximate 3GW/10GWh pipeline of potential projects, in different stages of development across the United States that will support our target to reach an energy storage portfolio of 352MW by the end of 2024 and between 500MW and 530MW by 2025. The development of such projects is dependent, inter alia, on site permitting, interconnection agreement, supply of Lithium- Ion batteries and economic viability, which are not certain. We plan to continue leveraging our experience in project development and finance, our engineering, procurement and construction know-how and our relationships with utilities and other market participants, to develop additional BESS projects.

Business Strategy

Our business strategy reiterates and supports our position that climate change is among the most important issues of our time. A large part of our business involves bringing baseload energy to parts of the world that lack access to affordable renewable energy. Our Company recognizes the importance of the fight against climate change and the imperative of lowering global greenhouse gas emissions, and our core business actively works to counteract these existential threats. We are focused on helping to create a sustainable energy infrastructure, and further an alternative energy future, where greenhouse gas emissions are significantly reduced and the ability to access and store renewable sourced power will enable electricity grids to become more responsive, more stable, and more environmentally friendly.

Our goals include continuing our leading position in the geothermal energy market and becoming a leading global provider of renewable energy. Our strategy focuses on three main elements:

- Developing our renewable geothermal business in the United States and globally;
- Establishing a strong market position in the IFM energy storage market; and
- Exploring opportunities in new areas by looking for synergistic growth opportunities utilizing our core competencies, strong market reputation, and new market opportunities focused upon environmental solutions.

We intend to implement this strategy through:

- *Development and Construction of New Geothermal Power Plants* - seeking out commercially viable renewable geothermal resources, to accelerate the development and construction of new zero emission geothermal power plants by entering into long-term PPAs providing stable and sustainable cash flows.
- *Expanding our Geographical Reach —* increasing our business development activities in an effort to grow our business in the global markets in all business segments. While we continue to evaluate global opportunities, we currently see the United States, Indonesia, Central America and Greece as attractive markets for our Electricity Segment. We see New Zealand, Philippines, Turkey, Chile, Indonesia, keep in United States and China as attractive markets for our Product Segment. We are actively looking at ways to expand our presence in these countries to offer and provide replacement to carbon-intensive power alternatives.
- *Accelerating the Development and Construction of New Energy Storage Assets* - increasing our business development activities seeking potential sites for development and construction of energy storage facilities (including hybrid storage and solar PV facilities) in an effort to significantly grow our energy storage market and provide efficient solutions to the grid.
- *Acquisition of New Geothermal Assets* - expanding and accelerating growth through acquisition activities globally, aiming to acquire additional geothermal assets as well as operating and development assets that can support our geothermal business.
- *Acquisition of Energy Storage Projects and Assets* – expanding and accelerating growth through acquisition activities of operating assets, shovel ready projects and projects in various stages of development.
- *Using Our Operational Capabilities to Increase Output from our Existing Geothermal Power Plants* - increasing output from our existing geothermal power plants by adding additional generating capacity, upgrading plant technology, and improving geothermal reservoir operations, including improving methods of heat source supply and delivery.

- *Creating Cost Savings Through Increased Operating Efficiency* - increasing efficiencies in our operating power plants and manufacturing facility including procurement by adding new technologies, restructuring of management control, automating part of our manufacturing work and centralizing our operating power plants.

- *Diversifying our Customer Base* - evaluating a number of strategies for expanding our customer base to the CCA's markets. In the near term, however, we expect that the substantial majority of our revenues will continue to be generated from our traditional electrical utility customer base for the Electricity segment.

- *Maintaining a Prudent and Flexible Capital Structure* - we have various financing structures in place, including non-recourse project financings, green convertible bonds, the sale of differential membership interests and equity interests in certain subsidiaries, as well as revolving credit facilities and term loans. We believe our cash flow profile, the long-term nature of our contracts, and our ability to raise capital provide greater flexibility for optimizing our capital structure.

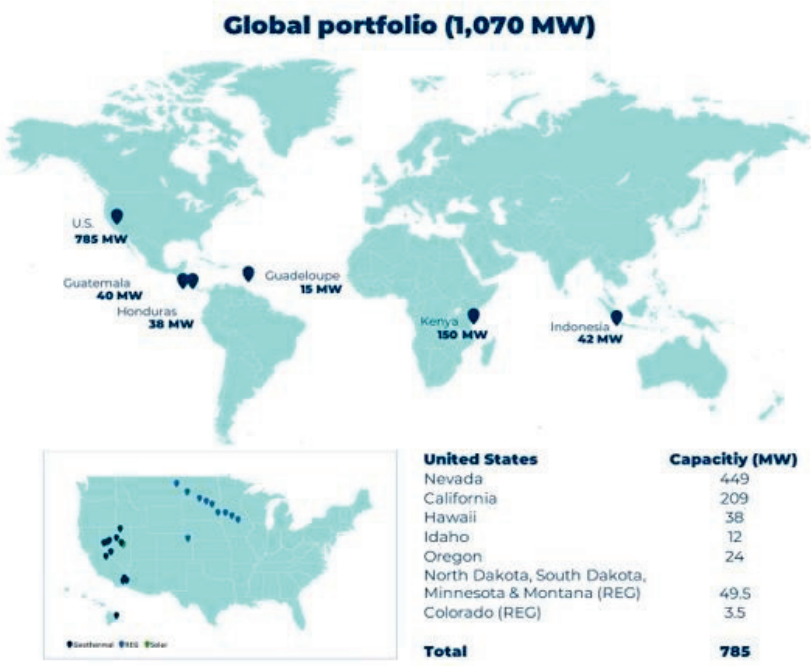
- *Improving our Technological Capabilities* — investing in research and development of renewable energy technologies and leveraging our technological expertise to continuously improve power plant components, reduce operations and maintenance costs, develop competitive, eco-efficient and low-carbon products for electricity generation and target new service opportunities. In addition, we are expanding our core geothermal competencies to provide high efficiency solutions for high enthalpy applications by utilizing our binary enhanced cycle and technology.

- *Manufacturing and Providing Products and EPC Services Related to Renewable Energy* - designing, manufacturing and contracting power plants for our own use and selling to third parties power units and other generation equipment for geothermal and recovered energy-based electricity generation.

- *Expanding into New Technologies* - leveraging our technological capabilities over a variety of renewable energy platforms, including solar power generation, energy storage and recovered energy generation. We may acquire companies with integration and technological capabilities that we do not currently have, or develop new technology ourselves, where we can effectively leverage our expertise to implement this part of our strategic plan.

The map below shows our worldwide portfolio of operating geothermal, solar PV and recovered energy power plants as of February 22, 2023.

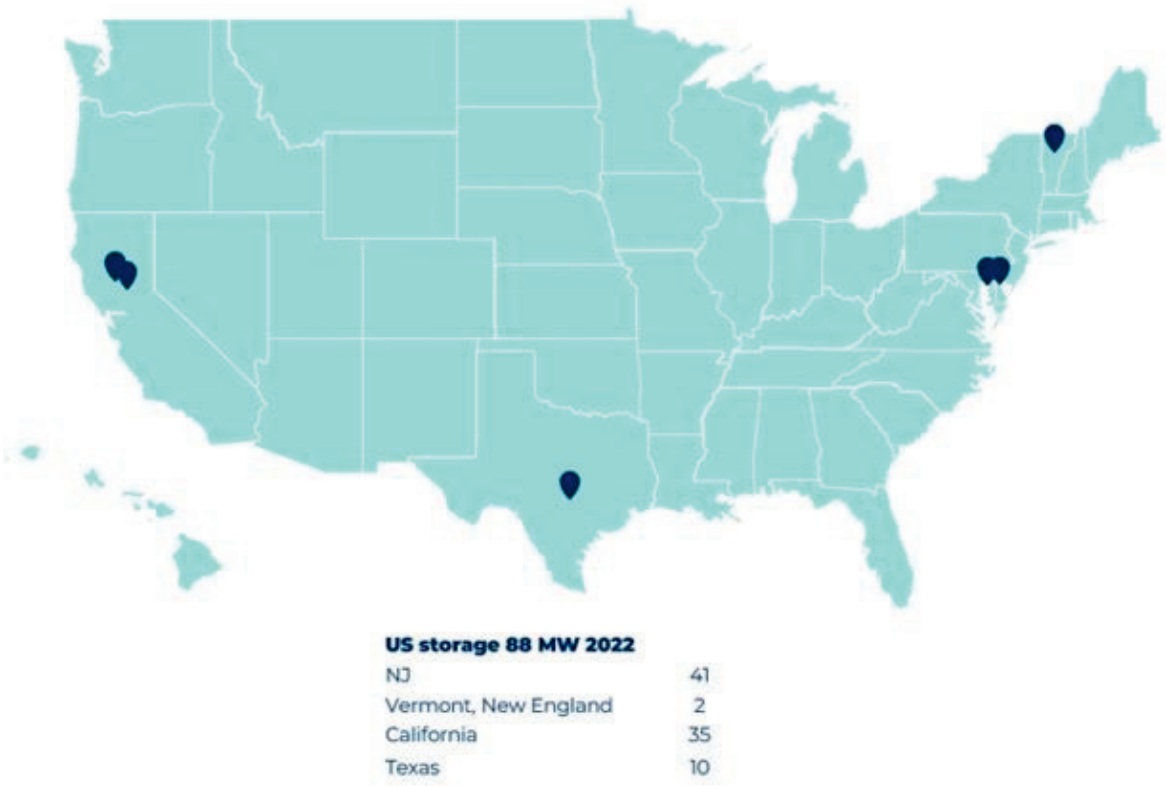
We believe our activities as a provider of renewable energy and our continued investment in clean and renewable assets help reduce greenhouse gas emissions.



United States	Capacitiy (MW)
Nevada	449
California	209
Hawaii	38
Idaho	12
Oregon	24
North Dakota, South Dakota, Minnesota & Montana (REG)	49.5
Colorado (REG)	3.5
Total	**785**

* In the Sarulla complex, we include our 12.75% share only.

The map below shows our portfolio of operating storage facilities as of February 22, 2023.



Sustainability Strategy

We are committed to engaging with stakeholders on, and strengthening our commitment to, sustainability issues, including environmental, social and governance ("ESG") matters. We endorse external initiatives and partner with national and international associations that we believe assist us in meeting our ESG commitments and values, in particular, relating to geothermal, energy and health and safety issues. We strive to provide recent, credible and comparable data to ESG agencies while engaging institutional investors and investor advocacy organizations around ESG issues.

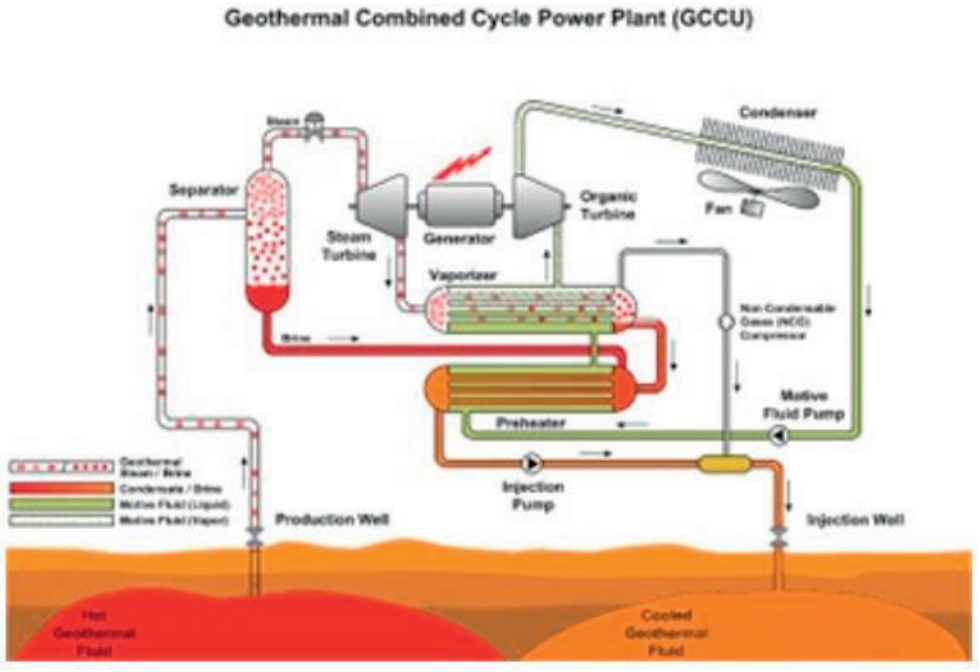
As a renewable energy solution provider, we are motivated to identify opportunities and risks with respect to climate change and take efforts to reduce our greenhouse gas ("GHG") emissions and improve our energy efficiency. In addition to meeting our regulatory requirements, we report our annual GHG emissions to global organizations, including CDP and the Israeli Ministry of Environmental Protection's voluntary business reporting initiative.

We report our progress on environmental goals and commitments annually in our Sustainability Reports, including, but not limited to, our climate change mitigation measures, biodiversity conservation, and water management efforts. A copy of our most recent Sustainability Report is accessible, free-of-charge, on our website at https://investor.ormat.com/sustainability-report. The contents of our website, including the Sustainability Reports, are not part of or otherwise incorporated by reference into this Form 10-K.

Our Proprietary Technology

Our proprietary technology involves original designs of turbines, pumps, and heat exchangers, as well as formulation of organic motive fluids (all of which are non-ozone-depleting substances) and may be used either in power plants operating according to the ORC alone or in combination with various other commonly used thermodynamic technologies that convert heat to mechanical power, such as gas and steam turbines. It can be used with a variety of thermal energy sources, such as geothermal, recovered energy, biomass, solar energy and fossil fuels. By using advanced computational fluid dynamics techniques and other computer aided design software as well as our test facilities, we continuously seek to improve power plant components, reduce operations and maintenance costs, and increase the range of our equipment and applications. We examine ways to increase the output of our plants by utilizing evaporative cooling, cold reinjection, configuration optimization, and topping turbines.

We also developed, patented and constructed GCCU power plants in which the steam first produces power in a backpressure steam turbine and is subsequently condensed in a vaporizer of a binary plant, which produces additional power. Our Geothermal Combined Cycle technology is depicted in the diagram below.



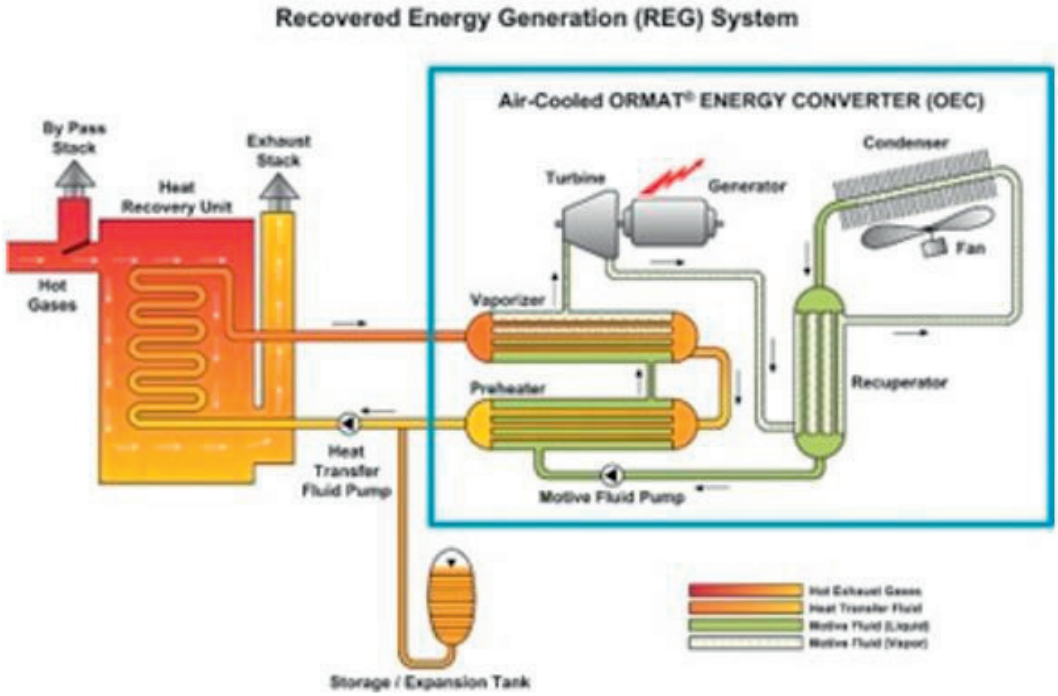
In the conversion of geothermal energy into electricity, our technology has a number of advantages over conventional geothermal steam turbine plants. A conventional geothermal steam turbine plant consumes significant quantities of water,

causing depletion of the aquifer and requiring cooling water treatment with chemicals and consequently a need for the disposal of such chemicals. A conventional geothermal steam turbine plant also creates a significant visual impact in the form of an emitted plume from the cooling towers, especially during cold weather. By contrast, our binary and combined cycle geothermal power plants have a low profile with minimal visual impact and do not emit a plume when they use air-cooled condensers. Our binary and combined cycle geothermal power plants reinject all of the geothermal fluids utilized in the respective processes into the geothermal reservoir. Consequently, such processes generally have no emissions.

Other advantages of our technology include simplicity of operation and maintenance and higher yearly availability. For instance, the OEC employs a low speed and high efficiency organic vapor turbine directly coupled to the generator, eliminating the need for reduction gear. In addition, with our binary design, there is no contact between the turbine blade and geothermal fluids, which can often be very erosive and corrosive. Instead, the geothermal fluids pass through a heat exchanger, which is less susceptible to erosion and can adapt much better to corrosive fluids. In addition, with the organic vapor condensed above atmospheric pressure, no vacuum system is required.

We use the same elements of our technology in our recovered energy products. The heat source may be exhaust gases from a Brayton cycle gas turbine, low-pressure steam, or medium temperature liquid found in the process industries such as oil refining and cement manufacturing. In most cases, we attach an additional heat exchanger in which we circulate thermal oil or water to transfer the heat into the OEC's own vaporizer in order to provide greater operational flexibility and control. Once this stage of each recovery is completed, the rest of the operation is identical to that of the OECs used in our geothermal power plants and enjoys the same advantages of using the ORC. In addition, our technology allows for better load following than conventional steam turbines, requires no water treatment (since it is air cooled and organic fluid motivated), and does not require the continuous presence of a licensed steam boiler operator on site.

Our REG technology is depicted in the diagram below.



Patents

As of December 31, 2022, we have 225 patents and patent applications worldwide, including 63 patents issued in the US and 35 pending U.S. patent applications. These patents and patent applications cover our products (mainly power units based on the ORC) and systems (mainly geothermal power plants and industrial waste heat recovery plants for electricity production). The product-related patents cover components that include turbines, heat exchangers, air coolers, seals and controls as well as control of operation of geothermal production well pumps. The system-related patents cover not only particular components but also the overall energy conversion system from the "fuel supply" (e.g., geothermal fluid, waste heat, biomass or solar) to electricity production.

The system-related patents also cover subjects such as waste heat recovery related to gas pipeline compressors and industrial waste heat, solar power systems, disposal of non-condensable gases present in geothermal fluids, reinjection of other geothermal fluids ensuring geothermal resource sustainability, power plants for very high-pressure geothermal resources, two-phase fluids, low temperature geothermal brine as well as processes related to EGS. Fifty-five of our patents cover combined cycle geothermal power plants, in which the steam first produces power in a backpressure steam turbine and is subsequently condensed in a vaporizer of a binary plant, which produces additional power. The remaining terms of our issued patents range from one year to 16 years. The loss of any single patent would not have a material effect on our business or results of operations.

Research and Development

We conduct research and development activities intended to improve plant performance, reduce costs, and increase the breadth of our product offerings. The primary focus of our research and development efforts is targeting power plant conceptual thermodynamic cycle and major equipment including continued performance, cost and land usage improvements to our condensing equipment, and development of new higher efficiency and higher power output turbines and brine production pumps. New realms for innovation include implementation of predictive maintenance software and automation of power plants performance analysis.

We also devote resources to research and development related to our energy storage segment. Our engineering and R&D teams are working to optimize the dispatch strategy of a battery energy storage system (BESS), develop and deploy capabilities to self-integrate BESS and test different battery cell and inverter technologies under simulated operating criteria of various energy markets to allow us to bring to market cost-effective BESS more rapidly and more optimized to the specific use cases and target revenue streams. Additionally, we hold patents in other energy storage solutions and continue to evaluate investment opportunities in companies with innovative technology or product offerings for renewable energy and energy storage solutions.

Market Opportunities

Geothermal Market Opportunities

Renewable energy provides a sustainable alternative to the existing solutions to two major global issues: climate change and volatile commodity costs. Renewable energy solutions are sustainable, clean and decarbonizes the grid. These environmental benefits have led numerous countries to focus their efforts on the development of renewable energy sources in general and geothermal specifically.

Based on data provided by ThinkGeo Energy in January 2023, the total installed geothermal power generation capacity at year-end 2022 stood at 16,128 MW, an increase of 274 MW over 2021. The leading countries with installed geothermal power generation are the U.S., Indonesia, the Philippines, Turkey, Mexico and New Zealand. The largest growth in 2022 happened in Indonesia and the U.S., which had an addition of 152 MW.

Realizing the importance of renewable energy alternatives, including geothermal alternatives providing firm baseload non-weather-dependent resource, various governments have instituted or have been preparing regulatory frameworks and policies to achieve emission reduction targets, and provide incentives to develop the sector and maximize renewable energy resources, create jobs, and improve energy reliability.

United States

Interest in geothermal energy in the United States continues to grow based on supportive legislation and regulation at the local, state, and federal levels. Policy makers and regulators are becoming increasingly aware of the comparatively high value of geothermal energy in contrast to intermittent renewable technology, as seen through individual state's renewable portfolio standard (RPS) goals (as described below) accounting for more baseload energy than ever before as coal, natural gas and nuclear power plants reach retirement.

Today, electricity generation from geothermal resources is concentrated primarily in California, Nevada, Hawaii, Idaho, Oregon, and Utah, and we believe there are opportunities for geothermal expansion in other states such as New Mexico and Colorado. New Mexico recently passed legislation increasing its renewable energy goals to 100% by 2045 for investor-owned utilities and Colorado is introducing new tax incentives for geothermal development.

On August 16, 2022, the Inflation Reduction Act of 2022 ("IRA") was signed, which is effective for taxable years beginning after December 31, 2022. The IRA includes several tax incentives to promote climate change mitigation and clean

energy, electric vehicles, battery and energy storage manufacture or purchase. Some highlights of the IRA include production tax credits ("PTCs") or investment tax credits ("ITCs") for wind and solar projects (including geothermal and hydropower) beginning construction before January 1, 2025. The PTCs and ITCs, as amended by the IRA, will apply to facilities placed in service after December 31, 2022. We expect the IRA will enable us to enter into tax equity transactions and fund a higher percentage of our investment. This should reduce our capital needs and increase the project economics. We expect that our geothermal projects starting operation in next five to six years should be eligible for these credits.

Geothermal energy provides numerous benefits to the U.S. grid and economy. Geothermal development and operation bring economic benefits in the form of tax incentives and long term high-paying jobs, and it currently has one of the lowest LCOE of all power sources in the United States, according to the U.S. Energy Information Administration - EIA - Independent Statistics and Analysis report published in February 2019. Additionally, improvements in geothermal production make it possible to provide ancillary and on-demand services. This helps load serving entities avoid additional costs from purchasing and then balancing intermittent resources with storage or new transmission.

State level legislation

Many state governments have enacted an RPS program under which utilities are required to include renewable energy sources as part of their energy generation portfolio. Under an RPS, participating states have set targets to produce their energy from renewable sources with specific deadlines. Renewable energy generation under an RPS program is tracked through the production of RECs. Load serving entities track the RECs to ensure they are meeting the mandate prescribed by the RPS.

Currently in the United States, 42 states plus the District of Colombia and four territories have enacted an RPS, renewable portfolio goals, or similar laws or incentives (such as clean energy standards or goals) requiring or encouraging load serving entities in such states to generate or buy a certain percentage of their electricity from renewable energy or recovered heat sources. The vast majority of Ormat's geothermal projects are in California, Nevada, and Hawaii which have some of the most stringent RPS programs in the country. We see the impact of RPS and climate legislation as a significant driver for us to expand existing power plants and to build new renewable projects.

States also provide incentives to geothermal energy producers. Nevada provides a property tax abatement of up to 55% for real and tangible personal property used to generate electricity from geothermal sources. The abatement may extend up to twenty years if certain job creation requirements are met. In Idaho, geothermal energy producers are exempt from property tax and, in lieu, pay a tax of 3% of gross energy earnings. The California Energy Commission provides favorable grants and loans to promote the development of new or existing geothermal resources and technologies within the state. Also in California, the CPUC has required Electric Load Service Entities (LSEs) to procure 11.5 GW of new clean electricity by 2028, 1 GW of this procurement must deliver firm power with an 80% capacity factor, produce zero on-site emissions, and be weather independent. With a high capacity factor and firm and flexible generation, geothermal energy addresses these requirements and is the natural replacement for baseload fossil fuels and nuclear generation.

In 2022, Ormat announced two additional PPAs for up to 160 MW of geothermal energy with Nevada Energy, and another power purchase agreement for up to 125 MW portfolio of geothermal projects with California Community Power.

Global

We believe the global markets continue to present growth and expansion opportunities in both established and emerging markets.

We believe several global Climate Change initiatives are likely to create business expansion opportunities for us and support the global growth of the renewable sector, such as the Paris Agreement approved by the Twenty-first Conference of the Parties to the UN Framework Convention on Climate Change (2015) and subsequent UN Climate Change Conferences which reaffirmed the commitments of the Paris Agreement.

Outside of the United States, the majority of power generating capacity has historically been owned and controlled by governments. Since the early 1990s, however, many foreign governments have privatized their power generation industries through sales to third parties encouraging new capacity development and/or refurbishment of existing assets by independent power developers. These foreign governments have taken a variety of approaches to encourage the development of competitive power markets, including awarding long-term contracts for energy and capacity to independent power generators and creating competitive wholesale markets for selling and trading energy, capacity, and related products. Some foreign regions and countries have also adopted active government programs designed to encourage clean renewable energy power generation such as the following countries in which we operate, sell products and/or are conducting business development activities:

Europe

Europe has the fourth largest geothermal power capacity, the majority of which stems from Italy and Turkey and recently small scale projects in Germany. A significant part of our European operations is in Turkey. We are looking for opportunities to expand in Europe, primarily in our Product segment.

A significant part of our European operations is in Turkey, and since 2004, we have established strong business relationships in the Turkish geothermal market and provided our wide range of solutions including our binary systems, to over 40 geothermal power plants with a total capacity of approximately 900 MW. We believe the potential for geothermal growth in Turkey is still high, specifically in center-south and east areas of the country, however, due to the ongoing economic crisis in Turkey, new projects and investments are at a standstill.

Latin America

Several Latin American countries have renewable energy programs and have pursued development in the geothermal market.

In Guatemala, where our Zunil and Amatitlan power plants are located, the government approved and adopted the Energy Policy 2013-2027 that secures, among other things, a supply of electricity at competitive prices by diversifying the energy mix with an 80% renewable energy share target for 2027.

In Honduras, where we operate our Platanares power plant, the government set a target to reach at least 80% renewable energy production by 2034.

New Zealand

In New Zealand, where we have been actively providing geothermal power plant solutions since 1988, the government's policies to fight climate change include a net zero GHG emissions reduction target by 2050 and a renewable electricity generation target of 90% of New Zealand's total electricity generation by 2035. We continue selling power plants and products to our New Zealand customers and cooperate with other potential customers for adding geothermal power generation capacity within the coming years. In 2022, we signed an EPC contract to build the 59MW Tehuka 3 geothermal project. We are currently exploring an opportunity to build and own a power plant in New Zealand.

Asia

The Electricity Law of 2009 (in conjunction with Job Creation Act No. 11 of 2020/Omnibus Law) is the principal regulation for the electricity industry in Indonesia which divides the industry into two broad categories: (1) electrical power provision, covering electric power generation, transmission, distribution and sales and (2) electrical power support such as services (consulting, construction, installation, operation & maintenance, certification & training, testing etc.) and manufacture (tools, power plant equipment, cables, electrical equipment, etc.). The electrical power provision business is dominated by PLN (a state-owned enterprise), which is the sole owner of transmission and distribution assets and 70% of the power generation assets. Private sector participation in power generation is allowed through an IPP scheme, mostly done through tenders or direct appointment for some power sources such as geothermal. Geothermal power is regulated by The Geothermal Law issued in 2014 (as also amended by the Indonesian Omnibus Law in 2020), that endorses private participation as a geothermal IPP. The central government conducts tenders for geothermal fields, awarding a Geothermal Business License for the winner. Geothermal Business License holders can conduct exploration and feasibility studies within five years and subject to two times one-year extensions, conduct well development and power plant construction and sell the electricity generated to PLN for a maximum of 30 years. Prior to the expiration of the Geothermal License, the IPP can propose to extend the license for an additional 20 years. In 2021, Presidential Regulation No. 112 was enacted with the aim of accelerating Renewable Energy. This regulation replaces the basis of the renewable energy tariff from the average electricity generation basic cost to a ceiling price. In this scheme, the tariff is negotiated between IPP and PLN and must not be higher than the ceiling tariff set for particular type of renewable energy power plant, which is then multiplied by a factor based on location.

East Africa

In East Africa the geothermal potential along the Rift Valley is estimated at several thousand MW. The countries along the Rift Valley are at different stages of development of their respective geothermal potential.

In Kenya, there are already several geothermal power plants, including our 150 MW Olkaria III complex. The Kenyan government has identified the country's untapped geothermal potential as the most suitable indigenous source of electricity.

The Kenyan government is aiming to reach 10 GW of power generating capacity by 2037, pursuant to the Least-Cost Power Development Plan 2017-37, which had a target of 62% of such capacity generated from renewable energy sources (including large hydro and solar).

Energy Storage

In the U.S., the IRA provides direct incentives to our Energy Storage segment by making projects eligible for ITCs. We also expect to see our Energy Storage segment benefit from the incentives available to other renewable energy technologies, which we believe will increase the need for energy storage.

In Europe, impacts from the war in Ukraine increased the demand for renewable energy. The IEA estimates, in its 2022 Renewable Analysis and Forecast, that global renewable energy deployment between 2022-2027 will be 2,400GW, which represents an increase of 85% over the previous five years. This increase can place strain on the electric grid as adding intermittent renewables such as wind and solar can create situations where a significant amount of capacity must be available to ramp up and down to accommodate these resource's daily output cycles and variations due to weather conditions. Furthermore, the output from wind and solar PV power plants can change significantly over short periods of time due to environmental conditions like cloud movement and fog burn off and can cause instability on the electric grid. As a result, we believe that energy storage is positioned to become a key component of the grid to provide flexibility and reliability.

Energy storage systems utilize surplus, available electricity that enables utilities and grid operators to optimize the operation of the grid, run generators closer to full capacity for longer periods, and operate the grid more efficiently and effectively. As penetration of wind and solar resources increases, so does the need for services that energy storage systems can provide to "balance the grid", such as local capacity, frequency regulation, ramping, reactive power, black start and movement of energy from times of excess supply to times of high demand. Common applications for energy storage systems include ancillary services, wind/solar smoothing, energy trading, peaker replacement, and transmission and distribution deferral.

According to Wood Mackenzie's Energy Storage Monitor for Q4 2022, approximately 1.3 GW/4.7 GWh of new grid-scale energy storage projects were installed in the United States as of Q3 2022 and this number represents a 26%/48% increase compared to Q3 2021. Wood Mackenzie is forecasting that annual energy storage deployments will grow to 65GWh by 2026, of which 84% is expected to be grid-scale installations (vs. community, commercial and industrial as well as residential installations, which are expected to comprise 16% of total installations).

BESS deployment in the United States saw record growth in 2022, and significant growth in BESS deployment is expected to continue primarily for grid-connected (also referred to as "in front of the meter") applications. Many power systems across the U.S. are facing significant challenges such as: grid aging; grid congestion; retirement of aging thermal generators; implementation of greenhouse gas emission reduction targets; and the increasing penetration of intermittent renewable energy resources, all of which drive the further deployment of grid-scale energy storage.

Recently the industry has experienced, and it is still facing, challenges in the development of new energy storage projects due to global supply chain constraints and inflation, which has caused an increase in prices and a shortage of core components of energy storage projects, specifically batteries. Our projects under development have experienced delays as a result of these challenges as well as challenges related to interconnection.

We own and operate several grid-scale BESS facilities, where revenues are derived from selling energy, capacity and/or ancillary services in merchant markets like PJM Interconnect, ISO New England, the ERCOT and the CAISO. We are pursuing the development of additional grid-connected BESS projects in multiple regions, with expected revenues coming from providing energy, capacity and/or ancillary services on a merchant basis, or through bilateral contracts with load serving entities, e.g. investor owned utilities, publicly owned utilities and community choice aggregators. We are also pursuing the development of storage plus Solar PV facilities.

Solar PV

The solar PV market continues to grow, and is benefited by the IRA as well as the general desire to replace conventional generation with renewable resources. We are monitoring market drivers with the potential to develop solar PV power plants in locations where we can offer competitively priced power generation. Our current focus is in adding solar PV systems in some of our operating geothermal power plants to reduce internal consumption loads, as well as developing solar PV and BESS projects in targeted regions where economics are favorable. Since 2019, we successfully placed in service one 20MW stand-alone Solar PV project an additional 17MW of solar PV augmentation systems adjacent to operating geothermal power plants in Nevada. We are also currently constructing and developing similar projects totaling 43MW.

Other Opportunities

Recovered Energy Generation

In addition to our geothermal power generation activities, we are pursuing recovered energy-based power generation opportunities in the United States and worldwide. We believe recovered energy-based power generation will ultimately benefit from the efforts to reduce GHG emissions. We have built 23 power plants in North America which generate electricity utilizing "waste heat" from gas turbine-driven compressor stations along interstate natural gas pipelines, from midstream and gas processing facilities, and from other applications.

The passage of the IRA extended ITCs of up to 30% for waste energy projects in the United States. As such, several states, and the federal government, have recognized the environmental benefits of recovered energy-based power generation.

EU aims to become the world's first climate-neutral continent by 2050 and reduce greenhouse gas emissions by 55% (compared to 1990 levels) by 2030. A main element in decarbonization is the energy sector, by aiming to increase the share of renewables in The overall energy mix and meet to enhanced energy efficiency targets via integrated energy systems.

We believe that these policies, incentives, and ambitious targets are likely to encourage the development of renewable energy technologies, including waste heat recovery, throughout U.S. and Europe. We believe that other markets worldwide may offer similar opportunities in recovered energy-based power generation.

In summary, the market for the recovery of waste heat converted into electricity exists either when already available electricity is expensive or where the regulatory environment facilitates construction and marketing of power generated from recovered waste heat. However, such projects tend to be smaller than 9 MW and we expect any growth to be relatively slow and geographically scattered.

Operations of our Electricity Segment

How We Own Our Power Plants

We customarily establish a separate subsidiary to own interests in each of our power plants. This ensures that the power plant, and the revenues generated by it, will be the only source for repaying indebtedness, if any, incurred to finance the construction or the acquisition (or to refinance the construction or acquisition) of the relevant power plant. If we do not own all of the interest in a power plant, we enter into a shareholders' agreement or a partnership agreement that governs the management of the specific subsidiary and our relationship with our partner in connection with the specific power plant. Our ability to transfer or sell our interests in certain power plants may be restricted by certain purchase options or rights of first refusal in favor of our power plant partners or the power plant's power purchasers and/or certain change of control and assignment restrictions in the underlying power plant and financing documents. All of our domestic geothermal and REG power plants are Qualifying Facilities under the PURPA and are eligible for regulatory exemptions from most provisions of the FPA and certain state laws and regulations.

How We Explore and Evaluate Geothermal Resources

We conduct exploration activities globally. It generally takes two to three years from the time we start active exploration of a particular geothermal resource to the time we have resource confirmation through drilling and testing. This timeframe assumes the resource is commercially viable and there is an intention to pursue its development. Exploration activities generally involve the phases described below.

Initial Evaluation

We identify and evaluate potential geothermal resources through field investigations using a robust geoscience program identified through both public and private data sources.

Our initial evaluation is usually conducted by our internal exploration team, although we might engage outside service providers for some tasks from time to time. The costs associated with an initial evaluation vary from site to site, based on various factors, including the acreage involved and the costs, if any, of obtaining information from private databases or other sources. On average, our expenses for an initial evaluation range from approximately $10,000 (mainly in the U.S.) to $50,000 (mainly in the international prospects) including travel, chemical analyses, and data acquisition.

If we conclude, based on the information considered in the initial evaluation, that the geothermal resource has potential to support a commercially viable power plant,considering various factors described below, we proceed to land rights acquisition.

Land Acquisition

We acquire land rights to any geothermal resources our initial evaluation indicates could potentially support a commercially viable power plant. For domestic power plants, we either lease or own the sites on which our power plants are located. For our foreign power plants, our lease rights for the power plant site are generally contained in the terms of a concession agreement or other contract with the host government or an agency thereof. In certain cases, we also enter into one or more geothermal resource leases (or subleases), a concession, an option agreement or other agreement granting us the exclusive right to extract geothermal resources from specified areas of land, with the owners (or sublessors) of such land.

For most of our current exploration sites in the United States, we acquire rights to use the geothermal resource through land leases with the BLM (which regulates leasehold interests in U.S. federal land), with various states, or through private leases. A summary of our typical lease terms is provided below under “Description of our Leases and Lands”. The up-front bonus and royalty payments vary from site to site and are based on, among other things, current market conditions.

Surveys

We conduct geological, geochemical, and/or geophysical surveys on the sites we acquire. These surveys are conducted incrementally considering relative impact and cost, and the geologic model is updated from time to time.

We make a further determination of the commercial viability of the geothermal resource based on the results of this process, particularly the results of the geochemical surveys estimating temperature and the overall geologic model, including potential resource size. If the results from the geochemical surveys are poor (i.e., low derived resource temperatures or poor permeability) or the geologic model indicates small or deep resource, we re-evaluate the commercial viability of the geothermal resource and may not proceed to exploratory drilling. We generally only move forward with those sites that we believe have a high probability of successful development.

Exploratory Drilling

We drill one or more exploratory wells on the high priority, relatively low risk sites to confirm and/or define the geothermal resource. Each year we determine and approve an exploration budget for the entire exploration activity in such year. We prioritize budget allocation between the various geothermal sites based on commercial and geological factors. The costs we incur for exploratory drilling vary from site to site based on various factors, including the accessibility of the drill site, the geology of the site, and the depth of the resource. However, on average, exploration costs, prior to drilling of a full-size well are approximately $1.0 million to $3.0 million for each site, not including land acquisition and depending on the success we see in the early stages of exploration. Outside the U.S. exploration costs can be higher.

At various points during our exploration activities, we re-assess whether the geothermal resource involved will support a commercially viable power plant based on information available at that time. For example, once we have a successful exploration wells, we then test the resource for up to several months to study long-term viability with temporary surface equipment. Well testing data informs the resource numerical model and supports decisions such as power plant capacity and specifications.

If we conclude that a geothermal resource will support a commercially viable power plant, we move to the phase of constructing a power plant at the site. Additional wells may be drilled during the plant construction phase to meet the design point criteria.

How We Construct Our Power Plants.

The principal phases involved in constructing one of our geothermal power plants are as follows:

- *Drilling production and injection wells.* We consider completing the drilling of the first production well to be the beginning of our construction phase for a power plant. However, this is not always sufficient for a full release of a project for construction. The number of production wells varies from plant to plant depending on, among other things, the geothermal resource, the projected capacity of the power plant, the power generation equipment to be used and the way geothermal fluids will be re-injected through injection wells to maintain the geothermal resource and surface conditions. We generally drill the wells ourselves although in some cases we use outside contractors. The cost for each production and injection well varies depending on, among other things, the depth and size of the well and market conditions affecting the supply and demand for drilling equipment, labor and operators. In the last five years, our typical cost for each production and injection well ranged between $1.3 million to $13.3 million. An average cost for a domestic well was approximately $3.6 million and $7.6 million for international wells.

- *Designing the well field, power plant, equipment, controls, and transmission facilities.* We usually use our own employees to design the well field and the power plant, including equipment that we manufacture and that will be needed for the power plant. In some cases, depending on complexity and location, we use third parties to help us with the design. The designs vary based on various factors, including local laws, required permits, the geothermal resource, the expected capacity of the power plant and the way geothermal fluids will be re-injected to maintain the geothermal resource and surface conditions.

- *Obtaining any required permits, electrical interconnection and transmission agreements.* We use our own employees and from time to time, depending on complexity and location, outside consultants to obtain any required permits and licenses for our power plants that are not already covered by the terms of our site leases. The permits and licenses required vary from site to site and are described below under “Environmental Permits”.

- *Manufacturing (or in the case of equipment we do not manufacture ourselves, purchasing) the equipment required for the power plant.* Generally, we manufacture most of the power generating unit equipment we use at our power plants. Multiple sources of supply are typically available for all other equipment we do not manufacture.

- *Assembling and constructing the well field, power plant, transmission facilities, and related facilities.* We use our own employees to manage construction work.The construction and installation works (such as site grading, civil, structural, mechanical, insulation, electrical, control and communication works) are normally subcontracted. Construction materials (such as concrete, rebar etc.), construction equipment (cranes, forklifts etc.) and tools are provided by us to the subcontractors in some cases or provided by the subcontractors.

In recent years, it has taken approximately two to three years from the time we drill a production well until a power plant becomes operational. During 2022, in the Electricity segment, we focused on the commencement of operations at Tungsten Mountain enhancement in Nevada, CD4 power plant and Heber-2 Repowering in California, Zunil upgrade in Guatemala and Olkaria optimization in Kenya. In addition, we commenced operations at Wister solar in California as well as at Tungsten Solar and Steamboat Solar in Nevada. We also focused on construction of Heber-1 repower, The North Valley power plant as well as with enhancement work in some other of our operating power plants worldwide. We also commenced construction of the Dixie Valley upgrade and some Solar PV projects to supply power to the auxiliary loads of our power plants.

When deciding whether to continue holding lease rights and/or to pursue exploration activity, we diligently prioritize our prospective investments, taking into account resource and probability assessments in order to make informed decisions about whether a particular project will support commercial operation.

We may conclude that a prospective geothermal resource will not support commercial operations. In such case, costs associated with exploration activities will be expensed accordingly under the Write-off of Unsuccessful Exploration Activities line item in the consolidated statements of operations in our financial statements.

How We Operate and Maintain Our Power Plants

Our operations and maintenance practices are designed to minimize operating costs without compromising safety or environmental standards while maximizing plant flexibility and maintaining high reliability. Our operations and maintenance practices for geothermal power plants seek to preserve the sustainable characteristics of the geothermal resources we use to produce electricity and maintain steady-state operations within the constraints of those resources reflected in our relevant geologic and hydrologic studies. Our approach to plant management emphasizes the operational autonomy of our individual plant or complex managers and staff to identify and resolve operations and maintenance issues at their respective power plants; however, each power plant or complex draws upon our available collective resources and experience, and that of our subsidiaries. We have organized our operations such that inventories, maintenance, backup, and other operational functions are pooled within each power plant complex and provided by one operation and maintenance provider. This approach enables us to realize cost savings and enhances our ability to meet our power plant availability goals.

Safety is a key area of concern to us. We believe that the most efficient and profitable performance of our power plants can only be accomplished within a safe working environment for our employees. Our compensation and incentive program includes safety as a factor in evaluating our employees, and we have a well-developed reporting system to track safety and environmental incidents, if any, at our power plants.

How We Sell Electricity

In the United States, our purchasers are typically investor-owned electric utility companies or electric cooperatives including public owned utilities, and more recently, CCAs. Outside of the United States, our purchasers are either state-owned utilities or privately-owned-entities. We typically operate our facilities under rights granted to us by a governmental agency pursuant to a concession agreement. In each case, we enter into long-term contracts (typically, PPAs) for the sale of electricity or the conversion of geothermal resources into electricity. Although previously our power plants' revenues under a PPA generally consisted of two payments, energy payments and capacity payments, our recent PPAs provide for energy payments only. Energy payments are normally based on a power plant's electrical output actually delivered to the purchaser measured in kWh, with payment rates either fixed or indexed to the power purchaser's "avoided" power costs (i.e., the costs the power purchaser would have incurred itself had it produced the power it is purchasing from third parties) or rates that escalate at a predetermined percentage each year. Capacity payments are normally calculated based on the generating capacity or the declared capacity of a power plant available for delivery to the purchaser, regardless of the amount of electrical output actually produced or delivered. In addition, we have one domestic power plants located in Hawaii that is eligible for capacity payments under the respective PPAs upon reaching certain levels of generation, or subject to a capacity payment reduction if certain levels of generation are not reached.

How We Finance Our Power Plants

Historically we have funded our power plants with different sources of liquidity such as a non-recourse or limited recourse debt, lease financing, tax monetization transactions, internally generated cash, which includes funds from operations, as well as proceeds from loans under corporate credit facilities, green convertibles corporate bonds public debt and equity offerings, senior unsecured corporate bonds, project financing and the sale of equity interests and other securities. Our debt financing permits the development of power plants with a limited amount of equity contributions, but also increases the risk that a reduction in cashflow could adversely affect a particular power plant's ability to meet its debt obligations. Leveraged financing also means that distributions of dividends or other distributions by our subsidiaries to us are contingent on compliance with financial and other covenants contained in the applicable finance documents.

In 2022, we raised several corporate and project finance loans and expanded and renewed our revolving credit facilities to support our geothermal and storage growth.

We have used financing structures to monetize PTCs and depreciation, such as our tax equity partnership transaction involving McGinness Hills Phase 3, Tungsten and Steamboat Hills Repowering Project and in 2022 the CD4 power plant. Our Dixie Valley power plant, acquired from Terra-Gen in 2021, has a leveraged lease financing arrangement.

How We Mitigate International Political Risk.

We generally, but not always, purchase insurance policies to cover our portion of our book equity exposure to certain political risks involved in operating in developing countries, as described below under "Insurance". However, insurance may not cover all political risks or coverage amounts may not be sufficient.

Description of Our Leases and Lands

We have domestic leases on approximately 381,746 acres of federal, state, and private land in California, Hawaii, Nevada, New Mexico, Utah, Idaho and Oregon. The approximate breakdown between federal, state and private leases and owned land is as follows:

- 78% of the acreage under our control is leased from the U.S. government, mainly through the BLM;
- 18% is leased or subleased from private landowners and/or leaseholders;
- 2% is owned by us; and
- 2% is leased from various states.

Each lease has standard terms and requirements, as summarized below. Internationally, our land position includes approximately 59,154 acres.

BLM Geothermal Leases

Certain of our domestic project subsidiaries have entered into geothermal resource leases with the U.S. government, pursuant to which they have obtained the right to conduct their geothermal development and operations on federally-owned land. These leases are made pursuant to the Geothermal Steam Act. The lessor under such leases is the U.S. government, acting through the BLM.

BLM geothermal leases grant the geothermal lessee the right and privilege to drill for, extract, produce, remove, utilize, sell, and dispose of geothermal resources on certain lands, together with the right to build and maintain necessary improvements thereon. The actual ownership of the geothermal resources and other minerals beneath the land is retained in the federal mineral estate. The geothermal lease does not grant to the geothermal lessee the exclusive right to develop the lands, although the geothermal lessee does hold the exclusive right to develop geothermal resources within the lands. Since BLM leases do not grant to the geothermal lessee the exclusive right to use the surface of the land, BLM may grant rights to others for activities that do not unreasonably interfere with the geothermal lessee's uses of the same land, including use, off-road vehicles, and/or wind or solar energy developments.

Typical BLM leases issued to geothermal lessees before August 8, 2005 have a primary term of ten years and will renew so long as geothermal resources are being produced or utilized in commercial quantities but cannot exceed a period of forty years after the end of the primary term. If at the end of the forty-year period geothermal steam is still being produced or utilized in commercial quantities and the lands are not needed for other purposes, the geothermal lessee will have a preferential right to renew the lease for a second forty-year term, under terms and conditions as the BLM deems appropriate.

BLM leases issued after August 8, 2005 have a primary term of ten years. If the geothermal lessee does not reach commercial production within the primary term, the BLM may grant two five-year extensions. If the lessee is drilling a well for the purposes of commercial production, the lease may be extended for five years and thereafter, as long as steam is being produced and used in commercial quantities, the lease may be extended for up to thirty-five years. If, at the end of the extended thirty-five-year term, geothermal steam is still being produced or utilized in commercial quantities and the lands are not needed for other purposes, the geothermal lessee will have a preferential right to renew the lease under terms and conditions as the BLM deems appropriate.

For BLM leases issued before August 8, 2005, the geothermal lessee is required to pay an annual rental fee (on a per acre basis), which escalates according to a schedule described therein, until production of geothermal steam in commercial quantities has commenced. After such production has commenced, the geothermal lessee is required to pay royalties (on a monthly basis) on the amount or value of (i) steam, (ii) by-products derived from production, and (iii) commercially de-mineralized water sold or utilized by the project (or reasonably susceptible to such sale or use).

For BLM leases issued after August 8, 2005, (i) a geothermal lessee who has obtained a lease through a non-competitive bidding process will pay an annual rental fee equal to $1.00 per acre for the first ten years and $5.00 per acre each year thereafter; and (ii) a geothermal lessee who has obtained a lease through a competitive process will pay a rental equal to $2.00 per acre for the first year, $3.00 per acre for the second through tenth year and $5.00 per acre each year thereafter. Rental fees paid before the first day of the year for which the rental is owed will be credited towards royalty payments for that year. For BLM leases issued, effective, or pending on August 5, 2005 or thereafter, royalty rates are fixed between 1.0-2.5% of the gross proceeds from the sale of electricity during the first ten years of production under the lease. The royalty rate set by the BLM for geothermal resources produced for the commercial generation of electricity but not sold in an arm's length transaction is 1.75% for the first ten years of production and 3.5% thereafter. The royalty rate for geothermal resources sold by the geothermal lessee or an affiliate in an arm's length transaction is 10.0% of the gross proceeds from the arm's length sale.

In the event of a default under any BLM lease, or the failure to comply with any of the provisions of the Geothermal Steam Act or regulations issued under the Geothermal Steam Act or the terms or stipulations of the lease, the BLM may, 30 days after notice of default is provided to the relevant project, (i) suspend operations until the requested action is taken, or (ii) cancel the lease.

Private Geothermal Leases

Certain of our domestic project subsidiaries have entered into geothermal resources leases with private parties, pursuant to which they have obtained the right to conduct their geothermal development and operations on privately owned land. In many cases, the lessor under these private geothermal leases owns only the geothermal resource and not the surface of the land.

Typically, the leases grant our project subsidiaries the exclusive right and privilege to drill for, produce, extract, take and remove from the leased land water, brine, steam, steam power, minerals (other than oil), salts, chemicals, gases (other than gases associated with oil), and other products produced or extracted by such project subsidiary. The project subsidiaries are also granted certain non-exclusive rights pertaining to the construction and operation of plants, structures, and facilities on the leased land. Additionally, the project subsidiaries are granted the right to dispose geothermal fluid as well as the right to re-inject into the leased land water, brine, steam, and gases in a well or wells for the purpose of maintaining or restoring pressure in the productive zones beneath the leased land or other land in the vicinity. Because the private geothermal leases do not grant to the lessee the exclusive right to use the surface of the land, the lessor reserves the right to conduct other activities on the leased land in a manner that does not unreasonably interfere with the geothermal lessee's uses of the same land, which other activities may include agricultural use (farming or grazing), recreational use and hunting, and/or wind or solar energy developments.

The leases provide for a term consisting of a primary term in the range of five to 30 years, depending on the lease, and so long thereafter as lease products are being produced or the project subsidiary is engaged in drilling, extraction, processing, or reworking operations on the leased land.

As consideration under most of our project subsidiaries' private leases, the project subsidiary must pay to the lessor a certain specified percentage of the value "at the well" (which is not attributable to the enhanced value of electricity generation), gross proceeds, or gross revenues of all lease products produced, saved, and sold on a monthly basis. In certain of our project subsidiaries' private leases, royalties payable to the lessor by the project subsidiary are based on the gross revenues received by the lessee from the sale or use of the geothermal substances, either from electricity production or the value of the geothermal resource "at the well".

In addition, pursuant to the leases, the project subsidiary typically agrees to commence drilling, extraction or processing operations on the leased land within the primary term, and to conduct such operations with reasonable diligence until lease products have been found, extracted and processed in quantities deemed "paying quantities" by the project subsidiary, or until further operations would, in such project subsidiary's judgment, be unprofitable or impracticable. The project subsidiary has the right at any time within the primary term to terminate the lease and surrender the relevant land. If the project subsidiary has not commenced any such operations on said land (or on the unit area, if the lease has been unitized), or terminated the lease within the primary term, the project subsidiary must pay to the lessor, in order to maintain its lease position, annually in advance, a rental fee until operations are commenced on the leased land.

If the project subsidiary fails to pay any installment of royalty or rental when due and if such default continues for a period of fifteen days specified in the lease, for example, after its receipt of written notice thereof from the lessor, then at the option of the lessor, the lease will terminate as to the portion or portions thereof as to which the project subsidiary is in default. If the project subsidiary defaults in the performance of any obligations under the lease, other than a payment default, and if, for a period of 90 days after written notice is given to it by the lessor of such default, the project subsidiary fails to commence and thereafter diligently and in good faith take remedial measures to remedy such default, the lessor may terminate the lease.

We do not regard any property that we lease as material unless and until we begin construction of a power plant on the property.

Description of Our Power Plants

Domestic Operating Power Plants

The following descriptions summarize certain industry metrics for our domestic operating power plants:

Power plants in the United States

Project Name	Size (MW)	Technology	Resource Cooling	Customer	PPA Expiration
Brawley	7	Geothermal water-cooled binary system	Depends on the mix of used production wells , with current decline rate around 2°F per year	SCE	2031
Brady Complex	26	Geothermal air and water-cooled binary system	Brady and Desert Peak 2 - less than 3°F per year	NV Energy	Brady — 2022 Desert Peak 2 — 2027
Don A. Campbell Complex [(1)(2)]	32	Geothermal air cooled binary system	4°F to 5°F per year	SCPPA	Phase 1 - 2034 Phase 2 - 2036
Heber Complex [(3)]	81	Geothermal dual flash and binary systems using a water cooled system	1°F to 2°per year	SCPPA and Peninsula Clean Energy (PCE)	Heber 1 — 2025 Heber 2 — 2037[(4)] Heber South — 2031
Jersey Valley	8	Geothermal air cooled binary system	Under 2°F per year	Nevada Power Company	2032
Mammoth Complex	65	Geothermal air cooled binary system	About 1°F per year	PG&E and Southern California Edison.	G-1 and G-3 - 2034 G-2 plant - 2027
McGinness Hills Complex	146[(14)]	Geothermal air cooled binary system	About 5°F per year	Nevada Power Company and SCPPA.	Phases 1 and 2 - 2033 Phase 3 - 2043.
Neal Hot Springs [(5)]	24	Geothermal air cooled binary system	1.5°F over the past year	Idaho Power Company	2038
OREG 1 [(2)]	22	Geothermal air cooled binary system	NA	Basin Electric Power Cooperative	2031
OREG 2 [(2)]	22	Geothermal air cooled binary system	NA	Basin Electric Power Cooperative	2034

OREG 3 [2]	5.5	Geothermal air cooled binary system	NA	Great River Energy.	2029
OREG 4	3.5	Geothermal air cooled binary system	NA	Highline Electric Association.	2029
Ormesa Complex	36	Geothermal water-cooled binary system and water-cooled flash system.	Less than 1.5°F per year	SCPPA under a single PPA.	2042
Puna Complex [2],[6]	38	Geothermal combined cycle and air cooled binary system	The resource temperature is stable	HELCO	2027
Raft River	12	Geothermal water-cooled binary system	The resource temperature is stable	Idaho Power Company.	2032
San Emidio	11	Geothermal- water-cooled binary system	1°F per year	NV Energy.	2038
Steamboat Complex	79	Geothermal air and water-cooled binary system and a single flash system	Lower Steamboat - between 2°F to 3°F per year Steamboat Hills 4°F per year	* Steamboat 2 & 3- Sierra Pacific Power Company * Galena1 & 3- Nevada Power Company * Galena 2 & Steamboat Hills- SCPPA	Steamboat 2 and 3- 2022 Galena1- 2026 Steamboat Hills and Galena 2 - 2043 Galena 3- 2028
Steamboat Solar	5	Solar PV System	NA	Internal use [11]	NA
Tungsten Mountain Geothermal	42	Geothermal air and water-cooled binary system	About 3°F per year	SCPPA	2043
Tungsten Mountain solar	12	Solar PV System	NA	Internal use [11]	NA
Tuscarora	18	Geothermal water-cooled binary system	Temperature decline has continued to lessen, currently under 2.5°F per year	Nevada Power Company.	2032
Dixie Valley	58	Geothermal air-cooled binary system and water-cooled flash system.	The resource temperature is stable	SCE	2038
Beowawe	14	Flash System and Binary	1°F per year	NV Energy	2025
Wister	20	Solar PV System	NA	San Diego Gas & Electric	2042

Foreign Power plants

Project Name	Size (MW)	Technology	Resource Cooling	Customer	PPA Expiration
Amatitlan (Guatemala)	20	Geothermal air cooled binary system and a small back pressure steam turbine (one MW)	Declining at about 2°F per year	INDE and another local purchaser.	2028
Bouillante (France)[7]	15	Geothermal direct steam turbines.	The resource temperature is stable	EDF pursuant to a PPA.	2030
Olkaria III Complex (Kenya)[8]	150	Geothermal air cooled binary system	Declining at about 2°F per year	KPLC	Plant 2 - 2033 Plant 1&3 - 2034 Plant 4 - 2036
Platanares (Honduras) [9]	38	Geothermal air cooled binary system	Decline rate has increased and is at 6°F per year	ENEE	2047
Sarulla Complex - (Indonesia) [10]	330 (our share is 42)	Geothermal Combined Cycle steam and binary systems	NIL power plant is declining at about 3°F per year and SIL is decling at about 1°F per year	PLN	2047
Zunil (Guatemala)	20	Geothermal air cooled binary system	The resource temperature is stable	INDE	2034

[1] Don A. Campbell is experiencing cooling since mid-2016, with 4°F to 5°F in the last year, which is reducing its generating capacity. Injection tests and tracer studies, along with reservoir modeling have been used to develop a plan to mitigate temperature decline of the reservoir. Temperature mitigation program is ongoing.

[2] 36.75% indirectly owned by Northleaf.

[3] We completed the enhancement of the Heber 2 power plant and currently working to replace the Heber 1 old steam turbine that was damaged in the fire and caused a shutdown of Heber 1.

[4] A new 15-year contract was signed for Heber 2 with PCE.

[5] 40% owned by Enbridge Inc. Upgrades to the power plant were completed in 2020.

[6] On May 3, 2018, the Kilauea volcano located in close proximity to our Puna 38 MW geothermal power plant in the Puna district of Hawaii's Big Island erupted following a significant increase in seismic activity in the area. The Puna power plant resumed operations in November 2020 and during 2021 operated at a level of 23-25 MW. We continue with drilling and workovers into 2023 to increase generation. In 2019, we reached an agreement with HELCO and signed a new PPA, subject to final PUC approval. The new PPA extends the current until 2052 and increases the current contract capacity by 8 MW to 46MW. In addition, the new PPA has a fixed price with no escalation, regardless of changes to fossil fuel pricing, which impacts the majority of our current pricing under the existing PPA. We are currently negotiating economic amendments to the new PPA. The existing PPA remains in effect with its current terms until the earlier of a) PPA's expiration date at the end of 2027 and b) the new PPA will be in effect.

[7] 85% of the Bouillante power plant is jointly owned by Ormat and CDC, with 75% allocated to Ormat and 25% to CDC.

[8] The Olkaria complex experienced lower performance of the wellfield since 2021 and currently is generating 125 MW.

[9]We hold the Platanares assets, including the project's wells, land, permits and a PPA, under a BOT structure for 15 years from the date the Platanares plant commenced commercial operation on September 26, 2017. A portion of the land on which the project is located is held by us through a lease from a local municipality.

[10] The Sarulla complex is experiencing a reduction in generation primarily due to wellfield issues at one of its power plants, as well as equipment failures which resulted in a decrease in profitability. During the second quarter of 2022, Sarulla agreed with its banks on a framework that will enable it to perform remediation work that is aimed to restore the plant's performance, however, uncertainty remains regarding Sarulla's ability to meet the plan and the Company is evaluating the impact of the plan on future performance. As we determined that the current situation and circumstances related to our equity method investment in Sarulla are temporary, no impairment testing was required for the period.

[11] The Tungsten and Steamboat Solar power plants generate energy that is used for the auxiliary power of the geothermal power plants

Future Projects

Projects Released for Construction

We have several projects in various stages of construction, including 11 projects that we have fully released for construction with a total capacity of 91MW and one project with capacity of 10MW to 15MW that is in the early stages of construction. In 2022, due to COVID-19 and other factors, we experienced delays in obtaining all relevant permits, delays in interconnection and delays in procuring panels for a Solar PV project, resulting in delays in expected COD.

These projects are expected to have a total geothermal generating capacity of between 62 MW (representing our interest) and solar PV projects with a total capacity of 29 MW

Project Name	Location	Expected Size (MW)	Technology	Customer	Expected COD	Current Condition
Heber Complex	California, U.S.	8	Geothermal air-cooled binary system	SCE and SCPPA	Q2 2023	Construction progressing
Dixie Meadows	Nevada, U.S.	12	Geothermal air-cooled binary system	SCPPA	On Hold	On hold. See further under Note 21
North Valley	Nevada, U.S.	25	Geothermal air-cooled binary system	NV Energy	Q1 2023	Plant Construction completed. Pre-Commissioning activities ongoing on site. T-line construction near completion
Dixie Valley upgrade	Nevada, U.S.	6	Geothermal air-cooled binary system	SCE	Q2 2023	Near completion

Beowawe Repower	Nevada, U.S.	6	Geothermal air-cooled binary system		Q3 2024	
Zunil	Guatemala	5	Geothermal air-cooled binary system	INDE	H2 2023	Construction near completion
Brady Solar	Nevada, U.S.	6	Solar PV System	Internal use	Q1 2023	Construction ongoing. Equipment deliveries ongoing
Steamboat Solar Phase 2	Nevada, U.S.	7	Solar PV System	Internal use	Q2 2023	Construction commenced. Awaiting solar panels to arrive.
North Valley Solar	Nevada, U.S.	6	Solar PV System	Internal use	Q3 2023	Engineering and procurement completed. Permitting ongoing
Steamboat Hills Solar Phase 2	Nevada, U.S.	4	Solar PV System	Internal use	Q3 2023	Engineering and procurement are ongoing
Beowawe Solar	Beowawe Solar	6	Solar PV System	Internal use	H1 2024	Project released. Engineering and procurement are ongoing
Carson Lake	Nevada, U.S.	10 - 15	Geothermal air-cooled binary system	No PPA	TBD	Early stage of construction

Projects under Various Stages of Development that were not Released for Construction

We also have projects under various stages of development in the United States, Indonesia and Guadeloupe that we estimate will increase the generating capacity of our geothermal projects by approximately 43 MW (representing our interest) and a Solar PV project with a total of 14 MW. We expect to continue to explore these and other opportunities for expansion so long as they continue to meet our business objectives and investment criteria. However, we prioritize our investments based on their readiness for continued construction and expected economics and therefore we are not planning to invest in all of such projects in 2023.

Project	Location	Technology	Size (MW)	Customer	Expected COD
Bouillante power plant	Guadeloupe	Geothermal	10	Under discussion with EDF	H1 2025
Puna Expansion	Hawaii, U.S.	Geothermal	8	HELCO	2025
Ijen	Indonesia	Geothermal	15 [(1)]	PLN	Q4 2024
North Valley 2	Nevada, U.S.	Geothermal	10	TBD	2026
McGinness Solar	Nevada, U.S.	Solar PV	14	SCPPA	H2 2024

[(1)] The size of the project reflects Ormat's 49% interest share

Future Prospects

We have a substantial land position that is expected to support future development and on which we have started or plan to start exploration activity. When deciding whether to continue holding lease rights and/or to pursue exploration activity, we diligently prioritize our prospective investments, taking into account resource and probability assessments in order to make informed decisions about whether a particular project will support commercial operation.

Our current land position is comprised of various leases, concessions and private land for geothermal resources of approximately 205,000 acres in **39** prospects across the western United States, Latin America, Africa and New Zealand. In the United States we hold **28** prospects:

- 20 prospects in Nevada
- 3 prospects in California
- 2 in Oregon
- 2 in Utah
- 1 in New Mexico

Outside the U.S. we hold **11** prospects:

- 2 prospects in Indonesia
- 4 prospects Ethiopia
- 2 prospects in Guatemala
- 1 prospect in Honduras
- 1 prospect in New Zealand.
- 1 prospect in Madagascar.

Operations of our Product Segment

Power Units for Geothermal Power Plants

We design, manufacture, and sell power units for geothermal electricity generation, which we refer to as OECs. Our customers include contractors and geothermal plant owners and operators.

The power units are usually paid for in installments, in accordance with milestones set forth in the supply agreement. We also provide the purchaser with spare parts (either upon their request or our recommendation). We provide the purchaser with at least a 12-month warranty for such products. We provide the purchaser with performance guarantees (usually in the form of standby letters of credit), which partially terminates upon delivery of the equipment to the site and terminates in full at the end of the warranty period.

Power Units for Recovered Energy-Based Power Generation

We design, manufacture, and sell power units used to generate electricity from recovered energy or so-called "waste heat". Our existing and target customers include interstate natural gas pipeline owners and operators, gas processing plant owners and operators, cement plant owners and operators, biomass facilities owners and operators and all other companies engaged in energy-intensive industrial processes such as glass, steel and other. We manufacture and sell the power units for recovered energy-based power generation to third parties for use in "inside-the-fence" installations or otherwise.

EPC of Power Plants

We engineer, procure and construct, as an EPC contractor, geothermal and recovered energy power plants on a turnkey basis, using power units we design and manufacture. Our customers are geothermal power plant owners as well as our target customers for the sale of our recovered-energy based power units described above. Unlike many other companies that provide EPC services, we believe that our advantage is in using our own manufactured equipment and thus have better quality and control over the timing and delivery of equipment and related costs. The consideration for such services is usually paid in installments, in accordance with milestones set forth in the EPC contract and related documents. We provide performance guarantees securing our obligations under the contract.

In connection with the sale of our power units for geothermal power plants, power units for recovered energy-based power generation, we enter into agreements, from time to time, with sales representatives for the marketing and sale of such products pursuant to which we are obligated to pay commissions to such representatives upon the sale of our products in the relevant territory.

Our manufacturing operations and products are certified ISO 9001, ISO 14001, American Society of Mechanical Engineers (ASME), Pressure Equipment Directive and TÜV, and we are an approved supplier to many electric utilities around the world.

Backlog

We have a product backlog of approximately $148.1 million as of February 22, 2023, which includes revenues for the period between January 1, 2023 and February 22, 2023, compared to $53.5 million as of February 16, 2022, which included revenues for the period between January 1, 2022 and February 16, 2022. The increase in the 2023 backlog is mainly related to the continued recovery following COVID-19 related impacts, and the signing of a new large EPC contract in New Zealand during 2022 and a supply contract in Indonesia for the Ijen project..

The following is a breakdown of the Product segment backlog amount (in $ millions) by countries as of February 22, 2023:

Country	Backlog Amount	Percentage of Backlog
New Zealand	73.8	49.8%
Guatemala	8.1	5.5%
Philippines	11.0	7.4%
U.S.	4.8	3.2%
Indonesia	36.7	24.8%
Taiwan	3.1	2.1%
Israel	3.8	2.6%
Germany	2.8	1.9%
Others	4.0	2.7%
Total	148.1	100%

The following is a breakdown of the Product segment backlog by technology as of February 22, 2023:

	% of Total Backlog	Latest Expected Completion
Geothermal	94.7%	2024
Recovered Energy	2.7%	2023
Pumps	2.1%	2025
Other	0.5%	2023

Operations of our Energy Storage Segment

Storage Projects

In addition to our Geothermal activity, we own, operate and develop energy storage projects in the United States including the following:

Under operation

Project Name	Customer	Location	Size (MW)	MWh	Type of contract
ACUA	PJM	NJ	1	1	Merchant
Plumsted	PJM	NJ	20	20	Merchant
Stryker	PJM	NJ	20	20	Merchant
Hinesburg	ISONE	VT	2.0	5.0	Merchant
Rabbit Hill	ERCOT	TX	10.0	10.0	Merchant
Pomona	SCE/CAISO	CA	20.0	80.0	Capacity PPA and Merchant
Vallecito	CAISO and SCE	CA	10.0	40.0	Capacity PPA and Merchant
Tierra Buena	CAISO, RCEA and VCE	CA	5.0	20.0	Capacity PPA and Merchant
Total			**88.0**	**196.0**	

Under construction and development

Project Name	Customer	Location	Size (MW)	MWh	Type of contract	Expected COD
Upton	ERCOT	TX	25	25	Merchant	Q1 2023
Andover	PJM	NJ	20	20	Merchant	Q1 2023
Howell.....	PJM	NJ	7	7	Merchant	Q1 2023
Bowling Green ..	PJM	OH	12	12	Capacity and Merchant	Q1 2023
Pomona 2	SCE/CAISO	CA	20	40	Capacity and Merchant	Q3 2023
Bottleneck	CAISO	CA	80	320	Tolling	Q1 2024
East Flemington	PJM	NJ	20	20	Merchant	Q3 2023
Montague	PJM	NJ	20	20	Merchant	Q4 2024
Total			**204.0**	**464.0**		

Energy Storage Pipeline

For an energy storage prospect to move into the EPC phase, it requires site control, an executed interconnection agreement, permits from all authorities and a viable financial model. We have a substantial pipeline of approximately 2.9GW/9.9GWh of projects in different stages of development for future development in the United States that will support our target to reach an energy storage portfolio of 352MW by the end of 2024 and between 500MW and 530MW by 2025.

Competition

Electricity Segment

In our Electricity segment, we face competition from geothermal power plant owners and developers as well as other renewable energy providers and developers.

Competition in the Electricity segment occurs in the very early stage of development and in advanced stages when obtaining a PPA. The early stage is primarily obtaining the rights to the resource for development of future projects or acquiring a site already in a more advanced stage of development. From time to time and in different jurisdictions competing geothermal developers become our customers in the Product segment.

Our main competitors in the geothermal sector in the United States are CalEnergy, Calpine Corporation, Enel Green Power S.p.A., Cyrq Energy Inc. and other smaller pure play developers. Outside the United States, in many cases our competitors are companies that are gaining experience developing geothermal projects in their own countries such as Mercury and Contact Energy in New Zealand, Energy Development Corporation from the Philippines, Storenergy and Meridian from France and Enel Green Power from Italy. In Indonesia we experience competition on land from Kaishan, PT Pertamina Geothermal Energy and PT Star Energy and in a recent tender Chevron teamed with Pertimina to compete with us for land. In Japan, Japanese company, Impex, is active in the geothermal space, but we have not experienced any competition yet. Some Turkish developers are also focusing on the international market. Additionally, we face competition from country-specific companies and smaller pure play geothermal developers.

In obtaining new PPAs, we also face competition from companies engaged in the power generation business from other renewable energy sources, such as wind power, biomass, solar power and hydroelectric power. In the United States we primarily compete against solar power generation combined with energy storage. We also face competition from existing geothermal power plants as they are re-contracted.

As a geothermal company, we are focused on niche markets where our baseload and flexibility advantages can allow us to develop competitive projects.

Product Segment

In our Product segment, we face competition from power plant equipment manufacturers and system integrators as well as engineering or project management companies.

Our competitors among power plant equipment suppliers are divided by technology, steam turbines and binary power plant manufacturers. Our main steam turbine competitors are industrial steam turbine manufacturers such as Mitsubishi Heavy Industries, Fuji Electric Co., Ltd. and Toshiba Corporation of Japan, GE/Nuovo Pignone and Ansaldo Energia of Italy.

Our binary technology competitors are manufacturers using the ORC technology such as Mitsubishi Heavy Industries through Turboden, TICA, a Chinese air conditioning company that acquired Italian Exergy, Egesim, a Turkish electrical contractor who is collaborating with Atlas Copco mainly in the Turkish market and internationally, Kaishan, a compressor manufacturer from China who also develops its own projects and Fuji Electric Co., Ltd of Japan. While we believe that we have a distinct competitive advantage based on our accumulated experience, an increase in competition, which we are currently experiencing, has started to affect our ability to secure new purchase orders from potential customers. The increased competition in addition to increase in raw material costs led to a reduction in the operating margins, which in turn impacted our profitability.

In the REG business, our competitors are other ORC manufacturers, mainly Mitsubishi/Turboden and TICA/Exergy, which dominate binary waste heat recovery market installations. Other manufacturers are conventional steam turbines and small scale ORC suppliers.

In the case of proposed EPC projects we also compete with other service suppliers, such as project/engineering companies or EPC contractors.

Energy Storage Segment

In the Energy Storage segment, we face significant competition from companies that have already established businesses in the sector, companies that are seeking to acquire established businesses to gain a foothold in the sector, and new market entrants.

The energy storage space is comprised of many companies with different business strategies, such as independent power producers, project developers, system integrators, EPC contractors, component suppliers (e.g. batteries, inverters, control software, and balance of plant), and scheduling coordinators, among others. The energy storage space is experiencing consolidation; however, the number of IPPs in the market remains high and competition is intense.

We continue to develop greenfield projects with great emphasis on the quality of the location and other characteristics that will make for highly profitable projects as well as targeting strategic acquisitions of development assets or platforms. Additionally, we believe that our participation and expertise in various parts of the value chain, such as engineering, procurement, construction, project development, operation and maintenance, and asset management and market participation puts us at a competitive advantage in the market of utility scale energy storage.

Customers

All of our revenues from the sale of Electricity in the year ended December 31, 2022 were derived from fully-contracted energy and/or capacity payments under long-term PPAs with governmental, public or private utility entities. The percentage of total revenues above 5% is detailed in the table below:

Utility	**% of total revenues for the year ended December 31, 2022**
SCPPA (U.S.)	21.5%
NV Energy (U.S.)	16.9%
KPLC (Kenya)	14.4%

Based on publicly available information, as of December 31, 2022, the credit ratings of our rated electric utility customers are as set forth below:

Issuer	Standard & Poor's Ratings Services	Moody's Investors Service Inc.
Southern California Edison	BBB (Stable)	Baa2 (Stable)
HELCO	BBB- (Stable)	Ratings withdrawn
Sierra Pacific Power Company	A (Stable)	Baa1 (Stable)
Nevada Power Company	A (Stable)	Baa1 (Stable)
SCPPA	BBB+ (Stable)	(Stable)
PG&E	BB- (Stable)	Ba2 (Stable)
EDF	BBB+ (Stable)	Baa (Negative)

The credit ratings of any power purchaser may change from time to time. There is no publicly available information with respect to the credit rating or stability of the power purchasers under the PPAs for our foreign power plants other than EDF (France).

Our revenues from the Product segment are derived from contractors, owners, or operators of power plants, process companies, and pipelines.

Our revenues from the Energy Storage segment are derived from selling energy, capacity services under long term capacity contracts and/or ancillary services in merchant markets like PJM, ISO New England, ERCOT and CAISO. We recently signed a long-term tolling agreement we believe that will secure fixed revenues for our Bottleneck 80MW/320MWh project in California. In addition, we are pursuing projects that will serve entities, such as investor owned utilities, publicly owned utilities and community choice aggregators.

Human Capital Resources

Our Team

As a global renewable energy company, we are proud to employ and work closely with the communities we serve, knowing we contribute to local economies and social well-being. The promise of renewable energy that we deliver to our customers and stakeholders goes hand in hand with our commitment to local employment and skill development wherever we work.

Our success largely depends on our ability to recruit, develop and retain a productive and engaged workforce. Accordingly, investing in our employees, focusing on safety, offering competitive compensation and benefits, promoting a diverse workforce, adopting forward thinking human capital management practices and community outreach are critical elements of our corporate strategy.

As of December 31, 2022, we employed 1,480 employees, of whom 523 were in Israel, 706 were in the United States, and 251 were in other countries. Any future material growth in our employee headcount will be attributable to purchasing or developing new power plants and energy storage facilities.

Workforce Health and Safety

The health and safety of our employees, subcontractors, the public, and the environment is our overarching priority. We manage risks by identifying, assessing and managing risks in the facilities and offices that we own and operate. In addition, we promote safety awareness and values. Our goal is to report, analyze, learn and improve performance to reduce the number of incidents. We seek to continuously improve our safety performance and instill a workplace safety culture. We also periodically conduct quality, environmental, health, and safety audits of our plants and facilities.

Ormat has an Integrated Quality, Environment, Health, and Safety Policy ("QEHS") that sets out our general commitments towards health and safety principles at our sites and for all our stakeholders. The policy is publicly available on Ormat's website and outlines our responsibilities to provide high quality products, conduct our business with care for the environment, and integrate our QEHS system into our business strategy and work processes. In addition, our Human Rights and Labor Policy, also available publicly on our website, outlines our commitments to ensuring that essential health and safety standards and practices are enforced in the workplace, developing risk awareness, and encouraging responsible health and safety behavior among employees.

In addition, we have an outreach plan to support communities where we do business such as addressing the reduced availability of food to vulnerable populations and providing medical and personal protective equipment to local healthcare workers across the globe.

Diversity Initiatives

We strive to provide a diverse and inclusive working environment where people are respected and feel a sense of belonging regardless of race, nationality, gender, age, religion or sexual orientation. Our offices, manufacturing plants and power plants are in multiple jurisdictions and our global workforce operates across many different beliefs. We are committed to local employment at all our operational and manufacturing locations. While our first and foremost consideration of a potential candidate is professional skills and overall qualifications for the position, we work with several organizations in the U.S. to help us present opportunities to ethnic minorities and veterans for open positions. Furthermore, we are committed to eliminating discrimination in our hiring and employment termination practices and ensuring that all employees are adequately accommodated and treated equally.

We actively seek opportunities to hire and promote female employees and managers across our Company, including our various operations worldwide.

Competitive Compensation and Benefits

We strive to ensure that all eligible employees receive fair and competitive compensation and benefits, including, paid maternity or paternity leave, sponsorship of learning opportunities, health care insurance, short-term and long-term disability, among others. Our global employees are entitled to retirement and pension benefits at or beyond the legally required level of employer contribution in the relevant country of operation, including access to 401(k) plans in the U.S. We fully cover retirement and pension plan liabilities in relevant countries of operation with our available resources. In addition, all our current employees in Israel are entitled to benefits in the event of termination or retirement following the Israeli Government's sponsorship of programs that provide limited non-pension benefits.

Employee Investment

We focus on creating opportunities for employee education, development and training and we strive to ensure that employees are fulfilling their professional and personal goals. Our training opportunities include professional and soft skills to help our employees improve their performance and expand their horizons. We have annual performance reviews for most of our employees. Our Human Resources department and various business units work together on initiatives to create a sense of community and togetherness. We offer employees options to improve their work-life balance, including community events, holiday and team milestone celebrations, volunteering opportunities and fitness support.

Collective Bargaining Agreements & Employee Unions

As of December 31, 2022, the only employees represented by a labor union are the employees of our acquired Bouillante power plant located in Guadeloupe. The employees in Guadeloupe are represented by the Confédération Générale du Travail de Guadeloupe. We maintain good relations with our employees and have not encountered any labor relations issues such as labor disputes, strikes, or work stoppages. We seek to continue to maximize a positive work environment for all our employees. .

We have no collective bargaining agreements for our Israeli employees. However, by order of the Israeli Ministry of Economy and Industry, the provisions of a collective bargaining agreement between the Histadrut (the General Federation of Labor in Israel) and the Coordination Bureau of Economic Organizations (which includes the Industrialists Association) may apply to some of our Israeli non-managerial, finance and administrative, and sales and marketing personnel. This collective bargaining agreement principally concerns the cost of living pay increases, length of the workday, minimum wages and insurance for work-related accidents, annual and other vacation, sick pay, and determination of severance pay, pension contributions, and other conditions of employment. We currently provide such employees with benefits and working conditions, at least as favorable as the conditions specified in the collective bargaining agreement.

Insurance

We maintain physical damage and business interruption insurance, including the perils of flood, volcanic eruption, earthquake and windstorm, cyber coverage, general and excess liability, pollution legal liability, control of well, drilling rigs, construction risks, as well as customary worker's compensation and automobile, marine transportation insurance and such other commercially available insurance as is generally carried by companies engaged in similar businesses and owning similar properties in the same general areas as us. Such insurance covering our properties extends to Ormat and/or our owned, controlled, direct or indirect affiliated or associated companies, subsidiary companies or corporations in amounts generally based upon the estimated replacement value and maximum foreseeable loss of our facilities (provided that certain perils including earthquake, volcanic eruption and flood coverage are subject to sublimit and/or annual aggregate limits depending on the type and location of the facility) and business interruption insurance coverage in an amount that also varies from location to location.

We purchase certain insurance policies to cover a portion of our book equity investment to specified political risks involved in operating in developing countries. We hold a global political risk insurance program covering the significant political risks at certain of our locations. This program is issued by the global insurers in the private sector. Such insurance policies generally cover, subject to the limitations and restrictions contained therein, losses derived from a specified governmental act, such as expropriation, political violence, and the inability to convert local currency into hard currency and, in certain cases, the breach of agreements with governmental entities, in approximately 70% of our book net equity investment.

Regulation of the Electric Utility Industry in the United States

The following is a summary overview of the electric utility industry and applicable federal and state regulations and should not be considered a full statement of the law or all issues pertaining thereto.

PURPA

PURPA and FERC's regulations thereunder exempt owners of small power production Qualifying Facilities that use geothermal resources as their primary source and other Qualifying Facilities that are 30 MW or under in size from regulation under the PUHCA 2005, from many provisions of the FPA and from state laws relating to the financial, organization and rate regulation of electric utilities.

PURPA provides the owners of power plants certain benefits described below if a power plant is a "Qualifying Facility." A small power production facility is a Qualifying Facility if: (i) the facility does not exceed 80 MW; (ii) the primary energy source of the facility is biomass, waste, geothermal, or renewable resources, or any combination thereof, and at least 75% of the total energy input of the facility is from these sources, and fossil fuel input is limited to specified uses; and (iii) the facility, if larger than one megawatt, has filed with FERC a notice of self-certification of qualifying status, or has been certified as a Qualifying Facility by FERC. The 80 MW size limitation, however, does not apply to a facility if (i) it produces electric energy solely by the use, as a primary energy input, of solar, wind, waste or geothermal resources; and (ii) an application for certification or a notice of self-certification of qualifying status of the facility was submitted to not later than December 31, 1994, and construction of the facility commenced not later than December 31, 1999.

With respect to the FPA, FERC's regulations under PURPA do not exempt from the rate provisions of the FPA sales of energy or capacity from Qualifying Facilities larger than 20 MW in size that are made (a) pursuant to a contract executed after March 17, 2006 or (b) not pursuant to a state regulatory authority's implementation of PURPA. The practical effect of these regulations is to require owners of Qualifying Facilities that are larger than 20 MW in size to obtain market-based rate authority from FERC if they seek to sell energy or capacity other than pursuant to a contract executed on or before March 17, 2006 or pursuant to a state regulatory authority's implementation of PURPA. A sale to a public utility under PURPA at state approved avoided cost rates is generally exempt from FERC rate regulation.

In addition, provided that the purchasing electric utility has not been relieved from its mandatory purchase obligation, PURPA and FERC's regulations under PURPA obligate electric utilities to purchase energy and capacity from Qualifying Facilities at either the electric utility's avoided cost or a negotiated rate. FERC's regulations under PURPA allow FERC, upon request of a utility, to terminate a utility's obligation to purchase energy from Qualifying Facilities upon a finding that Qualifying Facilities have nondiscriminatory access to: (i) independently administered, auction-based day ahead, and real time markets for electric energy and wholesale markets for long-term sales of capacity and electric energy; (ii) transmission and interconnection services provided by a FERC-approved regional transmission entity and administered under an open-access transmission tariff that affords nondiscriminatory treatment to all customers, and competitive wholesale markets that provide a meaningful opportunity to sell capacity, including long-term and short-term sales, and electric energy, including long-term, short-term, and real-time sales, to buyers other than the utility to which the Qualifying Facility is interconnected; or (iii) wholesale markets for the sale of capacity and electric energy that are at a minimum of comparable competitive quality as markets described in (i) and (ii) above. FERC regulations protect a Qualifying Facility's rights under any contract or obligation involving purchases or sales that are entered into before FERC has determined that the contracting utility is entitled to relief from the mandatory purchase obligation. FERC has granted the request of California investor-owned utilities for a waiver of the mandatory purchase obligation for Qualifying Facilities larger than 20 MW in size. In addition, FERC recently amended its PURPA regulations to reduce the rebuttable presumption that small power production facilities in organized markets have nondiscriminatory access to markets from 20 MW to 5 MW. Therefore, the California investor-owned utilities may have a basis to further reduce their mandatory purchase obligation.

We expect that our power plants in the U.S will continue to meet all criteria required for Qualifying Facility status under PURPA. However, if any of our domestic power plants were to lose its Qualifying Facility status, such power plant could become subject to the full scope of the FPA and applicable state regulation. The application of the FPA and other applicable state regulation to our domestic power plants could require our operations to comply with an increasingly complex regulatory regime that may be costly and greatly reduce our operational flexibility.

PUHCA

Under PUHCA 2005, the books and records of a utility holding company, its affiliates, associate companies, and subsidiaries are subject to FERC and state commission review with respect to transactions that are subject to the jurisdiction of either FERC or the state commission or costs incurred by a jurisdictional utility in the same holding company system. However, if a company is a utility holding company solely with respect to Qualifying Facilities, exempt wholesale generators, or foreign utility companies, it will not be subject to review of books and records by FERC under PUHCA 2005. Qualifying Facilities or exempt wholesale generators that make only wholesale sales of electricity are not subject to state commissions' rate regulations and, therefore, in all likelihood would not be subject to any review of their books and records by state commissions pursuant to PUHCA 2005 as long as the Qualifying Facility is not part of a holding company system that includes a utility subject to regulation in that state. Additionally, most of our storage projects have exempt wholesale generator status, exempting them from PUHCA requirements as well.

FPA

Pursuant to the FPA, FERC has exclusive jurisdiction over the rates for most wholesale sales of electricity and transmission of electricity in interstate commerce. These rates may be based on a cost of service approach or may be determined on a market basis through competitive bidding or negotiation. FERC can accept, reject or suspend rates. The rates can be suspended for up to five months, at which point the rates become effective subject to refund. FERC can order refunds for rates that are found to be "unjust and unreasonable" or "unduly discriminatory or preferential."

Moreover, the loss of the Qualifying Facility status of any of our power plants might also permit the off-taker, pursuant to the terms of its PPA, to cease taking and paying for electricity from the relevant power plant and to seek refunds for past amounts paid and/or a reduction in future payments.

Additionally, FERC possesses civil penalty authority, up to approximately $1.3 million per violation of the FPA per day. FERC can also require the disgorgement of unjust profits earned in connection with such violations of the FPA and revoke the right of the power plants to make sales at market-based rates.

Under the Energy Policy Act of 2005, the FPA was supplemented to empower FERC to ensure the reliability of the bulk electric system. Such authority required that FERC assume both oversight and enforcement roles. Pursuant to its new directive, FERC certified the North American Electric Reliability Corporation as the nation's Electric Reliability Organization (ERO) to develop and enforce mandatory reliability standards to address medium and long-term reliability concerns. Today, enforcement of the mandatory reliability standards, including the protection of critical energy infrastructure, is a substantial function of the ERO and of FERC, which may impose penalties of up to approximately $1.3 million a day for violating mandatory reliability standards. We examine our projects' compliance with NERC standards on an ongoing basis and begin work on the process of NERC registration as new projects approach the threshold at which NERC standards become applicable.

Thus, if any of the power plants were to lose Qualifying Facility status, the application of the FPA and other applicable state regulations to such power plants could require compliance with an increasingly complex regulatory regime that may be costly and greatly reduce our operational flexibility. Even if a power plant does not lose Qualifying Facility status, the owner of a Qualifying Facility/power plant in excess of 20 MW will become subject to rate regulation under the FPA for sales of energy or capacity pursuant to a contract executed after March 17, 2006 or not pursuant to a state regulatory authority's implementation of PURPA. A decrease in existing rates or being ordered by FERC to pay refunds for rates found to be "unjust and unreasonable" or "unduly discriminatory or preferential" would likely result in a decrease in our future revenues.

State Regulation

Our power plants in California, Nevada, Oregon, and Idaho, by virtue of being Qualifying Facilities that make only wholesale sales of electricity, are not subject to rate, financial and organizational regulations applicable to electric utilities in those states. The power plants each sell or will sell their electrical output under PPAs to electric utilities (Sierra Pacific Power Company, Nevada Power Company, Peninsula Clean Energy, SCPPA and Idaho Power Company). All of the utilities except SCPPA are regulated by their respective state public utilities commissions. Sierra Pacific Power Company and Nevada Power Company, which merged and are doing business as NV Energy, are regulated by the PUCN. Peninsula Clean Energy, is regulated by the CPUC.

Under Hawaiian law, non-fossil generators are not subject to regulation as public utilities. Hawaiian law provides that a geothermal power producer is to negotiate the rate for its output with the public utility purchaser. If such rate cannot be determined by mutual accord, the PUCH will set a just and reasonable rate. If a non-fossil generator in Hawaii is a Qualifying Facility, federal law applies to such Qualifying Facility and the utility is required to purchase the energy and capacity at its avoided cost. The rates for our power plant in Hawaii are established under a long-term PPA with HELCO.

Environmental Permits

U.S. environmental permitting regimes with respect to geothermal projects center upon several general areas of focus. The first involves land use approvals. These may take the form of Special Use Permits or Conditional Use Permits from local planning authorities or a series of development and utilization plan approvals and right of way approvals where the geothermal facility is entirely or partly on BLM or United States Forest Service lands. Certain federal approvals require a review of environmental impacts in conformance with the federal National Environmental Policy Act. In California, some local permit approvals require a similar review of environmental impacts under a state statute known as the California Environmental Quality Act. These federal and local land use approvals typically impose conditions and restrictions on the construction, scope and operation of geothermal projects.

The second category of permitting focuses on the installation and use of the geothermal wells themselves. Geothermal projects typically have three types of wells: (i) exploration wells designed to define and verify the geothermal resource, (ii) production wells to extract the hot geothermal liquids (also known as brine) for the power plant, and (iii) injection wells to inject the brine back into the subsurface resource. For example, on BLM lands in Nevada, California, Oregon, and Idaho, the well permits take the form of geothermal drilling permits for well installation. Approvals are also required to modify wells, including for use as production or injection wells. For all wells drilled in Nevada, a geothermal drilling permit must be obtained from the Nevada Division of Minerals. Those wells in Nevada to be used for injection will also require UIC permits from the Nevada Division of Environmental Protection and Bureau of Water Pollution Control. All geothermal wells drilled in Oregon (except on tribal lands) require a geothermal well drilling permit from the Oregon Department of Geology and Mineral Industries. All geothermal wells drilled in Idaho require a well construction permit from the IDWR and injection wells also require UIC permitting through IDWR. Geothermal wells on private lands in California require drilling permits from the California Department of Conservation's DOGGR. The eventual designation of these installed wells as individual production or injection wells and the ultimate closure of any wells is also reviewed and approved by DOGGR pursuant to a DOGGR-approved Geothermal Injection Program.

A third category of permits involves the regulation of potential air emissions associated with the construction and operation of wells and power plants and surface water discharges associated with construction and operations activities. Generally, each well and plant requires a preconstruction air permit and storm water discharge permit before earthwork can commence. In addition, in some jurisdictions the wells that are to be used for production require, and those used for injection may require air emissions permits to operate. Internal combustion engines and other air pollutant emissions sources at the projects may also require air emissions permits, including to manage fugitive dust emissions during construction. For our projects, these permits are typically issued at the state or county level. Permits are also required to manage storm water during project construction and to manage drilling mud from well construction, as well as to manage certain discharges to surface impoundment, if any.

A fourth category of permits, required in Nevada, California, Oregon, and Idaho, includes ministerial permits such as building permits, hazardous materials storage and management permits, and pressure vessel operating permits. We are also required to obtain water rights permits in Nevada if water cooling is being used at the power plant. In addition to permits, there are various regulatory plans and programs that are required, including risk management plans (federal and state programs) and hazardous materials management plans (in California).

In some cases, our projects may also require permits, issued by the applicable federal agencies or authorized state agencies, regarding threatened or endangered species, permits to impact wetlands or other waters and notices of construction of structures which may have an impact on airspace. Environmental laws and regulations may change in the future that may modify the time to receive such permits and associated costs of compliance.

Our BESS projects are subject to similar permitting and regulatory compliance requirements. All of our current BESS projects are located on privately owned land and may require ministerial permits from local agencies as described above or undergo a state environmental permitting process (e.g., under the California Environmental Quality Act) with the city or county as the lead permitting agency. Storage projects are also required to comply with all applicable federal, state, and local laws and regulations, and similar to geothermal projects, may require various regulatory plans and programs including emergency action plans and fire response plans.

As of the date of this report, all of the material environmental permits and approvals currently required for our operating power plants and BESS projects have been obtained. We sometimes experience regulatory delays in obtaining various environmental permits and approvals required for projects in development and construction. These delays may lead to increases in the time and cost to complete these projects. Our operations are designed and conducted to comply with applicable environmental permit and approval requirements. Non-compliance with any such requirements could result in fines and penalties and could also affect our ability to operate the affected project.

Environmental Laws and Regulations

Our facilities and operations are subject to a number of federal, state, local and foreign environmental laws and regulations relating to development, construction and operation. In the U.S, these may include the Clean Air Act, the Clean Water Act, the Emergency Planning and Community Right-to-Know Act, the Endangered Species Act, the National Environmental Policy Act, the Resource Conservation and Recovery Act, and related state laws and regulations.

Our geothermal operations involve significant quantities of brine (substantially, all of which we reinject into the subsurface) and scale, both of which can contain materials (such as arsenic, antimony, lead, and naturally occurring radioactive materials) in concentrations that exceed regulatory limits used to define hazardous waste. We also use various substances, including isopentane and industrial lubricants that could become potential contaminants and are generally flammable. As a result, our projects are subject to domestic and foreign federal, state and local statutory and regulatory requirements regarding the generation, handling, transportation, use, storage, treatment, fugitive emissions, and disposal of hazardous substances. The cost of investigation and removal or remediation activities associated with a spill or release of such materials could be significant. Hazardous materials are also used in our equipment manufacturing operations in Israel.

Although we are not aware of any mismanagement of these materials, including any mismanagement prior to the acquisition of some of our power plants that has materially impaired any of the power plant sites, any disposal or release of these materials onto the power plant sites, other than by means of permitted injection wells, could lead to contamination of the environment and result in material cleanup requirements or other responsive obligations under applicable environmental laws.

Regulation Related to the Energy Storage Segment

Our participation in the energy storage space and in energy management requires us to obtain and maintain certain additional authorizations and approvals. These include (1) authorization from FERC to make wholesale sales of energy, capacity, and ancillary services at market-based rates, and (2) membership status with eligibility to serve designated contractual functions in the ISO/RTOs of PJM, NYISO, CAISO, ISO-NE, and ERCOT. Among other requirements, our market-based rate sellers are subject to certain market behavior and anti-market manipulation rules and, if any of our subsidiaries were deemed to have violated any one of those rules, such subsidiary could be subject to potential disgorgement of profits associated with the violation and/or suspension or revocation of market-based rate authority, as well as criminal and civil penalties. If the market-based rate authority for one (or more) of our subsidiaries was revoked or it was not able to obtain market-based rate authority when necessary, and it was required to sell energy on a cost-of-service basis, it could become subject to the full accounting, record keeping and reporting requirements of FERC. In the future, we may need to obtain and maintain similar membership and eligibility status with other ISO/RTOs in order to offer such services in their respective areas.

Regulation of the Electric Utility Industry in our Foreign Countries of Operation

The following is a summary overview of certain aspects of the electric industry in the foreign countries in which we have an operating geothermal power plant. As such, it should not be considered a full statement of the laws in such countries or all of the issues pertaining thereto.

Guatemala

The General Electricity Law of 1996, Decree 93-96, created a wholesale electricity market in Guatemala and established a new regulatory framework for the electricity sector. The law created a new regulatory commission, the CNEE, and a new wholesale power market administrator, the AMM, for the operation and administration of the sector. The AMM is a private not-for-profit entity. The CNEE functions as an independent agency under the Ministry of Energy and Mines and is in charge of regulating, supervising, and controlling compliance with the electricity law, overseeing the market and setting rates for transmission services, and distribution to medium and small customers. All distribution companies must supply electricity to such customers pursuant to long-term contracts with electricity generators. Large customers can contract directly with the distribution companies, electricity generators or power marketers, or buy energy in the spot market. Guatemala has approved a Law of Incentives for the Development of Renewable Energy Power plants, Decree 52-2003, in order to promote the development of renewable energy power plants in Guatemala. This law provides certain benefits to companies utilizing renewable energy, including a 10-year exemption from corporate income tax and VAT on imports and customs duties. On September 16, 2008, CNEE issued a resolution that approved the Technical Norms for the Connection, Operation, Control and Commercialization of the Renewable Distributed Generation and Self-producers Users with Exceeding Amounts of Energy. This Technical Norm was created to regulate all aspects of generation, connection, operation, control and commercialization of electric energy produced with renewable sources to promote and facilitate the installation of new generation plants, and to promote the connection of existing generation plants which have excess amounts of electric energy for commercialization. It is applicable to projects with a capacity of up to 5 MW. At present, the General Electricity Law and the Law of Incentives for the Development or Renewable Energy Power Plants are still in force.

Kenya

The electric power sector in Kenya is regulated by the Kenyan Energy Act. Among other things, the Kenyan Energy Act provides for the licensing of electricity power producers and public electricity suppliers or distributors. KPLC is the major licensed public electricity supplier and has a virtual monopoly in the distribution of electricity in the country with the exception of a few off-grid, which have recently been licensed by the EPRA. The Kenyan Energy Act permits IPPs to install power generators and sell electricity to KPLC, which is owned by various private and government entities, and which currently purchases energy and capacity from other IPPs in addition to our Olkaria III complex. The electricity sector is regulated by the EPRA under the Kenyan Energy Act. KPLC's retail electricity rates are subject to approval by the EPRA. The EPRA has an expanded mandate to regulate not just the electric power sector but the entire energy sector in Kenya. Transmission of electricity is now undertaken by KETRACO while another company, GDC, is responsible for geothermal assessment, drilling of wells and sale of steam for electricity operations to IPPs and KenGen. Both KETRACO and GDC are wholly owned by the government of Kenya. Renewable energy dominated by geothermal, wind and, presently at a lower level, solar is one of the key energy sub-sectors in Kenya contributing significantly to the overall energy mix as a result of the implementation of the feed-in- tariff policy by the Ministry of Energy. Under the national constitution enacted in August 2010, formulation of energy policy (including electricity) and energy regulation are functions of the national government. However, the constitution lists the planning and development of electricity and energy regulation as a function of the county governments (i.e. the regional or local level where an individual power plant is or is intended to be located).

Indonesia

The Electricity Law of 2009 (in conjunction with Job Creation Act No. 11 of 2020/Omnibus Law) is the principal regulation for electricity industry in Indonesia which divides the industry into two broad categories: (1) electrical power provision, covering electric power generation, transmission, distribution and sales and (2) electrical power support such as services (consulting, construction, installation, operation & maintenance, certification & training, testing etc.) and manufacture (tools, power plant equipment, cables, electrical equipment, etc.). Electrical power provision business is dominated by PLN (a state-owned enterprise), which is the sole owner of transmission and distribution assets and 70% of the power generation assets. Private sector participation in power generation is allowed through an IPP scheme, mostly done through tenders or direct appointment for some power sources such as geothermal. Geothermal power is regulated by The Geothermal Law issued in 2014 (as also amended by the Indonesian Omnibus Law in 2020), that endorses private participation as geothermal IPP. Central government conduct tenders for geothermal fields, awarding Geothermal Business License for the winner. Geothermal Business License holder can conduct exploration and feasibility studies within five years and subject to two times one-year extensions, conduct well development and power plant construction and sell the electricity generated to PLN for a maximum of 30 years. Prior to the expiration of the Geothermal License, the IPP can propose to extend the license for an additional 20 years. In 2021, Presidential Regulation No. 112 was enacted with the aim of accelerating Renewable Energy. This regulation replaces the basis of the renewable energy tariff from the average electricity generation basic cost to ceiling price. In this scheme, the tariff is negotiated between IPP and PLN and must not be higher than the ceiling tariff set for particular type of renewable energy power plant, which then is multiplied by a factor based on location.

Guadeloupe

EDF is the transmission and distribution utility in Guadeloupe and also operates a significant portion of Guadeloupe's fossil fuel energy generation. There are also a number of IPPs in Guadeloupe, primarily producing renewable electricity. The electricity sector in Guadeloupe is regulated by the Commission Regulation of Energy (CRE), which also regulates EDF's operations in mainland France and its other overseas territories. The electricity sector in Guadeloupe is characterized by both enabling features and obstacles with respect to renewable energy. One of the most influential enabling features is a French law requiring the utility to purchase power from any interconnected renewable generator. The major obstacle preventing further uptake of renewable electricity generation is the cap on variable generation at 30% of instantaneous system load. According to the multi-annual energy program (PPE) for Guadeloupe, the island aims to reach total energy independence by 2030. The program outlines the development schedule with an emphasis on solar, wind and geothermal growth for the years 2023-2026. The PPE also predict a geothermal installed capacity of 78MW by 2028.

Honduras

In 2014, Honduras approved its new Law of Electrical Industry, which provides the legal framework for the electricity sector and replaces the previous Electricity Subsector Framework Law. The Law establishes technology-specific auctions for renewable energy. It creates the Regulatory Commission of Electric Power (CREE) as the entity in charge of supervising the bidding processes and the awarding of PPAs. The CREE is also responsible for granting study permits for the construction of generation projects that use renewable natural resources. Permits will have a maximum duration of two years, and will be revoked if no studies have been initiated within a period of six months and the reports required by the CREE have not been submitted. The new Law also establishes that all new capacity must be contracted through auctions and that the government can set a minimum quota for renewables in each auction. With respect to metering, after previous regulation applied legal incentives to renewable energy metering, the new law mandates utilities to buy excess power and credit it towards monthly bills and to install bi-directional meters.

Among others, the objectives of the law are to adapt the electricity sector's legislation to the Framework Treaty for the Central American Electricity Market, which Honduras is a party to, and update the operating rules in the country's electricity industry by incorporating structures and modern practices to increase the sector's efficiency and competency in the production and marketing of electricity services.

With the passage of this new law, Honduras has moved into a new and open market. Under this legislation, all aspects of the market have been opened to private parties. This legislation is still being implemented within the market.

Honduras has also approved a Law of Incentives for Renewable Energy Projects, Decree 70-2007, further amended by Decree 138-2013, with additional incentives to solar PV projects, etc. The purpose, as in other countries of the region, is to promote the development of renewable energy power plants. Laws provide certain benefits to companies that generate power through renewable sources, including a 10-year exemption from corporate income tax and VAT on imports and customs duties, a fast track process for certain permits and a Sovereign Guaranty by the Central Government for the payments of the off-taker, the Public Utility Company, ENEE. At present, the Law of the Electrical Industry and the Laws of Incentives for Renewable Energy Projects are still in force.

ITEM 1A. RISK FACTORS

The following risk factors should be read carefully in connection with evaluating us and this Annual Report. Certain statements in "Risk Factor" are forward-looking statements. See "Cautionary Note Regarding Forward-Looking Statements" elsewhere in this Annual Report.

Risks Related to the Company's Business and Operation

Our financial performance depends on the successful operation of our geothermal, REG and Solar PV power plants under the Electricity segment, as well as our Energy Storage facilities, which are subject to various operational risks.

Our financial performance depends on the successful operation of our geothermal REG and Solar PV power plants. In connection with such operations, we derived 86.0% of our total revenues for the year ended December 31, 2022 from the sale of electricity. The cost of operation and maintenance and the operating performance of our geothermal power, REG and Solar PV power plants may be adversely affected by a variety of factors, including:

- regular and unexpected maintenance and replacement expenditures;
- shutdowns due to the breakdown or failure of our equipment or third party equipment of the transmission serving utility;
- labor disputes;
- labor market risk;
- the presence of hazardous materials on our power plant sites;
- continued availability of cooling water supply;
- catastrophic events such as fires, explosions, earthquakes, volcanic activity, landslides, floods, releases of hazardous materials, severe weather storms or other weather events (including weather conditions associated with climate change, or similar occurrences affecting our power plants or any of the power purchasers or other third parties providing services to our power plants, such as the 2018 volcanic eruption that occurred in Hawaii's Big Island that impacted our Puna project, as discussed elsewhere in this Annual Report;
- the aging of power plants (which may reduce their availability and increase the cost of their maintenance);
- unsuccessful augmentation of batteries or other necessary equipment; and
- cyber-attacks that may interrupt the operation of our power plants.

Any of these events could significantly increase the expenses incurred by our storage facilities or our power plants, or could reduce the overall effectiveness of our storage facilities or the generating capacity of our power plants and could significantly reduce or entirely eliminate the revenues generated by one or more of our power plants, which in turn would reduce our net income and could materially and adversely affect our business, financial condition, future results and cash flows.

Our exploration, development, and operation of geothermal energy resources are subject to geological risks and uncertainties, which may result in decreased performance or increased costs for our power plants.

Our primary business involves the exploration, development, and operation of geothermal energy resources. These activities are subject to uncertainties that, in certain respects, are similar to those typically associated with oil and gas exploration, development, and exploitation, such as dry holes, uncontrolled releases, and pressure and temperature decline. Any of these uncertainties may increase our capital expenditures and our operating costs or reduce the efficiency of our power plants. We may not find geothermal resources capable of supporting a commercially viable power plant at exploration sites where we have conducted tests, acquired land rights, and drilled test wells, which would adversely affect our development of geothermal power plants. Further, since the commencement of their operations, several of our power plants have experienced geothermal resource cooling, uncontrolled flow and/or reservoir pressure decline in the normal course of operations. Because geothermal reservoirs are complex geological structures, we can only estimate their geographic area and sustainable output. The viability of geothermal power plants depends on different factors directly related to the geothermal resource (such as the temperature, pressure, storage capacity, transmissivity, and recharge) as well as operational factors relating to the extraction or reinjection of geothermal fluids. Our geothermal energy power plants may also suffer an unexpected decline in the capacity of their respective geothermal wells and are exposed to a risk of geothermal reservoirs not being sufficient for sustained generation of the electrical power capacity desired over time. A recent example is the Olkaria complex, which experienced a reduction in generation due to lower performance of the wellfield. We are working to increase the capacity back. Also, in the Sarulla complex, we experienced a reduction in generation primarily due to wellfield issues at one of its power plants, as well as equipment failures which resulted in a decrease in profitability. During the second quarter of 2022, Sarulla agreed with its banks on a framework that will enable it to perform remediation work that is aimed to restore the plant's performance, however, uncertainty remains regarding Sarulla's ability to meet the plan and the Company is evaluating the impact of the plan on future performance. Another recent example, in the fourth quarter 2022 we recorded a non-cash impairment loss of $30.5 million related to our Brawley power plant in California that has been generating electricity that is lower than its generating capacity of 13MW due to continuous wellfield issues which resulted in higher than expected operating costs and lower than expected electricity revenues. We are following the remediation plans as well as assessing the accounting impact and its implication on our financial statements and our investment in the Sarulla complex.

Another aspect of geothermal operations is the management and stabilization of subsurface impacts caused by fluid injection pressures of production and injection fluids to mitigate ground subsidence or inflation. Inflation and subsidence, if not controlled, can adversely affect farming operations and other infrastructure at or near the land surface.

Additionally, active geothermal areas, such as the areas in which our power plants are located, may be subject to frequent low-level seismic disturbances. Serious seismic disturbances, volcanic eruptions and lava flows are possible and could result in damage to our power plants (or transmission lines used by customers who buy electricity from us) or equipment or degrade the quality of our geothermal resources to such an extent that we could not perform under the PPA for the affected power plant, which in turn could reduce our net income and materially and adversely affect our business, financial condition, future results and cash flow. If we suffer a serious seismic disturbance, volcanic eruptions and lava flows, our business interruption and property damage insurance may not be adequate to cover all losses sustained as a result thereof. In addition, insurance coverage may not continue to be available in the future in amounts adequate to insure against such seismic disturbances, volcanic eruptions and lava flows.

Furthermore, absent additional geologic/hydrologic studies, any increase in power generation from our geothermal power plants, failure to reinject the geothermal fluid or improper maintenance of the hydrological balance may affect the operational duration of the geothermal resource and cause it to decline in value over time and may adversely affect our ability to generate power from the relevant power plant.

We may decide not to implement, or may not be successful in implementing, one or more elements of our multi-year strategic plan, and the plan as implemented may not achieve its goal of enhancing shareholder value through the long-term growth of our Company

We are implementing a multi-year strategic plan to:

- strengthen our core geothermal business in the United States as well as globally;
- establishing a strong market position in the IFM energy storage market; and
- exploring opportunities in new areas by looking for synergistic growth opportunities utilizing our core competence, market reputation as a successful company and new market opportunities focused upon environmental solutions.

There are uncertainties and risks associated with our strategic plan, including with respect to implementation and outcome. We may decide to change, or to not implement, one or more elements of the plan over time or we may not be successful in implementing one or more elements of the plan, in each case for a number of reasons. For example, we may face significant challenges and risks expanding into the energy storage market (or expanding our core geothermal business), including:

- our ability to compete with the large number of other companies pursuing similar business opportunities in energy storage and solar PV power generation, many of which already have established businesses in these areas and/or have greater financial, strategic, technological or other resources than we have;

- our ability to obtain financing on terms we consider acceptable, or at all, which we may need, for example, to develop new projects, to obtain any technology, personnel, intellectual property, or to acquire one or more existing businesses as a platform for our expansion, or to fund internal research and development, for energy storage and solar PV electric power generation products and services;

- our ability to provide energy storage services that keep pace with rapidly changing technology, customer preferences, equipment costs, increasing raw materials and transportation costs, market conditions and other factors that are unknown to us now that will impact these markets;

- our ability to manage the risks and uncertainties associated with our operating storage facilities and future development of storage and geothermal projects which may operate as "merchant" facilities without long-term sales agreements, including the variability of revenues and profitability of such projects;

- our ability to devote the amount of management time and other resources required to implement this plan, while continuing to grow our core geothermal and recovered energy businesses; and

- our ability to recruit appropriate employees and labor market challenges.

Strengthening our core geothermal business to new customers and geographical areas will have many of the same risks and uncertainties as those outlined above.

Implementing the plan may also involve various costs, including, among other things:

- opportunity costs associated with foregone alternative uses of our resources;

- various expense items that will impact our current financial results; and

- asset revaluations (for example, businesses or other assets acquired for new energy storage or solar PV power generation products or services may suffer impairment charges, as a result of rapidly changing technology, market conditions or otherwise).

These costs may not be recovered, in whole or in part, if one or more elements of the plan are not successfully implemented. These costs, or the failure to implement successfully one or more elements of the plan, could adversely affect our reputation and the reputation of our subsidiaries and could materially and adversely affect our business, financial condition, future results and cash flow.

Apart from the risks associated with implementing the plan, the plan itself will expose us to other risks and uncertainties once implemented. Expanding our customer base may expose us to customers with different credit profiles than our current customers. Expanding our geographic base will subject us to risks associated with doing business in new foreign countries in which we will have to learn the business and political environment. In addition, expanding into new technologies will expose us to new risks and uncertainties that are unknown to us now in addition to the risks and uncertainties that may be similar to those we now face. The success of the plan, once implemented, will depend, among other things, on our ability to manage these risks effectively.

The trading price of our common stock could decline if securities, industry analysts or our investors disagree with our strategic plan or the way we implement it. Accordingly, there is no assurance that the plan will enhance shareholder value through long-term growth of the Company to the extent currently anticipated by our management or at all.

Our investments in battery energy storage system (BESS) technology involves new technologies with relatively limited history with respect to reliability and performance and may not perform as expected. In addition, our investments may be negatively affected by a number of factors, including increases in storage costs, [risk of fire] and volatility in electricity pricing.

We devote resources to research and development related to our energy storage segment, and the ability of these BESS facilities to meet our performance expectations is subject to the risks inherent in newly constructed facilities, including, but not limited to, system failures, outages and design and/or construction flaws, latent defects and degradation of equipment in excess of our expectations. Battery storage facilities utilize new technologies with a relatively limited history with respect to reliability and performance. We will need to innovate in order to keep pace with industry developments and customer expectations, and there is no guarantee that such new technologies will perform as expected. If any of our battery energy storage services contains manufacturing defects or any undetected defects, errors or bugs in hardware or software, our business and financial results could be adversely affected.

In addition, our investments in BESS facilities may be negatively affected by increases in storage costs, and the industry has recently experienced, and it is still facing, challenges in the development of new energy storage projects due to global supply chain constraints and inflation, which has caused an increase in prices and a shortage of core components of energy storage projects, specifically batteries. Our projects under development have experienced delays as a result of these challenges.

The revenues from our BESS facilities fluctuate over time since a large portion of such revenues are generated in the merchant markets, where price volatility is inherent[; however, we may be required to guarantee an electricity customer's cost savings and if such cost savings decrease below the guaranteed amount, due to a decrease in retail peak electricity pricing or otherwise, we would be required to pay an amount equal to the difference between the customer's actual cost savings and the guaranteed amount. Developments in alternative technologies may materially and also adversely affect demand for battery energy storage.

Our BESS projects are also subject to current permitting and regulatory compliance requirements and an evolving regulatory landscape at both the federal and state level. Our projects under development have experienced delays and may in the future experience delays as a result of these requirements. In addition, we may be required by local governmental agencies to restrict our battery charging services, and in February 2021, as a result of the power crisis in Texas, we incurred $9.1 million in losses associated with our Rabbit Hill facility because ERCOT restricted us from providing battery charging services from February 16, 2021 to February 19, 2021.

Any of these events could significantly increase the expenses incurred by our BESS facilities or could significantly reduce or entirely eliminate the revenues generated by one or more of our BESS facilities plants, which in turn would reduce our net income and could materially and adversely affect our business, financial condition, future results and cash flows.

Concentration of customers, specific projects and regions may expose us to heightened financial exposure.

Our businesses often rely on a single customer to purchase all or a significant portion of a facility's output. The financial performance of these facilities depends on the ability of each customer to perform its obligations under a long-term agreement between the parties. A facility's financial results could be materially and adversely affected if any of our customers fail to fulfill its contractual obligations and we are unable to find other customers in the marketplace to purchase at the same level of profitability. We cannot assure that such performance failures by our customers will not occur, or that if they do occur, such failures will not adversely affect the cash flows or profitability of our businesses. Moreover, there can be no assurance that we will be able to enter into replacement agreements on favorable terms or at all.

While we have historically been able to collect on substantially all of our receivable balances, we have received late payments and have amounts overdue from certain of our significant customers. In the Electricity segment, we are exposed to the credit and financial condition of KPLC that buys the power generated from our Olkaria III complex in Kenya. In 2022, KPLC accounted for 14.4% of our total revenues. There has been a deterioration in the collection from KPLC that became slower than in the past, and as of December 31, 2022, the amount overdue from KPLC in Kenya was $27.0 million of which $15.2 million was paid in January and February of 2023. Any change in KPLC's financial condition may adversely affect us.

In Honduras, as of December 31, 2022, the total amount overdue from ENEE was $13.9 million of which $2.6 million was collected in February 2023. In addition, due to continuing restrictive measures related to the COVID-19 pandemic in Honduras, the Company may experience additional delays in collection. The Company believes it will be able to collect all past due amounts in Honduras.

We are also exposed to the credit and financial condition of SCPPA and its municipal utility members that account for 21.5% of our total revenues, as customers that buy the output from seven of our geothermal power plants. Because our contracts with SCPPA are long-term, we may be adversely affected if the credit quality of any of these customers were to decline or if their respective financial conditions were to deteriorate or if they are otherwise unable to perform their obligations under our long-term contracts.

In addition, we generate a significant portion of our revenue from our two largest projects, the McGinness Hills complex in East Nevada and the Olkaria III Complex in Kenya, which together accounted for approximately 27.6% of the total generating capacity of our Electricity segment in 2022. These two facilities accounted for 28.5% of our total revenues for the year ended December 31, 2022. Any disruption to the operation of these facilities would have a disproportionately adverse effect on our revenues and on our profitability.

Our global operations expose us to risks related to the application of international laws and regulations, any of which may adversely affect our business, financial condition, future results and cash flows.

Our global operations in countries including Kenya, Turkey, Guadeloupe, Guatemala, Honduras, Indonesia and others require us to comply with the laws and regulations of various governments and regulatory authorities outside the United States in addition to legal and regulatory requirements in the United States. Such foreign laws or regulations may not provide the same type of legal certainty, rights, or judicial processes with respect to our contractual relationships in such countries, as are afforded to our operations in the United States. A failure to receive adequate judicial or enforcement protection of our contractual rights abroad may adversely affect our ability to fulfill our contracts successfully and generate revenues therefrom. In particular, the legal and regulatory systems in the foreign jurisdictions where we operate can be characterized by one or more of the following:

- Selective or inconsistent enforcement of laws or regulations, sometimes in ways that have been perceived as being motivated by political or financial considerations;
- A perceived lack of judicial and prosecutorial independence from political, social and commercial forces;
- A high degree of discretion on the part of the judiciary and governmental authorities;
- Legal and bureaucratic obstacles and corruption;
- Rapidly evolving legal systems whose systems may not always coincide with market developments.

We face additional risks inherent in conducting business internationally, including compliance with laws and regulations of many jurisdictions that apply to our international operations. These laws and regulations may apply to us, our subsidiaries, individual directors, officers, employees and agents, and may restrict our operations, trade practices, investment

or acquisition decisions or partnership opportunities. These requirements include, but are not limited to, data privacy requirements, labor relations laws, tax laws, competition regulations, import and trade restrictions, economic sanctions, and export requirements.

In particular, our international operations are subject to United States and foreign anti-corruption laws and regulations, such as the Foreign Corrupt Practices Act of 1977, as amended (the "FCPA") and other local laws that prohibit corrupt payments to governmental officials or certain payments or remunerations to customers. The FCPA prohibits United States companies and their officers, directors, employees and agents acting on their behalf from corruptly offering, promising, authorizing or providing anything of value to foreign officials for the purposes of influencing official decisions or obtaining or retaining business or otherwise obtaining favorable treatment. The FCPA also requires companies to make and keep books, records and accounts that accurately and fairly reflect transactions and dispositions of assets and to maintain a system of adequate internal accounting controls. As part of our business, we deal with state-owned business enterprises, the employees and representatives of which may be considered foreign officials for purposes of the FCPA. As a result, business dealings between our employees and any such foreign official could expose us to the risk of violating anti-corruption laws even if such business practices may be customary or are not otherwise prohibited between us and a private third party. Violations of these legal requirements are punishable by criminal fines and imprisonment, civil penalties, disgorgement of profits, injunctions, debarment from government contracts as well as other remedial measures.

Given the high level of complexity of these laws, there is a risk that some provisions may be breached by us, for example through fraudulent or negligent behavior of individual employees (or third parties acting on our behalf), our failure to comply with certain formal documentation requirements, or otherwise. Violations of these laws and regulations could result in fines, criminal sanctions against us, our officers or our employees, requirements to obtain export licenses, cessation of business activities in sanctioned countries, implementation of compliance programs and prohibitions on the conduct of our business. Any such violation could include prohibitions on our ability to offer our products in one or more countries and could materially damage our reputation, our brand, our ability to attract and retain employees, our business, our financial condition and our results of operations.

Furthermore, existing laws or regulations may be amended or repealed, and new laws or regulations may be enacted or issued. In addition, the laws and regulations of some countries may limit our ability to hold a majority interest in some of the power plants that we may develop or acquire, thus limiting our ability to control the development, construction and operation of such power plants, or our ability to import our products into such countries.

Political, economic and other conditions in the emerging economies where we operate, including Israel, may subject us to greater risk than in the developed U.S. economy, which may have a materially adverse effect on our business.

We have substantial operations outside of the United States, both in our Electricity segment and our Product segment. In 2022, 34.1% of our total revenues were derived from international operations, and our Electricity segment international operations had higher gross profit than our U.S. operations. In 2022 a substantial portion of international revenues came from Kenya and, to a lesser extent, from Honduras, Guatemala, Guadeloupe and other countries. Thus, disturbances to and challenges facing our foreign operations, especially in Kenya, could have impacts on our business ranging from moderate to severe. Our foreign operations and our exposure to foreign customers that are in most cases, government owned utilities, subject us to significant political, economic and financial risks, which vary by country, and include:

- changes in government policies or personnel;
- changes in general economic conditions;
- restrictions on currency transfer or convertibility;
- the adoption or expansion of trade restrictions, the occurrence or escalation of a "trade war," or other governmental action related to tariffs or trade agreements or policies among the governments of the United States and countries where we operate;
- reduced protection for intellectual property rights in some countries;
- changes in labor relations;
- political instability and civil unrest, and risk of war;
- terrorist acts or other similar events;
- changes in the local electricity and/or geothermal markets;
- difficulties enforcing our rights against a governmental agency because of the doctrine of sovereign immunity and foreign sovereignty over international operations;
- breach or repudiation of important contractual undertakings by governmental entities; and
- expropriation and confiscation of assets and facilities, including without adequate compensation.

Electricity Segment. In 2022, the international operations of the Electricity segment accounted for 25% of our total revenues, but accounted for 43% of our gross profit, 72% of our net income and 36% of our EBITDA. A substantial portion of Electricity segment international revenues came from Kenya (which also contributed disproportionately to our gross profit and net income) and, to a lesser extent, from Guadeloupe, Guatemala and Honduras. In Kenya, any break-up or potential privatization of KPLC, the power purchaser for our power plants located in Kenya, may adversely affect our Olkaria III complex and our overall results of operations. Additionally, in Guatemala the electricity sector was partially privatized, and it is currently unclear whether further privatization will occur in the future. Such developments may affect our Amatitlan and Zunil power plants if, for example, they result in changes to the prevailing tariff regime or in the identity and creditworthiness of our power purchasers.

Product Segment. With respect to our Product segment, 90% of our Product segment revenues in 2022 came from international sales, primarily Turkey. Since we primarily engage in sales in those markets where there is a geothermal reservoir, any such change might adversely affect geothermal developers in those markets and, subsequently, the ability of such developers to purchase our products.

Generally. Outbreaks of civil and political unrest and acts of terrorism have also occurred in several countries in Africa, the Middle East and Latin America, where we have operations, such as Kenya and Honduras. Kenya experienced numerous terrorist attacks in 2014 and 2015, and has experienced an upsurge in attacks in more recent years, including in early 2019, from extremist groups. Continued or escalated civil and political unrest and acts of terrorism in the countries in which we operate could result in our curtailing operations. In the event that countries in which we operate experience civil or political unrest or acts of terrorism, especially in events where such unrest leads to an unseating of the established government, our operations in such countries could be materially impaired.

As a result of these risks, we purchase certain types of political risk insurance policies for selected countries where we operate and which are exposed to political turmoil, geopolitical issues or political uncertainty. While such policies are designed to offer assistance with respect to some political incidents that could give rise to financial liability, it does not mitigate all of the above-mentioned risks. In addition, insurance proceeds received pursuant to our political risk insurance policies, where applicable, may not be adequate to cover all losses sustained as a result of any covered risks and may at times be pledged in favor of the power plant lenders as collateral. Also, insurance may not be available in the future with the scope of coverage and in amounts of coverage adequate to insure against such risks and disturbances. Any or all of the changes discussed above could materially and adversely affect our business, financial condition, future results and cash flow.

Conditions in and around Israel, where the majority of our senior management and our main production and manufacturing facilities are located, may adversely affect our operations and may limit our ability to produce and sell our products or manage our power plants.

The majority of our senior management and our main production and manufacturing facilities are located in Israel approximately 26 miles from the border with the Gaza Strip. As such, political, economic and security conditions in Israel and the Middle East region directly affect our operations.

The political instability and civil unrest in the Middle East and North Africa as well as the increased tension between Iran and Israel have raised new concerns regarding security in the region and the potential for armed conflict or other hostilities involving Israel, any of which could impede our ability to manufacture and support our products offerings. We could be adversely affected by any such hostilities, the interruption or curtailment of trade between Israel and its trading partners, or a significant downturn in the economic or financial condition of Israel. In addition, the sale of products manufactured in Israel may be adversely affected in certain countries by restrictive laws, policies or practices directed toward Israel or companies having operations in Israel. If our facilities become temporarily or permanently disabled by an act of terrorism or war, we may be required to develop alternative infrastructure and we may not be able to avoid service interruptions.

These events and conditions could disrupt our operations in Israel, which could materially and adversely affect our business, financial condition, future results, and cash flow.

In addition, political unrest and recent widespread protests in Israel against a planned judicial overhaul may cause investor concerns associated with such political unrest in Israel and potential changes in the judicial system. We cannot be certain whether the planned judicial overhaul will occur or in what form. As such, we cannot be certain on how investors will assess these matters and whether this assessment will adversely impact perception s of our business and our share price, or impact our business operations in Israel.

Continued reduction in our Products backlog may affect our ability to fully utilize our main production and manufacturing facilities and may have a materially adverse effect on our business.

In our Product segment, reduction in our backlog may affect our ability to fully utilize our manufacturing facility and we may incur higher costs that our Product segment revenues may not be able to cover or increase capital costs to develop our own power plants, which could materially and adversely affect our business, financial condition, future results, and cash flow.

Some of our leases will terminate if we do not extract geothermal resources in "commercial quantities", if we fail to comply with the terms or stipulations of such leases or any of the provisions of the Geothermal Steam Act or if the lessor under any such lease defaults on any debt secured by the relevant property, thus requiring us to enter into new leases or secure rights to alternate geothermal resources, none of which may be available on terms as favorable to us as any such terminated lease, if at all.

Most of our geothermal resource leases are for a fixed primary term, and then continue for so long as geothermal resources are extracted in "commercial quantities" or pursuant to other terms of extension. The land covered by some of our leases (approximately 200,000 acres in the U.S. and approximately 15,000 acres elsewhere) is undeveloped and has not yet produced geothermal resources in commercial quantities. Leases that cover land which remains undeveloped and does not produce, or does not continue to produce, geothermal resources in commercial quantities and leases that we allow to expire, may terminate. In the event that a lease is terminated and we determine that we will need that lease once the applicable power plant is operating, we would need to enter into one or more new leases with the owner(s) of the premises that are the subject of the terminated lease(s) in order to develop geothermal resources from, or inject geothermal resources into, such premises or secure rights to alternate geothermal resources or lands suitable for injection. We may not be able to do this or may not be able to do so without incurring increased costs, which could materially and adversely affect our business, financial condition, future results and cash flow.

Additionally, pursuant to the terms of our BLM leases, we are required to conduct our operations on BLM-leased land in a workmanlike manner and in accordance with all applicable laws and BLM directives and to take all mitigating actions required by the BLM to protect the surface of and the environment surrounding the relevant land. Certain BLM leases contain additional requirements, some of which relate to the mitigation or avoidance of disturbance of any antiquities, cultural values or threatened or endangered plant, wildlife and species. In the event of a default under any BLM lease, or the failure to comply with such requirements, or any non-compliance with any of the provisions of the Geothermal Steam Act or regulations issued thereunder, the BLM may, 30 days after notice of default is provided to our relevant project subsidiary, suspend our operations until the requested action is taken or terminate the lease, either of which could materially and adversely affect our business, financial condition, future results and cash flow.

The fee interest in the land which is the subject of some of our leases (or subleases) may currently be or may become subject to encumbrances securing loans from third-party lenders to the lessor (or sublessor). Our rights as lessee (or sublessee) under such leases (or subleases) are or may be subject and subordinate to the rights of any such lender. Accordingly, a default by the lessor (or sublessor) under any such loan could result in a foreclosure on the underlying fee interest in the property and thereby terminate our leasehold interest and result in the shutdown of the power plant located on the relevant property and/or terminate our right of access to the underlying geothermal resources required for our operations.

Reduced levels of recovered energy required for the operation of our REG power plants may result in decreased performance of such power plants.

Our REG power plants generate electricity from recovered energy or so-called "waste heat" that is generated as a residual by-product of gas turbine-driven compressor stations and a variety of industrial processes. Any interruption in the supply of the recovered energy source, such as a result of reduced gas flows in the pipelines or reduced level of operation at the compressor stations, or in the output levels of the various industrial processes, may cause an unexpected decline in the capacity and performance of our recovered energy power plants.

Our business development activities may not be successful and our projects under construction or facilities undergoing enhancement and repowering may encounter delays, which may impact our future growth.

We are in the process of developing and constructing a number of new power plants. Our success in developing a project is contingent upon, among other things, negotiation of satisfactory engineering and construction agreements and obtaining PPAs and transmission services agreements, receipt of required governmental permits (including environmental permits), obtaining adequate financing, and the timely implementation and satisfactory completion of field development, testing and power plant construction and commissioning. We may be unsuccessful in accomplishing any of these matters or

doing so on a timely basis such in cases where we have to handle legal proceedings with respect to environmental permits. Although we may attempt to minimize the financial risks attributable to the development of a project by securing a favorable PPA and applicable transmission services agreements, obtaining all required governmental permits and approvals and arranging, in certain cases, adequate financing prior to the commencement of construction, the development of a power project may require us to incur significant expenses for preliminary engineering, permitting and legal and other expenses before we can determine whether a project is feasible, economically attractive or capable of being financed.

Currently, we have geothermal projects and prospects under exploration, development or construction in the United States, as well as in Indonesia, Ethiopia, Guadeloupe, Guatemala, Madagascar and New Zealand and we intend to pursue the development of other new plants. In addition, our current growth plans include enhancement and repowering of a number of our operating facilities, including the Heber, Dixie Valley, Zunil, Beowawe and Puna power plants and involve replacement of old equipment and optimization of the geothermal field, including repair and enhancement of existing wells and drilling of new wells. Our completion of these facilities' development and/or enhancement is subject to substantial risks, including:

- inability to secure a PPA;
- inability to secure transmission services agreements;
- inability to secure the required financing;
- cost increases and delays due to unanticipated shortages of adequate resources to execute the project such as equipment, material and labor;
- work stoppages resulting from force majeure events including riots, strikes and weather conditions;
- inability to obtain permits, licenses and other regulatory approvals;
- inability to satisfactorily complete field development and testing;
- failure to secure sufficient land positions for the wellfield, power plant and rights of way;
- failure by key contractors and vendors to timely and properly perform, including where we use equipment manufactured by others;
- inability to secure or delays in securing the required transmission line and/or capacity;
- adverse environmental and geological conditions (including, but not limited to, discoveries of contamination, protected plant or animal species or habitat, archaeological or cultural resources, or inclement weather conditions);
- adverse local business law;
- our attention to other projects and activities, including those in the solar energy and energy storage sectors; and
- changes in laws that mandate, incentivize or otherwise favor renewable energy sources.

Any one of these could give rise to delays, cost overruns, the termination of the plant expansion, construction or development or the loss (total or partial) of our interest in the project under development, construction, or expansion.

In addition, we enter into various types of arrangements with communities and joint venture partners, including in some cases, Indigenous peoples, for the development of projects. In some circumstances, we may be required to notify, consult, or obtain the consent of certain stakeholders, such as Indigenous peoples, landowners, and/or municipalities. In some jurisdictions where we have greenfield power projects, it may be possible to claim Indigenous rights to land and the existence or declaration of Indigenous title may affect the existing or future activities of our projects and impact our business, financial condition and results of operations. Certain of these communities and partners may have or may develop interests or objectives which are different from or even in conflict with our objectives. Any such differences could have a negative impact on the success of our projects.

We rely on power transmission facilities that we do not own or control.

We depend on transmission facilities owned and operated by others to deliver the power we sell from our power plants to our customers. If transmission is disrupted, or if the transmission capacity infrastructure is inadequate, of if there is a failure that requires long shutdown for repair, or if curtailment is required due to load system inefficiency, our ability to sell and deliver power to our customers may be adversely impacted and we may either incur additional costs or forego revenues. In addition, lack of access to new transmission capacity may affect our ability to develop new projects. Existing congestion of transmission capacity, as well as expansion of transmission systems and competition from other developers seeking access to expanded systems, could also affect our performance.

Our use of joint ventures may limit our flexibility with jointly owned investments.

We have partners in several of our plants and we may continue in the future to develop and/or acquire and/or hold properties in joint ventures with other entities when circumstances warrant the use of these structures. These arrangements are often driven by the magnitude of capital required to complete acquisitions of generating assets, strategic partnering arrangements to access operating expertise, and other geothermal and energy industry wide trends that we presume will continue in the future. Where we hold a minority interest in a joint venture or share control or management with another party in a joint venture (such as in the case of our plant in Guadeloupe), our ability to influence joint venture operations may be limited. As such, our ownership of assets in joint ventures is subject to risks that may not be present with other methods of ownership, including:

- we could experience an impasse on certain decisions because we do not have sole decision-making authority, which could require us to expend additional resources on resolving such impasses or potential disputes, including arbitration or litigation;

- our joint venture partners could have investment goals that are not consistent with our investment objectives, including the timing, terms and strategies for any investments in the projects that are owned by the joint ventures, which could affect decisions about future capital expenditures, major operational expenditures and retirement of assets, among other things;

- our ability to transfer our interest in a joint venture to a third party may be restricted and the market for our interest may be limited;

- our joint venture partners may be structured differently than us for tax purposes, and this could impact our ability to fully take advantage of federal tax incentives available for renewable energy projects;

- our joint venture partners might become bankrupt, fail to fund their share of required capital contributions or fail to fulfill their obligations as a joint venture partner, which may require us to infuse our own capital into the venture on behalf of the partner despite other competing uses for such capital; and

- our joint venture partners may have competing interests in our markets and investments in companies that compete directly or indirectly with us that could create conflict of interest issues.

For example, we hold a 12.75% minority interest in the Sarulla complex and, as a result, cannot control the development of its remediation plan, pace of exploration or development or major drilling decisions. Because we may, in some instances, have a reduced level of influence over our joint ventures, we may not be able to realize some or all of the benefits that we believe will be created from our involvement. If any of the foregoing were to occur, our business, financial condition and results of operations could suffer as a result.

Our operations could be adversely impacted by climate change.

We are susceptible to losses and interruptions caused by extreme weather conditions such as droughts, hurricanes, tsunamis, floods, wildfires, and water or other natural resource shortages, occurrences of which may increase in frequency and severity as a result of climate change. Climate change may also produce general changes in weather or other environmental conditions, including temperature or precipitation levels, and thus may impact consumer demand for electricity. Daily and seasonal fluctuations in temperature generally have a more significant impact on the generating capacity of geothermal energy plants than conventional power plants. Some of our power plants experience reduced generation in warm periods due to the lower heat differential between geothermal fluid and the ambient surroundings. While we generally account for the projected impact seasonal fluctuations in temperature based on our historic experience, the impact of climate change on traditional weather patterns has become more pronounced. This has reduced the certainty of our modelling efforts. For example, in 2019, we experienced prolonged elevated temperatures in the Western United States which impacted generating capacity at our facilities and adversely impacted our revenues in the fourth quarter of the year. To the extent weather conditions continue to be impacted by climate change, the generating capacity of certain of our facilities may be adversely impacted in a manner that we could not predict which may in turn adversely impact our results of operations. In addition, the potential physical effects of climate change, such as increased frequency and severity of storms, floods, and other climatic events, could disrupt our operations and cause us to incur significant costs to prepare for or respond to these effects.

Climate change could also affect the availability of a secure and economical supply of water, which is essential for the continued operation of some of our power plants that use water cooling systems. Ormat monitors water risk carefully. If it is determined that a water supply risk exists that could impact projected generation levels at any plant, risk mitigation efforts are identified and evaluated for implementation.

We could be negatively impacted by regulatory and other responses to climate change.

As a renewable energy solution provider, we are motivated to identify our opportunities and risks with respect to climate change and take efforts to reduce our GHG emissions and improve our energy efficiency. While we generally view this as an opportunity, uncertainty regarding nascent regulation in this area could also adversely affect us. In the United States, where we have a significant portion of our operations, no comprehensive climate change legislation has been implemented federally. The U.S. Environmental Protection Agency (the "EPA") has adopted rules that, among other things, establish construction and operating permit reviews for GHG emissions from certain large stationary sources, require the monitoring and reporting of GHG emissions from certain sources and implement standards directing the reduction of methane from certain facilities in the oil and gas sector. Additionally, various states have adopted or are considering adopting legislation and regulation focused on GHG cap-and-trade programs, carbon taxes, reporting and tracking programs and emissions limits. Uncertainty associated with these regulations, our inability to meet the demands of these regulations or our failure to predict accurately the impact of our response to these regulations could adversely affect our business and prospects.

In addition, the SEC proposed rules in March 2022 that would require public companies to include extensive climate-related disclosures in their SEC filings. Among other things, the proposed SEC rules, if adopted as written, would mandate disclosures on (i) GHG emissions, including Scope 3 emissions if material or part of a company's emissions goal, (ii) financial impact and expenditure metrics relating to severe weather and climate change and (iii) a company's use of scenario analysis and climate targets. Although the SEC has not finalized these rules, we would expect to incur substantial additional compliance costs to the extent these or similar rules are adopted. Such compliance costs could in turn adversely effect on our business or results of operations.

In addition to legal and regulatory requirements, growing stakeholder engagement with respect to sustainability matters could cause us to alter our business operations, which could require them to incur substantial expense. Any failure to comply with stakeholder requests, in particular, the ability to meet customer requirements or sustainability targets, could adversely impact the demand of our services and subject us to significant costs and liabilities and reputational risks, any of which could adversely affect our business, financial condition and results of operations.

Geothermal projects that we plan to develop in the future, may operate as "merchant" facilities without long-term PPAs and therefore such projects will be exposed to market fluctuations.

Geothermal projects that we plan to develop in the United States as part of our growth plans may operate as "merchant" facilities and sell electricity without long-term PPAs for some or all of their generating capacity and output. Merchant projects require that we sell directly into the market on a short term basis and our success with respect to any such projects depends, in large part, upon prevailing market prices. Given the volatility of commodity power prices, to the extent we are unable to secure the benefit of a long-term PPAs for these assets, we cannot be sure that we will be able to sell any or all of the power generated by these facilities at commercially attractive rates or that these facilities will be able to operate profitably. This could lead to future impairments of our property, plant and equipment resulting in economic losses and liabilities, which could have a material adverse effect on our results of operations, financial condition or cash flows.

We may not be able to successfully conclude the transactions, integrate companies, which we acquired and may acquire in the future, which could materially and adversely affect our business, financial condition, future results and cash flow.

Our strategy is to continue to expand in the future, including through acquisitions to enhance our geothermal portfolio and accelerate growth in our Electricity segment. Integrating acquisitions is often costly, and we may not be able to successfully integrate our acquired companies with our existing operations without substantial costs, delays or other adverse operational or financial consequences. Completion of M&A transactions may be subject to fulfilling conditions and receiving regulatory approval. Integrating our acquired companies involves a number of risks that could materially and adversely affect our business, including:

- failure of the acquired companies to achieve the results we expect;
- inability to retain key personnel of the acquired companies;
- risks associated with unanticipated events or liabilities; and
- the difficulty of establishing and maintaining uniform standards, controls, procedures and policies, including accounting controls and procedures.

If any of our acquired companies suffers customer dissatisfaction or performance problems, this could adversely affect the reputation of our group of companies and could materially and adversely affect our business, financial condition, future results and cash flow.

We encounter intense competition in the energy storage market.

We are experiencing intense competition in the energy storage market from independent power producers, developers, and third-party investors. If we are unable, as a result of increased competition, to grow our energy storage portfolio while meeting our profitability goals, our business, financial condition, future results and cash flow could be materially and adversely affected.

Changes in costs and technology may significantly impact our business by making our power plants and products less competitive resulting in the inability to sign new PPAs for our Electricity segment and new supply and EPC contracts for our Products segment.

A basic premise of our business model is that generating baseload power at geothermal power plants produces electricity at a competitive price. However, traditional coal-fired systems and gas-fired systems may under certain economic conditions produce electricity at lower average prices than our geothermal plants. In addition, there are other technologies that can produce electricity such as hydroelectric systems, fuel cells, microturbines, wind turbines, energy storage systems and solar PV systems. Some of these alternative technologies currently produce electricity at higher average prices than our geothermal plants while others produce electricity at lower average prices. It is possible that technological advances and economies of scale will further reduce the cost of alternate methods of power generation. It is also possible that energy technologies will compete with our basic premise of a firm (non-intermittent) renewable baseload power source by combining renewable technologies with energy storage to provide an alternative to firm baseload energy. If this were to happen, the competitive advantage of our power plants may be significantly impaired and will cause reduction and/or inability to sign new PPAs for our Electricity segment and new supply and EPC contracts for our Products segment.

Our intellectual property rights may not be adequate to protect our business.

Our existing intellectual property rights may not be adequate to protect our business. We occasionally file patent applications which cover our products (mainly power units based on the ORC) and systems (mainly geothermal power plants and industrial waste heat recovery plants for electricity production). However, the patent application process is expensive, time-consuming and complex and we may not be able to prepare, file, prosecute, maintain and enforce all necessary or desirable patent applications at a reasonable cost or in a timely manner. Patents may be invalidated and patents may not be issued on the basis of our patent applications. Additionally, the scope of patent protection can be reinterpreted after issuance. Even if our patent applications do issue as patents, they may not issue in a form that is sufficiently broad to protect our technology, prevent competitors or other third parties from competing with us or otherwise provide us with any competitive advantage. In addition, any patents issued to us or for which we have use rights may be challenged, narrowed, invalidated or circumvented. Third parties may initiate opposition, interference, re-examination, post-grant review, inter partes review, nullification or derivation actions, or similar proceedings challenging the inventorship, validity, enforceability or scope of our patents. An adverse determination in any such proceeding or litigation could reduce the scope of, or invalidate our patent rights, allow third parties to commercialize our technology and compete directly with us, without payment to us, or result in our inability to commercialize our technology without infringing third-party patent rights. Such proceedings also may result in substantial cost and require significant time from our management, even if the eventual outcome is favorable to us. Our competitors or other third parties may also be able to circumvent our patents by developing similar or alternative technologies in a non-infringing manner. Consequently, we do not know whether any of our technology will be protectable or remain protected by valid and enforceable patents.

In order to safeguard our unpatented proprietary know-how, trade secrets and technology, we rely on a combination of trade secret protection and non-disclosure provisions in agreements with employees and third parties having access to confidential or proprietary information. These measures may not adequately protect us from disclosure, use, reverse engineering, infringement, misappropriation or other violation of our proprietary information and other intellectual property rights by third parties. Furthermore, non-disclosure provisions can be difficult to enforce and, even if successfully enforced, may not be entirely effective. In addition, we cannot guarantee that we have entered into non-disclosure agreements with all employees and third parties that have or may have had access to our trade secrets and other confidential or proprietary information.

Even if we adequately protect our intellectual property rights, litigation may be necessary to enforce these rights, which could result in substantial costs to us and a substantial diversion of management attention. Furthermore, attempts to enforce our intellectual property rights against third parties could also provoke these third parties to assert their own intellectual property or other rights against us, or result in a holding that invalidates or narrows the scope of our rights, in whole or in part. Our success and ability to compete also depends in part on our ability to operate without infringing, misappropriating or otherwise violating the intellectual or proprietary rights of third parties. While we have attempted to ensure that our technology and the operation of our business does not infringe other parties' patents and other intellectual property or proprietary rights, our competitors or other third parties may assert that certain aspects of our business or technology infringe upon, misappropriate or otherwise violate their intellectual property or proprietary rights. In addition, former employers of our current, former or future employees may assert claims that such employees have improperly disclosed to us the confidential or proprietary information of these former employers. Infringement, misappropriation or other intellectual property violation claims, regardless of merit or ultimate outcome, can be expensive, hard to predict and time-consuming and can divert management’s attention from our core business. An assertion of an intellectual property infringement, misappropriation or other violation claim against us may result in adverse judgments, settlements on unfavorable terms or

cause us to pay significant money damages, lose significant revenues, be prohibited from using the relevant technology or other intellectual property, or incur significant license, royalty or technology development expenses. Future litigation may also involve non-practicing entities or other intellectual property owners who have no relevant product offerings or revenue and against whom our own intellectual property may therefore provide little or no deterrence or protection.

We may experience difficulties implementing and maintaining our new enterprise resource planning system

We purchased and in early 2023 implemented a new enterprise resource planning ("ERP") system. ERP implementations are complex and time-consuming. The ERP system is critical to our ability to provide important information to our management, obtain and deliver products, provide services and customer support, send invoices and track payments, fulfill contractual obligations, accurately maintain books and records, provide accurate, timely and reliable reports on our financial and operating results or otherwise file our financial statements with the SEC and operate our business. ERP implementations also require transformation of business and financial processes in order to reap the benefits of the ERP system; any such transformation involves risks inherent in the conversion to a new computer system, including loss of information and potential disruption to our normal operations. In addition, any disruptions, delays or deficiencies in the ongoing maintenance of the new ERP system could adversely affect our ability to process orders, ship products, provide services and customer support, send invoices and track payments, fulfill contractual obligations, accurately maintain books and records, provide accurate, timely and reliable reports on our financial and operating results, or otherwise file our financial statements with the SEC and operate our business. Additionally, if the new system does not operate as intended, the effectiveness of our internal control over financial reporting could be adversely affected or our ability to assess it adequately could be delayed.

A cyber-incident, cyber security breach, severe natural event or physical attack on our operational networks and information technology systems could have a material adverse effect on our financial condition, results of operations, liquidity and cash flows.

We rely on information technology systems that allow us to create, store, retain, transmit and otherwise process proprietary and sensitive or confidential information, including our business and financial information, and personal information regarding our employees and third-parties. We also rely on our operational technology systems to manufacture equipment for our energy projects, operate our power plants and provide our services. In addition, we often rely on third-party vendors to host, maintain, modify and update our systems.

Our and our third-party vendors' technology systems can be damaged by malicious events such as cyber and physical attacks, computer viruses, malicious and destructive code, phishing attacks, denial of service or information, as well as security breaches, natural disasters, fire, power loss, telecommunications failures, employee misconduct, human error, and third parties such as traditional computer hackers, persons involved with organized crime or foreign state or foreign state-supported actors. Furthermore, our disaster recovery planning may not be sufficient for all situations. Any failure, disruptions to or decrease in the functionality of our or our third-party vendors' operational and information technology networks could impact our ability to maintain effective internal controls over financial reporting, cause harm to the environment, the public or our employees, and significantly disrupt and damage our assets and operations or those of third parties.

We and our third-party vendors have been, and may in the future be, subject to breaches and attempts to gain unauthorized access to our information technology systems or sensitive or confidential data, or to disrupt our operations. To date, none of these breaches or attempts has, individually or in the aggregate, resulted in a security incident with a material effect on our operations or our financial condition, results of operations, liquidity, or cash flows. Despite implementation of security and control measures, we and our third-party vendors have not always been able to, and there can be no assurance that we or our third-party vendors will be able to in the future, anticipate or prevent unauthorized access to our or our third-party vendors' operational technology networks, information technology systems or data, or the disruption of our or our third-party vendors' operations. The techniques used to obtain unauthorized access to our and our third-party vendors' operational technology networks, information technology systems or data are constantly evolving and have become increasingly complex and sophisticated. Furthermore, such techniques change frequently and are often not detected until after they have been launched against a target. Therefore, we may be unable to anticipate these techniques and may not become aware in a timely manner of such a security breach, which could exacerbate any damage we experience. Such events could cause interruptions in the operation of our business, damage our operational technology networks and information technology systems, subject us to significant expenses, remediation costs, litigation, disputes, claims by third parties and regulatory actions or investigations that could result in damages, material fines and penalties, and harm to our reputation, any of which could have a material adverse effect on our financial condition, results of operations, liquidity, and cash flows. We may maintain cyber liability insurance that covers certain damages caused by cyber incidents. However, there is no guarantee that adequate insurance will continue to be available at rates that we believe are reasonable or that the costs of responding to and recovering from a cyber incident will be covered by insurance or recoverable in rates.

In addition, we are subject to various legislation, regulations, directives and guidelines from federal, state, local and foreign agencies, such as FERC, that are intended to strengthen cybersecurity measures required for information and operational technology and critical energy infrastructure and that apply to the collection, use, retention, protection, disclosure, transfer and other processing of personal information. In California, for example, the California Consumer Privacy Act (the "CCPA") imposes obligations on businesses to be transparent with their data privacy practices and vests consumers with rights to access and delete the personal information held by businesses. These requirements will become even more robust under the California Privacy Rights Act (the "CPRA") which amends the CCPA to, among other things, extend consumer rights and business obligations to employees, and will become effective on January 1, 2023. These cybersecurity, data protection and privacy law regimes continue to evolve and may result in ever-increasing public scrutiny and escalating levels of capital expenditures, regulatory enforcement, sanctions and fines and increased costs for compliance. We have instituted security measures and safeguards to protect our operational systems and information technology assets, including certain safeguards required by FERC. Despite our implementation of security measures and safeguards, any failure to comply with FERC or any of these legal requirements could result in enforcement action against us, including fines, imprisonment of company officials and public censure, any of which could harm our reputation and have a material adverse effect on our financial condition, results of operations, liquidity, and cash flows.

Risks Related to Governmental Regulations, Laws and Taxation

Our financial performance could be adversely affected by changes in the legal and regulatory environment affecting our operations.

All of our power plants are subject to extensive regulation, and therefore changes in applicable laws or regulations, or interpretations of those laws and regulations, could result in increased compliance costs, the need for additional capital expenditures or the reduction of certain benefits currently available to our power plants. The structure of domestic and foreign energy regulation currently is, and may continue to be, subject to challenges, modifications, the imposition of additional regulatory requirements, and restructuring proposals. We or our power purchasers may not be able to obtain all regulatory approvals that may be required in the future, or any necessary modifications to existing regulatory approvals, or maintain all required regulatory approvals. In addition, the cost of operation and maintenance and the operating performance of geothermal power plants may be adversely affected by changes in certain laws and regulations, including tax laws.

Any changes to applicable laws and regulations or interpretations of those laws and regulations could significantly increase the regulatory-related compliance, tax and other expenses incurred by the power plants and could significantly reduce or entirely eliminate the revenues generated by one or more of the power plants, which in turn would reduce our net income and could materially and adversely affect our business, financial condition, future results and cash flow.

Pursuant to the terms of some of our PPAs with investor-owned electric utilities and publicly-owned electric utilities in states that have renewable portfolio standards, the failure to supply the contracted capacity and energy thereunder may result in the imposition of penalties.

Pursuant to the terms of certain of our PPAs, we may be required to make payments to the relevant power purchaser under certain conditions, such as shortfall in delivery of renewable energy and energy credits, and not meeting certain performance threshold requirements, as defined in the relevant PPA. The amount of payment required is dependent upon the level of shortfall in delivery or performance requirements and is recorded in the period the shortfall occurs. In addition, if we do not meet certain minimum performance requirements, the capacity of the relevant power plant may be permanently reduced. Any or all of these considerations could materially and adversely affect our business, financial condition, future results and cash flow.

If any of our domestic power plants loses its current Qualifying Facility status under PURPA, or if amendments to PURPA are enacted that substantially reduce the benefits currently afforded to Qualifying Facilities, our domestic operations could be adversely affected.

Most of our domestic power plants are Qualifying Facilities pursuant to PURPA, which largely exempts the power plants from the FPA, and certain state and local laws and regulations regarding rates and financial and organizational requirements for electric utilities.

If any of our domestic power plants were to lose its Qualifying Facility status, such power plant could become subject to the full scope of the FPA and applicable state regulation. The application of the FPA and other applicable state regulation to our domestic power plants could require our operations to comply with an increasingly complex regulatory regime that may be costly and greatly reduce our operational flexibility.

If a domestic power plant were to lose its Qualifying Facility status, it would become subject to full regulation as a public utility under the FPA, and the rates charged by such power plant pursuant to its PPAs may be subject to the review and approval of FERC. FERC, upon such review, may determine that the rates currently set forth in such PPAs are not appropriate and may set rates that are lower than the rates currently charged. In addition, FERC may require that the affected domestic power plant refund amounts previously paid by the relevant power purchaser to such power plant. Even if a power plant does not lose its Qualifying Facility status, pursuant to regulations issued by FERC for Qualifying Facility power plants above 20 MW, if a power plant's PPA is terminated or otherwise expires, and the subsequent sales are not made pursuant to a state's implementation of PURPA, that power plant will become subject to FERC's ratemaking jurisdiction under the FPA. Moreover, a loss of Qualifying Facility status also could permit the power purchaser, pursuant to the terms of the particular PPA, to cease taking and paying for electricity from the relevant power plant or, consistent with FERC precedent, to seek refunds of past amounts paid. This could cause the loss of some or all of our revenues payable pursuant to the related PPAs, result in significant liability for refunds of past amounts paid, or otherwise impair the value of our power plants. If a power purchaser were to cease taking and paying for electricity or seek to obtain refunds of past amounts paid, there can be no assurance that the costs incurred in connection with the power plant could be recovered through sales to other purchasers or that we would have sufficient funds to make such payments. In addition, the loss of Qualifying Facility status would be an event of default under the financing arrangements currently in place for some of our power plants, which would enable the lenders to exercise their remedies and enforce the liens on the relevant power plant.

Pursuant to the Energy Policy Act of 2005, FERC also has the authority to prospectively lift the mandatory obligation of a utility under PURPA to offer to purchase the electricity from a Qualifying Facility if the utility operates in a workably competitive market. Our existing PPAs between a Qualifying Facility and a utility are not affected. If, in addition to the California utilities' waiver of the mandatory purchase obligation for QF projects that exceed 20 MW described in the risk factor above, the utilities in the other regions in which our domestic power plants operate were to be relieved of the mandatory purchase obligation, they would not be required to purchase energy from the power plant in the region under Federal law upon termination of the existing PPA or with respect to new power plants, which could materially and adversely affect our business, financial condition, future results and cash flow. Moreover, FERC has the authority to modify its regulations relating to the utility's mandatory purchase obligation under PURPA, which could result in the reduction in the purchase obligation of California and other utilities to a level below 5 MW, or the elimination of the purchase obligation. If that were to occur it could materially and adversely affect our business, financial condition, future results and cash flow.

The PURPA and QF described risks identified above are not likely to affect our Nevada based facilities that entered into PPAs with NV Energy as the off-taker after Nevada initially adopted its RPS in 2001. Those PPAs and the related rates agreed to for such facilities by the off-taker were not based upon PURPA or a QF mandated rate but were instead adopted as a result of a competitive bidding process and approved as part of the off-taker's integrated resource planning process and in order for the off-taker to comply with Nevada's RPS. While those PPAS were initially required to file for QF or EWG status with the FERC, the PPAs and their related prices for the term of the PPA were not approved by the FERC pursuant to PURPA. The PURPA and QF risks described above also are not likely to affect our Nevada and California based projects that have their PPAs with the SCPPA because SCPPA is not a regulated public utility under PURPA.

The reduction or elimination of government incentives could adversely affect our business, financial condition, future results and cash flows.

Construction and operation of our geothermal power plants and recovered energy-based power plants has benefited, and may benefit in the future, from public policies and government incentives that support renewable energy and enhance the economic feasibility of these projects in regions and countries where we operate. On August 16, 2022, the US President signed into law the Inflation Reduction Act (IRA), which contains tax incentives and other provisions that incentivize investment, development and deployment of renewable energy sources and technologies. We expect that the construction and operations of our geothermal power plants, recovered energy-based power plants, battery energy storage systems and solar PV will benefit in the future from the IRA and enhance the economic feasibility of projects in the United States.

There are additional public policy and government incentives that currently benefit and that we expect will benefit the Company in the future in countries outside of the United States as well as States within the United States. The incentives in these jurisdictions include accelerated depreciation tax benefits, rebates, mandated feed-in tariffs and other similar incentives.

The availability and continuation of these public policies and government incentives have a significant effect on the economics and viability of our development program and continued construction of new geothermal, recovered energy-based, solar PV facilities and, recently, energy storage projects. Any changes to such public policies, or any reduction in or elimination or expiration of such government incentives, could affect us in different ways. For example, any reduction in, termination or expiration of renewable portfolio standards may result in less demand for generation from our geothermal and recovered energy-based, power plants. Any reductions in, termination or expiration of other government incentives could reduce the economic viability of, and cause us to reduce, the construction of new geothermal, recovered energy-based, solar PV or any other power plants. Policies supporting or deregulating the exploration, production and use of fossil fuels may create regulatory uncertainty in the renewable energy industry. Similarly, any such changes that affect the geothermal energy industry in a manner that is different from other sources of renewable energy, such as wind or solar, may put us at a competitive disadvantage compared to businesses engaged in the development, construction and operation of renewable power projects using such other resources. Any of the foregoing outcomes could have a material adverse effect on our business, financial condition, future results, and cash flows.

We are a holding company and our cash depends substantially on the performance of our subsidiaries and the power plants they operate, most of which are subject to restrictions and taxation on dividends and distributions.

We are a holding company whose primary assets are our ownership of the equity interests in our subsidiaries. We conduct no other business and, as a result, we depend entirely upon our subsidiaries' earnings and cash flow.

The agreements pursuant to which some of our subsidiaries have incurred debt restrict the ability of these subsidiaries to pay dividends, make distributions or otherwise transfer funds to us prior to the satisfaction of other obligations, including the payment of operating expenses, debt service and replenishment or maintenance of cash reserves. In the case of some of our power plants that are owned jointly with other partners, there may be certain additional restrictions on dividend distributions pursuant to our agreements with those partners. In all of the foreign countries where our existing power plants are located, dividend payments to us may also be subject to withholding taxes. Each of the events described above may reduce or eliminate the aggregate amount of cash we can receive from our subsidiaries.

The costs of compliance with federal, state, local and foreign environmental laws and our ability to obtain and maintain environmental permits and governmental approvals required for development, construction and/or operation may result in liabilities, costs and delays in construction (as well as any fines or penalties that may be imposed upon us in the event of any non-compliance or delays with such laws or regulations) that could materially and adversely affect our business, financial condition, future results and cash flow and these liabilities and costs may increase in the future.

Our operations are subject to extensive environmental laws, ordinances and regulations, which may cause us to incur significant costs and liabilities. These laws, ordinances and regulations can be subject to change and such change could result in increased compliance costs, the need for additional capital expenditures, or otherwise adversely affect us. In addition, our power plants are required to comply with numerous federal, state, local and foreign statutory and regulatory environmental standards and to maintain numerous environmental permits and governmental approvals required for development, construction and/or operation. We may not be able to renew, maintain or obtain all environmental permits and governmental approvals required for the continued operation or further development and construction of the power plants. We have not yet obtained certain permits and government approvals required for the completion and successful operation of power plants under development, construction or enhancement. Our failure to renew, maintain or obtain required permits or governmental

approvals, including the permits and approvals necessary for operating power plants under development, construction or enhancement, could cause our operations to be limited or suspended resulting in fines under the PPA.

We may also be subject to litigation seeking to rescind or delay our receipt of environmental permits and governmental approvals. See "Litigation, legal proceedings, regulatory investigations or other administrative proceedings could expose us to significant liabilities and reputational damage that could have a material adverse effect on us" for additional information.

In addition, some of the environmental permits and governmental approvals that have been issued to the power plants contain conditions and restrictions, including restrictions or limits on emissions and discharges of pollutants and contaminants, or may have limited terms. If we fail to satisfy these conditions or comply with these restrictions, or with any statutory or regulatory environmental standards, we may become subject to regulatory enforcement action and the operation of the power plants could be adversely affected or be subject to fines, penalties or additional costs or other sanctions, including the imposition of investigatory or remedial obligations of the issuance of orders limiting or prohibiting our operations.

We could be exposed to significant liability for violations of hazardous substances laws because of the use or presence of such substances at our power plants.

Our power plants are subject to numerous domestic and foreign federal, regional, state and local statutory and regulatory standards relating to the generation, handling, transportation, use, storage, treatment and disposal of hazardous substances. We use butane, pentane, industrial lubricants, and other substances at our power plants which are or could become classified as hazardous substances. If any hazardous substances are found to have been released into the environment at or by the power plants in concentrations that exceed regulatory limits, we could become liable for the investigation and removal of those substances, regardless of their source and time of release. If we fail to comply with these laws, ordinances or regulations (or any change thereto), we could be subject to civil or criminal liability, the imposition of liens or fines, and cessation of operations, large expenditures to bring the power plants into compliance or other sanctions. Furthermore, under certain federal and states laws in the United States, we can be held liable for the cleanup of releases of hazardous substances at any of our current or former facilities or at any other locations where we arranged for disposal of those substances, even if we did not cause the release at that location or if the release complied with applicable law at the time it occurred. Liability under these laws can be joint and several. The cost of any remediation activities in connection with a spill or other release of such substances could be significant and could expose us to significant liability.

U.S. federal, state and international income tax law changes could adversely affect us

The Company continuously monitors and examines the impact of U.S. and international tax law changes, such as the Tax Act, CARES and similar tax law changes internationally, in order to determine the impact it may have on our business. The overall impact of the global tax law changes is uncertain, and our business, financial condition, future results and cash flow, as well as our stock price, could be adversely affected.

Litigation, legal proceedings, regulatory investigations or other administrative proceedings could expose us to significant liabilities and reputational damage that could have a material adverse effect on us.

We are involved in the ordinary course of business and otherwise in a number of lawsuits involving, among other matters, employment, commercial, and environmental issues, and other claims for injuries and damages, including the lawsuit filed by the Center for Biological Diversity and Fallon Paiute-Shoshone Tribe on December 15, 2021 in the U.S. District Court for the District of Nevada, which seeks to revoke the BLM's approval of the development of our Dixie Meadows geothermal power plant in Nevada on the basis that the BLM failed to adequately consider in its final environmental review the project's impact on the tribe's interests in performing traditional religious practices and the habitat of a species of toad native to the area. We evaluate litigation claims and legal proceedings to assess the likelihood of unfavorable outcomes and to estimate, if possible, the amount of potential losses. Based on these evaluations and estimates, when required by applicable accounting rules, we establish reserves and disclose the relevant litigation claims or legal proceedings, as appropriate. These evaluations and estimates are based on the information available to management at the time and involve a significant amount of judgment. Actual outcomes or losses may differ materially from current evaluations and estimates. The settlement or resolution of such claims or proceedings may have a material adverse effect on us. We use appropriate means to contest litigation threatened or filed against us, but the litigation environment poses a significant business risk**.**

We are also involved in the ordinary course of business in regulatory investigations and other administrative proceedings, and we are exposed to the risk that we may become the subject of additional regulatory investigations or administrative proceedings. For example, we are providing information to the SEC and Department of Justice ("DOJ") related to their investigation into certain claims made in a report published by a short seller regarding the Company's compliance with anti-corruption laws and formed a Special Committee of independent directors, which worked with outside legal counsel to investigate the claims made.

Risks Related to Economic and Financial Conditions

We may be unable to obtain the additional financing we need to pursue our growth strategy and any future financing we receive may be less favorable to us than our current financing arrangements, either of which may adversely affect our ability to expand our operations.

Some of our geothermal power plants have been financed using leveraged financing structures, consisting of non-recourse or limited recourse debt obligations. Each of our projects under development or construction and those projects and businesses we may seek to acquire, or construct will require substantial capital investment. Our continued access to capital on acceptable or favorable terms to us is necessary for the success of our growth strategy, particularly in enhancing our portfolio through M&A activities. Our attempts to obtain future financings may not be successful or on favorable terms.

In recent years, we have also increased our corporate recourse debt at the holding company level due to our ability to obtain improved economic terms, and in June 2022 we issued, $431.25 million aggregate principal amount of 2.50% convertible senior notes due 2027, which we refer to as the "Notes". Our existing and any future indebtedness may make it more difficult for us to refinance or borrow additional funds in the future, limiting our ability to pursue our growth strategy.

Market conditions and other factors may not permit future project and acquisition financings on terms similar to those our subsidiaries have previously received. Our ability to arrange for financing on a substantially non-recourse or limited recourse basis, and the costs of such financing, are dependent on numerous factors, including general economic conditions, conditions in the global capital and credit markets, investor confidence, the continued success of current power plants, the credit quality of the power plants being financed, the political situation in the country where the power plant is located, and the continued existence of tax and securities laws which are conducive to raising capital. If we are not able to obtain financing for our power plants on a substantially non-recourse or limited recourse basis, we may have to finance them using recourse capital such as direct equity investments or the incurrence of additional debt by us.

Also, in the absence of favorable financing options, we may decide not to build new plants or acquire facilities from third parties. Any of these alternatives could have a material adverse effect on our growth prospects.

We may also need additional financing to implement our strategic plan. For example, our cash flow from operations and existing liquidity facilities may not be adequate to finance any acquisitions we may want to pursue or new technologies we may want to develop or acquire. Financing for acquisitions or technology development activities may not be available on the non-recourse or limited recourse basis we have historically used for our business, or on other terms we find acceptable.

Our debt obligations may adversely affect our ability to raise additional capital and will be a burden on our future cash resources, particularly if we elect to settle these obligations in cash upon conversion or upon maturity or required repurchase.

Our ability to meet our payment obligations under the Note, depends on our future cash flow performance. This, to some extent, is subject to general economic, financial, competitive, legislative and regulatory factors, as well as other factors that may be beyond our control. There can be no assurance that our business will generate positive cash flow from operations, or that additional capital will be available to us, in an amount sufficient to enable us to meet our debt payment obligations and to fund other liquidity needs. If we are unable to generate sufficient cash flow to service our debt obligations, we may need to refinance or restructure our debt, sell assets, reduce or delay capital investments, or seek to raise additional capital. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations. As a result, we may be more vulnerable to economic downturns, less able to withstand competitive pressures and less flexible in responding to changing business and economic conditions.

Our foreign power plants and foreign manufacturing operations expose us to risks related to fluctuations in currency rates, which may reduce our profits from such power plants and operations.

Risks attributable to fluctuations in currency exchange rates can arise when any of our foreign subsidiaries incur operating or other expenses in one type of currency but receive revenues in another. In such cases, an adverse change in exchange rates can reduce such subsidiary's ability to meet its debt service obligations, reduce the amount of cash and income we receive from such foreign subsidiary or increase such subsidiary's overall expenses. In addition, the imposition by foreign governments of restrictions on the transfer of foreign currency abroad, or restrictions on the conversion of local currency into foreign currency, would have an adverse effect on the operations of our foreign power plants and foreign manufacturing operations, and may limit or diminish the amount of cash and income that we receive from such foreign power plants and operations.

Our power plants have generally been financed through a combination of our corporate funds and limited or non-recourse project finance debt and lease financing. If our project subsidiaries default on their obligations under such limited or non-recourse debt or lease financing, we may be required to make certain payments to the relevant debt holders, and if the collateral supporting such leveraged financing structures is foreclosed upon, we may lose certain of our power plants.

Our power plants have generally been financed using a combination of our corporate funds and limited or non-recourse project finance debt or lease financing. Limited recourse project finance debt refers to our additional agreement, as part of the financing of a power plant, to provide limited financial support for the power plant subsidiary in the form of limited guarantees, indemnities, capital contributions and agreements to pay certain debt service deficiencies. Non-recourse project finance debt or lease financing refers to financing arrangements that are repaid solely from the power plant's revenues and are secured by the power plant's physical assets, major contracts, cash accounts and, in many cases, our ownership interest in the project subsidiary. If our project subsidiaries default on their obligations under the relevant debt documents, creditors of a limited recourse project financing will have direct recourse to us, to the extent of our limited recourse obligations, which may require us to use distributions received by us from other power plants, as well as other sources of cash available to us, in order to satisfy such obligations. In addition, if our project subsidiaries default on their obligations under the relevant debt documents (or a default under such debt documents arises as a result of a cross-default to the debt documents of some of our other power plants) and the creditors foreclose on the relevant collateral, we may lose our ownership interest in the relevant project subsidiary or our project subsidiary owning the power plant would only retain an interest in the physical assets, if any, remaining after all debts and obligations were paid in full.

Possible fluctuations in the cost of construction, raw materials, commodities and drilling may materially and adversely affect our business, financial condition, future results, and cash flow.

Our manufacturing operations are dependent on the supply of various raw materials, including primarily steel and aluminum, commodities, vessels and industrial equipment components that we use. We currently obtain all such raw materials, commodities and equipment at prevailing market prices. We are not dependent on any one supplier and do not have any long-term agreements with any of our suppliers. Global events such as COVID-19 resulted in a shutdown of certain businesses at the beginning of the outbreak, which have since reopened, and resulted in delays in the supply and cost increase of raw materials and components that we purchased for our equipment manufacturing and in the cost increase of marine and other transportation, which delays and cost increases are beginning to moderate. Additionally, Russia's ongoing invasion of and military attacks on Ukraine, including indirect impacts as a result of sanctions and economic disruption, has complicated and may continue to further complicate existing supply chain constraints. Our development activity is also impacted by the supply delay and cost increase of storage batteries and Solar PV panels. Further cost increases of such raw materials, commodities and equipment could adversely affect our profit margins.

Our commodity derivative activity may limit potential gains, increase potential losses, result in earnings volatility and involve other risks.

We enter, from time to time, into commodity derivative contracts to manage our price exposure to our energy storage segment revenue. While these transactions are intended to limit our exposure to the adverse effects of fluctuations of storage services prices, they may also limit our ability to benefit from favorable changes in market conditions, and may subject us to periodic earnings volatility in the instances where we do not seek hedge accounting for these transactions or if the correlation between the hedge and the actual performance of the asset will be lower. Also, in connection with such derivative transactions, we may be required to make cash payments to maintain margin accounts and to settle the contracts at their value upon termination.

Finally, this activity exposes us to potential risk of counterparties to our derivative contracts failing to perform under the contracts. As a result, the effectiveness of our risk management could have an impact on our business, results of operations and cash flows.

We have incurred substantial indebtedness that may decrease our business flexibility, access to capital, and/or increase our borrowing costs, and we may still incur substantially more debt, which may adversely affect our operations and financial results.

In June 2022, we issued $431.25 million aggregate principal amount of 2.50% convertible senior notes due 2027, which we refer to as the Notes. As of December 31, 2022, we had $431.3 million outstanding aggregate principal amount of Notes. Our indebtedness may limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions or other general business purposes, limit our ability to use our cash flow or obtain additional financing for future working capital, capital expenditures, acquisitions or other general business purposes, require us to use a substantial portion of our cash flow from operations to make debt service payments, limit our flexibility to plan for, or react to, changes in our business and industry, place us at a competitive disadvantage compared to our less leveraged competitors and increase our vulnerability to the impact of adverse economic and industry conditions.

We may issue additional shares of our common stock in connection with conversions of the Notes, and thereby dilute our existing stockholders and potentially adversely affect the market price of our common stock.

In the event that the Notes are converted and the conversion value exceeds $1,000 per $1,000 principal amount of Notes, the ownership interests of existing stockholders will be diluted, and any sales in the public market of any shares of our common stock issuable upon such conversion could adversely affect the prevailing market price of our common stock. In addition, the anticipated conversion of the Notes could depress the market price of our common stock.

The fundamental change provisions of the Notes may delay or prevent an otherwise beneficial takeover attempt of us.

If the Company undergoes a “fundamental change”, subject to certain conditions, holders may require the Company to repurchase for cash all or part of their Notes at a fundamental change repurchase price equal to 100% of the principal amount of the Notes to be repurchased, plus accrued and unpaid interest to, but excluding, the fundamental change repurchase date. In addition, if such fundamental change also constitutes a “make-whole fundamental change”, the conversion rate for the Notes may be increased upon conversion of the Notes in connection with such “make-whole fundamental change”. Any increase in the conversion rate will be determined based on the date on which the “make-whole fundamental change” occurs or becomes effective and the price paid (or deemed paid) per share of our common stock in such transaction. Any such increase will be dilutive to our existing stockholders. Our obligation to repurchase the Notes or increase the conversion rate upon the occurrence of a make-whole fundamental change may, in certain circumstances, delay or prevent a takeover of us that might otherwise be beneficial to our stockholders.

The Capped Call Transactions may affect the value of the Notes and our common stock.

In connection with the issuance of the Notes, we entered into Capped Call Transactions with certain financial institutions. The Capped Call Transactions are expected generally to reduce or offset the potential dilution upon conversion of the Notes and/or offset any cash payments we are required to make in excess of the principal amount of converted Notes, as the case may be, with such reduction and/or offset subject to a cap.

From time to time, certain financial institutions (with which we entered into the Capped Call Transactions) or their respective affiliates may modify their hedge positions by entering into or unwinding various derivatives with respect to our common stock and/or purchasing or selling our common stock or other securities of ours in secondary market transactions

prior to the maturity of the Notes. This activity could also cause or avoid an increase or a decrease in the market price of our common stock.

The potential effect, if any, of these transactions and activities on the price of our common stock or Notes will depend in part on market conditions and cannot be ascertained at this time. Any of these activities could adversely affect the value of our common stock.

We are subject to counterparty risk with respect to the Capped Call Transactions.

All or some of the financial institutions (which are counterparties to the capped call transactions) might default under the Capped Call Transactions. Our exposure to the credit risk of the counterparties will not be secured by any collateral. Past global economic conditions have resulted in the actual or perceived failure or financial difficulties of many financial institutions. If an option counterparty becomes subject to insolvency proceedings, we will become an unsecured creditor in those proceedings with a claim equal to our exposure at the time under the capped call transactions with such option counterparty. Our exposure will depend on many factors but, generally, an increase in our exposure will be correlated to an increase in the market price and in the volatility of our common stock. In addition, upon a default by an option counterparty, we may suffer adverse tax consequences and more dilution than we currently anticipate with respect to our common stock. We can provide no assurance as to the financial stability or viability of the option counterparties.

We are exposed to swap counterparty credit risk that could materially and adversely affect our business, operating results, and financial condition.

We rely on cross-currency swap contracts to effectively manage our currency risk related to our Senior Unsecured Bonds - Series 4 issued in July 2020. Failure of any of our counterparties to perform under derivatives contracts could disrupt our hedging operations if the counterparties do not fulfill their obligations under the agreements, particularly if we were entitled to a termination payment under the terms of the contract that we did not receive, if we had to make a termination payment upon default of the counterparty, or if we were unable to reposition the swap with a new counterparty.

We may not be able to obtain sufficient insurance coverage to cover damages resulting from any damages to our assets and profitability including but not limited to natural disasters such as volcanic eruptions, lava flows, wind and earthquake, which could materially and adversely affect our business, operating results, and financial condition.

We maintain physical damage and business interruption insurance however, our business interruption and property damage insurance coverage may not be sufficient to cover all losses sustained as a result of natural disasters such as flood, volcanic eruptions, lava flows, wind and earthquake or any other insurable risk. In addition, insurance coverage may not continue to be available in the future at rates that we believe are reasonable or in amounts of coverage or with scope of coverage adequate to insure against future natural disasters. Following the May 2018 eruption of the Kilauea volcano in Hawaii, the full amount of our insurance claim for damages to our Puna power plant was denied and we experienced increased costs and difficulties in obtaining sufficient insurance coverage for natural disasters. Before the eruption in 2018, we obtained natural disasters business interruption and property damage insurance coverage of up to approximately $100 million compared to $30 million, with portions of the risk self-insured, secured in 2022 and 2023. An inability to obtain sufficient and adequate insurance to cover all book net equity may cause us to self-insure some or all of a particular location and losses, causing us to experience higher than expected insurance costs.

If insurance premiums or deductibles were to increase in the future, if certain types of insurance coverage were to become unavailable or cost prohibitive, if we were to have to increase the percentage of our self-insured insurance coverage or if we were to experience losses in excess of, or outside the scope of, our insurance coverage, such additional costs could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Risks Related to Force Majeure

Risks relating to public health epidemics, including the ongoing COVID-19 pandemic, have had, and may continue to have, an adverse impact on our business and financial results.

We face various risks relating to public health issues, including epidemics, pandemics, and other outbreaks, including the ongoing COVID-19 pandemic. The effects and potential effects of COVID-19 include, but are not limited to:

delays in permitting, its impact on general economic conditions, trade and financing markets, adverse impacts on customers' purchasing decisions, reduction in the demand for electricity and for our products, supply chain difficulties, an increase in the cost of raw materials, and significant uncertainty in the overall continuity in business operations. Also, the economics of some of projects may impacted by the rising inflation as the energy rate at some of our U.S. PPAs is not tied to CPI and has no escalation. We continue to monitor closely the impact of COVID-19 on all aspects of our business and geographies, including its impact on our employees, customers, and suppliers. The extent to which the COVID-19 pandemic may continue to affect our business will depend on continued developments, such as the emergence of new variants and status of governmental measures to combat it, which are uncertain and cannot be predicted. Even after the COVID-19 pandemic has subsided, we may continue to suffer an adverse effect on our business due to possible longer-term global economic effects of COVID-19, including any economic recession. In addition, a resurgence of COVID-19 cases or an emergence of additional variants or strains could cause other widespread or more severe impacts depending on where infection rates are highest.

In addition, the impact of COVID-19 on macroeconomic conditions may impact the proper functioning of financial and capital markets, foreign currency exchange rates, commodity and interest rates. Any of the events described above could amplify the other risks and uncertainties described in this report and could materially adversely affect our business, financial condition, results of operations and/or stock price.

The existence of a prolonged force majeure event or a forced outage affecting a power plant, or the transmission systems could reduce our net income and materially and adversely affect our business, financial condition, future results and cash flow.

The operation of our subsidiaries' geothermal power plants is subject to a variety of risks, including events such as fires, explosions, earthquakes, landslides, floods, severe storms, volcanic eruptions, lava flow or other similar events. If a power plant experiences an occurrence resulting in a force majeure event, although our subsidiary that owns that power plant would be excused from its obligations under the relevant PPA, the relevant power purchaser may not be required to make any capacity and/or energy payments with respect to the affected power plant for as long as the force majeure event continues and, pursuant to certain of our PPAs, will have the right to prematurely terminate the PPA. Additionally, to the extent that a forced outage has occurred, and if as a result the power plant fails to attain certain performance requirements under certain of our PPAs, the power purchaser may have the right to permanently reduce the contract capacity (and correspondingly, the amount of capacity payments due pursuant to such agreements in the future), seek refunds of certain past capacity payments, and/or prematurely terminate the PPA. As a consequence, we may not receive any net revenues from the affected power plant other than the proceeds from any business interruption insurance that applies to the force majeure event or forced outage after the relevant waiting period and may incur significant liabilities in respect of past amounts required to be refunded.

On May 3, 2018, the Kilauea volcano located in close proximity to our Puna 38 MW geothermal power plant in the Puna district of Hawaii's Big Island erupted following a significant increase in seismic activity in the area. The lava ultimately covered the wellheads of three geothermal wells, monitoring wells and the substation of the Puna complex and an adjacent warehouse that stored a drilling rig that was also consumed by the lava. We resumed operations and the Puna power plant is operating at approximately 23- 25 MW.

In addition to our power plant in Puna, Hawaii, our power plant in Amatitlan, Guatemala is located in proximity to an active volcano. As a result of recent events impacting our Puna facility, we cannot be certain how investors will assess the risks to which our facilities are subject and whether this assessment will adversely impact perceptions of our business and our share price.

Threats of terrorism may impact our operations in unpredictable ways and could adversely affect our business, financial condition, future results and cash flow.

Our operations and facilities, in particular, our generation and transmission facilities, information technology systems and other infrastructure facilities, systems and physical assets that we acquire, construct or develop, as well as those of third parties on which we rely, may be targets of terrorist acts and threats, as well as events occurring in response to or in connection with them, that could cause environmental repercussions, result in full or partial disruption of our operations. These operations

and facilities are also subject to natural disasters, public health crises, fire, power loss and telecommunication failures. Any of our assets or those of third-party vendors could be directly or indirectly affected by such events or activities. Any such terrorist acts, environmental repercussions or disruptions or natural disasters could result in a significant decrease in revenues or significant reconstruction or remediation costs, beyond what could be recovered through insurance policies, which could have a material adverse effect on the business, financial condition, results of operations and cash flows.

Risks Related to Ownership of Our Common Stock

Future equity issuances, including through our current or any future equity compensation plans, could result in dilution, which could cause the price of our shares of common stock to decline.

We may issue additional shares of our common stock in the future pursuant to current or future equity compensation plans, upon conversions of preferred stock or debt, including the Notes, or in connection with future acquisitions or financings. We may also seek to raise additional funds, finance acquisitions or develop strategic relationships by issuing additional shares of our common stock. If we choose to raise capital by selling shares of our common stock, or securities convertible into shares of our common stock, or additional shares are issued for the reasons described above or otherwise, the issuance could have a dilutive effect on the holders of our common stock and could have a material negative effect on the market price of our common stock.

A substantial percentage of our common stock is held by stockholders whose interests may conflict with the interests of our other stockholders.

As of December 31, 2022, ORIX holds 11.9% of our shares of common stock outstanding. Pursuant to the Governance Agreement between us and ORIX entered into in connection with this stock purchase transaction, based on its current level of ownership of our shares, ORIX has the right to designate one director to our Board for as long as ORIX and its affiliates collectively hold at least 5% of the voting power of all of our outstanding voting securities, the right to representation on certain committees of our Board as well as preemptive rights pursuant to the Governance Agreement. In addition, the Governance Agreement provides ORIX preemptive rights in the event we issue common stock or other securities that entitle the holder to vote for the election of directors. ORIX may also exercise certain registration rights pursuant to the Registration Rights Agreement, as amended, between us and ORIX.

As a result of these rights and ORIX's beneficial ownership of our common stock, ORIX could exert influence through its Board representation on our and our subsidiaries' business, operations and management, including our strategic plans, or, as a significant stockholder, on matters submitted to a vote of our stockholders, including mergers, consolidations and the sale of all or substantially all of our assets. This concentration of ownership of our common stock could delay or prevent proxy contests, mergers, tender offers, or other purchases of our common stock that might otherwise give our stockholders the opportunity to realize a premium over the then-prevailing market price for our shares. If ORIX requires us to register for sale the common stock held by ORIX or ORIX otherwise sells its common stock in the public markets, the price of our common stock may decline. This concentration of ownership may also adversely affect the liquidity of our common stock.

The price of our common stock may fluctuate substantially, and your investment may decline in value.

The market price of our common stock may be highly volatile and may fluctuate substantially due to many factors, including:

- actual or anticipated fluctuations in our results of operations including as a result of seasonal variations in our Electricity segment-based revenues or variations from year-to-year in our Product segment-based revenues;
- variance in our financial performance from the expectations of market analysts;
- conditions and trends in the end markets we serve, and changes in the estimation of the size and growth rate of these markets;
- our ability to integrate acquisitions;
- announcements of significant contracts by us or our competitors;
- changes in our pricing policies or the pricing policies of our competitors;
- restatements of historical financial results and changes in financial forecasts;
- loss of one or more of our significant customers;
- legislation;
- changes in market valuation or earnings of our competitors;
- the trading volume of our common stock;
- the trading of our common stock on multiple trading markets, which takes place in different currencies and at different times; and
- general economic conditions.

In addition, the stock market in general, and the NYSE and the market for energy companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of particular companies affected. These broad market and industry factors may materially harm the market price of our common stock, regardless of our operating performance. In the past, following periods of volatility in the market price of a company's securities, securities class-action litigation has often been instituted against that company. Such litigation, if instituted against us could result in substantial costs and a diversion of management's attention and resources, which could materially harm our business, financial condition, future results and cash flow. We are generally obliged under our bylaws, to the extent permitted under Delaware law, to indemnify our current and former officers who are named as defendants in these types of lawsuits. While a certain amount of insurance coverage is available for expenses or losses associated with these lawsuits, this coverage may not be sufficient for certain litigation. For information on our recently dismissed and ongoing securities class actions, see "Commitments and Contingencies" in Note 21 to the consolidated financial statements contained in Item 8 of this Annual Report.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We currently own our corporate offices at 6140 Plumas Street in Reno, Nevada 89519. We also occupy an approximately 807,000 square foot office and manufacturing facility located in the Industrial Park of Yavne, Israel, which we lease from the Israel Land Administration. See Item 13 — "Certain Relationships and Related Transactions". In Turkey, we established and leased a facility to locally produce power plant components to our local customers.

We believe that our current offices and manufacturing facilities will be adequate for our operations as currently conducted.

Each of our power plants is located on property leased or owned by us or one of our subsidiaries or is a property that is subject to a concession agreement.

Information and descriptions of our plants and properties are included in Item 1 — "Business", of this Annual Report.

ITEM 3. LEGAL PROCEEDINGS

The information required with respect to this item can be found under "Commitments and Contingencies" in Note 21 of the consolidated financial statements contained in Item 8 of this Annual Report and is incorporated by reference herein.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. *MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES*

Market for Our Common Stock

Our common stock has traded on the NYSE under the symbol "ORA" since November 11, 2004. Prior to November 11, 2004, there was no public market for our common stock. Effective on February 10, 2015, our common stock also began trading on the TASE under the same symbol.

Record Holders

As of February 23, 2023, there were 17 record holders of our common stock, including Cede & Co., the nominee of the Depository Trust Company. The number of record holders may not be representative of the number of beneficial owners of our common stock, whose shares are held in street name by banks, brokers and other nominees.

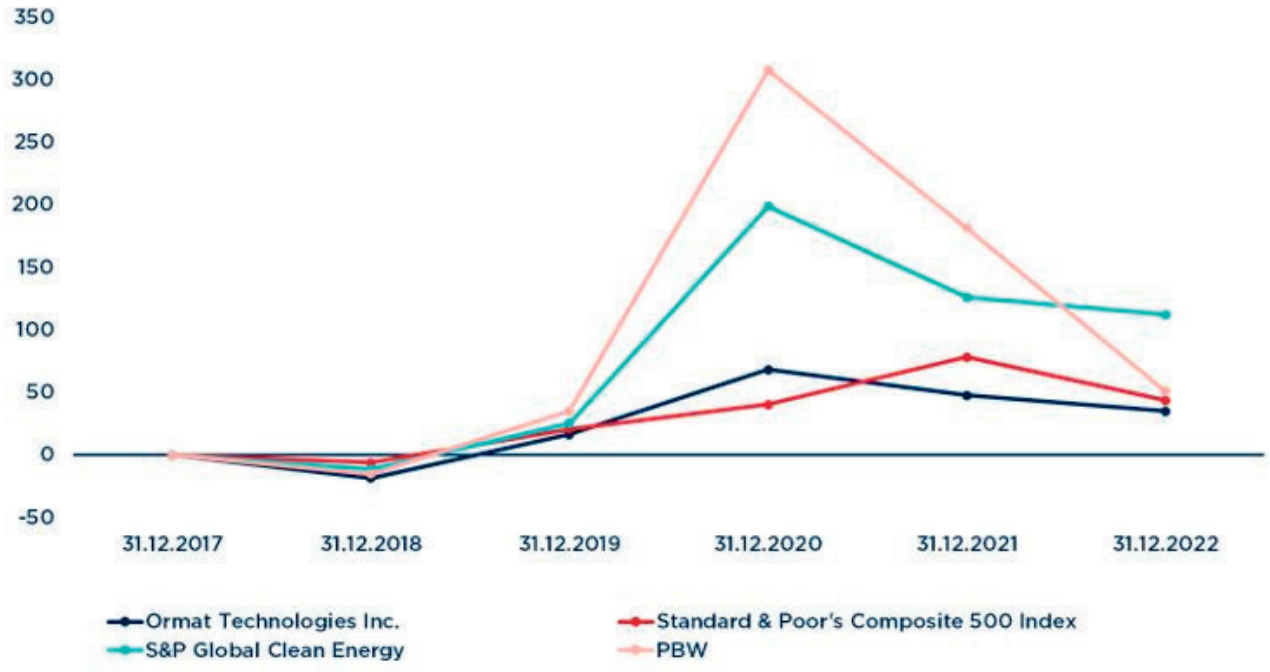
Dividend Policy

We have adopted a dividend policy pursuant to which we currently expect to distribute at least 20% of our annual profits available for distribution by way of quarterly dividends. In determining whether there are profits available for distribution, our Board will take into account our business plan and current and expected obligations, and no distribution will be made that in the judgment of our Board would prevent us from meeting such business plan or obligations.

Stock Performance Graph

The following performance graph represents the cumulative total shareholder return for the period December 30, 2017 through December 31, 2022 for our common stock, compared to the Standard and Poor's Composite 500 Index, S&P Global Clean Energy and PBW - Invesco WilderHill Clean Energy ETF. The chart assumes $100 was invested at the close of market on December 31, 2016 in our common stock and the stocks of the groups of companies shown below, and assumes the reinvestment of any dividends. The stock price performance on the following graph is not necessarily indicative of future stock price performance. On February 22, 2023, the closing price of our common stock as reported on the NYSE was $89.03 per share.

Comparison of Cumulative Returns for the Period December 31, 2016 through December 31, 2022



	2018	2019	2020	2021	2022
Ormat Technologies Inc	-18.20	16.50	68.40	47.90	35.20
Standard & Poor's Composite 500 Index.....	-6.20	20.80	40.50	78.30	43.60
S&P Global Clean Energy.....	-11.30	25.40	198.80	126.00	112.30
PBW - Invesco WilderHill Clean Energy ETF	-15.20	35.00	307.70	181.60	51.10

Equity Compensation Plan Information

For information on our equity compensation plan, refer to Item 12 — "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters".

Issuer Purchases of Equity Securities

None.

Sales of Unregistered Equity Securities

None.

ITEM 6. ***[RESERVED]***

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

You should read the following discussion and analysis of our results of operations, financial condition and liquidity in conjunction with our consolidated financial statements and the related notes. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report including information with respect to our plans and strategies for our business, statements regarding the industry outlook, our expectations regarding the future performance of our business, and the other non-historical statements contained herein are forward-looking statements. See "*Cautionary Note Regarding Forward-Looking Statements.*" *You should also review Item 1A —* "*Risk Factors*" *for a discussion of important factors that could cause actual results to differ materially from the results described herein or implied by such forward-looking statements.*

General

Overview of Fiscal Year 2022 Revenues

Recent Developments

The most significant recent developments for our Company and business during 2022 and 2023 to date are described below.

- In January 2023, we, together with PT Medco Power Indonesia ("Medco Power"), signed a Financing Agreement with PT Sarana Multi Infrastruktur (Persero) ("SMI") for development of the Ijen Geothermal Power Plant. The Ijen power plant will be developed in stages and the first phase of development is expected to generate 34 MW in 2025. MCG, a jointly owned company between Medco Power (51% equity share) and Ormat Technologies (49% equity share), will develop and operate the first geothermal power plant in East Java. Ormat also signed a contract as a key contractor on OEC supply for this project and secured $32.1 million to our backlog.

- In December 2022, we entered into a partnership agreement with a private investor, under which the private investor acquired membership interests in the CD4 Geothermal power plant project for an initial purchase price of approximately $50.3 million and for which it will pay additional installments that are expected to amount to approximately $7.3 million. The Company will continue to operate and maintain the power plant and will receive substantially all the distributable cash flow generated by the power plant, and the private investor receives substantially 99% of the tax attributes of the project.

- In November 2022, one of our subsidiaries entered into a note purchase agreement with the Prudential Insurance Company of America and other noteholders, pursuant to which we issued approximately $61.6 million in aggregate principal amount of senior secured notes. Proceeds of the notes were used to refinance the Prudential Capital Group - Idaho non-recourse loan, which had a remaining balance of approximately $16.0 million due in full in March 2023. For further details see discussion under Item 8 - Financial Statement and Supplementary Data.

- In October 2022, we signed a fixed price 15-year Energy Storage Power Purchase Agreement (ESPPA) with San Diego Gas & Electric (SDG&E) for the 80MW (320MWH) Bottleneck Battery Energy Storage System (BESS) located in the Central Valley of California. The ESPPA was recently approved by the CPUC. This project, once in operation, is expected to increase 2022 revenues in our battery storage segment by 50%.

- In August 2022, we signed with Contact Energy of New Zealand an EPC contract for a new maximum continuous performance 59MW geothermal power plant in New Zealand and signed a 6MW supply contract with Sarulla Operations Ltd. in Indonesia. The combined expected revenue of the two contracts is approximately $100 million.

- In July 2022, we announced the commercial operation of the CD4 30 MW geothermal power plant. The CD4 facility provides 7 MW of geothermal power to two Community Choice Aggregators, Silicon Valley Clean Energy and Central Coast Community Energy, each under a 10-year power purchase agreement ("PPA"), with a total of 14MW. In addition, the facility provides 16 MW of geothermal power to the Southern California Public Power Authority ("SCPPA") under a 25-year agreement.

- In July 2022, we completed two Solar PV power plants: (1) the 5 MW Steamboat Hills Solar plant in Nevada that is used for the ancillary needs of the Steamboat Hills geothermal power plant and will free a similar amount of MW to be sold from the geothermal resource to SCPPA under the SCPPA portfolio PPA; and (2) the 20MW Wister power plant in California that sells power under a long-term contract with San Diego Gas & Electric.

- In June 2022, the Company issued $375.0 million aggregate principal amount of its 2.5% convertible senior notes due 2027 (the "Notes"). The Notes were offered and sold in a private offering to qualified institutional buyers pursuant to Rule 144A under the Securities Act of 1933, as amended, pursuant to an indenture between the Company and U.S. Bank National Association, as trustee. Additionally, the Company granted the initial purchasers an option to purchase up to an additional $56.25 million aggregate principal amount of the Notes. The initial purchasers executed their option on June 27, 2022, thereby increasing the total aggregated principal amount of the Notes issued to $431.25 million. The Notes will mature on July 15, 2027, unless earlier converted, redeemed or repurchased. Interest will accrue on the Notes at a rate of 2.50% per year and will be payable semiannually in arrears on January 15 and July 15 of each year, beginning on January 15, 2023.

- In June 2022, we announced the commercial operation of the 5 MW/20 MWh Tierra Buena Battery Energy Storage System (Tierra Buena BESS). The Tierra Buena BESS will provide local resource adequacy to two Community Choice Aggregators (CCAs), Redwood Coast Energy Authority and Valley Clean Energy, at 2.5 MW each, under 10-year agreements. In addition, the facility will provide ancillary services and energy optimization through participation in merchant markets run by the California Independent System Operator (CAISO). The facility will connect to the adjacent Pacific Gas & Electric distribution circuit.

- In June 2022, we paid $221.9 million to prepay our senior unsecured Series 3 Bonds. The payment included the outstanding amount that was due in September 2022 and the interest related to the prepayment make-whole.

- In June 2022, we announced the execution of a PPA with California Community Power (CC Power), a Joint Powers Agency consisting of numerous CCAs. Energy deliveries under the portfolio PPA are expected to start in the second quarter of 2024, with the expectation that the entire portfolio covered under the new PPA will be online by the end of 2026. The portfolio PPA covers up to 125MW for a term of 20 years and is comprised entirely of new projects currently under construction or in development in Nevada and California. Capacity is subject to CAISO connection approval.

- In May 2022, we announced the execution of two PPAs with NV Energy. Under the first PPA, signed in 2021, NV Energy will purchase 25 MW of power over 25 years generated by the North Valley Geothermal Project, a new facility expected to come online by early 2023. Additionally, NV Energy will purchase up to 135 MW of power generated by a portfolio of the Company's new and existing geothermal power plants under a PPA signed in May. The portfolio PPA is subject to Public Utility Commission's approval.

- In April 2022, we commenced the commercial operation of the Tungsten Mountain 2 geothermal power plant, which sells an additional 13 MW to the Southern California Public Power Authority ("SCPPA") under the SCPPA portfolio PPA. The addition of Tungsten Mountain 2 to our existing Tungsten geothermal power plant increased our total Tungsten complex geothermal capacity to 42 MW.

- In March 2022, we signed a 15-year PPA with Peninsula Clean Energy, a CCA that provides more than 3,500 GWh of electricity to San Mateo County and the City of Los Banos in California. Under the terms of the PPA, Peninsula Clean Energy will purchase 26 MW of clean, renewable energy from Ormat's Heber 2 geothermal facility located in Imperial Valley, CA. This PPA marks the successful completion of Ormat's first ever solicitation for bids, with a request for bids (RFB) on the Heber 2 facility issued in July of 2021.

- Our 40 MW Heber 1 geothermal power plant located in California experienced an outage following a fire on February 25, 2022, that caused damage to the steam turbine-generator area. The Heber 1 power plant is part of the 81 MW Heber complex and sells its electricity under a long-term contract with the Southern California Public Power Authority. We decided not to rebuild the Heber 1 power plant and received all relevant insurance proceeds related to the event. We are currently optimizing the Heber complex through the repowering, which is expected to be completed in the second quarter of 2023.

Opportunities, Trends and Uncertainties

Different trends, factors and uncertainties may impact our operations and financial condition, including many that we do not or cannot foresee. However, we believe that our results of operations and financial condition for the foreseeable future will be primarily affected by the following trends, factors and uncertainties that are from time to time also subject to market cycles, in addition to those covered under "COVID-19 Update":

- There has been increased demand for energy generated from geothermal and other renewable resources in the United States as costs for electricity generated from renewable resources have become more competitive. Much of this is attributable to legislative and regulatory requirements and incentives, such as state RPS and federal tax credits such as PTCs or ITCs (which are discussed in more detail in the section entitled "Government Grants and Tax Benefits" below). We believe that future demand for energy generated from geothermal and other renewable resources in the United States will be driven primarily by further commitment to, and implementation of, state RPS and greenhouse gas reduction initiatives.

- The U.S. federal government has taken, and we expect it to continue to take, certain actions which are supportive of the industry for climate solutions. In August 2022, the President of the United States signed into law the IRA of 2022. The IRA includes several tax incentives to promote climate change mitigation and clean energy, electric vehicles, battery and energy storage manufacture or purchase. The U.S. presidential administration has taken immediate steps at the federal level which we believe signify support for climate solutions, including, but not limited to, rejoining the Paris Climate Accords and re-establishing a social price on carbon used in cost/benefit analysis for policy making. We expect this new administration, combined with a closely divided Congress, will usher in additional regulations supportive of the markets in which we invest.

- We expect that a variety of local governmental initiatives will create new opportunities for the development of new projects with the potential to realize higher returns on our equity as well as to create additional markets for our products. These initiatives include the award of long-term contracts to independent power generators, the creation of competitive wholesale markets for selling and trading energy, capacity and related energy products and the adoption of programs designed to encourage "clean" renewable and sustainable energy sources.

- In the Product segment, we see new opportunities for business in New Zealand, the U.S., Asia Pacific and Central and South America. We have experienced increased competition from binary power plant equipment suppliers including the major steam turbine manufacturers. While we believe that we have a distinct competitive advantage based on our technology, accumulated experience and current worldwide share of installed binary generation capacity, an increase in competition may impact our ability to secure new purchase orders from potential customers. The increased competition may also lead to further reductions in the prices that we are able to charge for our binary equipment.

- Russia's invasion of and military attacks on Ukraine, including indirect impacts as a result of sanctions and economic disruption, has complicated and may continue to further complicate existing supply chain constraints. Supply chain constraints may cause cost increases of raw materials, commodities and equipment that could adversely affect our profit margins.

- In the markets in which we operate, particularly in the U.S, there have been higher rates of inflation over the last year. While our U.S. contracts are not indexed to inflation most of our international-based contracts are indexed to inflation. If inflation continues to increase in our markets, it may increase our expenses such that our profit margins could be adversely impacted. It may also increase the costs of some of our development projects that could negatively impact their competitiveness.

- Interest rate increases for both short-term and long-term debt have increased sharply. Although our outstanding debt mostly bears fixed interest rates, as we refinance it, or borrow additional amounts, we may incur additional interest expense versus expiring loans.

Revenues

Sources of Revenues

We generate our revenues from the sale of electricity from our geothermal and recovered energy-based power plants; the design, manufacture and sale of equipment for electricity generation; the construction, installation and engineering of power plant equipment; and the sale of energy storage services and electricity from our operating energy storage facilities.

Electricity Segment. Revenues attributable to our Electricity segment are derived from the sale of electricity from our power plants pursuant to long-term PPAs. While approximately 89.1% of our Electricity revenues for the year ended December 31, 2022 were derived from PPAs with fixed price components, we have variable price PPAs in Hawaii, which provide for payments based on the local utilities' avoided cost. The avoided cost is the incremental cost that the power purchaser avoids by not having to generate such electrical energy itself or purchase it from others. In Hawaii, the prices paid for electricity pursuant to the 25 MW PPA for the Puna Complex in Hawaii change primarily as a result of variations in the price of oil as well as other commodities. In 2019, we signed a new PPA related to Puna with fixed prices, increased capacity and extended the term until 2052. We are currently negotiating economic amendments to the PPA which are subject to PUC approval.

Accordingly, our revenues from this power plant may fluctuate. Our Electricity segment revenues are also subject to seasonal variations, as more fully described in "Seasonality" below.

Our PPAs generally provide for energy payments alone, or energy and capacity payments. Generally, capacity payments are payments calculated based on the amount of time and capacity that our power plants are available to generate electricity. Energy payments, are payments calculated based on the amount of electrical energy delivered to the relevant power purchaser at a designated delivery point. Our more recent PPAs generally provide for energy payments alone with an obligation to compensate the off-taker for its incremental costs as a result of shortfalls in our supply.

Product Segment. Revenues attributable to our Product segment are based on the sale of equipment, engineering, procurement and construction contracts and the provision of various services to our customers. Product segment revenues fluctuate between periods, primarily based on our ability to receive customer orders, the status and timing of such orders, delivery of raw materials and the completion of manufacturing. Larger customer orders for our products are typically the result of our sales efforts, our participation in, and winning tenders or requests for proposals issued by potential customers in connection with projects they are developing and orders by returning customers. Such projects often take a significant amount of time to design and develop and are subject to various contingencies, such as the customer's ability to raise the necessary financing for a project. Consequently, we are generally unable to predict the timing of such orders for our products and may not be able to replace existing orders that we have completed with new ones. As a result, revenues from our Product segment fluctuate (sometimes extensively) from period to period.

Energy Storage Segment. Revenues attributable to our Energy Storage segment are generated by several grid-connected BESS facilities that we own and operate from selling energy, capacity and/or ancillary services in merchant markets like PJM Interconnect, ISO New England, ERCOT and CAISO. The revenues fluctuate over time since a large portion of such revenues are generated in the merchant markets, where price volatility is inherent. We recently signed a long-term tolling agreement that will secure fixed revenues for our Bottleneck 80MW/320MWh project in California.

We are pursuing the development of additional grid-connected BESS projects in multiple regions, with expected revenues coming from providing energy, capacity and/or ancillary services on a merchant basis, and/or through bilateral fixed contracts with load serving entities, investor owned utilities, publicly owned utilities and community choice aggregators. We may pursue financial instruments, where appropriate, to hedge some of the merchant risk.

Our management assesses the performance of our operating segments differently. In the case of our Electricity segment, when making decisions about potential acquisitions or the development of new projects, management typically focuses on the internal rate of return of the relevant investment, technical and geological matters and other business considerations. Management evaluates our operating power plants based on revenues, expenses, and EBITDA, and our projects that are under development based on costs attributable to each such project. Management evaluates the performance of our Product segment based on the timely delivery of our products, performance quality of our products, revenues and costs actually incurred to complete customer orders compared to the costs originally budgeted for such orders. We evaluate Energy Storage segment performance similar to the Electricity segment with respect to projects that we own and operate.

The following table sets forth a breakdown of our revenues for the years indicated:

	Revenues			% of Revenues for Period Indicated		
	Year Ended December 31,			Year Ended December 31,		
	2022	2021	2020	2022	2021	2020
Revenues:	(Dollars in thousands)					
Electricity	$ 631,727	$ 585,771	$ 541,393	86.0%	88.3%	76.8%
Product	71,414	46,920	148,125	9.7	7.1	21.0
Energy Storage	31,018	30,393	15,824	4.2	4.6	2.2
Total revenues	$ 734,159	$ 663,084	$ 705,342	100.0%	100.0%	100.0%

Geographic Breakdown of Results of Operations

The following table sets forth the geographic breakdown of the revenues attributable to our Electricity, Product and Energy Storage segments for the years indicated:

	Revenues Year Ended December 31,			% of Revenues for Period Indicated Year Ended December 31,		
	2022	2021	2020	2022	2021	2020
Electricity Segment:	(Dollars in thousands)					
United States	$ 446,000	$ 404,303	$ 341,399	70.6%	69.0%	63.1%
International	185,727	181,468	199,994	29.4	31.0	36.9
Total	$ 631,727	$ 585,771	$ 541,393	100.0%	100.0%	100.0%
Product Segment:						
United States	$ 7,037	$ 5,414	$ 5,800	9.9%	11.5%	3.9%
International	64,377	41,506	142,325	90.1	88.5	96.1
Total	$ 71,414	$ 46,920	$ 148,125	100.0%	100.0%	100.0%
Energy Storage Segment:						
United States	$ 31,018	$ 30,393	$ 15,824	100.0%	100.0%	100.0%
International	—	—	—	—	—	—
Total	$ 31,018	$ 30,393	$ 15,824	100.0%	100.0%	100.0%

In 2022, 2021 and 2020, 34%, 34% and 49% of our total revenues were derived from foreign locations, respectively, and our foreign operations had higher gross margins than our U.S. operations in each of those years. A substantial portion of international revenues came from Kenya and, to a lesser extent, from Honduras, Guadeloupe, Guatemala and other countries. Our operations in Kenya contributed disproportionately to gross profit and net income. The contribution to combined pre-tax income of our domestic and foreign operations within our Electricity segment and Product segment differ in a number of ways.

Electricity Segment. Our Electricity segment domestic revenues were approximately 71%, 69% and 63% of our total Electricity segment for the years ended December 31, 2022, 2021 and 2020, respectively. However, domestic operations have higher costs of revenues and expenses than our foreign operations. Our foreign power plants are located in lower-cost regions, like Kenya, Guatemala, Honduras and Guadeloupe, which favorably impact payroll, and maintenance expenses among other items. Our power plants in foreign locations are also newer than most of our domestic power plants and therefore tend to have lower maintenance costs and higher availability factors than our domestic power plants. Consequently, in 2022 and 2021, the international operations of the segment accounted for 43% and 45% of our total gross profits, 72% and 68% of our net income (assuming the majority of corporate operating expenses and financing are recorded under domestic jurisdiction) and 36% and 42% of our EBITDA, respectively.

Product Segment. Our Product segment foreign revenues were 90%, 88% and 96% of our total Product segment revenues for the years ended December 31, 2022, 2021 and 2020, respectively.

Energy Storage Segment. Our Energy Storage segment domestic revenues were 100.0% of our total Energy storage segment revenues for years ended December 31, 2022, 2021 and 2020, respectively.

Seasonality

Electricity generation from some of our geothermal power plants is subject to seasonal variations; in the winter, our power plants produce more energy primarily attributable to the lower ambient temperature, which has a favorable impact on the energy component of our Electricity segment revenues and the prices under many of our contracts are fixed throughout the year with no time-of-use impact. The prices paid for electricity under the PPAs for the Mammoth Complex and the North Brawley power plant in California, the Raft River power plant in Idaho, the Neal Hot Springs power plant in Oregon and the recently acquired Dixie Valley power plant in Nevada, are higher in the months of June through September. The higher payments payable under these PPAs in the summer months partially offset the negative impact on our revenues from lower generation in the summer attributable to a higher ambient temperature. As a result, we expect the revenues and gross profit in the winter months to be higher than the revenues and gross profit in the summer months and in general we expect the first and fourth quarters to generate higher revenues than the second and third quarters.

Breakdown of Cost of Revenues

Electricity Segment

The principal cost of revenues attributable to our operating power plants are operation and maintenance expenses comprised of salaries and related employee benefits, equipment expenses, costs of parts and chemicals, costs related to third-party services, lease expenses, royalties, startup and auxiliary electricity purchases, property taxes, insurance, depreciation and amortization and, for some of our projects, purchases of make-up water for use in our cooling towers. In our California power plants, our principal cost of revenues also includes transmission charges and scheduling charges. In some of our Nevada power plants we also incur transmission and wheeling charges. Some of these expenses, such as parts, third-party services and major maintenance, are not incurred on a regular basis. This results in fluctuations in our expenses and our results of operations for individual power plants from quarter to quarter. Payments made to government agencies and private entities on account of site leases where power plants are located are included in cost of revenues. Royalty payments, included in cost of revenues, are made as compensation for the right to use certain geothermal resources and are paid as a percentage of the revenues derived from the associated geothermal rights. Royalties constituted approximately 4.8% and 4.3% of Electricity segment revenues for the years ended December 31, 2022 and 2021, respectively.

Product Segment

The principal cost of revenues attributable to our Product segment are materials, salaries and related employee benefits, expenses related to subcontracting activities, and transportation expenses. Sales commissions to sales representatives are included in selling and marketing expenses. Some of the principal expenses attributable to our Product segment, such as a portion of the costs related to labor, utilities and other support services are fixed, while others, such as materials, construction, transportation and sales commissions, are variable and may fluctuate significantly, depending on market conditions. As a result, the cost of revenues attributable to our Product segment, expressed as a percentage of total revenues, fluctuates. Another reason for such fluctuation is that in responding to bids for our products, we price our products and services in relation to existing competition and other prevailing market conditions, which may vary substantially from order to order.

Energy Storage Segment

The principal cost of revenues attributable to our Energy Storage segment are direct costs of BESS that we own. Direct costs include the labor associated with operations and maintenance of owned BESS.

Critical Accounting Estimates and Assumptions

Our significant accounting policies are more fully described in Note 1 to our consolidated financial statements set forth in Item 8 of this Annual Report. However, certain of our accounting policies are particularly important to an understanding of our financial position and results of operations. In applying these critical accounting estimates and assumptions, our management uses its judgment to determine the appropriate assumptions to be used in making certain estimates. Such estimates are based on management's historical experience, the terms of existing contracts, management's observance of trends in the geothermal industry, information provided by our customers and information available to management from other outside sources, as appropriate. Such estimates are subject to an inherent degree of uncertainty and, as a result, actual results could differ from our estimates. Our critical accounting policies include:

- *Revenues and Cost of Revenues.* Revenues generated from the construction of geothermal and recovered energy-based power plant equipment and other equipment on behalf of third parties (Product revenues) are recognized using the percentage of completion method, which requires estimates of future costs over the full term of product delivery. Such cost estimates are made by management based on prior operations and specific project characteristics and designs. If management's estimates of total estimated costs with respect to our Product segment are inaccurate, then the percentage of completion is inaccurate resulting in an over- or under-estimate of revenue and gross margin. As a result, we review and update our cost estimates on significant contracts on a quarterly basis, and at least on an annual basis for all others, or when circumstances change and warrant a modification to a previous estimate. Changes in job performance, job conditions, and estimated profitability, including those arising from the application of penalty provisions in relevant contracts and final contract settlements, may result in revisions to costs and revenues and are recognized in the period in which the revisions are determined. Provisions for estimated losses relating to contracts are made in the period in which such losses are determined. Revenues generated from engineering and operating services and sales of products and parts are recorded once the service is provided or product delivered as the customer obtains control of the asset, as applicable.

- *Property, Plant and Equipment.* We capitalize all costs associated with the acquisition, development and construction of power plant facilities. Major improvements are capitalized and repairs and maintenance (including major maintenance) costs are expensed. We estimate the useful life of our power plants to range between 25 and 30 years. Such estimates are made by management based on factors such as prior operations, the terms of the underlying PPAs, geothermal resources, the location of the assets and specific power plant characteristics and designs. Changes in such estimates could result in useful lives which are either longer or shorter than the depreciable lives of such assets. We periodically re-evaluate the estimated useful life of our power plants and revise the remaining depreciable life on a prospective basis.

  We capitalize costs incurred in connection with the exploration and development of geothermal resources beginning when we acquire land rights to the potential geothermal resource. Prior to acquiring land rights, we make an initial assessment that an economically feasible geothermal reservoir is probable on that land using available data and external assessments vetted through our exploration department and occasionally outside service providers. Costs incurred prior to acquiring land rights are expensed. It normally takes two to three years from the time we start active exploration of a particular geothermal resource to the time we have an operating production well, assuming we conclude the resource is commercially viable.

  In most cases, we obtain the right to conduct our geothermal development and operations on land owned by the BLM, various states or with private parties. Once we acquire land rights to the potential geothermal resource, we perform additional activities to assess the commercial viability of the resource. Such activities include, among others, conducting surveys and other analysis, obtaining drilling permits, creating access roads to drilling sites, and exploratory drilling which may include temperature gradient holes and/or slim holes. Such costs are capitalized and included in construction-in-process. Once our exploration activities are complete, we finalize our assessment as to the commercial viability of the geothermal resource and either proceed to the construction phase for a power plant or abandon the site. If we decide to abandon a site, all previously capitalized costs associated with the exploration project are written off.

  Our assessment of economic viability of an exploration project involves significant management judgment and uncertainties as to whether a commercially viable resource exists at the time we acquire land rights and begin to capitalize such costs. As a result, it is possible that our initial assessment of a geothermal resource may be incorrect and we will have to write off costs associated with the project that were previously capitalized. Due to the uncertainties inherent in geothermal exploration, historical impairments may not be indicative of future impairments. Included in construction-in-process are costs related to projects in exploration and development of $95.3 million and $50.7 million at December 31, 2022 and 2021, respectively.

- *Impairment of Long-Lived Assets and Long-Lived Assets to be Disposed of.* We evaluate long-lived assets, such as property, plant and equipment and construction-in-process for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Factors which could trigger an impairment include, among others, significant underperformance relative to historical or projected future operating results, significant changes in our use of assets or our overall business strategy, negative industry or economic trends, a determination that an exploration project will not support commercial operations, a determination that a suspended project is not likely to be completed, a significant increase in costs necessary to complete a project, legal factors relating to our business or when we conclude that it is more likely than not that an asset will be disposed of or sold.

  We test our operating plants that are operated together as a complex for impairment at the complex level because the cash flows of such plants result from significant shared operating activities. For example, the operating power plants in a complex are managed under a combined operation management generally with one central control room that controls all of the power plants in a complex and one maintenance group that services all of the power plants in a complex. As a result, the cash flows from individual plants within a complex are not largely independent of the cash flows of other plants within the complex. We test for impairment of our operating plants which are not operated as a complex, as well as our projects under exploration, development or construction that are not part of an existing complex, at the plant or project level. To the extent an operating plant becomes part of a complex in the future, we will test for impairment at the complex level.

  Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the estimated future net undiscounted cash flows expected to be generated by the asset. The significant assumptions that we use in estimating our undiscounted future cash flows include (i) projected generating capacity of the power plant and rates to be received under the respective PPA and (ii) projected operating expenses of the relevant power plant. Estimates of future cash flows used to test recoverability of a long-lived asset under

development also include cash flows associated with all future expenditures necessary to develop the asset. If future cash flows are actually less than those used in such estimates, we may incur impairment losses in the future that could be material to our financial condition and/or results of operations.

If our assets are considered to be impaired, the impairment to be recognized is the amount by which the carrying amount of the assets exceeds their fair value. Assets to be disposed of are reported at the lower of the carrying amount or fair value less costs to sell. We believe that for the year ended December 31, 2022, except for the non-cash impairment charge related to our Brawley power plant, as further detailed under Note 9 to the consolidated financial statements, no impairment exists for any of our long-lived assets; however, estimates as to the recoverability of such assets may change based on revised circumstances. Estimates of the fair value of assets require estimating useful lives and selecting a discount rate that reflects the risk inherent in future cash flows.

- *Goodwill.* Goodwill represents the excess of the fair value of consideration transferred in the business combination transactions over the fair value of tangible and intangible assets acquired, net of the fair value of liabilities assumed and the fair value of any noncontrolling interest in the acquisitions. Goodwill is not amortized but rather subject to a periodic impairment testing on an annual basis, which the Company performs on December 31 of each year, or if an event occurs or circumstances change that would more likely than not reduce the fair value of the reporting unit below its carrying amount. Additionally, it is permitted to first assess qualitative factors to determine whether a quantitative goodwill impairment test is necessary. Further testing is only required if the entity determines, based on the qualitative assessment, that it is more likely than not that a reporting unit's fair value is less than its carrying amount. Otherwise, no further impairment testing is required. An entity has the option to bypass the qualitative assessment for any reporting unit in any period and proceed directly to the quantitative goodwill impairment test. This would not preclude the entity from performing the qualitative assessment in any subsequent period. The quantitative assessment compares the fair value of the reporting unit to its carrying value, including goodwill. Under ASU 2017-04, Intangibles – Goodwill and Other (Topic 350), an entity should recognize an impairment charge for the amount by which the carrying amount of the reporting unit exceeds its fair value. However, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit.

- *Obligations Associated with the Retirement of Long-Lived Assets.* We record the fair market value of legal liabilities related to the retirement of our assets in the period in which such liabilities are incurred. These liabilities include our obligation to plug wells upon termination of our operating activities, the dismantling of our power plants upon cessation of our operations, and the performance of certain remedial measures related to the land on which such operations were conducted. When a new liability for an asset retirement obligation is recorded, we capitalize the costs of such liability by increasing the carrying amount of the related long-lived asset. Such liability is accreted to its present value each period and the capitalized cost is depreciated over the useful life of the related asset. At retirement, we either settle the obligation for its recorded amount or report either a gain or a loss with respect thereto. Estimates of the costs associated with asset retirement obligations are based on factors such as prior operations, the location of the assets and specific power plant characteristics. We review and update our cost estimates periodically and adjust our asset retirement obligations in the period in which the revisions are determined. If actual results are not consistent with our assumptions used in estimating our asset retirement obligations, we may incur additional losses that could be material to our financial condition or results of operations.

- *Accounting for Income Taxes.* Significant estimates are required to arrive at our consolidated income tax provision. This process requires us to estimate our actual current tax exposure and to make an assessment of temporary differences resulting from different treatments of items for tax and accounting purposes. Such differences result in deferred tax assets and liabilities which are included in our consolidated balance sheets. For those jurisdictions where the projected operating results indicate that realization of our net deferred tax assets is not more likely than not, a valuation allowance is recorded.

We evaluate our ability to utilize the deferred tax assets quarterly and assess the need for a valuation allowance. In assessing the need for a valuation allowance, we estimate future taxable income, including the impacts of the enacted tax law, the feasibility of ongoing tax planning strategies and the realizability of tax credits and tax loss carryforwards. Valuation allowances related to deferred tax assets can be affected by changes in tax laws, statutory tax rates, and future taxable income. We have recorded a valuation allowance related to our U.S. deferred tax assets. In the future, if there is sufficient evidence that we will be able to generate sufficient future taxable income in the United States, we may be required to reduce this valuation allowance, resulting in income tax benefits in our Consolidated Statement of Operations.

In the ordinary course of business, there can be inherent uncertainty in quantifying our income tax positions. We assess our income tax positions and record tax benefits for all years subject to examination based upon management's evaluation of the facts, circumstances and information available at the reporting date. For those tax positions where it is more likely than not that a tax benefit will be sustained, which is greater than 50% likelihood of being realized upon ultimate settlement with a taxing authority that has full knowledge of all relevant information, we recognize between 0 to 100% of the tax benefit. For those income tax positions where it is not more likely than not that a tax benefit will be sustained, we do not recognize any tax benefit in the consolidated financial statements. Resolution of uncertainties in a manner inconsistent with our expectations could have a material impact on our financial condition or results of operations.

New Accounting Pronouncements

See Note 1 to our consolidated financial statements set forth in Item 8 of this Annual Report for information regarding new accounting pronouncements.

Results of Operations

Our historical operating results in dollars and as a percentage of total revenues are presented below.

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands, except earnings per share data)		
Revenues:			
Electricity	$ 631,727	$ 585,771	$ 541,393
Product	71,414	46,920	148,125
Energy storage	31,018	30,393	15,824
Total revenues	734,159	663,084	705,342
Cost of revenues:			
Electricity	380,361	337,019	300,059
Product	60,479	41,374	114,948
Energy storage	24,495	20,353	14,060
Total cost of revenues	465,335	398,746	429,067
Gross profit (loss)			
Electricity	251,366	248,752	241,334
Product	10,935	5,546	33,177
Energy storage	6,523	10,040	1,764
Total gross profit	268,824	264,338	276,275
Operating expenses:			
Research and development expenses	5,078	4,129	5,395
Selling and marketing expenses	16,193	15,199	17,384
General and administrative expenses	61,274	75,901	60,226
Impairment of long-lived assets	32,648	—	—
Write-off of unsuccessful exploration activities	828	—	—
Business interruption insurance income	—	(248)	(20,743)
Operating income	152,803	169,357	214,013
Other income (expense):			
Interest income	3,417	2,124	1,717
Interest expense, net	(87,743)	(82,658)	(77,953)
Derivatives and foreign currency transaction gains (losses)	(6,044)	(14,720)	3,802
Income attributable to sale of tax benefits	33,885	29,582	25,720
Other non-operating income (expense), net	(709)	(134)	1,418
Income from operations before income tax and equity in earnings (losses) of investees	95,609	103,551	168,717
Income tax (provision) benefit	(14,742)	(24,850)	(67,003)
Equity in earnings (losses) of investees, net	(3,072)	(2,624)	92
Net Income	77,795	76,077	101,806
Net income attributable to noncontrolling interest	(11,954)	(13,985)	(16,350)
Net income attributable to the Company's stockholders	$ 65,841	$ 62,092	$ 85,456
Earnings per share attributable to the Company's stockholders:			
Basic:	$ 1.17	$ 1.11	$ 1.66
Diluted:	$ 1.17	$ 1.10	$ 1.65
Weighted average number of shares used in computation of earnings per share attributable to the Company's stockholders:			
Basic	56,063	56,004	51,567
Diluted	56,503	56,402	51,937

Results as a percentage of revenues

	Year Ended December 31,		
	2022	2021	2020
Revenues:			
Electricity	86.0%	88.3%	76.8%
Product	9.7	7.1	21.0
Energy storage	4.2	4.6	2.2
Total revenues	100.0	100.0	100.0
Cost of revenues:			
Electricity	60.2	57.5	55.4
Product	84.7	88.2	77.6
Energy storage	79.0	67.0	88.9
Total cost of revenues	63.4	60.1	60.8
Gross profit (loss)			
Electricity	39.8	42.5	44.6
Product	15.3	11.8	22.4
Energy storage	21.0	33.0	11.1
Total gross profit	36.6	39.9	39.2
Operating expenses:			
Research and development expenses	0.7	0.6	0.8
Selling and marketing expenses	2.2	2.3	2.5
General and administrative expenses	8.3	11.4	8.5
Impairment charge	4.4	0.0	0.0
Write-off of unsuccessful exploration activities	0.1	0.0	0.0
Business interruption insurance income	0.0	0.0	(2.9)
Operating income	20.8	25.5	30.3
Other income (expense):			
Interest income	0.5	0.3	0.2
Interest expense, net	(12.0)	(12.5)	(11.1)
Derivatives and foreign currency transaction gains (losses)	(0.8)	(2.2)	0.5
Income attributable to sale of tax benefits	4.6	4.5	3.6
Other non-operating income (expense), net	(0.1)	—	0.2
Income from continuing operations before income tax and equity in earnings (losses) of investees	13.0	15.6	23.9
Income tax (provision) benefit	(2.0)	(3.7)	(9.5)
Equity in earnings (losses) of investees, net	(0.4)	(0.4)	—
Net Income	10.6	11.5	14.4
Net income attributable to noncontrolling interest	(1.6)	(2.1)	(2.3)
Net income attributable to the Company's stockholders	9.0%	9.4%	12.1%

Comparison of the Year Ended December 31, 2022 and the Year Ended December 31, 2021

Total Revenues

	Year Ended December 31, 2022	Year Ended December 31, 2021	Increase (Decrease)	
	(Dollars in millions)			
Electricity segment revenues	$ 631.7	$ 585.8	$ 46.0	7.8%
Product segment revenues	71.4	46.9	24.5	52.2
Energy Storage segment revenues	31.0	30.4	0.6	2.1
Total Revenues	**$ 734.2**	**$ 663.1**	**$ 71.1**	**10.7%**

For the year ended December 31, 2022, our total revenues increased by 10.7% from $663.1 million in 2021 to $734.2 million in 2022.

Electricity Segment

Revenues attributable to our Electricity segment for the year ended December 31, 2022 were $631.7 million, compared to $585.8 million for the year ended December 31, 2021, representing a 7.8% increase. The increase in our Electricity segment revenues was mainly due to (i) higher revenues in Puna of $20.0 million, primarily due to higher electricity rates and the resumption of the power plant to 25MW during the third quarter of 2021; (ii) the full year inclusion of the Dixie Valley and Beowawe power plants following the Terra-Gen acquisition in July 2021, which contributed approximately $21.8 million to the revenues increase; (iii) the start of commercial operation of our CD4 power plant facility in July 2022, which contributed an additional $9.0 million; (iv) the enhancement in McGinness Hills in April 2021, which contributed approximately $4.3 million, and (v) the start of commercial operations of Tungsten Mountain 2 in April 2022, which contributed an additional $4.7 million. This increase was partially offset primarily by a decrease in revenues of approximately $14.6 million as a result of the shutdown at the Heber 1 power plant following a fire that caused damage to the steam turbine in February 2022.

During the years ended December 31, 2022 and 2021, our consolidated power plants generated 6,661,775 MWh and 6,529,140 MWh, respectively, an increase of 2.0%. The average prices during the years ended December 31, 2022 and 2021 were $94.8 and $89.7 per MWh, respectively.

For the year ended December 31, 2022, our Electricity segment generated 86.0% of our total revenues, compared to 88.3% in the previous year, while our Product segment generated 9.7% of our total revenues, compared to 7.1% in the previous year, and our Energy Storage segment generated 4.2% of our total revenues, compared to 4.6% in the previous year.

Product Segment

Revenues attributable to our Product segment for the year ended December 31, 2022 were $71.4 million, compared to $46.9 million for the year ended December 31, 2021, representing a 52.2% increase. The increase in our Product segment revenues was due to certain new projects in New Zealand, Nicaragua and Indonesia for which we recorded revenues in 2022 compared to different projects in New Zealand and Chile for which revenues were recorded during 2021.

Energy Storage Segment

Revenues attributable to our Energy Storage segment for the year ended December 31, 2022 were $31.0 million compared to $30.4 million for the year ended December 31, 2021, representing a 2.1% increase. The increase was mainly due to higher revenues at PJM and CAISO facilities due to high energy rates and increased performance of the assets in 2022 compared to 2021, primarily offset by a decrease of $6.7 million in revenues from the Rabbit Hill battery energy storage facility primarily as a result of the February 2021 power crisis in Texas, which resulted in a record high increase in demand for electricity on the one hand and a significant decrease in electricity supply in the region on the other hand which led to a significant increase in the Responsive Reserve Service market price during this weather event.

Total Cost of Revenues

	Year Ended December 31, 2022	Year Ended December 31, 2021	Increase (Decrease)	
	(Dollars in millions)			
Electricity segment cost of revenues	$ 380.4	$ 337.0	$ 43.3	12.9%
Product segment cost of revenues	60.5	41.4	19.1	46.2
Energy Storage segment cost of revenues	24.5	20.4	4.1	20.4
Total Cost of Revenues	$ 465.4	$ 398.8	$ 66.5	16.7%

Electricity Segment

Total cost of revenues attributable to our Electricity segment for the year ended December 31, 2022 was $380.4 million, compared to $337.0 million for the year ended December 31, 2021, representing a 12.9% increase. This increase was primarily attributable to: (i) $20.8 million in higher costs related to the Puna power plant attributable to the resumption of the power plant to 25MW in the third quarter of 2021, including $13.7 million higher business interruption insurance income in 2021, versus 2022; (ii) the full year inclusion of the Dixie Valley and Beowawe power plants following the Terra-Gen acquisition in July 2021, which contributed approximately $20.2 million to the increase in cost of revenues; (iii) the start of commercial operation of our CD4 power plant facility in July 2022, which contributed an additional $4.6 million; and (iv) the start of commercial operations of Tungsten Mountain 2 in April 2022, which contributed an additional $2.5 million. This increase was partially offset by a decrease in cost of revenues of approximately $15.3 million as a result of the shutdown at the Heber 1 power plant following a fire that caused damage to the steam turbine in February 2022. The decrease in cost of revenues related to the Heber 1 fire included $13.8 million of business interruption insurance income recorded in 2022 versus none in 2021.

As a percentage of total Electricity revenues, the total cost of revenues attributable to our Electricity segment for the year ended December 31, 2022 was 60.2%, compared to 57.5% for the year ended December 31, 2021. This increase was primarily attributable to higher operational costs in some of our power plants. The cost of revenues attributable to our international power plants was 18% of our Electricity segment cost of revenues for the year ended December 31, 2022.

Product Segment

Total cost of revenues attributable to our Product segment for the year ended December 31, 2022 was $60.5 million, compared to $41.4 million for the year ended December 31, 2021, representing a 46.2% increase from the prior period. This increase was primarily attributable to the increase in Product segment revenues, as discussed above. As a percentage of total Product segment revenues, our total cost of revenues attributable to our Product segment for the year ended December 31, 2022 was 84.7%, compared to 88.2% for the year ended December 31, 2021.

Energy Storage Segment

Cost of revenues attributable to our Energy Storage segment for the year ended December 31, 2022 were $24.5 million as compared to $20.4 million in the year ended December 31, 2021. This increase was mainly due to the addition of the Vallecito battery energy storage system to our commercially operating sites in April 2021 and Tierra Buena in June 2022 as well as to the increase in energy storage revenues at our PJM and CAISO facilities as described above.

Research and Development Expenses

Research and development expenses for the year ended December 31, 2022 were $5.1 million, compared to $4.1 million for the year ended December 31, 2021, represent a 23.0% increase. The increase is mainly attributable to the timing of new development projects that took place during the year ended December 31, 2022 compared to 2021.

Selling and Marketing Expenses

Selling and marketing expenses for the year ended December 31, 2022 were $16.2 million, compared to $15.2 million for the year ended December 31, 2021, representing a 6.5% increase. The increase was mainly due to an increase in sales commissions as a result of the corresponding increase in Product segment revenues and amortization of stock-based awards. Selling and marketing expenses constituted 2.2% of total revenues for the year ended December 31, 2022, compared to 2.3%, for the year ended December 31, 2021.

General and Administrative Expenses

General and administrative expenses for the year ended December 31, 2022 were $61.3 million, compared to $75.9 million for the year ended December 31, 2021, representing a 19.3% decrease. The decrease was primarily attributable to: (i) $5.6 million of transaction costs in 2021 including $4.7 million related to the TG Geothermal Portfolio, LLC, acquisition, in July, 2021; (ii) higher legal costs in 2021 mainly associated with the investigation by the Special Committee; (iii) a provision for doubtful debts of $3.0 million included in 2021 related to imbalance charges from the grid operator in respect of our demand response operations that we were unable to collect due to the February 2021 power crisis in Texas; and (iv) a reversal of a contingent liability in 2022 of $1.8 million related to our Guadeloupe power plant acquisition.

General and administrative expenses for the year ended December 31, 2022 constituted 8.3% of total revenues for such period, compared to 11.4%, for the year ended December 31, 2021.

Impairment of long-lived assets

Impairment of long-lived assets for the year ended December 31, 2022 of $32.6 million is primarily attributable to a non-cash impairment charge related to our Brawley power plant as further described under Note 1 to the consolidated financial statement. There was no such impairment during the year ended December 31, 2021.

Write-off of Unsuccessful Exploration Activities

Write-offs of unsuccessful exploration activities for year ended December 31, 2022 were $0.8 million compared to none for the year ended December 31, 2021. These write-offs are related to geothermal exploration projects that the Company decided to no longer pursue.

Interest Expense, Net

Interest expense, net, for the year ended December 31, 2022 was $87.7 million, compared to $82.7 million for the year ended December 31, 2021, representing a 6.2% increase. This increase was primarily due to (i) $5.6 million related to the Convertible Senior Notes which we entered into in June 2022; (ii) $3.3 million of higher interest expenses related to the financing liability assumed as part of the business combination purchase transaction of the Terra-Gen geothermal assets in July 2021; and (iii) $6.6 million of higher interest expenses related to Bank Hapoalim Loan received in July 2021, HSBC Bank Loan received in July 2021, Bank Discount Loan received in September 2021 and Bank Mizrahi Loan received in April 2022. This increase was partially offset by an increase of $4.1 million in interest capitalized to projects under construction, $5.0 million related to the prepayment of Series 3 Bonds in June 2022, and lower interest expenses on other long-term loans as a result of regular principal payments.

Derivatives and Foreign Currency Transaction Gains (Losses)

Derivatives and foreign currency transaction losses for the year ended December 31, 2022 were $6.0 million, compared to losses of $14.7 million for the year ended December 31, 2021. Derivatives and foreign currency transaction losses for the year ended December 31, 2021 included mainly $14.5 million in losses relating to the hedge transaction associated with our Rabbit Hill battery energy storage facility, due to extreme weather conditions in the area of Georgetown, Texas in February 2021. In addition, derivatives and foreign currency transaction gains and losses includes losses from foreign currency forward contracts which were not accounted for as hedge transactions and which were higher in 2022 than in 2021.

Income Attributable to Sale of Tax Benefits

Income attributable to the sale of tax benefits for the year ended December 31, 2022 was $33.9 million, compared to $29.6 million for the year ended December 31, 2021. This income primarily represents the value of PTCs and taxable income or loss generated by certain of our power plants allocated to investors under tax equity transactions. The increase of $4.3 million in income attributable to the sale of tax benefits is primarily related to the Steamboat Hills tax monetization transaction which we entered into in October 2021.

Other Non-Operating Income (Expense), Net

Other non-operating income, net for the year ended December 31, 2022 was $0.7 million, compared to $0.1 million for the year ended December 31, 2021. Other non-operating income for the year ended December 31, 2022 primarily includes a make-whole premium of $1.1 million from the prepayment of Series 3 Bonds during the second quarter of 2022, as further discussed under Note 1 to the consolidated financial statements, net of gain from a sale of certain equipment to a third party.

Income Taxes

Income tax provision for the year ended December 31, 2022, was $14.7 million, a decrease of $10.1 million compared to an income tax provision of $24.9 million for the year ended December 31, 2021. Our effective tax rate for the year ended December 31, 2022 and 2021, was 15.4% and 24.0%, respectively. The effective rate differs from the federal statutory rate of 21% for the year ended December 31, 2022 due to the jurisdictional mix of earnings at differing tax rates from the federal statutory tax rate, movement in the valuation allowance; and generation of production tax credits.

Equity in Earnings (losses) of investees, net

Equity in losses of investees, net in the year ended December 31, 2022, was $3.1 million, compared to $2.6 million in the year ended December 31, 2021. Equity in earnings (losses) of investees, net is mainly derived from our 12.75% share in the earnings or losses in Sarulla. During the second quarter of 2022, Sarulla agreed with its banks on a framework that will enable it to perform remediation work that is aimed to improve the plant's performance. The execution of the phase 1 of the remediation works is underway and major contractors are being mobilized. However, as part of the remediation works involves drilling activities, uncertainty remains regarding Sarulla's ability to meet the plan and the Company is evaluating periodically the impact of the plan on future performance. As the Company determined that the current situation and circumstances related to its equity investment in Sarulla are temporary, no impairment testing was required at year-end.

Net Income attributable to the Company's Stockholders

Net income attributable to the Company's stockholders for the year ended December 31, 2022 was $65.8 million, compared to $62.1 million for the year ended December 31, 2021, which represents an increase of $3.7 million. This increase was attributable to the increase of $1.7 million in net income which was affected by the factors described above, as well as a decrease of $2.0 million in net income attributable to noncontrolling interest, mainly attributable to lower allocated income in the year ended December 31, 2022, compared to the year ended December 31, 2021.

Comparison of the year ended December 31, 2021 and the year ended December 31, 2020

A discussion of changes in our results of operations in 2021 compared to 2020 has been omitted from this Form10-K, but may be found in "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of our Form 10-K for the fiscal year ended December 31, 2021, filed with the SEC on February 25, 2022, which is incorporated by reference herein. This Form 10-K for the fiscal year ended December 31, 2021 is available free of charge on the SECs website at www.sec.gov and at www.Ormat.com, by clicking "Investors" located at the top of the home page.

Liquidity and Capital Resources

Our principal sources of liquidity have been derived from cash flows from operations, proceeds from third party debt such as borrowings under our credit facilities and issuances of debt securities, equity offerings, project financing and tax monetization transactions, short term borrowing under our lines of credit, and proceeds from the sale of equity interests in one or more of our projects. We have utilized this cash to develop and construct power plants, fund our acquisitions, pay down existing outstanding indebtedness, and meet our other cash and liquidity needs.

Based on current conditions, we believe that we have sufficient financial resources to fund our activities and execute our business plans. However, the cost of obtaining financing for our project needs may increase significantly or such financing may be difficult to obtain.

As of December 31, 2022, we had access to: (i) $95.9 million in cash and cash equivalents, of which $28.1 million was held by our foreign subsidiaries; and (ii) $390.7 million of unused corporate borrowing capacity under existing lines of credit with different commercial banks.

As of December 31, 2022, $197.4 million in the aggregate was outstanding under credit agreements with several banks as detailed below under "Letters of Credits under the Credit Agreements".

Our estimated capital needs for 2023 include approximately $589.0 million for capital expenditures on new projects under development or construction including storage projects, exploration activity and maintenance capital expenditures for our existing projects. In addition, we expect $181.7 million for long-term debt repayments.

Our capital expenditures primarily relate to the enhancement of our existing power plants and the construction of new power plants. We have budgeted approximately $570.0 million in capital expenditures for construction of new projects and enhancements to our existing power plants, of which we had invested $245.0 million as of December 31, 2022. We expect to invest approximately $225.0 million in 2023 and the remaining approximately $100.0 million on thereafter.

In addition, we estimate approximately $364.0 million in additional capital expenditures in 2023 to be allocated as follows: (i) approximately $101.0 million for the exploration, drilling and development of new projects and enhancements of existing power plants that are not yet released for full construction; (ii) approximately $60.0 million for maintenance of capital expenditures to our operating power plants; (iii) approximately $183.0 million for the construction and development of storage projects; and (iv) approximately $20.0 million for enhancements to our production facilities.

We expect to finance these requirements with: (i) the sources of liquidity described above; (ii) positive cash flows from our operations; and (iii) future project financings and re-financings (including construction loans and tax equity). Management believes that, based on the current stage of implementation of our strategic plan, the sources of liquidity and capital resources described above will address our anticipated liquidity, capital expenditures, and other investment requirements.

Letters of Credits under the Credit Agreements

Some of our customers require our project subsidiaries to post letters of credit in order to guarantee their respective performance under relevant contracts. We are also required to post letters of credit to secure our obligations under various leases and licenses and may, from time to time, decide to post letters of credit in lieu of cash deposits in reserve accounts under certain financing arrangements. In addition, our subsidiary, Ormat Systems, is required from time to time to post performance letters of credit in favor of our customers with respect to orders of products.

The table below describes our committed and non-committed lines:

Credit Agreements	Amount Issued	Issued and Outstanding as of December 31, 2022	Termination Date
	(Dollars in millions)		
Committed lines for credit and letters of credit	$ 468.0	$ 77.3	March 2023 - Jul 2025
Committed lines for letters of credit	155.0	105.2	April 2023 - December 2023
Non-committed lines	-	14.9	October 2023
Total	**$ 623.0**	**$ 197.4**	

Restrictive covenants

Our obligations under the credit agreements, the loan agreements, and the trust instrument governing the bonds described above, are unsecured, but we are subject to a negative pledge in favor of the banks and the other lenders and certain other restrictive covenants. These include, among other things, a prohibition on: (i) creating any floating charge or any permanent pledge, charge or lien over our assets without obtaining the prior written approval of the lender; (ii) guaranteeing the liabilities of any third party without obtaining the prior written approval of the lender; and (iii) selling, assigning, transferring, conveying or disposing of all or substantially all of our assets, or a change of control in our ownership structure. Some of the credit agreements, the term loan agreements, and the trust instrument contain cross-default provisions with respect to other material indebtedness owed by us to any third party. In some cases, we have agreed to maintain certain financial ratios, which are measured quarterly, such as: (i) equity of at least $750 million and in no event less than 25% of total assets; and (ii) 12-month debt, net of cash, cash equivalents, and short-term bank deposits to Adjusted EBITDA ratio not to exceed 6. As of December 31, 2022: (i) total equity was $2,021.0 million and the actual equity to total assets ratio was 43.8%; and (ii) the 12-month debt, net of cash and cash equivalents to Adjusted EBITDA ratio was 4.13. During the year ended December 31, 2022, we distributed interim dividends in an aggregate amount of $27.1 million. The failure to perform or observe any of the covenants set forth in such agreements, subject to various cure periods, would result in the occurrence of an event of default and would enable the lenders to accelerate all amounts due under each such agreement.

As described above, we are currently in compliance with our covenants with respect to the credit agreements, the loan agreements (except as described below) and the trust instrument, and believe that the restrictive covenants, financial ratios and other terms of any of our full-recourse bank credit agreements will not materially impact our business plan or operations.

As of December 31, 2022, we did not meet the covenants related to the DAC 1 Senior Secured Notes which resulted in certain equity distribution restrictions from the related subsidiary.

Credit Agreements

Credit Agreement with MUFG Union Bank

Ormat Nevada has a credit agreement with MUFG Union Bank under which it has an aggregate available credit of up to $60.0 million as of December 31, 2022.The credit termination date is June 30, 2023.

The facility is limited to the issuance, extension, modification or amendment of letters of credit. Union Bank is currently the sole lender and issuing bank under the credit agreement, but is also designated as an administrative agent on behalf of banks that may, from time to time in the future, join the credit agreement as lenders. In connection with this transaction, the Company entered into a guarantee in favor of the administrative agent for the benefit of the banks, pursuant to which the Company agreed to guarantee Ormat Nevada's obligations under the credit agreement. Ormat Nevada's obligations under the credit agreement are otherwise unsecured. There are various restrictive covenants under the credit agreement, which include a requirement to comply with the following financial ratios, which are measured quarterly: (i) a 12-month debt to EBITDA ratio not to exceed 4.5; (ii) 12-month DSCR of not less than 1.35; and (iii) distribution leverage ratio not to exceed 2.0. As of December 31,2022: (i) the actual 12-month debt to EBITDA ratio was 2.04; (ii) the 12-month DSCR was 3.91; and (iii) the distribution leverage ratio was 0.63. In addition, there are restrictions on dividend distributions in the event of a payment default or noncompliance with such ratios, and subject to specified carve-outs and exceptions, a negative pledge on the assets of Ormat Nevada in favor of Union Bank. As of December 31, 2022, the covenants have been met. As of December 31, 2022, letters of credit in the aggregate amount of $57.6 million were issued and outstanding under this credit agreement.

Credit Agreement with HSBC Bank USA N.A.

Ormat Nevada has a credit agreement with HSBC Bank USA, N.A for one year with annual renewals. The current expiration date of the facility under this credit agreement is October 31, 2023. On December 31, 2022, the aggregate amount available under the credit agreement was $35.0 million. This credit line is limited to the issuance, extension, modification or amendment of letters of credit. In addition, Ormat Nevada has an uncommitted discretionary demand line of credit in the aggregate amount of $35.0 million available for letters of credit including up to $20 million of credit. In connection with this transaction, the Company entered into a guarantee in favor of the administrative agent for the benefit of the banks, pursuant to which the Company agreed to guarantee Ormat Nevada's obligations under the credit agreement. Ormat Nevada's obligations under the credit agreement are otherwise unsecured.

There are various restrictive covenants under the credit agreement, including a requirement to comply with the following financial ratios, which are measured quarterly: (i) a 12-month debt to EBITDA ratio not to exceed 4.5; (ii) 12-month DSCR of not less than 1.35; and (iii) distribution leverage ratio not to exceed 2.0. As of December 31, 2022: (i) the actual 12-month debt to EBITDA ratio was 2.04; (ii) the 12-month DSCR was 3.91; and (iii) the distribution leverage ratio was 0.63. In addition, there are restrictions on dividend distributions in the event of a payment default or noncompliance with such ratios, and subject to specified carve-outs and exceptions, a negative pledge on the assets of Ormat Nevada in favor of HSBC. As of December 31, 2022, the covenants have been met.

As of December 31, 2022, letters of credit in the aggregate amount of $34.2 million were issued and outstanding under the committed portion of this credit agreement and $4.8 million under the uncommitted portion of the agreement.

Future minimum payments

Future minimum payments under long-term obligations as of December 31, 2022, are detailed under the caption Contractual Obligations and Commercial Commitments, below.

Third-Party Debt

Our third-party debt consists of (i) non-recourse and limited-recourse project finance debt or acquisition financing that we or our subsidiaries have obtained for the purpose of developing and constructing, refinancing or acquiring our various projects; (ii) full-recourse debt incurred by us or our subsidiaries for general corporate purposes; (iii) convertible senior note issued in June 2022 as further described under Note 1 to the consolidated financial statements; and (iv) financing liability assumed as part of the TG Geothermal Portfolio, LLC acquisition as further described under note 2 to the consolidated financial statements.

Non-recourse debt refers to debt involving debt repayments that are made solely from the power plant's revenues (rather than our revenues or revenues of any other power plant) and generally are secured by the power plant's physical assets, major contracts and agreements, cash accounts and, in many cases, our ownership interest in our affiliate that owns that power plant. These forms of financing are referred to as "project financing".

In the event of a foreclosure after a default, our affiliate that owns the power plant would only retain an interest in the power plant assets, if any, remaining after all debts and obligations have been paid in full. In addition, incurrence of debt by a power plant may reduce the liquidity of our equity interest in that power plant because the equity interest is typically subject both to a pledge in favor of the power plant's lenders securing the power plant's debt and to transfer and change of control restrictions set forth in the relevant financing agreements.

Limited recourse debt refers to project financing as described above with the addition of our agreement to undertake limited financial support for our affiliate that owns the power plant in the form of certain limited obligations and contingent liabilities. These obligations and contingent liabilities may take the form of guarantees of certain specified obligations, indemnities, capital infusions and agreements to pay certain debt service deficiencies. Creditors of a project financing of a particular power plant may have direct recourse to us to the extent of these limited recourse obligations.

Non-Recourse and Limited-Recourse Third-Party Debt

Loan	Line of Credit	Amount Outstanding as of December 31, 2022	Interest Rate	Maturity Date	Related Projects	Location
	(Dollars in millions)					
OFC 2 Senior Secured Notes – Series A	$ 151.7	$ 71.8	4.69%	2032	McGinness Hills phase 1 and Tuscarora	United States
OFC 2 Senior Secured Notes – Series B	140.0	86.3	4.61%	2032	McGinness Hills phase 2	United States
Olkaria III Financing Agreement with DFC – Tranche 1	85.0	37.8	6.34%	2030	Olkaria III Complex	Kenya
Olkaria III Financing Agreement with DFC – Tranche 2	180.0	79.4	6.29%	2030	Olkaria III Complex	Kenya
Olkaria III Financing Agreement with DFC – Tranche 3	45.0	21.5	6.12%	2030	Olkaria III Complex	Kenya
Amatitlan Financing [1]	42.0	15.8	LIBOR+4.35%	2027	Amatitlan	Guatemala
Don A. Campbell Senior Secured Notes	92.5	62.7	4.03%	2033	Don A. Campbell Complex	United States
Idaho Refinancing Note [2]	61.6	61.6	6.26%	2038	Neal Hot Springs and Raft River	United States
U.S. Department of Energy loan [3]	96.8	32.8	2.61%	2035	Neal Hot Springs	United States
Prudential Capital Group Nevada Loan	30.7	25.0	6.75%	2037	San Emidio	United States
Platanares Loan with DFC	114.7	79.9	7.02%	2032	Platanares	Honduras
Viridity – Plumstriker	23.5	11.4	LIBOR+3.5%	2026	Plumsted Striker	United States
Geothermie Bouillante [4]	8.9	4.6	1.52%	2026	Geothermie Bouillante	Guadeloupe
Geothermie Bouillante [4]	8.9	5.8	1.93%	2026	Geothermie Bouillante	Guadeloupe
Total	**$ 1,081.3**	**$ 596.4**				

[1] LIBOR Rate cannot be lower than 1.25%. Margin of 4.35% as long as the Company's guaranty of the loan is outstanding (current situation) or 4.75% otherwise. As of December 31, 2022, interest rate is 5.6%.
[2] Secured by equity interest.
[3] Secured by the assets.
[4] Loan in Euros and issued amount is EUR 8.0 million

Full-Recourse Third-Party Debt

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Interest Rate	Maturity Date
	(Dollars in millions)			
Mizrahi Loan	$ 75.0	$ 70.3	4.10%	April 2030
Hapoalim Loan	125.0	98.2	3.45%	June 2028
HSBC Loan	50.0	42.9	3.45%	July 2028
Discount Loan	100.0	87.5	2.90%	September 2029
Senior Unsecured Bonds Series 4 [1]	289.8	255.8	3.35%	June 2031
Senior Unsecured Loan 1	100.0	87.4	4.80%	March 2029
Senior Unsecured Loan 2	50.0	43.7	4.60%	March 2029
Senior Unsecured Loan 3	50.0	43.7	5.44%	March 2029
DEG Loan 2	50.0	27.5	6.28%	June 2028
DEG Loan 3	41.5	24.0	6.04%	June 2028
Total	**$ 1,149.3**	**$ 781.0**		

[1] Bonds issued in total aggregate principal amount of NIS 1.0 billion.

Financing Liability

Loan	Amount Outstanding as of December 31, 2022 (Dollar in millions)	Annual Interest Rate	Maturity Date [1]
Financing Liability - Dixie Valley	$ 242.0	2.55%	March 2033

[1] final maturity date of the financing liability is assuming execution of the buy-out option in September 2024.

Convertible Senior Notes

Loan	Amount Outstanding as of December 31, 2022 (Dollar in millions)	Annual Interest Rate	Maturity Date [1]
Convertible Senior Notes	$ 431.3	2.50%	July 2027

[1] The Notes mature In July 2027, unless earlier converted, redeemed or repurchased.

For additional description of our long term debt, see Note 12, Long-term Debt, Credit Agreements and Financial Liability to our consolidated financial statements, set forth in Item 8 of this Annual Report.

Liquidity Impact of Uncertain Tax Positions

As discussed in Note 17 - Income Taxes, to our consolidated financial statements set forth in Item 8 of this Annual Report, we have a liability associated with unrecognized tax benefits and related interest and penalties in the amount of approximately $6.6 million as of December 31, 2022. This liability is included in long-term liabilities in our consolidated balance sheet, because we generally do not anticipate that settlement of the liability will require payment of cash within the next 12 months. We are not able to reasonably estimate when we will make any cash payments required to settle this liability.

Dividends

We have adopted a dividend policy pursuant to which we currently expect to distribute at least 20% of our annual profits available for distribution by way of quarterly dividends. In determining whether there are profits available for distribution, our Board will take into account our business plan and current and expected obligations, and no distribution will be made that in the judgment of our Board would prevent us from meeting such business plan or obligations.

The following are the dividends declared by us during the past two years, as of December 31, 2022:

Date Declared	Dividend Amount per Share	Record Date	Payment Date
February 24, 2021	$ 0.12	March 11, 2021	March 29, 2021
May 5, 2021	$ 0.12	May 18, 2021	June 1, 2021
August 4, 2021	$ 0.12	August 18, 2021	September 1, 2021
November 3, 2021	$ 0.12	November 17, 2021	December 3, 2021
February 23, 2022	$ 0.12	March 9, 2022	March 23, 2022
May 2, 2022	$ 0.12	May 16, 2022	May 31, 2022
August 3, 2022	$ 0.12	August 17, 2022	August 31, 2022
November 2, 2022	$ 0.12	November 16, 2022	November 30, 2022
February 22, 2023	$ 0.12	March 8, 2023	March 22, 2023

Historical Cash Flows

The following table sets forth the components of our cash flows for the relevant periods indicated:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Net cash provided by operating activities	$ 280,974	$ 258,822	$ 265,005
Net cash used in investing activities	(523,406)	(638,193)	(385,969)
Net cash provided by (used in) financing activities	126,273	186,385	503,478
Translation adjustments on cash and cash equivalents	(609)	(348)	1,154
Net change in cash and cash equivalents and restricted cash and cash equivalents	$ (116,768)	$ (193,334)	$ 383,668

For the Year Ended December 31, 2022

Net cash provided by operating activities for the year ended December 31, 2022 was $281.0 million, compared to $258.8 million for the year ended December 31, 2021. The net increase of $22.2 million resulted primarily from (i) an increase in net income of $1.7 million in 2022 compared to 2021, adjusted by an increase in depreciation an amortization of $15.8 million in 2022 compared to 2021, and an increase in impairment of long-lived assets of $32.6 million in 2022 compared to 2021. Additional contributors to the increase in net cash provided by operating activities were an increase in the change in accounts payable and accrued expenses of $19.9 million, mainly due to timing of payments to our supplier and a decrease in the change in prepaid expenses and other of $24.0 million in 2022 compared to 2021. This increase was partially offset by: (i) an increase in the change in receivables of $46.7 million in 2022 compared to 2021, due to timing of collections from our customers; (ii) a decrease in the change of costs and estimated earnings in excess of billing on uncompleted contracts, net of $21.6 million in 2022 compared to 2021, as a result of timing of billing to our customers.

Net cash used in investing activities for the year ended December 31, 2022 was $523.4 million, compared to $638.2 million for the year ended December 31, 2021. The principal factors that affected the decrease in our net cash used in investing activities during the year ended December 31, 2022 were: (i) cash provided from the purchase, maturities and sale and of marketable securities of $42.8 million in 2022 compared to cash used for purchase of marketable securities, net maturities of $43.8 million in 2021; and (ii) cash paid for the purchase transaction of Terra-Gen for a total consideration of $171.0 million in 2021, compared to none in 2022. This increase was partially offset by capital expenditures of $563.5 million in 2022 compared to $419.3 million in the prior year, primarily for our facilities under construction that support our growth plan.

Net cash provided by financing activities for the year ended December 31, 2022 was $126.3 million, compared to $186.4 million provided by financing activities for the year ended December 31, 2021. The principal factors that affected the decrease in net cash provided by financing activities were: (i) $135.3 million proceeds from long-term loans from banks in 2022 compared to $275.0 million during 2021; (ii) $219.1 million of prepayment of Series 3 Bond and $185.2 million of long-term loans compared to $93.0 million in 2021; (iii) purchase of capped call instruments of $24.5 million in 2022, and purchase of treasury stock of $18.0 million in 2022, partially offset by proceeds from issuance of convertible notes, net of $419.7 million in 2022.

For the Year Ended December 31, 2021

A discussion of changes in our cash flows in 2021 compared to 2020 has been omitted from this Form10-K, but may be found in "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of our Form 10-K for the fiscal year ended December 31, 2021, filed with the SEC on February 25, 2022, which is incorporated by reference herein. This Form 10-K is available free of charge on the SECs website at www.sec.gov and at www.Ormat.com, by clicking "Investors" located at the top of the home page.

Total EBITDA and Adjusted EBITDA

We calculate EBITDA as net income before interest, taxes, depreciation, amortization and accretion. We calculate Adjusted EBITDA as net income before interest, taxes, depreciation, amortization and accretion, adjusted for (i) mark-to-market gains or losses from accounting for derivatives, (ii) stock-based compensation, (iii) merger and acquisition transaction costs, (iv) gain or loss from extinguishment of liabilities, (v) cost related to a settlement agreement, (vi) non-cash impairment charges; (vii) write-off of unsuccessful exploration activities; and (viii) other unusual or non-recurring items. We adjust for these factors as they may be non-cash, unusual in nature and/or are not factors used by management for evaluating operating performance. We believe that presentation of these measures will enhance an investor's ability to evaluate our financial and operating performance. EBITDA and Adjusted EBITDA are not measurements of financial performance or liquidity under accounting principles generally accepted in the United States, or U.S. GAAP, and should not be considered as an alternative to cash flow from operating activities or as a measure of liquidity or an alternative to net earnings as indicators of our operating performance or any other measures of performance derived in accordance with U.S. GAAP. Our Board of Directors and senior management use EBITDA and Adjusted EBITDA to evaluate our financial performance. However, other companies in our industry may calculate EBITDA and Adjusted EBITDA differently than we do.

Starting in the fourth quarter of 2022, we include accretion expenses related to asset retirement obligation in the adjustments to net income when calculating EBITDA and adjusted EBITDA. The presentation of EBITDA and adjusted EBITDA includes accretion expenses for the fiscal year ended December 31, 2022, however, the prior years have not been recast to include accretion expenses as the amounts were immaterial.

This information should not be considered in isolation from, or as a substitute for, or superior to, measures of financial performance prepared in accordance with GAAP or other non-GAAP financial measures.

Net income for the year ended December 31, 2022 was $77.8 million, compared to $76.1 million for the year ended December 31, 2021 and $101.8 million for the year ended December 31, 2020.

Adjusted EBITDA for the year ended December 31, 2022 was $435.5 million, compared to $401.4 million for the year ended December 31, 2021 and $420.2 million for the year ended December 31, 2020.

The following table reconciles net income to EBITDA and Adjusted EBITDA for the years ended December 31, 2022, 2021 and 2020:

	Year Ended December 31,		
	2022	**2021**	**2020**
	(Dollars in thousands)		
Net income	$ 77,795	$ 76,077	$ 101,806
Adjusted for:			
Interest expense, net (including amortization of deferred financing costs)	84,326	80,534	76,236
Income tax provision (benefit)	14,742	24,850	67,003
Adjustment to investment in an unconsolidated company: our proportionate share in interest expense, tax and depreciation and amortization in Sarulla complex	13,199	14,680	11,549
Depreciation, amortization and accretion	198,603	177,930	151,371
EBITDA	**388,665**	**374,071**	**407,965**
Mark-to-market on derivative instruments	1,613	741	(1,192)
Stock-based compensation	11,646	9,168	9,830
Make-whole premium related to long-term debt prepayment	1,102	—	—
Reversal of a contingent liability related to a business combination	(1,829)	(418)	—
Allowance for bad debts related to February power crisis in Texas	115	2,980	—
Hedge losses resulting from February power crisis in Texas	—	9,133	—
Impairment of long-lived assets	32,648	—	—
Write-off of unsuccessful exploration activities	828	—	—
Merger and acquisition transaction costs	675	5,635	2,279
Legal settlement expenses	—	—	1,277
Tender-related deposits write-off	—	134	—
Adjusted EBITDA	**$ 435,463**	**$ 401,444**	**$ 420,159**

Adjusted EBITDA for fiscal year 2022 increased by 8.5% compared to fiscal year 2021, primarily due to an increase in gross profit of our Electricity and Product segments together with a decrease in general and administrative expenses, partially offset by a decrease in the Energy Storage segment gross profit.

EBITDA and Adjusted EBITDA include our proportionate share (12.75%) of Sarulla's EBITDA and Adjusted EBITDA, respectively.

On May 2014, the Sarulla consortium ("SOL") closed $1,170 million in financing. As of December 31, 2022, the credit facility has an outstanding balance of $876.2 million. Our proportionate share in the SOL credit facility is $111.7 million. In September 2022, the last calculation period, Sarulla was able to meet its historical debt service coverage ratio ("DSCR") covenant under the credit facility agreement notwithstanding the lower performance of the power plants, and it was able to pay the entire current Extended Political Risk Guaranty ("EPRG") premium due in September 2022 (but not to eliminate the overdue EPRG amount of approx. $1.5 million from past periods). For the calculation period ending on March 2023, the consortium projects that it will be able to meet the historical DSCR covenant and to eliminate overdue EPRG premiums, however, for the next calculation period between March – September 2023 the consortium projects that the minimum DSCR requirement and the payment obligation of the EPRG premium will not be met. During the second quarter of 2022, Sarulla agreed with its banks on a framework that will enable it to perform remediation work that is aimed to improve the plant's performance. The execution of the phase 1 of the remediation works is underway and major contractors are being mobilized. However, as part of the remediation works involves drilling activities, uncertainty remains regarding Sarulla's ability to meet the plan and the Company is evaluating periodically the impact of the plan on future performance. As the Company determined that the current situation and circumstances related to its equity investment in Sarulla are temporary, no impairment testing was required at year-end. As of December 31, 2022, the carrying value of our equity investment in SOL is $74.9 million.

Exposure to Market Risks

We, like other power plant operators, are exposed to electricity price volatility risk. Our exposure to such market risk is currently limited because the majority of our long-term PPAs have fixed or escalating rate provisions that limit our exposure to changes in electricity prices. Our energy storage projects sell primarily on a "merchant" basis and are exposed to changes in the electricity market prices.

The energy payments under the PPAs of the Heber 2 power plant in the Heber Complex until the end of 2022, are determined by reference to the relevant power purchaser's short run avoided cost. A decline in the price of natural gas will result in a decrease in the incremental cost that the power purchaser avoids by not generating its electrical energy needs from natural gas, or by reducing the price of purchasing its electrical energy needs from natural gas power plants, which in turn will reduce the energy payments that we may charge under the relevant PPA for these power plants. The Puna Complex is currently benefiting from energy prices which are higher than the floor under the 25 MW PPA for the Puna Complex. For Heber 2 power plant we signed a new PPA and for Puna we are currently negotiating a new PPA, for both with a fixed energy rate, as discussed above.

As of December 31, 2022, 98.7% of our consolidated long-term debt was fixed rate debt and therefore was not subject to interest rate volatility risk and 1.3% of our long-term debt was floating rate debt, exposing us to interest rate risk in connection therewith. As of December 31, 2022, $27.1 million of our long-term debt remained subject to interest rate risk.

Our cash equivalents are subject to interest rate risk. We currently maintain our surplus cash in short-term, interest-bearing bank deposits, money market funds, corporate bonds and debt securities available for sale (with a minimum investment grade rating of A+ by Standard & Poor's Ratings Services).

We are also exposed to foreign currency exchange risk, in particular the fluctuation of the U.S. dollar versus the New Israeli Shekels ("NIS") in Israel and the Euro. Risks attributable to fluctuations in currency exchange rates can arise when we or any of our foreign subsidiaries borrow funds or incur operating or other expenses in one type of currency but receive revenues in another. In such cases, an adverse change in exchange rates can reduce such subsidiary's ability to meet its debt service obligations, reduce the amount of cash and income we receive from such foreign subsidiary, or increase such subsidiary's overall expenses. In Kenya, the tax asset is recorded in Kenyan Shillings ("KES") similar to the tax liability, however any change in the exchange rate in the KES versus the U.S. dollar has an impact on our financial results. Risks attributable to fluctuations in foreign currency exchange rates can also arise when the currency denomination of a particular contract is not the U.S. dollar. Substantially all of our PPAs in the international markets are either U.S. dollar-denominated or linked to the U.S. dollar except for our operations on Guadeloupe, where we own and operate the Bouillante power plant which sells its power under a Euro-denominated PPA with Électricité de France S.A. Our construction contracts from time to time contemplate costs which are incurred in local currencies. The way we often mitigate such risk is to receive part of the proceeds from the contract in the currency in which the expenses are incurred. Currently, we have forward and cross-currency swap contracts in place to reduce our NIS/U.S. dollar currency exposure and expect to continue to use currency exchange and other derivative instruments to the extent we deem such instruments to be the appropriate tool for managing such exposure.

On July 1, 2020, we concluded an auction tender and accepted subscriptions for senior unsecured bonds comprised of NIS 1.0 billion aggregate principal amount (the "Senior Unsecured Bonds - Series 4"). The Senior Unsecured Bonds - Series 4 were issued in New Israeli Shekels and converted to approximately $290 million using a cross-currency swap transaction shortly after the completion of such issuance. In June 2022, we issued $431.3 million aggregate principal amount of our 2.5% convertible senior notes due in 2027. The Notes bear annual interest of 2.5%, payable semiannually in arrears, and mature on July 15, 2027, unless earlier converted, redeemed or repurchased.

We performed a sensitivity analysis on the fair values of our long-term debt obligations, and foreign currency exchange forward contracts. The foreign currency exchange forward contracts listed below principally relate to trading activities. The sensitivity analysis involved increasing and decreasing forward rates at December 31, 2022 and 2021 by a hypothetical 10% and calculating the resulting change in the fair values.

At this time, the development of our strategic plan has not exposed us to any additional market risk. However, as the implementation of the plan progresses, we may be exposed to additional or different market risks.

The results of the sensitivity analysis calculations as of December 31, 2022 and 2021 are presented below:

	Assuming a 10% Increase in Rates		Assuming a 10% Decrease in Rates		
	As of December 31,		As of December 31,		
Risk	**2022**	**2021**	**2022**	**2021**	**Change in the Fair Value of**
			(In thousands)		
Foreign Currency	$ (5,093)	$ (2,719)	$ 6,220	$ 3,324	Foreign Currency Forward Contracts
Interest Rate	$ (1,493)	$ (1,131)	$ 1,531	$ 1,148	Hapoalim Loan
Interest Rate	$ (631)	$ (557)	$ 648	$ 566	HSBC Loan
Interest Rate	$ (1,378)	$ (1,119)	$ 1,416	$ 1,131	Discount Loan
Interest Rate	$ (4,096)	$ (3,394)	$ 4,232	$ 3,465	Financing Liability
Interest Rate	$ (3,693)	$ (3,069)	$ 3,832	$ 3,146	OFC 2 Senior Secured Notes
Interest Rate	$ (3,178)	$ (2,946)	$ 3,295	$ 3,025	DFC Loan
Interest Rate	$ (259)	$ (226)	$ 268	$ 231	Amatitlan Loan
Interest Rate	$ (5,701)	$ (3,833)	$ 5,925	$ 3,880	Senior Unsecured Bonds
Interest Rate	$ (527)	$ (494)	$ 544	$ 505	DEG 2 Loan
Interest Rate	$ (1,528)	$ (1,286)	$ 1,597	$ 1,324	DAC 1 Senior Secured Notes
Interest Rate	$ (3,902)	$ (3,135)	$ 4,045	$ 3,214	Migdal Loan and the Additional Migdal Loan and the Second Addendum Migdal Loan
Interest Rate	$ (986)	$ (920)	$ 1,051	$ 965	San Emidio Loan
Interest Rate	$ (748)	$ (539)	$ 775	$ 550	DOE Loan
Interest Rate	$ (2,430)	$ (88)	$ 2,606	$ 89	Idaho Holdings Loan
Interest Rate	$ (2,198)	$ (2,035)	$ 2,293	$ 2,100	Platanares DFC Loan
Interest Rate	$ (435)	$ (389)	$ 448	$ 397	DEG 3 Loan
Interest Rate	$ (155)	$ (121)	$ 158	$ 123	Plumstriker Loan
Interest Rate	$ (96)	$ (81)	$ 97	$ 82	Other long-term loans

In July 2019, the United Kingdom's Financial Conduct Authority (the "FCA"), which regulates LIBOR (London Interbank Offered Rate), announced that it intends to phase out LIBOR. LIBOR is still in use and being published until its phaseout in June 2023 in order to allow a transition period mainly for contracts that already exist using LIBOR. Additionally, the FCA has stated that no new contracts using U.S. dollar LIBOR should be entered into after December 31, 2021. The U.S. Federal Reserve, in conjunction with the Alternative Reference Rates Committee, a steering committee comprised of large U.S. financial institutions, is considering replacing U.S. dollar LIBOR with a new index calculated by short-term repurchase agreements, backed by Treasury securities ("SOFR"). SOFR is observed and backward-looking, which stands in contrast with LIBOR under the current methodology, which is an estimated forward-looking rate and relies, to some degree, on the expert judgment of submitting panel members. Given that SOFR is a secured rate backed by government securities, it would not take into account bank credit risk (as is the case with LIBOR). Therefore, the SOFR rate, if adopted, would likely be lower than LIBOR rates and is less likely to correlate with the funding costs of financial institutions.

We have evaluated the impact of the transition from LIBOR, and currently believe that the transition will not have a material impact on our consolidated financial statements.

Effect of Inflation

We are seeing an increase in overall operating and other costs as the result of higher inflation rates, in particular in the United States. In addition, we are experiencing an increase in raw material cost and supply chain delays, which may put pressure on our operating margins in the Product segment and increases our cost to build our own power plants and energy storage assets. To address the possibility of rising inflation, some of our contracts include certain provisions that mitigate inflation risk.

In connection with the Electricity segment, none of our U.S. PPAs, including the SCPPA Portfolio PPA, are directly linked to the Consumer Price Index ("CPI"). Inflation may directly impact an expense we incur for the operation of our projects, thereby increasing our overall operating costs and reducing our profit and gross margin. The negative impact of inflation would be partially offset by price adjustments built into some of our PPAs that could be triggered upon such occurrences. In addition to the Heber 2 and part of the Puna rates that are impacted by higher commodity prices, the energy payments pursuant to our PPAs for some of our power plants such as the Brady power plant, the Steamboat 2 and 3 power plants and the McGinness Complex increase every year through the end of the relevant terms of such agreements, although such increases are not directly linked to the CPI or any other inflationary index. Lease payments are generally fixed, while royalty payments are generally calculated as a percentage of revenues and therefore are not significantly impacted by inflation. In our Product segment, inflation may directly impact fixed and variable costs incurred in the construction of third party power plants, thereby lowering our profit margins at the Product segment. We are more likely to be able to offset long term, all or part of this inflationary impact through our project pricing. With respect to power plants that we build for our own electricity production, inflationary pricing may impact our operating costs which may be partially offset in the pricing of the new long-term PPAs that we negotiate.

Interest rate increases for both short-term and long-term debt have increased sharply. Although our outstanding debt mostly bears fixed interest rates, as we refinance it, or borrow additional amounts, we may incur additional interest expense versus expiring loans.

Contractual Obligations and Commercial Commitments

The following tables set forth our material contractual obligations as of December 31, 2022 (in thousands):

	Payments Due by Period						
	Remaining Total	2023	2024	2025	2026	2027	Thereafter
Long-term debt and financing liabilities - principal	$ 2,052,601	$ 181,660	$ 261,622	$ 176,309	$ 177,539	$ 605,013	$ 650,458
Interest on long-term debt and financing liabilities [1]	290,912	69,658	52,854	43,558	36,496	29,968	58,377
Finance lease obligations	4,119	1,710	1,031	866	483	29	—
Operating lease obligations	34,366	2,925	2,547	2,225	2,086	1,897	22,686
Benefits upon retirement [2]	12,147	2,156	81	508	406	529	8,467
Asset retirement obligation	97,660	—	—	—	—	—	97,660
Purchase commitments [3]	569,881	569,881	—	—	—	—	—
	$ 3,061,686	$ 827,990	$ 318,135	$ 223,466	$ 217,010	$ 637,436	$ 837,648

(1) See interest rates and maturity dates under Liquidity and Capital Resources section above.

(2) The above amounts were determined based on employees' current salary rates and the number of years' service that will have been accumulated at their expected retirement date. These amounts do not include amounts that might be paid to employees that will cease working with us before reaching their expected retirement age.

(3) We purchase raw materials for inventories, construction-in-process and services from a variety of vendors. During the normal course of business, in order to manage manufacturing lead times and help assure adequate supply, we enter into agreements with contract manufacturers and suppliers that either allow them to procure goods and services based upon specifications defined by us, or that establish parameters defining our requirements. At December 31, 2022, total obligations related to such supplier agreements were approximately $569.9 million (approximately $404.1 million of which relate to construction-in-process). All such obligations are payable in 2023.

The table above does not reflect unrecognized tax benefits of $6.6 million, the timing of which is uncertain. Refer to Note 17 to our consolidated financial statements set forth in Item 8 of this Annual Report for additional discussion of unrecognized tax benefits. The above table also does not reflect a liability associated with the sale of tax benefits of $166.3 million, the timing of which is uncertain and other long-term liabilities of $3.3 million that are deemed immaterial. Refer to Note 13 to our consolidated financial statements as set forth in Item 8 of this Annual Report for additional discussion of our liability associated with the sale of tax benefits.

Concentration of Credit Risk

Our credit risk is currently concentrated with the following major customers: Sierra Pacific Power Company and Nevada Power Company (subsidiaries of NV Energy), SCPPA and KPLC. If any of these electric utilities fail to make payments under its PPAs with us, such failure would have a material adverse impact on our financial condition. Also, by implementing our multi-year strategic plan we may be exposed, by expanding our customer base, to different credit profile customers than our current customers.

The Company's revenues from its primary customers as a percentage of total revenues are as follows:

	Year Ended December 31,		
	2022	2021	2020
Southern California Public Power Authority ("SCPPA")	21.5%	23.7%	20.6%
Sierra Pacific Power Company and Nevada Power Company	16.9	18.6	17.5
Kenya Power and Lighting Co. Ltd. ("KPLC")	14.4	15.5	16.4

We have historically been able to collect on substantially all of our receivable balances. As of December 31, 2022, the amount overdue from KPLC in Kenya was $27.0 million of which $15.2 million was paid in January and February of 2023 The Company believes it will be able to collect all past due amounts in Kenya. This belief is supported by the fact that in addition to KPLC's obligations under its power purchase agreement, the Company holds a support letter from the Government of Kenya that covers certain cases of KPLC non-payment (such as where caused by government actions and/or political events).

In Honduras, as of December 31, 2022, the total amount overdue from ENEE was $13.9 million of which $2.6 million was collected in February 2023. In addition, due to continuing restrictive measures related to the COVID-19 pandemic in Honduras, the Company may experience additional delays in collection. The Company believes it will be able to collect all past due amounts in Honduras.

Government Grants and Tax Benefits

On August 16, 2022, the President of the United States signed into law the Inflation Reduction Act of 2022 (the "IRA"), which is effective for taxable years beginning after December 31, 2022. The IRA includes several tax incentives to promote climate change mitigation and clean energy, electric vehicles, battery and energy storage manufacture or purchase. Some of these measures may materially affect our consolidated financial statements, and we are in the process of evaluating the IRA and identifying potential effects of the IRA as more guidance is issued. Furthermore, the IRA introduces the following: (i) a new corporate alternative minimum tax of 15% on adjusted financial statement income of corporations with profits greater than $1 billion over a three-year period; and (ii) an excise tax of 1% of the fair market value of any stock which is repurchased, reduced by any stock issued during the taxable year. The IRA also includes significant tax incentives for energy and climate initiatives related to Production Tax Credits ("PTC") and Investment Tax Credits ("ITC"), including extending ITC to energy storage projects for assets placed in service after December 31, 2022 and the ability to transfer or sell PTCs to other taxpayers.

We are also permitted to depreciate most of the cost of a new geothermal power plant. In cases where we claim ITC, our tax basis in the plant that is eligible for depreciation is reduced by one-half of the ITC amount. In cases where we claim the PTC, there is no reduction in the tax basis for depreciation. Following the IRA, projects that were or will be placed in service after September 27, 2017, could qualify for a 100% bonus depreciation with respect to its qualifying assets. After applying any depreciation bonus that is available, we can depreciate the remainder of our tax basis in the plant, if any, mostly over five years on an accelerated basis, meaning that more of the cost may be deducted in the first few years than during the remainder of the depreciation period. We will continue to analyze this new provision under the IRA and determine if an election is appropriate as it relates to our business needs.

Ormat Systems received "Benefited Enterprise" status under Israel's Law for Encouragement of Capital Investments, 1959 (the Investment Law), with respect to two of its investment programs through 2011. In January 2011, new legislation amending the Investment Law was enacted. Under the new legislation, a uniform rate of corporate tax will apply to all qualified income of certain industrial companies, as opposed to the previous law's incentives that are limited to income from a "Benefited Enterprise" during their benefits period. As a result, we now pay a uniform corporate tax rate of 16% with respect to that qualified income. In January 2021, Ormat Systems received an approval from the Israeli Innovation Authority that it owns an "Innovation Promoting Enterprise" and therefore is eligible for a reduced corporate tax rate of 12% on its "Preferred Technological Income" for the tax years 2019 and 2020 (effective tax rate of approximately 13% for 2019 and 2020). The tax benefit of lower effective tax rate is reflected in the 2021 net income.

ITEM 7A. *QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK*

Information responding to Item 7A is included in Item 7 — "Management's Discussion and Analysis of Financial Condition and Results of Operations" of this Annual Report.

ITEM 8. *FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA*

Index to Consolidated Financial Statements of Ormat Technologies, Inc. and Subsidiaries

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Ormat Technologies, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Ormat Technologies, Inc. and its subsidiaries (the "Company") as of December 31, 2022 and 2021, and the related consolidated statements of operations and comprehensive income (loss), of equity and of cash flows for each of the three years in the period ended December 31, 2022, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting 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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

Critical Audit Matters

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

Estimates of Future Costs in Product Revenue Recognition

As described in Note 18 to the consolidated financial statements, $71.4 million of the Company's total revenues for the year ended December 31, 2022 was generated from product revenues, the majority of which related to long-term contracts. For the Company’s long-term contracts, control transfers over time and revenue is recognized based on the extent of progress in each period towards completion of the performance obligation. The selection of the measure of progress towards completion requires management judgment and is based on the nature of the products or services to be provided. As disclosed by management, the Company generally uses the percentage of completion method to measure progress for its contracts because management believes that measure best depicts the transfer of control to the customer, which occurs as the Company incurs costs related to those contracts. Under the percentage of completion method, the extent of progress towards completion is based on the ratio of costs incurred to date compared to the total estimated costs at completion of the performance obligation, which includes both the actual costs already incurred and the estimated costs to complete. Revenues are recognized proportionately as costs are incurred. Due to the nature of the work required to be performed on the performance obligation, management’s estimation of future costs to completion is complex and requires significant judgment. Management has disclosed that there are factors that can affect the accuracy of cost estimates, including, but not limited to, the ability to properly execute the engineering and design phases consistent with customer expectations, the availability and costs of labor and materials resources, and productivity.

The principal consideration for our determination that performing procedures relating to future costs to completion estimates in revenue recognition is a critical audit matter are that there was significant judgment by management when developing the estimates of future costs to complete projects. This in turn led to significant auditor judgment and effort in performing procedures to evaluate management's estimates of future costs to complete projects, including the assessment of management’s judgment about the Company’s ability to properly execute the engineering and design phases consistent with customer expectations and significant assumptions related to estimated expected labor costs.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process, including controls over the determination of estimates of future costs to complete projects. These procedures also included, among others, evaluating and testing management’s process for determining the estimates of future costs for a sample of projects. Evaluating the reasonableness of significant assumptions used involved evaluating management’s ability to estimate future costs to complete projects by (i) performing a comparison of the originally estimated and actual costs incurred on similar completed projects; (ii) evaluating the timely identification of circumstances that warranted a modification to estimated costs to complete projects, including changes in job performance, job conditions, and estimated profitability; and (iii) testing management’s process for evaluating the Company’s ability to execute the specific contract characteristics.

Impairment of Long-Lived Assets

As described in note 9 to the consolidated financial statements, the Company's Property Plant and Equipment, net balances as of December, 31, 2022 is $2,493 million. As discussed in Note 1 to the consolidated financial statements, the Company evaluates long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Long-lived assets, specifically geothermal operating power plants, comprise a significant amount of Company's total assets. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the estimated future net undiscounted cash flows expected to be generated by the asset upon indication of impairment. The significant assumptions that the Company uses in estimating its undiscounted future cash flows include: (i) projected generating capacity of the power plants and rates to be received under the respective power purchase agreement and expected market rates thereafter and (ii) projected operating expenses of the relevant power plants. If the assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds their fair value.

The principal consideration for our determination that performing procedures relating to the impairment of long-lived assets, specifically geothermal operating power plants, is a critical audit matter is that there was significant judgment exercised by management in estimating the recoverability of its geothermal operating power plants upon indication of impairment. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures to evaluate management’s cash flow projections and significant assumptions as detailed above. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the impairment of long-lived assets, including controls over the identification of impairment indicators and the determination of the recoverable amount. These procedures also included, among others, testing management's process for identifying and analyzing impairment indicators, evaluating the reasonableness of management’s significant assumptions related to estimating future cash flows of long-lived assets and testing the completeness and accuracy of underlying data used in management’s assessment. Evaluating management’s assumptions related to estimating future cash flows of long-lived assets involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the Company; (ii) the consistency with external market and industry data; and (iii) the consistency of the assumptions with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company’s discounted cash flow model to calculate the impairment amount.

/s/ Kesselman & Kesselman
Certified Public Accountants (Isr.)
A member firm of PricewaterhouseCoopers International Limited

Tel Aviv, Israel
February 24, 2023

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

ORMAT TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

	December 31,	
	2022	2021
	(Dollars in thousands)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 95,872	$ 239,278
Marketable securities at fair value	—	43,343
Restricted cash and cash equivalents (primarily related to VIEs)	130,804	104,166
Receivables:		
Trade less allowance for credit losses of $90 and $90, respectively (primarily related to VIEs)	128,818	122,944
Other	32,415	18,144
Inventories	22,832	28,445
Costs and estimated earnings in excess of billings on uncompleted contracts	16,405	9,692
Prepaid expenses and other	29,571	35,920
Total current assets	456,717	601,932
Investment in unconsolidated companies	115,693	105,886
Deposits and other	39,762	78,915
Deferred income taxes	161,365	143,450
Property, plant and equipment, net ($2,326,491 and $2,159,696 related to VIEs, respectively)	2,493,457	2,294,973
Construction-in-process ($360,508 and $366,924 related to VIEs, respectively)	893,198	721,483
Operating leases right of use ($9,662 and $7,825 related to VIEs, respectively)	23,411	19,357
Finance leases right of use ($75 and $192 related to VIEs, respectively)	3,806	6,414
Intangible assets, net	333,845	363,314
Goodwill	90,325	89,954
Total assets	$ 4,611,579	$ 4,425,678
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable and accrued expenses	$ 149,423	$ 143,186
Billings in excess of costs and estimated earnings on uncompleted contracts	8,785	9,248
Current portion of long-term debt:		
Limited and non-recourse (primarily related to VIEs):	64,044	61,695
Full recourse	101,460	313,846
Financing liability	16,270	10,835
Operating lease liabilities	2,347	2,564
Finance lease liabilities	1,581	2,782
Total current liabilities	343,910	544,156
Long-term debt, net of current portion:		
Limited and non-recourse (primarily related to VIEs and less deferred financing costs of $10,272 and $11,304, respectively)	521,885	539,664
Full recourse (less deferred financing costs of $2,995 and $3,659, respectively)	676,512	740,335
Convertible senior notes (less deferred financing costs of $10,445 and $0, respectively)	420,805	—
Financing liability	225,759	242,029
Operating lease liabilities	19,788	16,462
Finance lease liabilities	2,262	4,361
Liability associated with sale of tax benefits	166,259	134,953
Deferred income taxes	83,465	84,662
Liability for unrecognized tax benefits	6,559	5,730
Liabilities for severance pay	12,833	15,694
Asset retirement obligation	97,660	84,891
Other long-term liabilities	3,317	4,951
Total liabilities	$ 2,581,014	$ 2,417,888
Commitments and contingencies (Note 21)		
Redeemable noncontrolling interest	9,590	9,329
Equity:		
The Company's stockholders' equity:		
Common stock, par value $0.001 per share; 200,000,000 shares authorized; 56,095,918 and 56,056,450 issued and outstanding as of December 31, 2022 and December 31, 2021, respectively	56	56
Additional paid-in capital	1,259,072	1,271,925
Treasury stock, at cost (258,667 and 0 shares held as of December 31, 2022 and 2021, respectively)	(17,964)	—
Retained earnings	623,907	585,209
Accumulated other comprehensive gain (loss)	2,500	(2,191)
Total stockholders' equity attributable to Company's stockholders	1,867,571	1,854,999
Noncontrolling interest	153,404	143,462
Total equity	2,020,975	1,998,461
Total liabilities, redeemable noncontrolling interest and equity	$ 4,611,579	$ 4,425,678

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

ORMAT TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME (LOSS)

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands, except earnings per share data)		
Revenues:			
Electricity	$ 631,727	$ 585,771	$ 541,393
Product	71,414	46,920	148,125
Energy storage	31,018	30,393	15,824
Total revenues	734,159	663,084	705,342
Cost of revenues:			
Electricity	380,361	337,019	300,059
Product	60,479	41,374	114,948
Energy storage	24,495	20,353	14,060
Total cost of revenues	465,335	398,746	429,067
Gross profit	268,824	264,338	276,275
Operating expenses:			
Research and development expenses	5,078	4,129	5,395
Selling and marketing expenses	16,193	15,199	17,384
General and administrative expenses	61,274	75,901	60,226
Impairment of long-lived assets	32,648	—	—
Write-off of unsuccessful exploration activities	828	—	—
Business interruption insurance income	—	(248)	(20,743)
Operating income	152,803	169,357	214,013
Other income (expense):			
Interest income	3,417	2,124	1,717
Interest expense, net	(87,743)	(82,658)	(77,953)
Derivatives and foreign currency transaction gains (losses)	(6,044)	(14,720)	3,802
Income attributable to sale of tax benefits	33,885	29,582	25,720
Other non-operating income (expense), net	(709)	(134)	1,418
Income from operations before income tax and equity in earnings (losses) of investees	95,609	103,551	168,717
Income tax (provision) benefit	(14,742)	(24,850)	(67,003)
Equity in earnings (losses) of investees, net	(3,072)	(2,624)	92
Net income	77,795	76,077	101,806
Net income attributable to noncontrolling interest	(11,954)	(13,985)	(16,350)
Net income attributable to the Company's stockholders	65,841	$ 62,092	$ 85,456
Comprehensive income:			
Net income	77,795	76,077	101,806
Other comprehensive income (loss), net of related taxes:			
Change in foreign currency translation adjustments	(2,486)	(3,236)	3,813
Change in unrealized gains or losses in respect of the Company's share in derivatives instruments of unconsolidated investment that qualifies as a cash flow hedge	8,370	3,892	(3,975)
Change in unrealized gains or losses in respect of a cross currency swap derivative instrument that qualifies as a cash flow hedge (net of related tax of $464 and $817, respectively)	(1,825)	2,379	3,366
Change in unrealized gains or losses on marketable securities available-for-sale (net of related tax of $0)	40	(40)	—
Other changes in comprehensive income	59	228	274
Comprehensive income	$ 81,953	79,300	105,284
Comprehensive income attributable to noncontrolling interest	(11,421)	(12,779)	(17,794)
Comprehensive income attributable to the Company's stockholders	$ 70,532	$ 66,521	$ 87,490
Earnings per share attributable to the Company's stockholders:			
Basic:	$ 1.17	$ 1.11	$ 1.66
Diluted:	$ 1.17	$ 1.10	$ 1.65
Weighted average number of shares used in computation of earnings per share attributable to the Company's stockholders:			
Basic	56,063	56,004	51,567
Diluted	56,503	56,402	51,937

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

ORMAT TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY

	The Company's Stockholders' Equity								
	Common Stock		Additional Paid-in Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total	Noncontrolling Interest	Total Equity
	Shares	Amount							
	(Dollars in thousands, except per share data)								
Balance as of December 31, 2019	51,032	$ 51	$ 913,150	$ —	$ 487,873	$ (8,654)	$ 1,392,420	$ 122,990	$ 1,515,410
Cumulative effect of changes in accounting principles	—	—	—	—	(755)	—	(755)	—	(755)
Adjusted balance as of the beginning of the year	51,032	$ 51	$ 913,150	$ —	$ 487,118	$ (8,654)	$ 1,391,665	$ 122,990	$ 1,514,655
Stock-based compensation	—	—	9,830	—	—	—	9,830	—	9,830
Exercise of options by employees and directors (*)	178	—	—	—	—	—	—	—	—
Cash paid to noncontrolling interest	—	—	—	—	—	—	—	(6,756)	(6,756)
Cash dividend declared, $0.44 per share	—	—	—	—	(22,471)	—	(22,471)	—	(22,471)
Common stock issuance	4,773	5	339,466	—	—	—	339,471	—	339,471
Increase in noncontrolling interest	—	—	—	—	—	—	—	2,754	2,754
Net income	—	—	—	—	85,456	—	85,456	15,020	100,476
Other comprehensive income (loss), net of related taxes:									
Change in foreign currency translation adjustments	—	—	—	—	—	2,369	2,369	1,444	3,813
Change in unrealized gains or losses in respect of the Company's share in derivative instruments of unconsolidated investment that qualifies as a cash flow hedge	—	—	—	—	—	(3,975)	(3,975)	—	(3,975)
Change in unrealized gains or losses in respect of a cross currency swap derivative instrument that qualifies as a cash flow hedge (net of related tax of $1,095)	—	—	—	—	—	3,366	3,366	—	3,366
Other	—	—	—	—	—	274	274	—	274
Balance at December 31, 2020	55,983	56	1,262,446	—	550,103	(6,620)	1,805,985	135,452	1,941,437
Stock-based compensation	—	—	9,168	—	—	—	9,168	—	9,168
Exercise of options by employees and directors (*)	73	—	—	—	—	—	—	—	—
Stock issuance costs reimbursement	—	—	311	—	—	—	311	—	311
Cash paid to noncontrolling interest	—	—	—	—	—	—	—	(5,507)	(5,507)
Cash dividend declared, $0.48 per share	—	—	—	—	(26,986)	—	(26,986)	—	(26,986)
Increase in noncontrolling interest in Steamboat Hills	—	—	—	—	—	—	—	1,357	1,357
Net income	—	—	—	—	62,092	—	62,092	13,366	75,458
Other comprehensive income (loss), net of related taxes:									
Foreign currency translation adjustments	—	—	—	—	—	(2,030)	(2,030)	(1,206)	(3,236)
Change in unrealized gains or losses in respect of the Company's share in derivative instruments of unconsolidated investment	—	—	—	—	—	3,892	3,892	—	3,892
Change in unrealized gains or losses in respect of a cross currency swap derivative instrument that qualifies as a cash flow hedge (net of related tax of $817)	—	—	—	—	—	2,379	2,379	—	2,379
Change in unrealized gains or losses on marketable securities available-for-sale (net of related tax of $0)	—	—	—	—	—	(40)	(40)	—	(40)
Other	—	—	—	—	—	228	228	—	228
Balance at December 31, 2021	56,056	56	1,271,925	—	585,209	(2,191)	1,854,999	143,462	1,998,461
Stock-based compensation	—	—	11,646	—	—	—	11,646	—	11,646
Exercise of stock-based awards by employees and directors (*)	299	—	39	—	—	—	39	—	39
Purchase of treasury stock	(259)	—	—	(17,964)	—	—	(17,964)	—	(17,964)
Purchase of capped call instruments	—	—	(24,538)	—	—	—	(24,538)	—	(24,538)
Cash paid to noncontrolling interest	—	—	—	—	—	—	—	(4,811)	(4,811)
Cash dividend declared, $0.48 per share	—	—	—	—	(27,143)	—	(27,143)	—	(27,143)
Increase in noncontrolling interest in CD4	—	—	—	—	—	—	—	3,970	3,970
Net income	—	—	—	—	65,841	—	65,841	11,316	77,157
Foreign currency translation adjustments	—	—	—	—	—	(1,953)	(1,953)	(533)	(2,486)
Change in unrealized gains or losses in respect of the Company's share in derivative instruments of unconsolidated investment that qualifies as a cash flow hedge (net of related tax of $0)	—	—	—	—	—	8,370	8,370	—	8,370
Change in unrealized gains or losses in respect of a cross currency swap derivative instrument that qualifies as a cash flow hedge (net of related tax of $464)	—	—	—	—	—	(1,825)	(1,825)	—	(1,825)
Change in unrealized gains or losses on marketable securities available-for-sale (net of related tax of $0)	—	—	—	—	—	40	40	—	40
Other	—	—	—	—	—	59	59	—	59
Balance at December 31, 2022	56,096	56	1,259,072	(17,964)	623,907	2,500	1,867,571	153,404	2,020,975

(*) Resulted in an amount lower than $1 thousand.

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

ORMAT TECHNOLOGIES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Cash flows from operating activities:			
Net income	$ 77,795	$ 76,077	$ 101,806
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	198,792	182,972	156,612
Accretion of asset retirement obligation	5,257	3,977	3,232
Stock-based compensation	11,646	9,168	9,830
Income attributable to sale of tax benefits, net of interest expense	(13,153)	(12,201)	(12,090)
Equity in losses (earnings) of investees, net	3,072	2,624	(92)
Mark-to-market of derivative instruments	1,613	741	(1,192)
Loss on disposal of property, plant and equipment	(89)	—	—
Write-off of unsuccessful exploration activities	828	—	—
Impairment of long-lived assets	32,648	—	—
Loss from prepayment of a long-term loan	1,102	—	—
Loss (gain) on severance pay fund asset	1,019	(1,335)	(893)
Deferred income tax provision	(18,979)	(3,115)	5,102
Liability for unrecognized tax benefits	829	3,760	(12,673)
Other	575	526	338
Changes in operating assets and liabilities, net of businesses acquired:			
Receivables	(19,929)	26,738	3,520
Costs and estimated earnings in excess of billings on uncompleted contracts	(6,713)	14,852	13,821
Inventories	5,613	4,127	178
Prepaid expenses and other	4,888	(19,105)	(2,687)
Change in operating lease right of use asset	2,717	3,010	3,825
Deposits and other	2,571	(4,154)	(893)
Accounts payable and accrued expenses	(2,045)	(21,936)	(5,373)
Billings in excess of costs and estimated earnings on uncompleted contracts	(463)	(1,931)	8,424
Liabilities for severance pay	(2,861)	(3,055)	(2)
Change in operating lease liabilities	(3,581)	(2,816)	(3,765)
Other liabilities, net	(2,178)	(102)	(2,023)
Net cash provided by operating activities	280,974	258,822	265,005
Cash flows from investing activities:			
Purchase of marketable securities	(19,192)	(60,070)	—
Maturities of marketable securities	32,645	16,272	—
Sale of marketable securities	29,355	—	—
Capital expenditures	(563,476)	(419,272)	(320,738)
Cash received from insurance recoveries	600	—	4,700
Investment in unconsolidated companies	(4,509)	(6,401)	(20,960)
Cash paid for acquisition of a business, net of cash acquired	—	(171,000)	(43,397)
Decrease (increase) in severance pay fund asset, net of payments made to retired employees	1,171	3,189	845
Other investing activities	—	(911)	(6,419)
Net cash used in investing activities	(523,406)	(638,193)	(385,969)
Cash flows from financing activities:			
Proceeds from long-term loans, net of transaction costs	135,259	275,000	419,262
Proceeds from exercise of options by employees	39	—	—
Proceeds from issuance of common stock, net of stock issuance costs	—	311	339,471
Proceeds from issuance of convertible notes, net of transaction costs	419,698	—	—
Purchase of capped call instruments	(24,538)	—	—
Purchase of treasury stock	(17,964)	—	—
Proceeds from the sale of limited liability company interest, net of transaction costs	50,330	37,141	—
Repayments of commercial paper and prepayments of long-term debt	(219,126)	—	(50,000)
Proceeds from revolving credit lines with banks	—	—	1,249,400
Repayment of revolving credit lines with banks	—	—	(1,289,950)
Cash received from noncontrolling interest	5,443	5,390	7,577
Repayments of long-term debt and financing liability	(185,163)	(93,046)	(135,384)
Cash paid to noncontrolling interest	(5,880)	(6,903)	(9,739)
Payments under finance lease obligations	(2,983)	(3,181)	(2,890)
Deferred debt issuance costs	(1,699)	(1,341)	(1,798)
Cash dividends paid	(27,143)	(26,986)	(22,471)
Net cash provided by (used in) financing activities	126,273	186,385	503,478
Effect of exchange rate changes on cash and cash equivalents and restricted cash and cash equivalents	(609)	(348)	1,154
Net change in cash and cash equivalents and restricted cash and cash equivalents	$ (116,768)	$ (193,334)	$ 383,668
Cash and cash equivalents and restricted cash and cash equivalents at beginning of period	343,444	536,778	153,110
Cash and cash equivalents and restricted cash and cash equivalents at end of period	$ 226,676	$ 343,444	$ 536,778
Supplemental disclosure of cash flow information:			
Cash paid during the year for:			
Interest, net of interest capitalized	$ 69,132	$ 66,627	$ 60,830
Income taxes, net	$ 29,004	$ 34,357	$ 64,795
Supplemental non-cash investing and financing activities:			
Increase (decrease) in accounts payable related to purchases of property, plant and equipment	$ 4,764	$ 7,976	$ 3,148
Right of use assets obtained in exchange for new lease liabilities	$ 8,759	$ 6,175	$ 3,642
Increase in asset retirement cost and asset retirement obligation	$ 7,512	$ 12,153	$ 8,963

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

NOTE 1 — BUSINESS AND SIGNIFICANT ACCOUNTING POLICIES

Business

The Company is primarily engaged in the geothermal and recovered energy business and primarily designs, develops, builds, sells, owns and operates clean, environmentally friendly geothermal and recovered energy-based power plants, usually using equipment that it designs and manufactures. The Company owns and operates geothermal and recovered energy-based power plants in various countries, including the United States, Kenya, Guatemala, Guadeloupe and Honduras. The Company's equipment manufacturing operations are primarily located in Israel. Additionally, the Company owns and operates independent storage facilities in the United States providing energy storage and related services.

Most of the Company's domestic power plant facilities are Qualifying Facilities under the PURPA. The Power Purchase Agreements for certain of such facilities are dependent upon their maintaining Qualifying Facility status.

Rounding

Dollar amounts, except per share data, in the notes to these financial statements are rounded to the closest $1,000, unless otherwise indicated.

Basis of presentation

The consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and include the accounts of the Company and of all majority-owned subsidiaries in which the Company exercises control over operating and financial policies, and variable interest entities in which the Company has an interest and is the primary beneficiary. Intercompany accounts and transactions have been eliminated in consolidation.

Investments in less-than-majority-owned entities or other entities in which the Company exercises significant influence over operating and financial policies are accounted for using the equity method of accounting or consolidated if they are a variable interest entity in which the Company has an interest and is the primary beneficiary. Under the equity method, original investments are recorded at cost and adjusted by the Company's share of undistributed earnings or losses of such companies. The Company's earnings or losses in investments accounted for under the equity method have been reflected as "equity in earnings (losses) of investees, net" on the Company's consolidated statements of operations and comprehensive income (loss).

Use of estimates in preparation of financial statements

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of such financial statements and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates. The most significant estimates with regard to the Company's consolidated financial statements relate to the useful lives of property, plant and equipment, impairment of goodwill and long-lived assets, including intangible assets, revenue recognition of product sales using the percentage of completion method, asset retirement obligations, and the provision for income taxes.

Cash and cash equivalents

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

Restricted cash, cash equivalents, and marketable securities

Under the terms of certain long-term debt agreements, the Company is required to maintain certain debt service reserves, including principal and interest, cash collateral and operating fund accounts, including for future wells drilling, that have been classified as restricted cash and cash equivalents. Funds that will be used to satisfy obligations due during the next 12 months are classified as current restricted cash and cash equivalents, with the remainder classified as non-current restricted

cash and cash equivalents. Such amounts are invested primarily in money market accounts and commercial paper with a minimum investment grade of "A".

Reconciliation of cash and cash equivalents and restricted cash and cash equivalents

The following table provides a reconciliation of cash and cash equivalents and restricted cash and cash equivalents reported on the balance sheets that sum to the total of the same amounts shown on the statement of cash flows:

	December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Cash and cash equivalents	$ 95,872	$ 239,278	$ 448,252
Restricted cash and cash equivalents	130,804	104,166	88,526
Total cash and cash equivalents and restricted cash and cash equivalents	$ 226,676	$ 343,444	$ 536,778

Marketable securities

The Company's investments in marketable securities consist of debt securities with maturity of up to one year and a high credit rating. The investments in marketable securities are classified as available-for-sale ("AFS") and thus measured at fair value based on quoted market prices. Unrealized gains and losses from AFS debt securities are excluded from earnings and reported net of the related tax effect in "Accumulated other comprehensive income (loss)". Realized gains and losses from sale of marketable securities, as determined on a specific identification basis, as well as interest income earned, are included in earnings. The Company considers available evidence in evaluating potential impairments of its investments, including credit market conditions, credit ratings of the security as well as the extent to which fair value is less than amortized cost. The Company estimates the lifetime expected credit losses for all AFS debt securities in an unrealized loss position under its allowance for credit losses model. The Company assesses the security's credit indicators, including credit ratings when estimating a security's probability of default. If the assessment indicates that an expected credit loss exists, the Company determines the portion of the unrealized loss attributable to credit deterioration and records an allowance for the expected credit loss in earnings. Unrealized gains and losses attributable to non-credit factors are recorded in "Accumulated other comprehensive income (loss)", net of tax. Marketable debt securities with original maturities of three months or less that are readily convertible into a known amount of cash in the amount of approximately $0.1 million are presented under "Cash and cash equivalents" in the consolidated balance sheets.

Concentration of credit risk

Financial instruments which potentially subject the Company to concentration of credit risk consist principally of temporary cash investments, marketable securities, accounts receivable and the cross-currency swap transaction.

The Company places its temporary cash investments with high credit quality financial institutions located in the U.S. and in foreign countries. At December 31, 2022 and 2021, the Company had deposits totaling $10.0 million and $31.0 million, respectively, in ten United States financial institutions that were federally insured up to $250,000 per account. At December 31, 2022 and 2021, the Company's deposits in foreign countries of approximately $64.3 million and $64.3 million, respectively, were not insured.

At December 31, 2022 and 2021, accounts receivable related to operations in foreign countries amounted to approximately $78.9 million and $77.5 million, respectively. At December 31, 2022 and 2021, accounts receivable from the Company's major customers (see Note 18) amounted to approximately 60% and 58%, respectively, of the Company's accounts receivable. The aggregate amount of notes receivable exceeding 10% of total receivables for the year ended December 31, 2022 and 2021 is $89.8 million and $86.4 million, respectively.

The Company has historically been able to collect substantially all of its receivable balances. As of December 31, 2022, the amount overdue from KPLC in Kenya was $27.0 million of which $15.2 million was paid in January and February of 2023. The Company believes it will be able to collect all past due amounts in Kenya. This belief is supported by the fact that in addition to KPLC's obligations under its power purchase agreement, the Company holds a support letter from the Government of Kenya that covers certain cases of KPLC non-payment (such as where caused by government actions and/or political events).

In Honduras, as of December 31, 2022, the total amount overdue from ENEE was $13.9 million of which $2.6 million was collected in February 2023. In addition, due to continuing restrictive measures related to the COVID-19 pandemic in Honduras, the Company may experience additional delays in collection. The Company believes it will be able to collect all past due amounts in Honduras.

The Company may experience delays in collection in other locations due to the lingering impacts related to the COVID-19 pandemic which were imposed globally to different extents.

Additionally, the Company considers the counterparty credit risk related to the cross-currency swap, as further described in note 12 to the consolidated financial statements, when assessing the hedge effectiveness, noting such risk to be low as of December 31, 2022.

Inventories

Inventories consist primarily of raw material parts and sub-assemblies for power units and are stated at the lower of cost or net realizable value, using the weighted-average cost method. Inventories are reduced by a provision for slow-moving and obsolete inventories. This provision was not material at December 31, 2022 and 2021.

Deposits and other

Deposits and other consist primarily of performance bonds for construction and storage projects, long-term insurance contract funds and receivables, certain deferred costs and derivative instrument receivables.

Property, plant and equipment, net

Property, plant and equipment are stated at cost. All costs associated with the acquisition, development and construction of power plants operated by the Company are capitalized. Major improvements are capitalized and repairs and maintenance (including major maintenance) costs are expensed. Power plants operated by the Company, which include geothermal wells and exploration and resource development costs, are depreciated using the straight-line method over their estimated useful lives, which range from 15 to 30 years. The other assets are depreciated using the straight-line method over the following estimated useful lives of the assets:

	Years
Buildings	25
Leasehold improvements	15 - 30
Machinery and equipment — manufacturing and drilling	10
Machinery and equipment — computers	3 - 5
Energy storage equipment	15
Solar facility equipment	30
Office equipment — furniture and fixtures	5 - 15
Office equipment — other	5 - 10
Vehicles	5 - 7

The cost and accumulated depreciation of items sold or retired are removed from the accounts. Any resulting gain or loss is recognized currently and recorded in the accompanying statements of operations.

The Company capitalizes interest costs as part of constructing power plant facilities. Such capitalized interest is recorded as part of the asset to which it relates and is amortized over the asset's estimated useful life. Capitalized interest costs amounted to $18.7 million, $14.6 million, and $10.4 million for the years ended December 31, 2022, 2021 and 2020, respectively.

During the fourth quarter of 2022, the Company recorded a non-cash impairment charge, primarily related to its Brawley power plant as further detailed below under the caption "Impairment of long-lived assets"

Exploration and development costs

The Company capitalizes costs incurred in connection with the exploration and development of geothermal resources once it acquires land rights to the potential geothermal resource. Prior to acquiring land rights, the Company makes an initial

assessment that an economically feasible geothermal reservoir is probable on that land. The Company determines the economic feasibility of potential geothermal resources internally, with all available data and external assessments vetted through the exploration department and occasionally using outside service providers. Costs associated with the initial assessment are expensed and included in cost of electricity revenues in the consolidated statements of operations and comprehensive income (loss). Such costs were immaterial during the years ended December 31, 2022, 2021 and 2020. It normally takes two to three years from the time active exploration of a particular geothermal resource begins to the time a production well is in operation, assuming the resource is commercially viable. However, in certain sites the process may take longer due to permitting delays, transmission constraints or any other commercial milestones that are required to be reached in order to pursue the development process.

In most cases, the Company obtains the right to conduct the geothermal development and operations on land owned by the Bureau of Land Management ("BLM"), various states or with private parties. The land lease payments made during the exploration, development and construction phase are accounted under lease accounting as further described under the caption Leases below and reflected as expenses under “Electricity cost of revenues” in the consolidated statements of operations and comprehensive income (loss). Upon commencement of power generation on the leased land, the Company begins to pay the lessor’s long-term royalty payments based on the utilization of the geothermal resources as defined in the respective agreements. Such payments are expensed when the related revenues are earned and included in “Electricity cost of revenues” in the consolidated statements of operations and comprehensive income (loss).

Following the acquisition of land rights to the potential geothermal resource, the Company conducts further studies and surveys, including water and soil analyses, among others, and augments its database with the results of these studies. The Company then initiates a suite of geophysical surveys to assess the resource and determine drilling locations. If the results of these activities support the initial assessment of the feasibility of the geothermal resource, the Company then proceeds to exploratory drilling and other related activities which may include drilling of temperature gradient holes, drilling of slim holes, building access roads to drilling locations, drilling full size production and/or injection wells and flow tests. If the slim hole supports a conclusion that the geothermal resource will support a commercially viable power plant, it may be converted to a full-size commercial well, used either for extraction or re-injection of geothermal fluids, or be used as an observation well to monitor and define the geothermal resource. Costs associated with these activities and other directly attributable costs, including interest once physical exploration activities begin and permitting costs are capitalized and included in “Construction-in-process”. If the Company concludes that a geothermal resource will not support commercial operations, capitalized costs are expensed in the period such determination is made.

When deciding whether to continue holding lease rights and/or to pursue exploration activity, the Company diligently prioritizes prospective investments, taking into account resource and probability assessments in order to make informed decisions about whether a particular project will support commercial operation. There was no material write-off of unsuccessful activities for the years ended December 31, 2022, 2021 and 2020. The write-off of $0.8 million in 2022 is primarily related to relinquishment of project related costs.

All exploration and development costs that are being capitalized will be depreciated over their estimated useful lives when the related geothermal power plant is substantially complete and ready for use. A geothermal power plant is substantially complete and ready for use when electricity generation commences.

Asset retirement obligation

The Company records the fair value of a legal liability for an asset retirement obligation in the period in which it is incurred. The Company’s legal liabilities include plugging wells and post-closure costs of power producing and storage sites. When a new liability for asset retirement obligations is recorded, the Company capitalizes the costs of the liability by increasing the carrying amount of the related long-lived asset. The liability is accreted to its present value each period, and the capitalized cost is depreciated over the useful life of the related asset. The Company periodically reassesses the assumptions used to estimate the expected cash flows required to settle the asset retirement obligation, including changes in estimated probabilities, amounts, and timing of the settlement of the asset retirement obligation, as well as changes in the legal requirements of an obligation and revises the previously recorded asset retirement obligation accordingly. At retirement, the obligation is settled for its recorded amount at a gain or loss.

Deferred financing costs

Deferred financing costs are presented as a direct deduction from the carrying value of the associated debt liability or under "Deposits and other" if associated with lines of credit. Such deferred costs are amortized over the term of the related

obligation using the effective interest method or ratably, as applicable. Amortization of deferred financing costs is presented as interest expense in the consolidated statements of operations and comprehensive income (loss). Amortization expense for the years ended December 31, 2022, 2021 and 2020 amounted to $4.2 million, $3.2 million, and $3.5 million, respectively. During the years ended December 31, 2022, 2021 and 2020, no material amounts were written-off as a result of extinguishment of liabilities.

Goodwill

Goodwill represents the excess of the fair value of consideration transferred in the business combination transactions over the fair value of tangible and intangible assets acquired, net of the fair value of liabilities assumed and the fair value of any noncontrolling interest in the acquisitions. Goodwill is not amortized but rather subject to a periodic impairment testing on an annual basis, which the Company performs on December 31 of each year, or if an event occurs or circumstances change that would more likely than not reduce the fair value of the reporting unit below its carrying amount. Additionally, it is permitted to first assess qualitative factors to determine whether a quantitative goodwill impairment test is necessary. Further testing is only required if the entity determines, based on the qualitative assessment, that it is more likely than not that a reporting unit's fair value is less than its carrying amount. Otherwise, no further impairment testing is required. An entity has the option to bypass the qualitative assessment for any reporting unit in any period and proceed directly to the quantitative goodwill impairment test. This would not preclude the entity from performing the qualitative assessment in any subsequent period. The quantitative assessment compares the fair value of the reporting unit to its carrying value, including goodwill. Under ASU 2017-04, Intangibles – Goodwill and Other (Topic 350), an entity should recognize an impairment charge for the amount by which the carrying amount of the reporting unit exceeds its fair value. However, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. For further information relating to goodwill see Note 10 - Intangible Assets and Goodwill to the consolidated financial statements.

Intangible assets

Intangible assets consist of allocated acquisition costs of PPAs, which are amortized using the straight-line method over the 6 to 19-year terms of the agreements (see Note 10) as well as acquisition costs allocation related to the Company's Energy Storage segment activities that are amortized over a period of between approximately 6 and 19 years. Intangible assets are tested for recoverability whenever events or changes in circumstances indicate that their carrying amount may not be recoverable. In case there are no such events or change in circumstances, there is no need to perform an impairment testing. The recoverability is tested by comparing the net carrying value of the intangible assets to the undiscounted net cash flows to be generated from the use and eventual disposition of these assets. If the carrying amount of a long-lived asset (or asset group) is not recoverable, the fair value of the asset (asset group) is measured and if the carrying amount exceeds the fair value, an impairment loss is recognized.

Impairment of long-lived assets and long-lived assets to be disposed of

The Company evaluates long-lived assets, such as property, plant and equipment and construction-in-process for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Factors which could trigger an impairment include, among others, significant underperformance relative to historical or projected future operating results, significant changes in the Company's use of assets or its overall business strategy, negative industry or economic trends, a determination that an exploration project will not support commercial operations, a determination that a suspended project is not likely to be completed, a significant increase in costs necessary to complete a project, legal factors relating to its business or when it concludes that it is more likely than not that an asset will be disposed of or sold.

The Company tests its operating plants that are operated together as a complex for impairment at the complex level because the cash flows of such plants result from significant shared operating activities. For example, the operating power plants in a complex are managed under a combined operation management generally with one central control room that controls all of the power plants in a complex and one maintenance group that services all of the power plants in a complex. As a result, the cash flows from individual plants within a complex are not largely independent of the cash flows of other plants within the complex. The Company tests for impairment of its operating plants which are not operated as a complex as well as its projects under exploration, development or construction that are not part of an existing complex at the plant or project level. To the extent an operating plant becomes part of a complex, the Company will test for impairment at the complex level.

Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the estimated future net undiscounted cash flows expected to be generated by the asset. The significant assumptions that the Company uses in estimating its undiscounted future cash flows include: (i) projected generating capacity of the complex or power plant and rates to be received under the respective PPAs and expected market rates thereafter and (ii) projected operating expenses of the relevant complex or power plant. Estimates of future cash flows used to test recoverability of a long-lived asset under development also include cash flows associated with all future expenditures necessary to develop the asset.

If the assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds their fair value. Management believes that no impairment exists for long-lived assets, except as detailed below in respect of the Brawley power plant; however, estimates as to the recoverability of such assets may change based on revised circumstances. If actual cash flows differ significantly from the Company's current estimates, a material impairment charge may be required in the future.

During the fourth quarter of 2022, the Company recorded a non-cash impairment charge of $30.5 million relating to its Brawley power plant. Further information relating to this impairment charge is disclosed under Note 9 to the consolidated financial statements. In addition, the Company recorded a write-off of $2.1 million during the year ended December 31, 2022, related to energy storage projects and assets that the Company is no longer pursuing, as well as certain customer related assets.

Derivative instruments

Derivative instruments (including certain derivative instruments embedded in other contracts) are measured at their fair value and recorded as either assets or liabilities unless exempted from derivative treatment as a normal purchase and sale. Changes in the fair value of derivatives not designated as hedging instruments are recognized in earnings. Changes in the fair value of derivatives designated as cash flow hedging instruments are initially recorded in "Other comprehensive income (loss)" and a corresponding amount is reclassified out of "Accumulated other comprehensive income (loss)" into earnings to offset the impact of the underlying hedge transaction when it affects earnings under the same line item in the consolidated statements of operations and comprehensive income.

The Company maintains a risk management strategy that may incorporate the use of swap contracts, put options, forward exchange contracts, interest rate swaps, and cross-currency swaps to minimize significant fluctuation in cash flows and/or earnings that are caused by oil and natural gas prices, exchange rate or interest rate volatility.

Foreign currency translation

The U.S. dollar is the functional currency for all of the Company's consolidated operations and those of its equity affiliates except the Guadeloupe power plant and operations in New Zealand. For those entities, all gains and losses from currency translations are included under "Derivatives and foreign currency transaction gains (losses)" in the consolidated statements of operations and comprehensive income (loss). The Euro and New Zealand Dollar are the functional currencies of the Company's operations in Guadeloupe and New Zealand, respectively, and thus the impact from currency translation adjustments in those locations is included as currency translation adjustments in "Accumulated other comprehensive income" in the consolidated statements of equity and in comprehensive income. The accumulated currency translation adjustments amounted to a debit of $3.1 million and a debit of $1.2 million as of December 31, 2022 and 2021, respectively.

Comprehensive income

Comprehensive income includes net income plus other comprehensive income (loss), which for the Company consists primarily of changes in foreign currency translation adjustments, changes in unrealized gains or losses in respect of the Company's share in derivatives instruments of an unconsolidated investment that qualifies as a cash flow hedge, changes in respect of derivative instruments designated as a cash flow hedge and changes in unrealized gains or losses on marketable securities available-for-sale. The changes in foreign currency translation adjustments during the years ended December 31, 2022, 2021 and 2020 amounted to $(2.5) million, $(3.2) million and $3.8 million, respectively. The changes in the Company's share in derivative instruments of unconsolidated investment, gains or losses in respect of derivative instruments designated as a cash flow hedge and changes in unrealized gains or losses on marketable securities are disclosed under Note 6 – Investment in unconsolidated companies, Note 8 - Fair value of financial instruments and Note 3 - Marketable securities, respectively, to the consolidated financial statements.

Power purchase agreements

Substantially all of the Company's Electricity revenues are recognized pursuant to PPAs in the United States and in various foreign countries, including Kenya, Guatemala, Guadeloupe and Honduras. These PPAs generally provide for the payment of energy payments or both energy and capacity payments through their respective terms which expire in varying periods from 2022 to 2047. Generally, capacity payments are calculated based on the amount of time that the power plants are available to generate electricity. The energy payments are calculated based on the amount of electrical energy delivered at a designated delivery point. The price terms are customary in the industry and include, among others, a fixed price, SRAC (the incremental cost that the power purchaser avoids by not having to generate such electrical energy itself or purchase it from others), and a fixed price with an escalation clause that includes the value for environmental attributes, known as renewable energy credits. Certain of the PPAs provide for bonus payments in the event that the Company is able to exceed certain target levels and potential payments by the Company if it fails to meet minimum target levels. The Company has PPAs that give the power purchaser or its designee a right of first refusal or a right of first offer to acquire the geothermal power plants at fair market value as negotiated between the parties. One of the Company's subsidiaries in Guatemala sells power at an agreed upon price subject to terms of a "take or pay" PPA.

Pursuant to the terms of certain of the PPAs, the Company may be required to make payments to the relevant power purchaser under certain conditions, such as shortfall in delivery of renewable energy and energy credits, and not meeting certain performance threshold requirements, as defined in the relevant PPA. The amount of payment required is dependent upon the level of shortfall in delivery or performance requirements and is recorded in the period the shortfall occurs. In addition, if the Company does not meet certain minimum performance requirements, the capacity of the power plant may be permanently reduced.

Revenues and cost of revenues

Revenues from contracts with customers are recognized in connection with the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. Specifically, the Company is required to apply each of the following steps: (1) identify the contract(s) with the customer; (2) identify the performance obligations in the contracts; (3) determine the transaction price; (4) allocate the transaction price to the performance obligations in the contract; and (5) recognize revenue when (or as) the entity satisfies a performance obligation.

Revenues are primarily related to: (i) sale of electricity from geothermal and recovered energy-based power plants owned and operated by the Company; (ii) geothermal and recovered energy-based power plant equipment engineering, sale, construction and installation, and operating services and (iii) Energy storage services as well as services relating to the engineering, procurement, construction, operation and maintenance of energy storage units.

Electricity segment revenues: Revenues related to the sale of electricity from geothermal and recovered energy-based power plants and capacity payments are recorded based upon output delivered and capacity provided at rates specified under relevant contract terms. The Company assesses whether PPAs entered into, modified, or acquired in business combinations contain a lease element requiring lease accounting. Revenue from such PPAs are accounted for in electricity revenues. In the Electricity segment, revenues for all but five power plants are accounted as operating leases, and therefore equipment related to geothermal and recovered energy generation power plants as described in Note 9 is considered held for leasing. For power plants in the scope of ASC 606, the Company identified electricity as a separate performance obligation. Performance obligations identified were evaluated and determined to be satisfied over time and qualified for the invoicing practical expedient since the invoiced amounts reasonably represents the value to customers of performance obligations fulfilled to date. The transaction price is determined based on the price per actual mega-watt output or available capacity as agreed to in the respective PPA. Customers are generally billed on a monthly basis and payment is typically due within 30 to 60 days after the issuance of the invoice.

Product segment revenues: Revenues from engineering, operating services, and parts and product sales are recorded upon providing the service or delivery of the products and parts and when collectability is reasonably assured. Revenues from the supply and/or construction of geothermal and recovered energy-based power plant equipment and other equipment to third parties are recognized over time since control is transferred continuously to the Company's customers. The majority of the Company's contracts include a single performance obligation which is essentially the promise to transfer the individual goods or services that are not separately identifiable from other promises in the contracts and therefore deemed as not distinct. Performance obligations are satisfied over-time if the customer receives the benefits as we perform work, if the customer

controls the asset as it is being constructed, or if the product being produced for the customer has no alternative use and the Company has a contractual right to payment. In the Company's Product segment, revenues are spread over a period of one to two years and are recognized over time based on the cost incurred to date in ratio to total estimated costs which represents the input method that best depicts the transfer of control over the performance obligation to the customer. Costs include direct material, labor, and indirect costs. Provisions for estimated losses on uncompleted contracts are made in the period in which such losses are determined.

In contracts for which the Company determines that control is not transferred continuously to the customer, the Company recognizes revenues at the point in time when the customer obtains control of the asset. Revenues for such contracts are recorded upon delivery and acceptance by the customer. This generally is the case for the sale of spare parts, generators or similar products.

Accounting for product contracts that are satisfied over time includes use of several estimates such as variable consideration related to bonuses and penalties and total estimated cost for completing the contract. The estimated amount of variable consideration will be included in the transaction price only to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. These estimates are based on historical experience, anticipated performance and the Company's best judgment at the time.

The nature of the Company's product contracts give rise to several modifications or change requests by its customers. Substantially all of the modifications are treated as cumulative catch-ups to revenues since the additional goods are not distinct from those already provided. The Company includes the additional revenues related to the modifications in its transaction price when both parties to the contract approved the modification. As a significant change in one or more of these estimates could affect the profitability of the Company's contracts, the Company reviews and updates its contract-related estimates regularly. If at any time the estimate of contract profitability indicates an anticipated loss on the contract, the Company recognizes the total loss in the period in which it is identified.

Energy Storage segment revenues: Battery energy storage systems as a service and energy management related services revenues are recorded based on energy management of load curtailment capacity delivered or service provided at rates specified under the relevant contract terms. The Company determined that such revenues are in the scope of ASC 606 and identified energy management services as a separate performance obligation. Performance obligations are satisfied once the Company provides verification to the electric power grid operator or utility of its ability to meet the committed capacity, the power curtailment requirements or the ancillary services and thus entitled to cash proceeds. Such verification may be provided by the Company bi-weekly, monthly or under any other frequency as set by the related program and are typically followed by a payment shortly after. Performance obligations identified were evaluated and determined to be satisfied over time and qualified for the invoicing practical expedient since the amounts included in the verification document reasonably represent the value of performance obligations fulfilled to date. The transaction price is determined based on mechanisms specified in the contract with the customer.

Contract assets related to the Company's Product segment reflect revenues recognized and performance obligations satisfied in advance of customer billing. Contract liabilities related to the Company's Product segment reflect customer billing in advance of the satisfaction of performance under the contract. The Company receives payments from customers based on the terms established in the contracts. Total contract assets and contract liabilities as of December 31, 2022 and 2021 are as follows:

	December 31, 2022	December 31, 2021
	(Dollars in thousands)	
Contract assets (*)	$ 16,405	$ 9,692
Contract liabilities (*)	$ (8,785)	$ (9,248)

(*) Contract assets and contract liabilities are presented as "Costs and estimated earnings in excess of billings on uncompleted contracts" and "Billings in excess of costs and estimated earnings on uncompleted contracts", respectively, on the consolidated balance sheets. The contract liabilities balance at the beginning of the year was partially recognized as product revenues during the year ended December 31, 2022 as a result of performance obligations that were partially satisfied.

The following table presents the significant changes in the contract assets and contract liabilities for the years ended December 31, 2022 and 2021:

	Years Ended December 31,			
	2022		2021	
	Contract assets	Contract liabilities	Contract assets	Contract liabilities
	(Dollars in thousands)			
Recognition of contract liabilities as revenue as a result of performance obligations satisfied	$ —	$ —	$ —	$ 3,566
Cash received in advance for which revenues have not yet recognized, net of expenditures made	—	(2,604)	—	(2,146)
Reduction of contract assets as a result of rights to consideration becoming unconditional	(23,000)	—	(43,518)	—
Contract assets recognized, net of recognized receivables	32,780	—	29,177	—
Net change in contract assets and contract liabilities	$ 9,780	$ (2,604)	$ (14,341)	$ 1,420

The timing of revenue recognition, billings and cash collections results in accounts receivable, contract assets and contract liabilities on the consolidated balance sheet. In the Company's Products segment, amounts are billed as work progresses in accordance with agreed-upon contractual terms, or upon achievement of contractual milestones. Generally, billing occurs subsequent to the recognition of revenue, resulting in contract assets. However, the Company sometimes receives advances or deposits from its customers before revenue can be recognized, resulting in contract liabilities. These assets and liabilities are reported on the consolidated balance sheet on a contract-by-contract basis at the end of each reporting period. The timing of billing its customers and receiving advance payments vary from contract to contract. The majority of payments are received no later than the completion of the project and satisfaction of the Company's performance obligation.

On December 31, 2022, the Company had approximately $113.4 million of remaining performance obligations not yet satisfied or partly satisfied related to its Product segment. The Company expects to recognize approximately 100% of this amount as Product revenues during the next 24 months.

The following schedule reconciles revenues accounted under lease accounting and under ASC 606, Revenues from Contracts with Customers, to total consolidated revenues for the three years ended December 31, 2022, 2021 and 2020:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Electricity revenues accounted under lease accounting	$ 529,264	$ 502,355	$ 473,260
Electricity, Product and Energy Storage revenues accounted under ASC 606	204,895	160,729	232,082
Total consolidated revenues	$ 734,159	$ 663,084	$ 705,342

Disaggregated revenues from contracts with customers for the years ended December 31, 2022, 2021 and 2020 are disclosed under Note 18 - Business Segments, to the consolidated financial statements.

Allowance for credit losses

The Company performs an analysis of potential credit losses related to its financial instruments that are within the scope of ASU 2018-19, Codification Improvements to Topic 325, Financial Instruments – Credit Losses. Such instruments are primarily cash and cash equivalents, restricted cash and cash equivalents, investment in marketable securities, receivables (excluding those accounted under lease accounting) and costs and estimated earnings in excess of billings on uncompleted contracts, based on class of financing receivables which share the same or similar risk characteristics such as customer type and geographic location, among others. The Company estimates the expected credit losses for each class of financing receivables by applying the related corporate default rate which corresponds to the credit rating of the specific customer or

class of financing receivables. For trade receivables, the Company applied this methodology using aging schedules reflecting how long the receivables have been outstanding. The Company has also considered the existence of credit enhancement arrangements that may mitigate the credit risk of its financial receivables in estimating the applicable corporate default rate. The Company considered the current and expected future economic and market conditions related to inflation and rising interest rates as well as lingering impacts of the COVID-19 pandemic and determined that the estimate of credit losses was not significantly impacted.

The following table describes the changes in the allowance for expected credit losses for the years ended December 31, 2022 and 2021 (all related to trade receivables):

	Years Ended December 31,	
	2022	2021
	(Dollars in thousands)	
Beginning balance of the allowance for expected credit losses	$ 90	$ 597
Change in the provision for expected credit losses for the period	—	(507)
Ending balance of the allowance for expected credit losses	$ 90	$ 90

Leases

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842). This standard introduced a number of changes and simplified previous guidance, primarily the recognition of lease assets and lease liabilities by lessees for those leases classified as operating leases. The standard retained the distinction between finance leases and operating leases and the classification criteria between the two types remains substantially similar. Also, lessor accounting remained largely unchanged from previous guidance. Additionally, the standard defined a lease as a contract, or part of a contract, that conveys the right to control the use of an identified asset for a period of time in exchange for consideration. Control over the use of the identified asset means that the customer has both (a) the right to obtain substantially all of the economic benefits from the use of the asset and (b) the right to direct the use of the asset. The Company adopted this new standard as of January 1, 2019 using the modified retrospective approach and accordingly recognized a cumulative-effect adjustment to the opening balance of retained earnings, which was an immaterial amount, with no restatement of comparative information.

The Company is a lessee in operating lease transactions primarily consisting of land leases for its exploration and development activities. Additionally, the Company is a lessee in finance lease transactions related to fleet vehicles. As further described under Note 2 - Business Acquisitions to the consolidated financial statements, one of the Company's power plant asset is subject to a sale and leaseback transaction that is accounted as a "failed" sale and leaseback under accounting guidance. Additionally, as further described above under Revenues and cost of revenues, the Company acts as a lessor in PPAs that are accounted under ASC 842, Leases.

In accordance with the lease standard, for agreements in which the Company is the lessee, the Company applies a unified accounting model by which it recognizes a right-of-use asset ("ROU") and a lease liability at the commencement date of the lease contract for all the leases in which the Company has a right to control identified assets for a specified period of time. The classification of the lease as a finance lease or an operating lease determines the subsequent accounting for the lease arrangement.

Upon the adoption of the new standard the Company, both as a lessee and as a lessor, chose to apply the following permitted practical expedients:

1. Not reassess whether any existing contracts are or contain a lease;
2. Not reassess the classification of leases that commenced before the effective date (for example, all existing leases that were classified as operating leases in accordance with Topic 840 continued to be classified as operating leases, and all existing leases that were classified as capital leases in accordance with Topic 840 continued to be classified as finance leases);
3. Exclude initial direct costs from measurement of the ROU asset at the date of initial application;
4. Applying the practical expedient (for a lessor) to not separate non-lease components accounted for under Topic 606 from lease components and, instead, to account for each separate lease component and the non-lease components associated with that lease as a single component. If the non-lease components are the predominant components, the Company will account for the combined component as a single performance obligation entirely

in accordance with Topic 606. Otherwise, the combined component will be accounted as an operating lease entirely in accordance with the new standard.

5. Applying the practical expedient (for a lessee) regarding the recognition and measurement of short-term leases, for leases for a period of up to 12 months from the commencement date. Instead, the Company continued to recognize the lease payments for those leases in profit or loss on a straight-line basis over the lease term.
6. Applying the practical expedient (for a lessee) to not assess whether existing or expired land easements that were not previously accounted for as leases under Topic 840 are or contain a lease under Topic 842.

Since the Company elected to apply the practical expedients above, it applied the lease standard to all contracts entered into before January 1, 2019 and identified as leases in accordance with Topic 840.

The significant accounting policies regarding leases that were applied as from January 1, 2019 following the application of the new standard are as follows:

1. Determining whether an arrangement contains a lease

On the inception date of the lease, the Company determines whether the arrangement is a lease or contains a lease, while examining if it conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

2. The Company as a lessee

a. Lease classification:

At the commencement date, a lease is a finance lease if it meets any one of the criteria below; otherwise the lease is an operating lease:

- The lease transfers ownership of the underlying asset to the lessee by the end of the lease term.
- The lease grants the lessee an option to purchase the underlying asset that the lessee is reasonably certain to exercise.
- The lease term is for the major part of the remaining economic life of the underlying asset.
- The present value of the sum of the lease payments and any residual value guaranteed by the lessee that is not already reflected in the lease payments equals or exceeds substantially all of the fair value of the underlying asset.
- The underlying asset is of such a specialized nature that it is expected to have no alternative use to the lessor at the end of lease term.

b. Leased assets and lease liabilities - initial recognition

Upon initial recognition, the Company recognizes a liability at the present value of the lease payments to be made over the lease term, and concurrently recognizes a ROU asset at the same amount of the liability, adjusted for any prepaid or accrued lease payments, plus initial direct costs incurred in respect of the lease. Since the interest rate implicit in the lease is not readily determinable, the incremental borrowing rate of the Company is used. The subsequent measurement depends on whether the lease is classified as a finance lease or an operating lease.

c. The lease term

The lease term is the non-cancellable period of the lease plus periods covered by an extension or termination option if it is reasonably certain that the Company will exercise the option.

d. Subsequent measurement of operating leases

After lease commencement, the Company measures the lease liability at the present value of the remaining lease payments using the discount rate determined at lease commencement (as long as the discount rate has not been updated as a result of a reassessment event). The Company subsequently measures the ROU asset at the present value of the remaining lease payments, adjusted for the remaining balance of any lease incentives received, any cumulative prepaid or accrued rent

if the lease payments are uneven throughout the lease term and any unamortized initial direct costs. Further, the Company recognizes lease expense on a straight-line basis over the lease term.

e. Subsequent measurement of finance leases

After lease commencement, the Company measures the lease liability by increasing the carrying amount to reflect interest on the lease liability and reducing the carrying amount to reflect lease payments made during the period. The Company determines the interest on the lease liability in each period during the lease term as the amount that produces a constant periodic discount rate on the remaining balance of the liability, taking into consideration the reassessment requirements.

After lease commencement, the Company measures the ROU assets at cost less any accumulated amortization and any accumulated impairment losses, taking into consideration the reassessment requirements. The Company amortizes the ROU asset on a straight-line basis, unless another systematic basis better represents the pattern in which the Company expects to consume the ROU asset's future economic benefits. The ROU asset is amortized over the shorter of the lease term or the useful life of the ROU asset. The amortization period related to the finance lease transactions on fleet vehicles is 4-5 years.

The total periodic expense (the sum of interest and amortization expense) of a finance lease is typically higher in the early periods and lower in the later periods.

f. Variable lease payments:

Variable lease payments that depend on an index or a rate

On the commencement date, the lease payments may include variability and depend on an index or a rate (such as the Consumer Price Index or a market interest rate). The Company does not remeasure the lease liability for changes in future lease payments arising from changes in an index or rate unless the lease liability is remeasured for another reason. Therefore, after initial recognition, such variable lease payments are recognized in profit or loss as they are incurred.

Other variable lease payments:

Variable payments that depend on performance or use of the underlying asset are not included in the lease payments. Such variable payments are recognized in profit or loss in the period in which the event or condition that triggers the payment occurs.

3. The Company as a lessor

At lease commencement, the Company as a lessor classifies leases as either finance or operating leases. Finance leases are further classified as a sales-type lease or as a direct financing lease, however, the Company has no such leases as a lessor.

Under an operating lease, the Company recognizes the lease payment as income over the lease term, generally as earned or on a straight-line basis.

Termination fee

Fees to terminate PPAs are recognized in the period incurred as selling and marketing expenses. No termination fees were incurred during 2022, 2021 and 2020.

Warranty on products sold

The Company generally provides a one to two year warranty against defects in workmanship and materials related to the sale of products for electricity generation. The Company considers the warranty to be an assurance type warranty since the warranty provides the customer the assurance that the product complies with agreed-upon specifications. Estimated future warranty obligations are included in operating expenses in the period in which the related revenue is recognized. Such charges are immaterial for the years ended December 31, 2022, 2021 and 2020.

Research and development

Research and development costs incurred by the Company for the development of technologies related to its existing and new geothermal and recovered energy power plants as well as storage facilities are expensed as incurred.

Stock-based compensation

The Company accounts for stock-based compensation using the fair value method whereby compensation cost is measured at the grant date, based on the calculated fair value of the award, and is recognized as an expense over the requisite employee service period (generally the vesting period of the grant). The Company uses the Complex Lattice, Three-based Option Pricing model to calculate the fair value of the stock-based compensation awards.

Tax monetization Transactions

The Company has five tax monetization transactions, Opal Geo, Tungsten, McGinness Hills 3, Steamboat Hills and CD4 as further described under Note 13 – Tax monetization transactions. The purpose of these transactions is to form tax partnerships, whereby investors provide cash in exchange for equity interests that provide the holder a right to the majority of tax benefits associated with a renewable energy project. The Company accounts for a portion of the proceeds from the transaction as debt under ASC 470. Given that a portion of these transactions is structured as a purchase of an equity interest the Company also classifies a portion as noncontrolling interest consistent with guidance in ASC 810. The portion recorded to noncontrolling interest is initially measured at the fair value of the discounted tax attributes and cash distributions which represents the partner's residual economic interest. The residual proceeds are recognized as the initial carrying value of the debt which is classified as a "Liability associated with the sale of tax benefits". The Company applies the effective interest rate method to the liability associated with the tax monetization transaction component as described by ASC 835 and CON 7. The tax benefits and cash distributions realized by the partner each period are treated as the debt servicing amounts, with the tax benefit amounts giving rise to income attributable to the sale of tax benefits. The deferred transaction costs are capitalized and amortized using the effective interest method.

Income taxes

Income taxes are accounted for using the asset and liability approach, which requires the recognition of taxes payable or refundable for the current year and deferred tax assets and liabilities for the future tax consequences of events that have been recognized in the Company's financial statements or tax returns. The measurement of current and deferred tax assets and liabilities are based on provisions of the enacted tax law. The Company accounts for investment tax credits and production tax credits as a reduction to income taxes in the year in which the credit arises. The measurement of deferred tax assets is reduced, if necessary, by the amount of any tax benefits that, based on available evidence, are more likely than not expected to be realized. A valuation allowance has been established to offset the Company's U.S. deferred tax assets. Tax benefits from uncertain tax positions are recognized only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities, based on the technical merits of the position. Interest and penalties assessed by taxing authorities on an underpayment of income taxes are included as a component of income tax provision in the consolidated statements of operations and comprehensive income.

Earnings per share

Basic earnings per share attributable to the Company's stockholders ("earnings per share") is computed by dividing net income attributable to the Company's stockholders by the weighted average number of shares of common stock outstanding for the period. The Company does not have any equity instruments that are dilutive, except for stock-based awards and convertible senior notes.

The table below shows the reconciliation of the number of shares used in the computation of basic and diluted earnings per share:

	Year Ended December 31,		
	2022	2021	2020
	(In thousands)		
Weighted average number of shares used in computation of basic earnings per share	56,063	56,004	51,567
Add:			
Additional shares from the assumed exercise of employee stock-based awards	440	398	370
Weighted average number of shares used in computation of diluted earnings per share	56,503	56,402	51,937

The number of stock-based awards that could potentially dilute future earnings per share which were not included in the computation of diluted earnings per share because to do so would have been anti-dilutive was 29.2 thousand, 142.4 thousand, and 369.7 thousand, respectively, for the years ended December 31, 2022, 2021 and 2020.

As per ASU 2020-06, the if-converted method is required for calculating any potential dilutive effect from convertible instruments. For the year ended December 31, 2022, the average price of the Company's common stock did not exceed the per share conversion price of its convertible senior notes (the "Notes") of $90.27, and other requirements for the Notes to be convertible were not met, and as such, there was no dilutive effect from the Notes in respect with the aforementioned periods. Further information on the Notes is detailed under Note 1 to the consolidated financial statements.

Redeemable noncontrolling interest

Redeemable noncontrolling interest is currently redeemable and relates to a certain noncontrolling shareholder in a subsidiary having an option to sell its equity interest to the Company. The carrying value of the redeemable noncontrolling interest balance as of December 31, 2022 and 2021 approximates the redemption price of such interests. Changes in the carrying amount of the Company's Redeemable noncontrolling interest were as follows:

	2022	2021
	(Dollars in thousands)	
Redeemable noncontrolling interest as of January 1,	$ 9,329	$ 9,830
Redeemable noncontrolling interest in results of operation of a consolidated subsidiary	638	619
Cash paid to noncontrolling interest	—	(268)
Currency translation adjustments	(377)	(852)
Redeemable noncontrolling interest as of December 31,	$ 9,590	$ 9,329

Cash dividends

During the years ended December 31, 2022, 2021 and 2020, the Company’s Board of Directors (the “Board”) declared, approved, and authorized the payment of cash dividends in the aggregate amount of $27.1 million ($0.48 per share), $27.0 million ($0.48 per share), and $22.5 million ($0.44 per share), respectively. Such dividends were paid in the years declared.

Convertible Senior Notes

On June 22, 2022, the Company issued $375.0 million aggregate principal amount of its 2.5% convertible senior notes ("Notes") due 2027. The Notes were offered and sold in a private offering to qualified institutional buyers pursuant to Rule 144A under the Securities Act of 1933, as amended, pursuant to an indenture between the Company and U.S. Bank National Association, as trustee. Additionally, the Company granted the initial purchasers an option to purchase up to an additional $56.25 million aggregate principal amount of the Notes. The initial purchasers executed their option on June 27, 2022, and by that, increased the total aggregated principal amount of the Notes issued to $431.25 million. The Notes bear annual interest of 2.5%, payable semiannually in arrears on January 15 and July 15 of each year, beginning on January 15, 2023. The Notes mature on July 15, 2027, unless earlier converted, redeemed or repurchased and are the Company's senior unsecured obligations.

Holders of the Notes may convert all or any portion of their Notes at their option at any time prior to the close of business on the business day immediately preceding January 15, 2027 only under the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending on September 30, 2022 (and only during such calendar quarter), if the last reported sale price of the Company's common stock, par value $0.001 per share (the "Common Stock"), for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day (equivalent to an initial conversion price of approximately $90.27 per share of common stock); (2) during the five consecutive business day period immediately after any five consecutive trading day period (the "Measurement Period") in which the trading price per $1,000 principal amount of Notes, as determined following a request by a holder or holders of the Notes for each trading day of the Measurement Period was less than 98% of the product of the last reported sale price of the Company's Common Stock and the conversion rate on each such trading day; (3) if the Company calls any or all of the Notes for redemption (the Company may not redeem the notes prior to July 21, 2025), at any time prior to the close of business on the second scheduled trading day prior to the redemption date, but only with respect to the Notes called (or deemed called) for redemption; or (4) upon the occurrence of specified corporate events. On or after January 15, 2027 until the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert all or any portion of their Notes at any time, regardless of the foregoing circumstances. Upon conversion, the Company will pay cash up to the aggregate principal amount of the Notes to be converted and pay or deliver, as the case may be, cash, shares of its common stock or a combination of cash and shares of its common stock, at its election, in respect of the remainder, if any, of its conversion obligation in excess of the aggregate principal amount of the Notes being converted.

The initial conversion rate was 11.0776 shares of common stock per $1,000 principal amount of Notes, which is equivalent to an initial conversion price of approximately $90.27 per share of common stock, subject to adjustment in certain events. In addition, following certain corporate events that occur prior to the maturity date or if the Company delivers a notice of redemption, it will, in certain circumstances, increase the conversion rate for a holder who elects to convert its Notes in connection with such a corporate event or notice of redemption, as the case may be. The Company may not redeem the notes prior to July 21, 2025. The Company may redeem for cash all or any portion of the Notes, at its option, on or after July 21, 2025 and on or before the 41st scheduled trading day immediately preceding the maturity date, if the last reported sale price of its common stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide notice of redemption at a redemption price equal to 100% of the principal amount of the notes to be redeemed, plus accrued and unpaid interest, but excluding, the redemption date. No sinking fund is provided for the notes. Additionally, if the Company undergoes a fundamental change (other than certain exempted fundamental changes), holders may require the Company to repurchase for cash all or any portion of their Notes at a fundamental change repurchase price equal to 100% of the principal amount of the notes to be repurchased, plus accrued and unpaid interest.

The Company incurred approximately $11.6 million of issuance costs in respect of the issuance of the Notes, which were deferred and are presented as a reduction to the Notes principal amounts on the consolidated balance sheets. The deferred issuance costs are amortized over the term of the Notes into interest expenses, net in the consolidated statements of operations and comprehensive income. During the year ended December 31, 2022, $1.1 million was recorded as amortized issuance costs under interest expenses, net. The effective interest rate on the Notes, including the impact of the deferred debt issuance costs, is 3.1%.

Based on the closing market price of the Company's common stock on December 31, 2022, the if-converted value of the Notes was less than their aggregate principal amount.

Capped Call Transactions

In connection with the issuance of the convertible notes described above, the Company entered into capped call transactions (the "Capped Calls") with certain counterparties. The capped call transactions will cover, subject to customary adjustments, the number of shares of our common stock initially underlying the Notes of approximately 4.8 million shares of common stock and at an initial strike price of $90.27 per share. The Capped Calls are generally intended to reduce the potential dilution to the Company's Common Stock upon any conversion of the Notes and/or offset any cash payments the Company is required to make in excess of the principal amount of converted Notes, in the event that at the time of conversion, the Common Stock price exceeds the conversion price. If, however, the market price per share of Common Stock exceeds the cap price of the Capped Calls, there would nevertheless be dilution or there would not be an offset of such potential cash payments, in each case, to the extent that such market price exceeds the cap price of the Capped Calls.

The Capped Calls exercise price is equal to the $90.27 initial conversion price of each of the Notes and the cap price of the Capped Calls is initially $107.63 per share, which represents a premium of approximately 55% above the closing price of the Company's common stock on the date of the Notes offering and is subject to customary anti-dilution adjustments. The Capped Calls transactions are separate transactions entered into by the Company with the option counterparties, are not part of the terms of the Notes and will not change the holders' rights under the notes.

The Company paid approximately $24.5 million for the Capped Calls which was recorded as a reduction to Additional Paid-in Capital in the consolidated statements of equity in the second quarter of 2022, as such transactions qualify for the equity classification with no subsequent adjustment to fair value under ASU 815, Derivatives and Hedging. The Capped Calls are not included in the calculation of diluted earnings per share because their impact is anti-dilutive.

Purchase of Treasury Stock

In connection with the issuance of the Notes as described above, the Company used approximately $18.0 million of the net proceeds from the issuance of these Notes to repurchase 258,667 shares of its common stock in privately negotiated transactions at a price of $69.45 per share. The Company recorded this purchase of treasury stocks as a reduction to its equity on the consolidated statements of equity in the second quarter of 2022.

Prepayment of Series 3 Bonds

Additionally, in connection with the issuance of the Notes as described above, on June 27, 2022, the Company used approximately $221.9 million of the net proceeds from the issuance of these Notes to prepay its Series 3 Bonds that were set to mature in September 2022 in a single bullet payment. This amount included an aggregated principal amount of $218.0 million, $2.8 million of accrued interest and $1.1 million of make-whole premium which was recorded in the second quarter of 2022 under Other non-operating income (expense), net in the consolidated statements of operations and comprehensive income.

Heber 1 fire

The Company's 40 MW Heber 1 geothermal power plant located in California experienced an outage following a fire on February 25, 2022 that caused damage primarily to the steam turbine-generator area. The Heber 1 power plant is part of the 81 MW Heber complex and sells its electricity under a long-term contract with the Southern California Public Power Authority. In mid-April, 2022 the Company gradually re-started operation of the binary units and the Heber 1 power plant is currently running at approximately 20 MW. In addition, the Company is currently optimizing the complex through the repowering of the Heber complex, which is expected to be completed in the second quarter of 2023. During 2022, the Company recognized $21.8 million of insurance recoveries in respect of the Heber 1 fire event, of which $8.0 million was attributable to property damage and thus recorded against the related receivable and offset the loss from the damaged equipment, and the remainder, $13.8 million, was related to business interruption and thus recorded as income under electricity cost of revenues in the consolidated statements of operations and comprehensive income. The Company has received all insurance proceeds related to the Heber 1 fire event.

February power crisis in Texas

In February 2021, extreme weather conditions in Texas resulted in a significant increase in demand for electricity on the one hand and a decrease in electricity supply in the region on the other hand. On February 15, 2021, the Electricity Reliability Council of Texas ("ERCOT") issued an Energy Emergency Alert Level 3 ("EEA 3") prompting rotating outages in Texas. This ultimately led to a significant increase in the Responsive Reserve Service ("RRS") market prices, where the Company operates its Rabbit Hill battery energy storage facility which provides ancillary services and energy optimization to the wholesale markets managed by ERCOT. Due to the electricity supply shortage, ERCOT restricted battery charging in the Rabbit Hill facility from February 16, 2021 to February 19, 2021, resulting in a limited ability of the Rabbit Hill storage facility to provide RRS. As a result, the Company incurred losses of approximately $9.1 million, net of associated revenues, from a hedge transaction in relation to its inability to provide RRS during that period. Starting February 19, 2021, the Rabbit Hill energy storage facility resumed operation at full capacity.

In addition, the Company recorded a provision for approximately $3.0 million for receivables related to imbalance charges from the grid operator in respect of its demand response operation as it estimated it is probable it may be unable to

collect such receivables. The provision for uncollectible receivables is included in "General and administrative expenses" in the consolidated statements of operations and comprehensive income for the year ended December 31, 2021.

The Company has filed billing disputes with ERCOT related to some of the imbalance charges and revenue allocated to its Demand Response services and customers, the outcome of which may impact the final amount.

New Accounting Pronouncements

New accounting pronouncements effective in the year ended December 31, 2022

Debt with Conversion

In August 2020, the FASB issued ASU 2020-06 Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40) ("ASU 2020-06"): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity. This guidance simplifies the accounting for certain financial instruments with characteristics of liabilities and equity, including convertible instruments and contracts on an entity's own equity. Furthermore, ASU 2020-06 requires the application of the if-converted method for calculating diluted earnings per share. The amendments to this guidance are effective for fiscal years beginning after December 15, 2021, and interim periods within those fiscal years. The Company adopted this guidance as prescribed and accounted for its convertible senior notes issued in June 2022, as further described above, under the amendments of this update.

Government Assistance

In November 2021, the FASB issued ASU 2021-10 "Government Assistance (Topic 832)," which requires annual disclosures that increase the transparency of transactions involving government grants, including (1) the types of transactions, (2) the accounting for those transactions, and (3) the effect of those transactions on an entity's financial statements. The Company applied the guidance prospectively to all in-scope transactions beginning fiscal year 2022. The adoption of this guidance did not have a material impact on the Company's consolidated financial statements.

New accounting pronouncements effective in future periods

Revenue Contracts Acquired in a Business Combination

In October 2021, the FASB issued ASU 2021-08, Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers ("ASU 2021-08"). ASU 2021-08 is intended to improve the accounting for acquired revenue contracts with customers in a business combination by addressing the following topics: (1) recognition of an acquired contract liability and (2) payment terms and their effect on subsequent revenue recognized by the acquirer. The amendments in ASU 2021-08 require that an entity that is the acquirer recognize and measure contract assets and contract liabilities acquired in a business combination in accordance with Topic 606 at the acquisition date as if it had originated the contracts. The amendments in ASU 2021-08 are effective for fiscal years beginning after December 15, 2022 including interim periods within those fiscal years. The amendments in this update should be applied prospectively to business combinations occurring on or after the effective date of the amendments. The Company does not anticipate the adoption of ASU 2021-08 will have a material impact on its consolidated financial statements.

NOTE 2 —BUSINESS ACQUISITIONS

Business combination - geothermal assets purchase transaction

On July 13, 2021, the Company closed a transaction with TG Geothermal Portfolio, LLC (a subsidiary of Terra-Gen, LLC) (the "Seller") to acquire two contracted geothermal assets in Nevada with a total net generating capacity of 67.5 MW, a greenfield development asset adjacent to one of the plants, and an underutilized transmission line (the "Terra-Gen Transaction"). The Company paid approximately $171.0 million in cash (excluding working capital adjustment of approximately $10.8 million) for 100% of the equity interests in the entities holding those assets and assumed a financing obligation with a fair value at acquisition date of approximately $258.4 million. The two contracted geothermal assets include the Dixie Valley and Beowawe geothermal power plants which sell power under existing power purchase agreements with

Southern California Edison under a long term PPA expiring in 2038 and with NV Power, Inc. under a PPA expiring in December 2025, respectively.

As a result of the acquisition, the Company expanded its overall generation capacity and expects to improve the profitability of the purchased assets through cost reduction and synergies. The Company accounted for the transaction in accordance with Accounting Standard Codification ("ASC") 805, Business Combinations. Following the transaction, the Company consolidates the Dixie Valley and Beowawe power plants as well as the other geothermal assets included in the transaction in accordance with ASC 810, Consolidation. In 2021, the Company incurred approximately $4.7 million of acquisition-related costs included under "General and administrative expenses" in the consolidated statements of operations and comprehensive income for the year December 30, 2021.

The following table summarizes the purchase price allocation to the fair value of the assets acquired and liabilities assumed (in millions):

Cash and cash equivalents and restricted cash	$	10.9
Trade receivables and others [(1)]		8.6
Deferred income taxes		22.8
Property, plant and equipment and construction-in-process		152.0
Intangible assets [(2)]		191.6
Goodwill [(3)]		66.2
Total assets acquired	$	452.1
Accounts payable, accrued expenses and others	$	6.6
Financing liability [(4)]		258.4
Asset retirement obligation		5.3
Total liabilities assumed	$	270.3
Total assets acquired, and liabilities assumed, net	$	181.8

[(1)] The gross amount of receivables due under the Dixie Valley and Beowawe PPAs is $7.8 million. These receivables were fully collected during the third quarter of 2021.

[(2)] Intangible assets are related to the long-term electricity PPAs described above and are amortized over the term of those PPAs.

[(3)] Goodwill is primarily related to the synergies and cost savings in operations as a result of the purchase transaction. The goodwill is allocated to the Electricity segment and is deductible for tax purposes pending the exercise of the financial lease buy-out option as described below.

[(4)] Financing liability is related to a sale and leaseback transaction entered into by the Seller in September 2015 under which it sold and leased back the undivided interests in the Dixie Valley power plant asset through June 2038. The lease transaction was accounted for by the Seller as a finance lease due to the Seller's continued involvement and management of the power plant and the existence of an early buy-out option in September 2024. As per the accounting guidance, the Company retained the Seller's accounting of a "failed" sale and leaseback transaction and accordingly accounted for the liability as a financing liability. This financing liability, as well as the related power plant asset, were measured at their acquisition-date fair value.

During the year ended December 31, 2022, the acquired geothermal power plants contributed $48.0 million to the Company Electricity revenues, $3.3 million to earnings, net of $7.4 million related to tax and interest expense in respect of the related finance liability. During the year ended 31, 2021, starting from acquisition date, the acquired geothermal power plants contributed $26.2 million to the Company Electricity revenues, $5.5 million to earnings, net of $4.9 million related to tax and interest expense in respect of the related finance liability.

The following unaudited pro forma summary presents condensed consolidated information of the Company as if the business combination had occurred on January 1, 2020. The pro forma results below include the impact of certain adjustments related to the depreciation of property, plant and equipment, amortization of intangible assets, transaction-related costs incurred as of the acquisition date, and interest expense on related borrowings, and in each case, the related income tax effects, as well as certain other post-acquisition adjustments. This pro forma presentation does not include any impact from transaction synergies.

	Pro forma for the Year Ended December 31,	
	2021	2020
	(Dollars in millions)	
Electricity revenues	$ 613.3	$ 596.6
Total revenues	$ 690.6	$ 760.6
Net income attributable to the Company's stockholders	$ 69.6	$ 84.3

NOTE 3 — MARKETABLE SECURITIES

Marketable securities are presented at fair value and include investments in debt securities classified as available for sale. All marketable securities have maturities of less than a year. Investment in marketable securities is comprised of the following:

	December 31, 2022				December 31, 2021			
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value	Amortized Cost	Gross unrealized gains	Gross unrealized losses	Fair value
	(Dollars in thousands)				(Dollars in thousands)			
Debt security type:								
Corporate bonds	$ —	$ —	$ —	$ —	$ 32,302	$ —	$ (36)	$32,529
Commercial paper	—	—	—	—	8,891	—	—	8,891
Money market funds	136	—	—	136	3,686	—	—	3,686
Foreign issuers	—	—	—	—	1,920	—	(4)	1,923
Total debt securities available for sale	$ 136	$ —	$ —	$ 136	$ 46,799	$ —	$ (40)	$47,029

As of December 31, 2022 and December 31, 2021, approximately $0.1 million and $3.7 million, respectively, of debt securities were classified under "Cash and cash equivalents" in the consolidated balance sheets as such securities met all applicable classification criteria.

The following table summarizes the fair value and gross unrealized losses of debt securities with unrealized losses aggregated by security type and length of time that the fair value had been below amortized cost, on an individual security basis:

	December 31, 2022				December 31, 2021			
	Less than 12 months		Greater than 12 months		Less than 12 months		Greater than 12 months	
	Fair value	Gross unrealized loss	Fair value	Gross unrealized loss	Fair value	Gross unrealized loss	Fair value	Gross unrealized loss
	(Dollars in thousands)				(Dollars in thousands)			
Debt security type:								
Corporate bonds	$ —	$ —	$ —	$ —	$ 32,529	$ (36)	$ —	$ —
Commercial paper	—	—	—	—	8,891	—	—	—
Money market funds	136	—	—	—	3,686	—	—	—
Foreign issuers	—	—	—	—	1,923	(4)	—	—
Total debt securities available for sale	$ 136	$ —	$ —	$ —	$ 47,029	$ (40)	$ —	$ —

The Company sold all of its investments in debt securities during the second quarter of 2022 except for an immaterial amount of $0.1 million which was classified under "cash and cash equivalents" as described above. There were no sales of debt securities during years ended December 31, 2021 and 2022.

NOTE 4 — INVENTORIES

Inventories consist of the following:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Raw materials and purchased parts for assembly	$ 10,629	$ 11,539
Self-manufactured assembly parts and finished products	12,203	16,906
Total	$ 22,832	$ 28,445

NOTE 5 — COST AND ESTIMATED EARNINGS ON UNCOMPLETED CONTRACTS

Cost and estimated earnings on uncompleted contracts consist of the following:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Costs and estimated earnings incurred on uncompleted contracts	$ 155,407	$ 103,486
Less billings to date	(147,787)	(103,042)
Total	$ 7,620	$ 444

These amounts are included in the consolidated balance sheets under the following captions:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Costs and estimated earnings in excess of billings on uncompleted contracts	$ 16,405	$ 9,692
Billings in excess of costs and estimated earnings on uncompleted contracts	(8,785)	(9,248)
Total	$ 7,620	$ 444

The completion costs of the Company’s construction contracts are subject to estimation. Due to uncertainties inherent in the estimation process, it is reasonably possible that estimated contract earnings will be further revised in the near term.

NOTE 6 — INVESTMENT IN UNCONSOLIDATED COMPANIES

Investment in unconsolidated companies consists of the following:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Investment in Sarulla	$ 74,881	$ 68,968
Investment in Ijen	40,812	36,918
Total investment in unconsolidated companies	$ 115,693	$ 105,886

The Sarulla Complex

The Company holds a 12.75% equity interest in a consortium that developed the 330 MW Sarulla geothermal power plant project in Tapanuli Utara, North Sumatra, Indonesia. The Sarulla project is comprised of three separately constructed 110 MW units, the most recent of which, NIL 2, was completed in April 2018. The Sarulla project is owned and operated by the consortium members under the framework of a joint operating contract and energy sales contract that were both executed on April 4, 2013. Under the joint operating contract, PT Pertamina Geothermal Energy, the concession holder for the project, provided the consortium with the right to use the geothermal field, and under the energy sales contract, PT PLN, the state electric utility, is the off-taker at the Sarulla complex for a period of 30 years. The Company has a significant influence over the Sarulla project through representation on Sarulla's board of directors and thus accounts for its investment in the Sarulla geothermal project under the equity method prescribed by ASC 323 - Investments - Equity Method and Joint Ventures.

During the years ended December 31, 2022, 2021 and 2020, the Company made no cash equity investment in the Sarulla complex. As of December 31, 2022, total cash investment in the Sarulla complex since its inception is $62.0 million.

The Sarulla consortium entered into interest rate swap agreements with various international banks, effective as of June 4, 2014, and accounted for the interest rate swap as a cash flow hedge upon which changes in the fair value of the hedging instrument, relative to the effective portion, are recorded in other comprehensive income. The Company’s share of such gains (losses) recorded in other comprehensive income (loss) are as follows:

	Year Ended December 31,	
	2022	2021
	(Dollars in thousands)	
Change in unrealized gains or losses in respect of the Company's share in derivatives instruments of unconsolidated investment that qualifies as a cash flow hedge	$ 8,370	$ 3,892

The related accumulated loss (gain) recorded by the Company under accumulated other comprehensive income as of December 31, 2022 and 2021 was $(2.0) million and $6.4 million, respectively.

The Sarulla power plant complex has been experiencing a reduction in generation primarily due to wellfield issues at one of its power plants, as well as equipment failures which resulted in a decrease in profitability. During the second quarter of 2022, Sarulla agreed with its banks on a framework that will enable it to perform remediation work that is aimed to restore the plant’s performance, however, uncertainty remains regarding Sarulla’s ability to meet the plan and the Company is evaluating the impact of the plan on future performance. As the Company determined that the current situation and circumstances related to its equity investment in Sarulla are temporary, no impairment testing was required at year-end.

The Ijen Project

On July 2, 2019, the Company acquired 49% of the Ijen geothermal project from a subsidiary of Medco Power (“Medco”), which is a party to a Power Purchase Agreement and holds a geothermal license to develop the Ijen project in East Java in Indonesia for a total consideration of approximately $2.7 million. As part of the transaction, the Company committed to make additional funding for the exploration and development of the project, subject to specific conditions. During 2022, 2021 and 2020, the Company made additional cash investments of approximately $4.5 million, $6.4 million and $21.0 million, respectively, and $42.6 million in total. Medco retains 51% ownership in the project company and the Company and Medco are developing the project jointly. The Company accounted for its investment in the Ijen geothermal project company under the equity method prescribed by ASC 323 - Investments - Equity Method and Joint Ventures.

NOTE 7 — VARIABLE INTEREST ENTITIES

The Company’s overall methodology for evaluating transactions and relationships under the variable interest entity (“VIE”) accounting and disclosure requirements includes the following two steps: (i) determining whether the entity meets the criteria to qualify as a VIE; and (ii) determining whether the Company is the primary beneficiary of the VIE.

In performing the first step, the significant factors and judgments that the Company considers in making the determination as to whether an entity is a VIE include:

- The design of the entity, including the nature of its risks and the purpose for which the entity was created, to determine the variability that the entity was designed to create and distribute to its interest holders;
- The nature of the Company's involvement with the entity;
- Whether control of the entity may be achieved through arrangements that do not involve voting equity;
- Whether there is sufficient equity investment at risk to finance the activities of the entity; and
- Whether parties other than the equity holders have the obligation to absorb expected losses or the right to receive residual returns.

If the Company identifies a VIE based on the above considerations, it then performs the second step and evaluates whether it is the primary beneficiary of the VIE by considering the following significant factors and judgments:

- Whether the Company has the power to direct the activities of the VIE that most significantly impact the entity's economic performance; and
- Whether the Company has the obligation to absorb losses of the entity that could potentially be significant to the VIE or the right to receive benefits from the entity that could potentially be significant to the VIE.

The Company's VIEs include certain of its wholly owned subsidiaries that own one or more power plants with long-term PPAs. In most cases, the PPAs require the utility to purchase substantially all of the plant's electrical output over a significant portion of its estimated useful life. Some of the VIEs have associated project financing debt that is non-recourse to the general creditors of the Company, is collateralized by substantially all of the assets of the VIE and those of its wholly owned subsidiaries (also VIEs) and is fully and unconditionally guaranteed by such subsidiaries. The Company has concluded that such entities are VIEs primarily because the entities do not have sufficient equity at risk and/or subordinated financial support is provided through the long-term PPAs. The Company has evaluated each of its VIEs to determine the primary beneficiary by considering the party that has the power to direct the most significant activities of the entity. Such activities include, among others, construction of the power plant, operations and maintenance, dispatch of electricity, financing and strategy. Except for power plants that it acquired, the Company is responsible for the construction of its power plants and generally provides operation and maintenance services. Primarily due to its involvement in these and other activities, the Company has concluded that it directs the most significant activities at each of its VIEs and, therefore, is considered the primary beneficiary. The Company performs an ongoing reassessment of the VIEs to determine the primary beneficiary for each. The Company has aggregated its consolidated VIEs into the following categories: (i) wholly owned subsidiaries with project debt; and (ii) wholly owned subsidiaries with PPAs.

The tables below detail the assets and liabilities (excluding intercompany balances which are eliminated in consolidation) for the Company's VIEs, combined by VIE classifications, that were included in the consolidated balance sheets as of December 31, 2022 and 2021:

	December 31, 2022	
	Project Debt	PPAs
	(Dollars in thousands)	
Assets:		
Restricted cash and cash equivalents	$ 127,972	$ —
Other current assets	128,414	29,377
Property, plant and equipment, net	1,516,107	810,384
Construction-in-process	104,956	255,552
Other long-term assets	304,766	51,037
Total assets	$ 2,182,215	$ 1,146,350
Liabilities:		
Accounts payable and accrued expenses	$ 42,577	$ 8,552
Long-term debt	637,080	—
Other long-term liabilities	400,271	50,348
Total liabilities	$ 1,079,928	$ 58,900

	December 31, 2021	
	Project Debt	PPAs
	(Dollars in thousands)	
Assets:		
Restricted cash and cash equivalents	$ 101,364	$ —
Other current assets	122,944	31,781
Property, plant and equipment, net	1,300,941	858,755
Construction-in-process	96,764	270,160
Other long-term assets	326,686	55,441
Total assets	$ 1,948,699	$ 1,216,137
Liabilities:		
Accounts payable and accrued expenses	$ 34,155	$ 10,004
Long-term debt	672,804	2,444
Other long-term liabilities	419,085	49,919
Total liabilities	$ 1,126,044	$ 62,367

NOTE 8— FAIR VALUE OF FINANCIAL INSTRUMENTS

The fair value measurement guidance clarifies that fair value represents the amount that would be received upon selling an asset or paid upon transferring a liability in an orderly transaction between market participants at the measurement date. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. The guidance establishes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy under the fair value measurement guidance are described below:

Level 1 — unadjusted observable inputs that reflect quoted prices for identical assets or liabilities in active markets;
Level 2 — inputs other than quoted prices included in Level 1 that are observable for the asset or liability either directly or indirectly;
Level 3 — unobservable inputs.

The following table sets forth certain fair value information at December 31, 2022 and 2021 for financial assets and liabilities measured at fair value by level within the fair value hierarchy, as well as cost or amortized cost. As required by the fair value measurement guidance, assets and liabilities are classified in their entirety based on the lowest level of inputs that is significant to the fair value measurement.

		December 31, 2022			
		Fair Value			
	Carrying Value at December 31, 2022	Total	Level 1	Level 2	Level 3
	(Dollars in thousands)				
Assets:					
Current assets:					
Cash equivalents (including restricted cash accounts)	$ 34,832	$ 34,832	$ 34,832	$ —	$ —
Marketable securities (including cash equivalents)	136	136	136	—	—
Derivatives:					
Long-term assets:					
Cross currency swap [3]	3,029	3,029	—	3,029	—
Liabilities:					
Current liabilities:					
Derivatives:					
Currency forward contracts [2]	(800)	(800)	—	(800)	—
Cross currency swap [3]	(2,777)	(2,777)	—	(2,777)	—
	$ 34,420	$ 34,420	$ 34,968	$ (548)	$ —

		December 31, 2021			
		Fair Value			
	Carrying Value at December 31, 2021	Total	Level 1	Level 2	Level 3
	(Dollars in thousands)				
Assets					
Current assets:					
Cash equivalents (including restricted cash accounts)	$ 31,675	$ 31,675	$ 31,675	$ —	$ —
Marketable securities	47,029	47,029	47,029	—	—
Derivatives:					
Cross currency swap [3]	1,461	1,461	—	1,461	—
Currency forward contracts [2]	813	813	—	813	—
Long-term assets:					
Cross currency swap [3]	37,883	37,883	—	37,883	—
Liabilities:					
Long-term liabilities:					
Contingent payables [1]	(2,425)	(2,425)	—	—	(2,425)
	$ 116,436	$ 116,436	$ 78,704	$ 40,157	$ (2,425)

[1] These amounts relate to contingent payables pertaining to the Guadeloupe power plant purchase transaction, valued primarily based on unobservable inputs and are included within "Other long-term liabilities" on December 31, 2022 and 2021 in the consolidated balance sheets with the corresponding gain or loss being recognized within "Derivatives and foreign currency transaction gains (losses)" in the consolidated statement of operations and comprehensive income.

(2) These amounts relate to currency forward contracts valued primarily based on observable inputs, including forward and spot prices for currencies, net of contracted rates and then multiplied by notional amounts, and are included within "Receivables, other" and "Accounts payable and accrued expenses" on December 31, 2022 and December 31, 2021, as applicable, in the consolidated balance sheet with the corresponding gain or loss being recognized within "Derivatives and foreign currency transaction gains (losses)" in the consolidated statement of operations and comprehensive income.

(3) These amounts relate to cross currency swap contracts valued primarily based on the present value of the Cross Currency Swap future settlement prices for USD and NIS zero yield curves and the applicable exchange rate as of December 31, 2022. These amounts are included within “Deposits and other” and "Accounts payable and accrued expenses" on December 31, 2022 and within "Prepaid expenses and other" and “Deposits and other” on December 31, 2021 in the consolidated balance sheets. There are no cash collateral deposits on December 31, 2022.

The following table presents the amounts of gain (loss) recognized in the consolidated statements of operations and comprehensive income (loss):

Derivatives not designated as hedging instruments	Location of recognized gain (loss)	Amount of recognized gain (loss)		
		2022	2021	2020
		(Dollars in thousands)		
Swap transaction on RRS prices (1)...	Derivative and foreign currency transaction gains (losses)	$ —	$ (14,540)	$ —
Currency forward contracts (1).....	Derivative and foreign currency transaction gains (losses)	(5,466)	1,368	5,175
		$ (5,466)	$ (13,172)	$ 5,175
Derivatives designated as cash flow hedging instruments				
Cross currency swap (2).....	Derivative and foreign currency transaction gains (losses)	$ (36,803)	$ 10,501	$ 21,187

(1) The foregoing currency forward and price swap transactions were not designated as hedge transactions and were marked to market with the corresponding gains or losses recognized within “Derivatives and foreign currency transaction gains (losses)” in the consolidated statements of operations and comprehensive income. The price swap transaction was related to a hedging agreement with a third party that was effective January 1, 2021 under which the Company fixed the price per MWh on a portion of RRS provided by its Rabbit Hill storage facility, as described under Note 1 to the consolidated financial statements. The price swap transaction was terminated effective April 1, 2021.

(2) The foregoing cross currency swap transactions were designated as a cash flow hedge as further described under Note 1 to the consolidated financial statements. The changes in the cross currency swap fair value are initially recorded in "Other comprehensive income (loss)" and a corresponding amount is reclassified out of "Accumulated other comprehensive income (loss)" to "Derivatives and foreign currency transaction gains (losses)" to offset the remeasurement of the underlying hedged transaction which also impacts the same line item in the consolidated statements of operations and comprehensive income.

There were no transfers of assets or liabilities between Level 1, Level 2 and Level 3 during the year ended December 31, 2022.

The following table presents the effect of derivative instruments designated as cash flow hedges on the consolidated statements of operations and comprehensive income (loss) for the years ended December 31, 2022, 2021 and 2020 :

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Cross currency swap cash flow hedge:			
Balance in Other comprehensive income (loss) beginning of period	$ 5,745	$ 3,366	$ —
Gain or (loss) recognized in Other comprehensive income (loss) [(1)]	(38,628)	12,880	24,553
Amount reclassified from Other comprehensive income (loss) into earnings	36,803	(10,501)	(21,187)
Balance in Other comprehensive income (loss) end of period	$ 3,920	$ 5,745	$ 3,366

[(1)] The amount of gain or (loss) recognized in Other comprehensive income (loss) for the years ended December 31, 2022, 2021 and 2020 is net of tax of $0.5 million, $0.8 million and $1.1 million, respectively.

The estimated net amount of existing gain (loss) that is reported in "Accumulated other comprehensive income (loss)" as of December 31, 2022 that is expected to be reclassified into earnings within the next 12 months is immaterial. The maximum length of time over which the Company is hedging its exposure to the variability in future cash flow is from the transaction commencement date through June 2031.

The fair value of the Company’s long-term debt approximates its fair value, except for the following:

	Fair Value		Carrying Amount	
	2022	2021	2022	2021
	(Dollars in millions)		(Dollars in millions)	
Mizrahi Loan	$ 71.4	$ —	$ 70.3	$ —
Convertible Senior Notes	505.3	—	431.3	—
HSBC Loan	40.3	50.4	42.9	50.0
Hapoalim Loan	91.1	117.8	98.2	116.1
Discount Loan	81.1	100.2	87.5	100.0
Financing Liability - Dixie Valley	219.8	248.4	242.0	252.9
Olkaria III Loan - DFC	134.2	166.5	138.7	156.7
Olkaria III plant 4 Loan - DEG 2	26.5	34.1	27.5	32.5
Olkaria III plant 1 Loan - DEG 3	23.3	30.1	24.0	28.4
Platanares Loan - DFC	80.2	98.2	79.9	88.1
Amatitlan Loan	14.7	19.8	15.8	19.3
OFC 2 LLC Senior Secured Notes ("OFC 2")	149.8	183.3	158.0	173.3
Don A. Campbell 1 Senior Secured Notes ("DAC 1")	57.4	69.8	62.7	67.9
USG Prudential - NV	23.7	28.9	25.0	26.3
USG Prudential - ID Refinancing (prior year: USG Prudential - ID)	56.8	17.3	61.6	17.3
USG DOE	32.8	39.9	32.8	35.5
Senior Unsecured Bonds	235.1	578.9	255.8	539.6
Senior Unsecured Loan	166.4	204.3	174.8	191.6
Plumstriker	11.2	14.8	11.4	14.7
Other long-term debt	9.2	13.3	10.4	13.6

The fair value of the long-term debt is determined by a valuation model, which is based on a conventional discounted cash flow methodology and utilizes assumptions of current borrowing rates, except for the fair value of the Convertible Senior Notes for which the fair value was estimated based on a quoted bid price of the Notes in an over-the-counter market on the last trading day of the reporting period. A hypothetical change in the quoted bid price will result in a corresponding change in the estimated fair value of the Notes.

As disclosed above under Note 1 to the consolidated financial statements, the outbreak of the COVID-19 pandemic caused a global economic downturn and market volatility that may continue to have an impact on the estimated fair value of the Company's long-term debt and financing liability. Additionally, other components of the Company's borrowing rates may

increase as the global economic situation evolves which may have a direct impact on the fair value of the Company's long-term debt.

The carrying value of the deposits approximates fair value.

The following table presents the fair value of financial instruments as of December 31, 2022:

	Level 1	Level 2	Level 3	Total
	(Dollars in millions)			
Mizrahi Loan	$ —	$ —	$ 71.4	$ 71.4
Convertible Senior Notes	—	505.3	—	505.3
HSBC Loan	—	—	40.3	40.3
Hapoalim Loan	—	—	91.1	91.1
Discount Loan	—	—	81.1	81.1
Financing Liability - Dixie Valley	—	—	219.8	219.8
Olkaria III - DFC	—	—	134.2	134.2
Olkaria III plant 4 - DEG 2	—	—	26.5	26.5
Olkaria III plant 1 - DEG 3	—	—	23.3	23.3
Platanares Loan - DFC	—	—	80.2	80.2
Amatitlan Loan	—	14.7	—	14.7
OFC 2 Senior Secured Notes	—	—	149.8	149.8
DAC 1 Senior Secured Notes	—	—	57.4	57.4
USG Prudential - NV	—	—	23.7	23.7
USG Prudential - ID	—	—	56.8	56.8
USG DOE	—	—	32.8	32.8
Senior Unsecured Bonds	—	—	235.1	235.1
Senior Unsecured Loan	—	—	166.4	166.4
Plumstriker	—	11.2	—	11.2
Other long-term debt	—	—	9.2	9.2
Deposits	13.9	—	—	13.9

The following table presents the fair value of financial instruments as of December 31, 2021:

	Level 1	Level 2	Level 3	Total
	(Dollars in millions)			
HSBC Loan	$ —	$ —	$ 50.4	$ 50.4
Hapoalim Loan	—	—	117.8	117.8
Discount Loan	—	—	100.2	100.2
Financing Liability - Dixie Valley	—	—	248.4	248.4
Olkaria III Loan - DFC	—	—	166.5	166.5
Olkaria III plant 4 - DEG 2	—	—	34.1	34.1
Olkaria III plant 1 - DEG 3	—	—	30.1	30.1
Platanares Loan - DFC	—	—	98.2	98.2
Amatitlan Loan	—	19.8	—	19.8
Senior Secured Notes:				
OFC 2 Senior Secured Notes	—	—	183.3	183.3
DAC 1 Senior Secured Notes	—	—	69.8	69.8
USG Prudential - NV	—	—	28.9	28.9
USG Prudential - ID	—	—	17.3	17.3
USG DOE	—	—	39.9	39.9
Senior Unsecured Bonds	—	—	578.9	578.9
Senior Unsecured Loan	—	—	204.3	204.3
Plumstriker	—	14.8	—	14.8
Other long-term debt	—	—	13.3	13.3
Deposits	17.1	—	—	17.1

NOTE 9 — PROPERTY, PLANT AND EQUIPMENT AND CONSTRUCTION-IN-PROCESS

Property, plant and equipment

Property, plant and equipment, net, consist of the following:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Land owned by the Company where the geothermal resource is located	$ 42,335	$ 40,545
Leasehold improvements	13,230	9,105
Machinery and equipment	350,584	302,367
Land, buildings and office equipment	52,222	48,275
Vehicles	14,115	10,724
Energy storage equipment	91,025	79,805
Solar facility equipment	32,003	—
Geothermal and recovered energy generation power plants, including geothermal wells and exploration and resource development costs:		
United States of America, net of cash grants	2,641,280	2,511,027
Foreign countries	897,657	800,000
Asset retirement cost	48,578	41,157
	4,183,029	3,843,005
Less accumulated depreciation	(1,689,572)	(1,548,032)
Property, plant and equipment, net	$ 2,493,457	$ 2,294,973

Depreciation expense for the years ended December 31, 2022, 2021 and 2020 amounted to $163.2 million, $153.0 million and $133.5 million, respectively. Depreciation expense for the years ended December 31, 2022, 2021, and 2020 is net of the impact of the cash grant in the amount of $7.5 million, $7.4 million and $7.3 million, respectively.

U.S. Operations

The net book value of the property, plant and equipment, including construction-in-process, located in the United States was approximately $2,830.3 million and $2,502.2 million as of December 31, 2022 and 2021, respectively. These amounts as of December 31, 2022 and 2021 are net of cash grants in the amount of $144.4 million and $151.9 million, respectively.

Foreign Operations

The net book value of property, plant and equipment, including construction-in-process, located outside of the United States was approximately $556.4 million and $514.3 million as of December 31, 2022 and 2021, respectively.

The Company, through its wholly owned subsidiary, OrPower 4, Inc. (“OrPower 4”), owns and operates geothermal power plants in Kenya. The net book value of assets associated with the power plants was $301.5 million and $297.4 million as of December 31, 2022 and 2021, respectively. The Company sells the electricity produced by the power plants to Kenya Power and Lighting Co. Ltd. (“KPLC”) under a 20-year PPA ending between 2033 and 2036.

The Company, through its wholly owned subsidiary, Orzunil I de Electricidad, Limitada (Orzunil), owns a 97% interest in a geothermal power plant in Guatemala. The net book value of the assets related to the power plant was $27.1 million and $17.2 million at December 31, 2022 and 2021, respectively. The Company sells the electricity produced by the power plants to INDE, a Guatemalan power company under a PPA ending in 2034.

The Company, through its wholly owned subsidiary, Ortitlan, Limitada (“Ortitlan”), owns a power plant in Guatemala. The net book value of the assets related to the power plant was $42.3 million and $39.8 million at December 31, 2022 and 2021, respectively.

The Company, through its wholly owned subsidiary, GeoPlatanares, signed a BOT contract for the Platanares geothermal project in Honduras with ELCOSA, a privately owned Honduran energy company, for 15 years from the commercial operation date. Platanares sells the electricity produced by the power plants to ENEE, the national utility of Honduras under a 30-year PPA which expires in 2047. The net book value of the assets related to the power plant was $79.5 million and $75.4 million at December 31, 2022 and 2021, respectively.

The Company, through its subsidiary, Guadeloupe Bouillante ("GB"), owns a power plant in Guadeloupe. The net book value of the assets related to the power plant was $43.5 million and $39.4 million at December 31, 2022 and 2021, respectively. GB sells the electricity produced by the power plants to EDF, the French electric utility, under a 15-year PPA.

Construction-in-process

Construction-in-process consists of the following:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Projects under exploration and development:		
Up-front bonus costs	$ 5,335	$ 5,335
Exploration and development costs	89,230	44,664
Interest capitalized	703	703
	95,268	50,702
Projects under construction:		
Up-front bonus costs	11,156	39,156
Drilling and construction costs	761,129	611,553
Interest capitalized	25,645	20,072
	797,930	670,781
Total	$ 893,198	$ 721,483

	Projects under exploration and development			
	Up-front Bonus Costs	Exploration and Development Costs	Interest Capitalized	Total
	(Dollars in thousands)			
Balance at December 31, 2019	$ 17,018	$ 66,916	$ 703	$ 84,637
Cost incurred during the year	—	5,832	—	5,832
Transfer of projects under exploration and development to projects under construction	(11,671)	(27,270)	—	(38,941)
Balance at December 31, 2020	5,347	45,478	703	51,528
Cost incurred during the year	—	2,680	—	2,680
Transfer of projects under exploration and development to projects under construction	(12)	(3,494)	—	(3,506)
Balance at December 31, 2021	5,335	44,664	703	50,702
Cost incurred during the year	—	44,566	—	44,566
Balance at December 31, 2022	$ 5,335	$ 89,230	$ 703	$ 95,268

	Projects under construction			
	Up-front Bonus Costs	Drilling and Construction Costs	Interest Capitalized	Total
	(Dollars in thousands)			
Balance at December 31, 2019	$ 27,473	$ 258,484	$ 5,961	$ 291,918
Cost incurred during the year	—	298,215	3,565	301,780
Transfer of projects under exploration and development to projects under construction	11,671	27,270	—	38,941
Transfer of completed projects to property, plant and equipment	—	(204,852)	—	(204,852)
Balance at December 31, 2020	39,144	379,117	9,526	427,787
Cost incurred during the year	—	403,296	10,546	413,842
Transfer of projects under exploration and development to projects under construction	12	3,494	—	3,506
Transfer of completed projects to property, plant and equipment	—	(174,354)	—	(174,354)
Balance at December 31, 2021	39,156	611,553	20,072	670,781
Cost incurred during the year	—	489,953	5,573	495,526
Transfer of completed projects to property, plant and equipment	(28,000)	(340,377)	—	(368,377)
Balance at December 31, 2022	$ 11,156	$ 761,129	$ 25,645	$ 797,930

Impairment of long-lived assets

The Brawley power plant has been generating electricity below its generating capacity of 13MW due to continuous wellfield issues which have resulted in higher-than-expected operating costs and lower-than-expected electricity revenues. The Company has implemented a number of remediation plans and technical solutions involving additional investments in the power plant in order to improve its performance and reduce operating costs, however, during the fourth quarter of 2022, as a result of the failure of the recent remediation plan and the lower than forecasted performance of the power plant during the quarter, the Company decided that it was no longer economical to continue investing in the Brawley power plant as the probability of success of additional wellfield work to increase capacity and reduce operating costs is low. The Company concluded that the power plant can be operated at optimal capacity of 7MW which will require lower investment and results in lower operating costs.

Based on the above circumstances and indicators, the Brawley power plant was tested for recoverability during the fourth quarter of 2022 by comparing the carrying amount of its assets to the estimated future net undiscounted cash flows expected to be generated by such assets, the result of which was that the carrying amount of the asset was below the estimated future net undiscounted cash flows. The Company then estimated the fair value of those assets using the expected future discounted cash flow approach using Level 3 inputs under ASC 820, as a measure of fair value as it deemed it to be the most appropriate for the power plant. As a result of the impairment analysis, the Brawley power plant was written down to its fair value of $13.6 million and the Company recorded a non-cash impairment loss of $30.5 million which was presented in the consolidated statement of operations and comprehensive income (loss) under “Impairment of long-lived-assets” for the year ended December 31, 2022, and is allocated to the Electricity segment.

In estimating the fair value for the power plant, the Company utilized the discounted cash flow approach ("DCF") which is a form of the Income Approach. The DCF approach is based on the present value of the estimated cash flow expected to be generated by the Brawley power plant which is the asset group. The expected cash flow was discounted using a rate of return that reflects the relative risk of the asset, as well as the time value of money. The determination of the Company and asset specific risk-adjusted discount rate is based on the weighted-average cost of capital ("WACC") taking into consideration the value of equity and interest-bearing debt. The Company applied a WACC rate of 9% in the estimation of the Brawley power plant. The Company noted that a 1% change to the WACC or long-term growth rates would not yield a significant change in the estimated fair value of the Brawley power plant. In addition to the WACC rate of 9%, other significant inputs of the future net cash flow estimates are generation capacity output, average realized price, and operating costs growth rate. These future net cash flow estimates are classified as Level 3 within the fair value hierarchy. Below are the significant unobservable inputs included in the valuation as of the year ended December 31, 2022.

Significant unobservable inputs:	
Average generation capacity (MW)	7
Electricity price escalation (%)	2.2
Cost long-term growth rate	2.2
Average realized electricity price ($/MW)	92.2

NOTE 10 — INTANGIBLE ASSETS AND GOODWILL

As of December 31, 2022 and 2021, intangible assets amounted to $333.8 million and $363.3 million, respectively, net of accumulated amortization of $122.8 million and $110.1 million, respectively. Intangible assets are mainly related to the Company’s PPAs acquired in business combinations and its energy storage activities, .

The following table summarizes the information related to the Company's intangible assets as of December 31, 2022 and 2021:

	December 31, 2022		December 31, 2021	
	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
	(Dollars in thousands)		(Dollars in thousands)	
Amortized intangible assets				
Electricity segment	$ 402,340	$ (104,601)	$ 417,479	$ (96,250)
Storage segment	54,310	(18,204)	55,973	(13,888)
Total	$ 456,650	$ (122,805)	$ 473,452	$ (110,138)

Amortization expense for the years ended December 31, 2022, 2021 and 2020 amounted to $27.2 million, $21.7 million and $14.4 million, respectively.

There were no additions to intangible assets during 2022. Additions to intangible assets during 2021 and 2020 amounted to $192.5 million and $20.4 million, respectively. The additions in 2021 and 2020 relate to the geothermal assets purchase transaction from TG Geothermal Portfolio, LLC and the Pomona acquisition, respectively. Further information on the TG Geothermal Portfolio, LLC is described under Note 2 to the consolidated financial statements.

During 2022, the Company wrote-off specific certain customer related assets in the total amount of $0.9 million. The Company tested the intangible assets for recoverability in December 2022, 2021 and 2020 and assessed whether there were events or change in circumstances which may indicate that the intangible assets are not recoverable. The Company's assessment resulted in that there were no write-offs of intangible assets in 2022, 2021 and 2020, except as noted above.

Estimated future amortization expense for the intangible assets as of December 31, 2022 is as follows:

	(Dollars in thousands)
Year ending December 31:	
2023	$ 27,191
2024	26,229
2025	25,911
2026	24,056
2027	22,176
Thereafter	208,282
Total	$ 333,845

Goodwill

Goodwill amounting to $90.3 million and $90.0 million as of December 31, 2022 and 2021, respectively, represents the excess of the fair value of consideration transferred in business combination transactions over the fair value of tangible and intangible assets acquired, net of the fair value of liabilities assumed and non-controlling interest (as applicable) in the acquisitions. For the years 2022, 2021 and 2020, the Company's impairment assessment of goodwill related to its reporting units resulted in no impairment.

Changes in the carrying amount of the Company's goodwill for the years ended December 31, 2022 and 2021 were as follows:

	2022	2021
	(Dollars in thousands)	
Goodwill as of January 1,	$ 89,954	$ 24,566
Goodwill acquired [(1)]	—	65,441
Translation differences	371	(53)
Goodwill as of December 31,	$ 90,325	$ 89,954

[(1)] Goodwill acquired in 2021 is related to the purchase of geothermal assets from TG Geothermal Portfolio, LLC and the Pomona storage facility purchase transaction, respectively, as further described in Note 2 to the consolidated financial statements.

NOTE 11 — ACCOUNTS PAYABLE AND ACCRUED EXPENSES

Accounts payable and accrued expenses consist of the following:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Trade payable	$ 77,551	$ 75,164
Salaries and other payroll costs	24,205	25,513
Customer advances	1,060	1,218
Accrued interest	14,063	11,283
Income tax payable	8,393	8,138
Property tax payable	3,271	2,906
Scheduling and transmission	1,000	3,632
Royalty accrual	9,825	6,023
Warranty accrual	1,705	1,579
Other	8,350	7,730
Total	$ 149,423	$ 143,186

NOTE 12 — LONG-TERM DEBT, CREDIT AGREEMENTS AND FINANCE LIABILITY

Long-term debt consists of the following loan agreements:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Limited and non-recourse agreements [1]:		
Limited recourse:		
Loan agreement with DFC (the Olkaria III power plant)	$ 138,663	$ 156,657
Loan agreement with DFC (the Platanares power plant)	$ 79,880	88,073
Loan agreement with Banco Industrial S.A. and Westrust Bank (International) Limited	$ 15,750	19,250
Loan agreement with a global industrial company (the Plumstriker battery energy storage projects)	$ 11,392	14,726
Loans assumed in the purchase of USG	$ 119,392	79,064
Other loans	$ 4,585	5,930
OFC 2 Senior Secured Notes	$ 158,036	173,321
Non-recourse:		
DAC 1 Senior Secured Notes	$ 62,698	67,939
Other loans	$ 5,805	7,697
Total limited and non-recourse agreements	$ 596,201	612,657
Less current portion	$ (64,044)	(61,695)
Noncurrent portion	$ 532,157	$ 550,962
Full recourse agreements [1]:		
Senior Unsecured Bonds (Series 3 and Series 4)	$ 255,754	$ 539,567
Senior Unsecured Loan (Migdal)	$ 174,800	191,600
Hapoalim, Mizrahi, HSBC and Discount loans	$ 298,884	266,071
Loan agreements with DEG (the Olkaria III and power plants 4 and 1 upgrade)	$ 51,528	60,896
Total full recourse agreements	$ 780,966	1,058,134
Less current portion	$ (101,460)	(313,846)
Noncurrent portion	$ 679,506	$ 744,288
Convertible senior notes (all noncurrent) [1]	$ 431,250	$ —
Financing liability	$ 242,029	$ 252,864
Less current portion	$ (16,270)	$ (10,835)
Noncurrent portion	$ 225,759	$ 242,029

[1] the amounts presented exclude deferred financing costs, if any

Full-Recourse Third-Party Debt

Mizrahi Bank Loan

On April 12, 2022, the Company entered into a definitive loan agreement (the "Mizrahi Loan Agreement") with Mizrahi Tefahot Bank Ltd. (“Mizrahi Bank”). The Mizrahi Loan Agreement provides for a loan by Mizrahi Bank to the Company in an aggregate principal amount of $75.0 million (the “Mizrahi Loan”). The outstanding principal amount of the Mizrahi Loan will be repaid in 16 semi-annual payments of $4.7 million each, commencing on October 12, 2022. The duration of the Mizrahi Loan is 8 years. The Mizrahi Loan Agreement includes various affirmative and negative covenants, including a requirement that the Company maintain (i) a financial debt to adjusted EBITDA ratio not to exceed 6.0, (ii) a minimum equity capital amount (as shown on its consolidated financial statements) of not less than $750 million, and (iii) an equity capital to total assets ratio of not less than 25%. The Mizrahi Loan Agreement includes other customary affirmative and negative covenants, including payment and covenant events of default. As of December 31, 2022, the covenants have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
Mizrahi Loan	$ 75.0	$ 70.3	4.10%	April 2030

[1] payable semi-annually

Bank Hapoalim Loan

On July 12, 2021, the Company entered into a definitive loan agreement (the "Hapoalim Loan Agreement") with Bank Hapoalim B.M. (“Bank Hapoalim”). The Hapoalim Loan Agreement provides for a loan by Bank Hapoalim to the Company in an aggregate principal amount of $125 million (the “Hapoalim Loan”). The outstanding principal amount of the Hapoalim Loan will be repaid in 14 semi-annual payments of $8.9 million each, commencing on December 12, 2021. The duration of the Hapoalim Loan is 7 years. The Hapoalim Loan Agreement includes various affirmative and negative covenants, including a requirement that the Company maintain (i) a financial debt to adjusted EBITDA ratio not to exceed 6, (ii) a minimum equity capital amount (as shown on its consolidated financial statements) of not less than $750 million, and (iii) an equity capital to total assets ratio of not less than 25%. The Hapoalim Loan Agreement includes other customary affirmative and negative covenants, including payment and covenant events of default. As of December 31, 2022, the covenants have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
Hapoalim Loan	$ 125.0	$ 98.2	3.45%	June 2028

[1] payable semi-annually

HSBC Bank Loan

On July 15, 2021, the Company entered into a definitive loan agreement (the "HSBC Loan Agreement") with HSBC Bank PLC ("HSBC Bank"). The HSBC Loan Agreement provides for a loan by HSBC Bank to the Company in an aggregate principal amount of $50 million (the "HSBC Loan"). The outstanding principal amount of the HSBC Loan will be repaid in 14 semi-annual payments of $3.6 million each, commencing on January 19, 2022. The duration of the HSBC Loan is 7 years. The HSBC Loan Agreement includes various affirmative and negative covenants, including a requirement that the Company maintain (i) a financial debt to adjusted EBITDA ratio not to exceed 6, (ii) a minimum equity capital amount (as shown on its consolidated financial statements) of not less than $750 million, and (iii) an equity capital to total assets ratio of not less than 25%. The HSBC Loan Agreement includes other customary affirmative and negative covenants, including payment and covenant events of default. As of December 31, 2022, the covenants have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
HSBC Loan	$ 50.0	$ 42.9	3.45%	July 2028

[1] payable semi-annually

The proceeds from Hapoalim Loan and HSBC Loan were used to pay for the purchase of the geothermal assets portfolio from TG Geothermal Portfolio, LLC as described above in Note 2 - Business Acquisitions to the consolidated financial statements.

Discount Bank Loan

On September 2, 2021, the Company entered into a definitive loan agreement (the "Discount Loan Agreement") with Israel Discount Bank Ltd. ("Discount Bank"). The Discount Loan Agreement provides for a loan by Discount Bank to the Company in an aggregate principal amount of $100 million (the "Discount Loan"). The outstanding principal amount of the Discount Loan will be repaid in 16 semi-annual payments of $6.25 million each, commencing on March 2, 2022. The duration of the Discount Loan is 8 years. The Discount Loan Agreement includes various affirmative and negative covenants, including a requirement that the Company maintain (i) a financial debt to adjusted EBITDA ratio not to exceed 6, (ii) a minimum equity capital amount (as shown on its consolidated financial statements) of not less than $750 million, and (iii) an equity capital to total assets ratio of not less than 25%. The Discount Loan Agreement includes other customary affirmative and negative covenants, including payment and covenant events of default. As of December 31, 2022, the covenants have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
Discount Loan	$ 100.0	$ 87.5	2.9%	September 2029

[1] payable semi-annually

Senior Unsecured Bonds - Series 4

On July 1, 2020, the Company concluded an auction tender and accepted subscriptions for New Israeli Shekels ("NIS") 1.0 billion aggregate principal amount of senior unsecured bonds (the "Senior Unsecured Bonds - Series 4"). The Senior Unsecured Bonds - Series 4 are denominated in NIS and were converted to approximately $289.8 million using a cross-currency swap transaction shortly after the completion of such issuance as further detailed below. The Senior Unsecured Bonds - Series 4 are payable semi-annually in arrears starting December 2020 and will be repaid in 10 equal annual payments commencing June 2022 unless prepaid earlier by the Company pursuant to the terms and conditions of the trust instrument that governs the Senior Unsecured Bonds - Series 4. The proceeds from the Senior Unsecured Bonds - Series 4 were used to pay the total consideration of $43.4 million in the Pomona purchase transaction as further detailed under Note 2 to the consolidated financial statements and to repay certain existing indebtedness with the balance being used to support the Company's growth plans. As of December 31, 2022, the covenants have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
Senior Unsecured Bonds - Series 4 ...	$ 289.8	$ 255.8	3.35%	June 2031

[1] payable semi-annually

Cross Currency Swap

Concurrently with the issuance of the Senior Unsecured Bonds - Series 4, the Company entered into a long-term cross currency swap with the objective of hedging the currency rate fluctuations related to the aggregated principal amount and interest of the Senior Unsecured Bonds - Series 4 at an average fixed rate of 4.34%. The terms of the Cross Currency Swap match those of the Senior Unsecured Bonds - Series 4, including the notional amount of the principal and interest payment dates. The Company designated the Cross Currency Swap as a cash flow hedge as per ASC 815, Derivatives and Hedging and accordingly measures the Cross Currency Swap instrument at fair value. The changes in the Cross Currency Swap fair value are initially recorded in Other Comprehensive Income (Loss) and reclassified to Derivatives and foreign currency transaction gains (losses) in the same period or periods during which the hedged transaction affects earnings and is presented in the same line item in the consolidated statements of operations and comprehensive income as the earnings effect of the Senior Unsecured Bonds - Series 4.

Senior Unsecured Bonds - Series 3

As described under Note 1 to the consolidated financial statements, in connection with the issuance of the Notes, on June 27, 2022, the Company used approximately $221.9 million of the net proceeds from the issuance of the Notes to prepay its Series 3 Bonds that were set to mature in September 2022 in a single bullet payment. This amount included an aggregated principal amount of $218.0 million, $2.8 million of accrued interest and $1.1 million of make-whole premium which was recorded in the second quarter of 2022 under Other non-operating income (expense), net in the consolidated statements of operations and comprehensive income.

Senior Unsecured Loan

On March 22, 2018 the Company entered into a definitive loan agreement (the "Migdal Loan Agreement") with Migdal Insurance Company Ltd., Migdal Makefet Pension and Provident Funds Ltd. and Yozma Pension Fund of Self-Employed Ltd., all entities within the Migdal Group, a leading Israeli insurance company and institutional investor in Israel. The Migdal Loan Agreement provides for a loan by the lenders to the Company in an aggregate principal amount of $100.0 million (the "Migdal Loan"). The Migdal Loan is repaid in 15 semi-annual payments of $4.2 million each, commencing on September 15, 2021, with a final payment of $37.0 million on March 15, 2029.

The Loan is subject to early redemption by the Company prior to maturity from time to time (but not more frequently than once per quarter) and at any time in whole or in part, at a redemption price set forth in the Migdal Loan Agreement. If the rating of the Company is downgraded to "ilA-"(or equivalent), of any of Standard and Poor's, Moody's or Fitch (whether in Israel or outside of Israel) (each a "Credit Rating Agency"), the interest rate applicable to the Migdal Loan will increase by 0.50%. If the rating of the Company is further downgraded to a lower level by any Credit Rating Agency, the interest rate applicable to the Migdal Loan will be increased by 0.25% for each additional downgrade. In no event will the cumulative

increase in the interest rate applicable to the Loan exceed 1% regardless of the cumulative rating downgrade. A subsequent upgrade or reinstatement of a rating by any Credit Rating Agency will reduce the interest rate applicable to the Migdal Loan by 0.25% for each upgrade (but in no event will the interest rate applicable the Migdal Loan fall below the base interest rate of 4.8%). Additionally, if the ratio between short-term and long-term debt to financial institutions and bondholders, deducting cash and cash equivalents to EBITDA is equal to or higher than 4.5, the interest rate on all amounts then outstanding under the Migdal Loan shall be increased by 0.5% per annum over the interest rate then-applicable to the Migdal Loan.

The Migdal Loan Agreement includes various affirmative and negative covenants, including a covenant that the Company maintain (i) a debt to adjusted EBITDA ratio below 6, (ii) a minimum equity amount (as shown on its consolidated financial statements, excluding noncontrolling interests) of not less than $750 million, and (iii) an equity attributable to Company's stockholders to total assets ratio of not less than 25%. The Migdal Loan Agreement includes other customary affirmative and negative covenants and events of default. As of December 31, 2022, the covenants have been met.

On March 25, 2019, the Company entered into a first addendum (“First Addendum”) to the Migdal Loan Agreement with the Migdal Group dated March 22, 2018. The First Addendum provides for an additional loan by the lenders to the Company in an aggregate principal amount of $50.0 million (the “Additional Migdal Loan”). The Additional Migdal Loan is repaid in 15 semi-annual payments of $2.1 million each, commencing on September 15, 2021, with a final payment of $18.5 million on March 15, 2029. The Additional Migdal Loan was entered into under substantially the same terms and conditions of the Migdal Loan Agreement as disclosed above.

In April 2020, the Company entered into a second addendum (the “Second Addendum”) to the loan agreement with the Migdal Group dated March 22, 2018. The Second Addendum provides for an additional loan by the lenders to the Company in an aggregate principal amount of $50.0 million (the “Second Addendum Migdal Loan”). The principal amount of $31.5 million of the Second Addendum Migdal Loan will be repaid in 15 equal semi-annual payments commencing on September 15, 2021 and ending on September 15, 2028. The principal amount of $18.5 million is repaid in one bullet payment on March 15, 2029. The Second Addendum Migdal Loan was entered into under substantially the same terms and conditions of the Migdal Loan Agreement.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
Migdal Loan	$ 100.0	$ 87.4	4.80%	March 2029
Additional Migdal Loan	50.0	43.7	4.60%	March 2029
Second Addendum Migdal Loan	50.0	43.7	5.44%	March 2029
Total Senior Unsecured Loan	$ 200.0	$ 174.8		

[1] payable semi-annually in arrears.

Loan Agreements with DEG (the Olkaria III Complex)

On October 20, 2016, OrPower 4 entered into a new $50.0 million subordinated loan agreement with Deutsche Investitions-und Entwicklungsgesellschaft mbH ("DEG") (the “DEG 2 Loan Agreement”) and on December 21, 2016, OrPower 4 completed a drawdown of the full loan amount of $50 million, with a fixed interest rate of 6.28% for the duration of the loan (the “DEG 2 Loan”). The DEG 2 Loan is being repaid in 20 equal semi-annual principal installments which commenced on December 21, 2018, with a final maturity date of June 21, 2028. Proceeds of the DEG 2 Loan were used by OrPower 4 to refinance Plant 4 of the Olkaria III Complex, which was originally financed using equity. The DEG 2 Loan is subordinated to the senior loan provided by DFC for Plants 1-3 of the Olkaria III Complex. The DEG 2 Loan is guaranteed by the Company.

On January 4, 2019, OrPower 4 entered into an additional $41.5 million subordinated loan agreement with DEG (the “DEG 3 Loan Agreement”) and on February 28, 2019, OrPower 4 completed a drawdown of the full loan amount, with a fixed interest rate of 6.04% for the duration of the loan (the “DEG 3 Loan”). The DEG 3 Loan is being repaid in 19 equal semi-annual principal installments, which commenced on June 21, 2019, with a final maturity date of June 21, 2028. Proceeds of the DEG 3 Loan were used by OrPower 4 to refinance upgrades to Plant 1 of the Olkaria III Complex, which were originally

financed using equity. The DEG 3 Loan is subordinated to the senior loan provided by DFC (formerly OPIC) for Plants 1-3 of the Olkaria III Complex. The DEG 3 Loan is guaranteed by the Company. As of December 31, 2022, the covenants have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
DEG 2 Loan	$ 50.0	$ 27.5	6.28%	June 2028
DEG 3 Loan	41.5	24.0	6.04%	June 2028
	$ 91.5	$ 51.5		

[1] payable semi-annually

Non-Recourse and Limited-Recourse Third-Party Debt

Finance Agreement with DFC (formerly OPIC) (the Olkaria III Complex)

On August 23, 2012, OrPower 4, the Company's wholly owned subsidiary, entered into a Finance Agreement with U.S. International Development Finance Corporation, an agency of the U.S. government, to provide limited-recourse senior secured debt financing in an aggregate principal amount of up to $310.0 million (the "OPIC Loan") for the refinancing and financing of the Olkaria III geothermal power complex in Kenya.

The OPIC Loan is comprised of up to three tranches:

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
OPIC Loan - Tranche I	$ 85.0	$ 37.8	6.34%	December 2030
OPIC Loan - Tranche II	180.0	79.4	6.29%	June 2030
OPIC Loan - Tranche III	45.0	21.5	6.12%	December 2030
Total OPIC Loan	$ 310.0	$ 138.7		

[1] payable quarterly

The OPIC Loan is collateralized by substantially all of OrPower 4's assets and by a pledge of all of the equity interests in OrPower 4. There are various restrictive covenants under the OPIC Loan, which include a required historical and projected 12-month DSCR. As of December 31, 2022, the covenants have been met.

Finance Agreement with DFC (the Platanares power plant)

On April 30, 2018, Geotérmica Platanares, S.A. de C.V. ("Platanares"), a Honduran sociedad anónima de capital variable and an indirect subsidiary of Ormat Technologies, Inc., entered into a Finance Agreement (the "Finance Agreement") with DFC, pursuant to which DFC will provide to Platanares senior secured non-recourse debt financing in an aggregate principal amount of up to $114.7 million (the "Platanares Loan"), the proceeds of which will be used principally for the refinancing and financing of the Platanares 35 MW geothermal power plant located in western Honduras. The finance agreement was amended and closed in October of 2018.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
DFC - Platanares Loan	$ 114.7	$ 79.9	7.02%	September 2032

[1] payable quarterly

The Platanares Loan is secured by a first priority lien on all of the assets and ordinary shares of Platanares. The Finance Agreement contains various restrictive covenants applicable to Platanares, among others (i) to maintain a projected and historic debt service coverage ratio; (ii) to maintain on deposit in a debt service reserve account and well reserve account funds or assets with a value in excess of a minimum threshold and (iii) covenants that restrict Platanares from making certain payments or other distributions to its equity holders.

Loan Agreement with Banco Industrial S.A. and Westrust Bank (International) Limited

On July 31, 2015, Ortitlan, Limitada, the Company's wholly owned subsidiary, obtained a 12-year secured term loan in the principal amount of $42.0 million (the "Amatitlan Loan") for the 20 MW Amatitlan power plant in Guatemala. Under the credit agreement with Banco Industrial S.A. and Westrust Bank (International) Limited, the Company can expand the Amatitlan power plant with financing to be provided either via equity, additional debt from Banco Industrial S.A. or from other lenders, subject to certain limitations on expansion financing in the credit agreement.

The loan is payable in 48 quarterly payments commencing September 30, 2015. The loan bears interest at a rate *per annum* equal to the sum of LIBOR (which cannot be lower than 1.25%) plus a margin of (i) 4.35% as long as the Company's guaranty of the loan (as described below) is outstanding or (ii) 4.75% otherwise.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
Amatitlan Loan	$ 42.0	$ 15.8	LIBOR+4.35%	June 2027

[1] payable quarterly

There are various restrictive covenants under the Amatitlan credit agreement. These include, among other things, (i) a financial covenant to maintain a Debt Service Coverage Ratio (as defined in the credit agreement) and (ii) limitations on Restricted Payments (as defined in the credit agreement) that among other things would limit dividends that could be paid. As of December 31, 2022, the covenants have been met. The loan is collateralized by substantially all the assets of the borrower and a pledge of all of the membership interests of the borrower. The Company expects that the scheduled discontinuation of the LIBOR will have no material effect on its consolidated financial statements as the loan agreements includes a mechanism for a substitute rate.

Plumstriker Loan

On May 4, 2019, a wholly owned indirect subsidiary of the Company ("Plumstriker") and its two subsidiaries entered into a $23.5 million loan agreement with a United States ("U.S.") financing division of a leading global industrial company for the financing of two 20 MW battery energy storage projects located in New Jersey.

On May 30, 2019, Plumstriker completed the drawdown of the full loan amount, bearing interest of three months U.S. Libor plus a 3.5% margin. The loan is being repaid in 29 equal quarterly principal installments of 1.25% of the loan, and additional 14 unequal semi-annual principal payments, which commenced on June 30, 2019. Proceeds of the loan were used to refinance investments in the Plumsted and Stryker projects. The debt repayment of the loan is not guaranteed by the Company or any of its subsidiaries. The Company expects that the scheduled discontinuation of the LIBOR will have no effect on its consolidated financial statements as the loan agreements includes a mechanism for a substitute rate. As of December 31, 2022, the covenants have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
Plumstriker Loan	$ 23.5	$ 11.4	LIBOR+3.5%	May 2026

[1] payable quarterly

Don A. Campbell Senior Secured Notes — Non-Recourse

On November 29, 2016, ORNI 47 LLC ("ORNI 47"), the Company's subsidiary, entered into a note purchase agreement (the "ORNI 47 Note Purchase Agreement") with MUFG Union Bank, N.A., as collateral agent, Munich Reinsurance America, Inc. and Munich American Reassurance Company (the "Purchasers") pursuant to which ORNI 47 issued and sold to the Purchasers $92.5 million aggregate principal amount of its Senior Secured Notes (the "DAC 1 Senior Secured Notes") in a private placement exempt from the registration requirements of the Securities Act of 1933, as amended. ORNI 47 is the owner of the first phase of the Don A. Campbell geothermal power plant ("DAC 1"), and part of the ORPD LLC ("ORPD") portfolio.

The net proceeds from the sale of the DAC 1 Senior Secured Notes, were used to refinance the development and construction costs of the DAC 1 geothermal power plant, which were originally financed using equity.

The DAC 1 Senior Secured Notes constitute senior secured obligations of ORNI 47 and are secured by all of the assets of ORNI 47. The ORNI 47 Note Purchase Agreement requires ORNI 47 to comply with certain covenants, including, among others, restrictions on the incurrence of indebtedness or liens, amendment or modification of material project documents, the ability of ORNI 47 to merge or consolidate with another entity. In addition, there are restrictions on the ability of ORNI 47 to make distributions to its shareholders, which include a required historical and projected DSCR. As of December 31, 2022, the covenants for this loan have not been met which resulted in certain restrictions on equity distribution by ORNI 47.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
DAC 1 Senior Secured Notes	$ 92.5	$ 62.7	4.03%	September 2033

[1] payable quarterly

OFC 2 Senior Secured Notes

In September 2011, OFC 2, the Company's wholly owned subsidiary and OFC 2's wholly owned project subsidiaries (collectively, the "OFC 2 Issuers") entered into a note purchase agreement (the "Note Purchase Agreement") with OFC 2 Noteholder Trust, as purchaser, John Hancock Life Insurance Company (U.S.A.), as administrative agent, and the DOE, as guarantor, in connection with the offer and sale of up to $350.0 million aggregate principal amount of OFC 2 Senior Secured Notes ("OFC 2 Senior Secured Notes") due December 31, 2034. The DOE will guarantee payment of 80% of principal and interest on the OFC 2 Senior Secured Notes pursuant to Section 1705 of Title XVII of the Energy Policy Act of 2005, as amended. The conditions precedent to the issuance of the OFC 2 Senior Secured Notes includes certain specified conditions required by the DOE in connection with its guarantee of the OFC 2 Senior Secured Notes.

On October 31, 2011, the OFC 2 Issuers completed the sale of $151.7 million in aggregate principal amount Series A Notes due 2032 (the "Series A Notes"). The net proceeds from the sale of the Series A Notes were used to finance a portion of the construction costs of Phase I of the McGinness Hills and Tuscarora power plants and to fund certain reserves.

On August 29, 2014, OFC 2 sold $140.0 million of OFC 2 Senior Secured Notes (the "Series C Notes") to finance the construction of the second phase of the McGinness Hills project. The Series C Notes are the last tranche under the Note Purchase Agreement with John Hancock Life Insurance Company and are guaranteed by the DOE's Loan Programs Office in accordance with and subject to the DOE's Loan Guarantee Program under Section 1705 of Title XVII of the Energy Policy Act of 2005.

The OFC 2 Senior Secured Notes are collateralized by substantially all of the assets of OFC 2 and those of its wholly owned subsidiaries and are fully and unconditionally guaranteed by all of the wholly owned subsidiaries of OFC 2. There are various restrictive covenants under the OFC 2 Senior Secured Notes, which include limitations on additional indebtedness of OFC 2 and its wholly owned subsidiaries. Failure to comply with these and other covenants will, subject to customary cure rights, constitute an event of default by OFC 2. In addition, there are restrictions on the ability of OFC 2 to make distributions to its shareholders. Among other things, the distribution restrictions include a historical debt service coverage ratio requirement and a projected future DSCR requirement. As of December 31, 2022, the covenants have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
OFC 2 Senior Secured Notes - Series A.....	$ 151.7	$ 71.8	4.69%	December 2032
OFC 2 Senior Secured Notes - Series C.....	140.0	86.3	4.61%	December 2032
Total OFC 2 Senior Secured Notes	$ 291.7	$ 158.1		

[1] payable quarterly in arrears

The Company provided a guaranty in connection with the issuance of the Series A Notes and Series C Notes. The guaranty may be drawn in the event of, among other things, the failure of any facility financed by the relevant series of OFC 2 Senior Secured Notes to reach completion and meet certain operational performance levels (the "non-performance trigger") which gives rise to a prepayment obligation on the OFC 2 Senior Secured Notes. The guarantee may also be drawn if there is a payment default on the OFC 2 Senior Secured Notes or upon the occurrence of certain fundamental defaults that result in the acceleration of the OFC 2 Senior Secured Notes, in each case, prior to the date that the relevant facility(ies) financed by such OFC 2 Senior Secured Notes reaches completion and meets the applicable operational performance levels. The Company's liability under the guaranty with respect to the non-performance trigger is limited to an amount equal to the prepayment amount on the OFC 2 Senior Secured Notes necessary to bring the OFC 2 Issuers into compliance with certain coverage ratios. The Company's liability under the guaranty with respect to the other trigger event described above is not so limited.

Other Limited Recourse Loans

On April 24, 2018, the Company completed the acquisition of USG. As part of the acquisition, the Company assumed the following loans:

Prudential Capital Group – Idaho

In May 2016, the Company's wholly owned subsidiary (Idaho USG Holdings LLC) entered into a loan agreement with the Prudential Capital Group for an aggregate principal amount of $20.0 million. The principal and interest payments were due semi-annually. The loan was secured by the Company's ownership interests in the Neal Hot Springs and the Raft River projects. During November 2022, this loan was fully repaid as further details below under Idaho Refinancing Note.

Idaho Refinancing Note

On November 28, 2022, Idaho USG Holdings, LLC (the "Issuer") entered into a note purchase agreement with the Prudential Insurance Company of America and other noteholders, pursuant to which the Issuer issued approximately $61.6

million in aggregate principal amount of senior secured notes ("Idaho Refinancing Note"). Proceeds of the Idaho Refinancing Note were used by the Issuer for the refinancing of the Prudential Capital Group - Idaho non-recourse loan which had a remaining balance of approximately $16.0 million due in full in March 2023 (the "Idaho Refinancing").

The Idaho Refinancing note purchase agreement also includes an approximately $4.3 million revolving note tranche to be issued in the event of a shortfall in debt service with respect to the Idaho Refinancing Note. The Issuer shall pay a commitment fee on the revolving note tranche at a rate of 0.5% per annum. If drawn, the revolving notes shall bear interest at a rate of Term SOFR + 140bps.

The Idaho Refinancing is secured by the Issuer's 100% ownership interests in Raft River Energy I LLC, which owns the Raft River geothermal project, and by the Issuer's 60% ownership interests in Oregon USG Holdings, LLC, the owner of USG Oregon LLC, which owns the Neal Hot Springs geothermal project. The Idaho Refinancing Note will be repaid in 31 semi-annual payments, commencing on March 31st, 2023. The Idaho Refinancing Note bears interest at a fixed rate of 6.26% per annum and has a final maturity date of March 31, 2038. The Company has provided a limited guarantee with respect to certain insurance obligations of the Issuer.

There are various restrictive covenants under the Idaho Refinancing, including limitations on additional indebtedness of the Issuer and its subsidiaries. Failure to comply with these and other covenants will, subject to customary cure rights, constitute an event of default by the Issuer. In addition, there are restrictions on the ability of the Issuer to make distributions to its shareholders. Among other things, the distribution restrictions include both a historical and projected minimum debt service coverage ratio requirement. As of December 31, 2022, the covenants for this loan have been met.

As part of the security package, the note purchase agreement states the Issuer shall establish and maintain customary reserve accounts which include a debt service reserve account, a make-up well reserve account, a maintenance reserve account and a construction reserve account.

U.S. Department of Energy

On August 31, 2011, USG's wholly owned subsidiary, USG Oregon LLC ("USG Oregon"), completed the first funding drawdown associated with the U.S. Department of Energy ("DOE") of $96.8 million loan guarantee ("Loan Guarantee") to construct its power plant at Neal Hot Springs project in Eastern Oregon. In connection with the Loan Guarantee, the DOE has been granted a security interest in all of the equity interests of USG Oregon, as well as in the assets of USG Oregon, including a mortgage on real property interests relating to the Neal Hot Springs site. As of December 31, 2022, the covenants for this loan have been met.

Prudential Capital Group – Nevada

On September 26, 2013, USG's wholly owned subsidiary ("USG Nevada LLC"), entered into a note purchase agreement with the Prudential Capital Group to finance Phase I of the San Emidio geothermal project located in northwest Nevada. Principal payments are due quarterly based upon minimum debt service coverage ratios established according to projected operating results made at the loan origination date and available cash balances. The loan agreement is secured by USG Nevada LLC's right, title and interest in and to its real and personal property, including the San Emidio project and the equity interests in USG Nevada LLC. As of December 31, 2022, the covenants for this loan have been met.

Loan	Amount Issued	Amount Outstanding as of December 31, 2022	Annual Interest Rate [1]	Maturity Date
	(Dollars in millions)			
Idaho Refinancing Note	$ 61.6	$ 61.6	6.26%	March 2038
U.S. Department of Energy	96.8	32.8	2.60%	February 2035
Prudential Capital Group – Nevada	30.7	25.0	6.75%	December 2037
Total	$ 189.1	$ 119.4		

[1] payable semi-annually, except for Nevada which is payable quarterly

Bpifrance Loan - Non Recourse

On April 4, 2019, an indirect subsidiary of the Company ("Guadeloupe"), entered into a $8.9 million loan agreement with Banque Publique d'Investissement ("Bpifrance"). On April 29, 2019, Guadeloupe completed the drawdown of the full loan amount, bearing a fixed interest rate of 1.93%. The loan will be repaid in 20 equal quarterly principal installments, commencing June 30, 2021. The final maturity date of the loan is March 31, 2026. The loan is not guaranteed by the Company or any of its other subsidiaries. As of December 31, 2022, $5.8 million is outstanding under the Bpifrance Loan.

Société Générale Loan - Limited Recourse

On April 9, 2019, Guadeloupe, entered into a $8.9 million loan agreement with Société Générale. On April 29, 2019, Guadeloupe completed the drawdown of the full loan amount of the loan, bearing a fixed interest rate of 1.52%. The loan is being repaid in 28 quarterly principal installments, which commenced on July 29, 2019. The final maturity date of the loan is April 29, 2026. The loan has a limited guarantee by one of the Company's subsidiaries. As of December 31, 2022, $4.6 million was outstanding under the Société Généralé Loan.

Convertible Senior Notes

Details related to the Notes are provided under Note 1 to the consolidated financial statements.

Financing Liability

On July 13, 2021, the Company closed a transaction with TG Geothermal Portfolio, LLC (a subsidiary of Terra-Gen, LLC) (the "Seller") to acquire two contracted geothermal assets in Nevada with a total net generating capacity of 67.5 MW, a greenfield development asset adjacent to one of the plants, and an underutilized transmission line. Financing liability is related to a sale and leaseback transaction entered into by the Seller in September 2015 under which it sold and leased back the undivided interests in the Dixie Valley power plant asset through June 2038. The lease transaction was accounted for by the Seller as a finance lease due to the Seller's continued involvement and management of the power plant and the existence of an early buy-out option in September 2024. The fair value of the financing liability at the acquisition date was $258.4 million. Further details on the Terra-Gen business combination are described under Note 2 to the consolidated financial statements. As of December 31, 2022, the covenants have been met.

Loan	Amount Outstanding as of December 31, 2022 (Dollar in millions)	Annual Interest Rate [1]	Maturity Date [2]
Financing Liability - Dixie Valley	$ 242.0	2.55%	March 2033

[1] payable semi-annually

[2] final maturity date of the financing liability is assuming execution of the buy-out option in September 2024.

Revolving Credit Lines with Commercial Banks

As of December 31, 2022, the Company has credit agreements with a number of financial institutions for an aggregate amount of $623.0 million (including $60.0 million from MUFG Union Bank, N.A. ("Union Bank") and $35.0 million from HSBC Bank USA N.A. as described below or $528.0 million excluding Union Bank and HSBC Bank USA N/A). Under the terms of these credit agreements, the Company, or its Israeli subsidiary, Ormat Systems Ltd. ("Ormat Systems), can request: (i) extensions of credit in the form of loans and/or the issuance of one or more letters of credit in the amount of up to $408.0 million; and (ii) the issuance of one or more letters of credit in the amount of up to $120.0 million. The credit agreements mature between March 2023 and July 2025. Loans and draws under the credit agreements or under any letters of credit will bear interest at the respective bank's cost of funds or USD LIBOR/SOFR plus a margin. As of December 31, 2022, no loans were outstanding and letters of credit with an aggregate amount of $90.7 million were issued and outstanding under such credit agreements (excluding the amounts outstanding under the section Credit Agreements below with Union bank and HSBC bank).

Credit Agreements

Credit Agreement with MUFG Union Bank

Ormat Nevada has a credit agreement with MUFG Union Bank under which it has an aggregate available credit of up to $60.0 million as of December 31, 2022. The credit termination date is June 30, 2023.

The facility is limited to the issuance, extension, modification or amendment of letters of credit. Union Bank is currently the sole lender and issuing bank under the credit agreement, but is also designated as an administrative agent on behalf of banks that may, from time to time in the future, join the credit agreement as lenders. In connection with this transaction, the Company entered into a guarantee in favor of the administrative agent for the benefit of the banks, pursuant to which the Company agreed to guarantee Ormat Nevada's obligations under the credit agreement. Ormat Nevada's obligations under the credit agreement are otherwise unsecured.

There are various restrictive covenants under the credit agreement, which include a requirement to comply with the following financial ratios, which are measured quarterly: (i) a 12-month debt to EBITDA ratio not to exceed 4.5; (ii) 12-month DSCR of not less than 1.35; and (iii) distribution leverage ratio not to exceed 2.0. As of December 31, 2022: (i) the actual 12-month debt to EBITDA ratio was 2.04; (ii) the 12-month DSCR was 3.91; and (iii) the distribution leverage ratio was 0.63. In addition, there are restrictions on dividend distributions in the event of a payment default or noncompliance with such ratios, and subject to specified carve-outs and exceptions, a negative pledge on the assets of Ormat Nevada in favor of Union Bank. As of December 31, 2022, the covenants have been met.

As of December 31, 2022, letters of credit in the aggregate amount of $57.6 million were issued and outstanding under this credit agreement.

Credit Agreement with HSBC Bank USA N.A.

Ormat Nevada has a credit agreement with HSBC Bank USA, N.A for one year with annual renewals. The current expiration date of the facility under this credit agreement is October 31, 2023. On December 31, 2022, the aggregate amount available under the credit agreement was $35.0 million. This credit line is limited to the issuance, extension, modification or amendment of letters of credit. In addition, Ormat Nevada has an uncommitted discretionary demand line of credit in the aggregate amount of $35.0 million available for letters of credit including up to $20 million of credit. In connection with this transaction, the Company entered into a guarantee in favor of the administrative agent for the benefit of the banks, pursuant to which the Company agreed to guarantee Ormat Nevada's obligations under the credit agreement. Ormat Nevada's obligations under the credit agreement are otherwise unsecured.

There are various restrictive covenants under the credit agreement, including a requirement to comply with the following financial ratios, which are measured quarterly: (i) a 12-month debt to EBITDA ratio not to exceed 4.5; (ii) 12-month DSCR of not less than 1.35; and (iii) distribution leverage ratio not to exceed 2.0. As of December 31, 2022: (i) the actual 12-month debt to EBITDA ratio was 2.04; (ii) the 12-month DSCR was 3.91; and (iii) the distribution leverage ratio was 0.63. In addition, there are restrictions on dividend distributions in the event of a payment default or noncompliance with such ratios, and subject to specified carve-outs and exceptions, a negative pledge on the assets of Ormat Nevada in favor of HSBC. As of December 31, 2022, the covenants have been met.

As of December 31, 2022, letters of credit in the aggregate amount of $34.2 million were issued and outstanding under the committed portion of this credit agreement and $4.8 million under the uncommitted portion of the agreement.

Chubb Surety Bond

In May 2017, the Company entered into a surety bond agreement (the "Surety Agreement") with Chubb Limited ("Chubb") pursuant to which the Company may request that Chubb issue up to an aggregate $200.0 million of surety bonds with respect to the contractual obligations of the Company and its subsidiaries in exchange for bank letters of credit or as otherwise may be required. There is no expiration date for the Surety Agreement, but it may be terminated by the Company at any time upon twenty days' prior written notice to Chubb. Delivery of such termination notice will not affect any surety bonds issued and outstanding prior to the date on which such notice is delivered. As of December 31, 2022, Chubb issued a surety bond in the amount of $192.4 million under the Surety Agreement.

Restrictive Covenants

The Company's obligations under the credit agreements, the loan agreements, and the trust instrument governing the bonds, described above, are unsecured, but are subject to a negative pledge in favor of the banks and the other lenders and certain other restrictive covenants. These include, among other things, a prohibition on: (i) creating any floating charge or any permanent pledge, charge or lien over the Company's assets without obtaining the prior written approval of the lender; (ii) guaranteeing the liabilities of any third party without obtaining the prior written approval of the lender; and (iii) selling, assigning, transferring, conveying or disposing of all or substantially all of the Company's assets, or a change of control in the Company's ownership structure. Some of the credit agreements, the term loan agreements, as well as the trust instrument contain cross-default provisions with respect to other material indebtedness owed by us to any third party. In some cases, the Company has agreed to maintain certain financial ratios, which are measured quarterly, such as: (i) equity of at least $750 million and in no event less than 25% of total assets; and (ii) 12-month debt, net of cash, cash equivalents marketable securities and short-term bank deposits to Adjusted EBITDA ratio not to exceed 6. As of December 31, 2022: (i) total equity was $2,021.0 million and the actual equity to total assets ratio was 43.8%, and (ii) the 12-month debt, net of cash, cash equivalents marketable securities and short-term bank deposits to Adjusted EBITDA ratio was 4.13 and as such, the covenants have been met as of December 31, 2022. During the year ended December 31, 2022, the Company distributed interim dividends in an aggregate amount of $27.1 million.

Future minimum payments

Future minimum payments under long-term obligations, including long-term debt and the financing liability, as of December 31, 2022 are as follows:

	(Dollars in thousands)
Year ending December 31:	
2023	$ 181,660
2024	261,622
2025	176,309
2026	177,539
2027	605,013
Thereafter	650,458
Total	$ 2,052,601

NOTE 13 —TAX MONETIZATION TRANSACTIONS

Casa Diablo IV ("CD4") tax monetization transaction

On December 23, 2022, one of the Company's wholly-owned subsidiaries that indirectly owns the CD4 Geothermal power plant entered into a partnership agreement with JPM. Under the transaction documents, the private investor acquired membership interests in the CD4 Geothermal power plant project for an initial purchase price of approximately $50.3 million and for which it will pay additional installments that are expected to amount to approximately $7.3 million. The Company will continue to operate and maintain the power plant and will receive substantially all the distributable cash flow generated by the power plant, as described below.

Under the transaction documents, prior to December 31, 2031 ("CD 4 Target Flip Date"), the Company receives substantially all of the distributable cash flow generated by the project, while the private investor receives substantially 99% of the tax attributes of the project. Following the later of the CD4 Target Flip Date and the date on which the private investor reaches its target return, the Company will receive 97.5% of the distributable cash and 95.0% of the taxable income, on a go forward basis. In the event that JPM will not reach its target return by the CD4 Target Flip Date, then for the period between the CD4 Target Flip Date and the date on which the private investor reaches its target return, the private investor will receive 75% of the distributable cash generated by the power plant and 99% of the tax attributes as long as the project is generating Production Tax Credits ("PTCs") (and 5% of the tax attributes afterwards).

On the Target Flip Date, the Company has the option to purchase the private investor's interests at the then-current fair market value, plus an amount that causes JPM to reach its target return, if needed. If the Company exercises this purchase option, it will become the sole owner of the project again.

JPM's capital contribution of $50.3 million was recorded as allocation to noncontrolling interests of $3.9 million and to liability associated with sale of tax benefits of $46.4 million.

Steamboat Hills tax monetization transaction

On October 25, 2021, one of the Company's wholly-owned subsidiaries that indirectly owns the Steamboat Hills Repower Geothermal power plant entered into a partnership agreement with a private investor. Under the transaction documents, the private investor acquired membership interests in the Steamboat Hills Repower Geothermal power plant project for an initial purchase price of approximately $38.9 million and for which it will pay additional installments that are expected to amount to approximately $5.3 million. The Company will continue to operate and maintain the power plant and will receive substantially all the distributable cash flow generated by the power plant, as described below.

Under the transaction documents, prior to December 31, 2029 ("Steamboat Hills Target Flip Date"), the Company's wholly-owned subsidiary, Ormat Nevada Inc. ("Ormat Nevada"), receives substantially all of the distributable cash flow generated by the project, while the private investor receives substantially all of the tax attributes of the project. Following the later of the Steamboat Hills Target Flip Date and the date on which the private investor reaches its target return, Ormat Nevada will receive 97.5% of the distributable cash and 95.0% of the taxable income, on a go forward basis. In the event that the private investor will not reach its target return by the Steamboat Hills Target Flip Date, then for the period between the Steamboat Hills Target Flip Date and the date on which the private investor reaches its target return, the private investor will receive 100% of the distributable cash generated by the power plant and 99% of the tax attributes as long as the project is generating PTCs (and 5% of the tax attributes afterwards).

On the Steamboat Hills Target Flip Date, Ormat Nevada has the option to purchase the private investor's interests at the then-current fair market value, plus an amount that causes the private investor to reach its target return, if needed. If Ormat Nevada exercises this purchase option, it will become the sole owner of the project again.

McGinness Hills 3 tax monetization transaction

On August 14, 2019, one of the Company's wholly-owned subsidiaries that indirectly owns the McGinness Hills phase 3 geothermal power plant entered into a partnership agreement with a private investor. Under the transaction documents, the private investor acquired membership interests in the McGinness Hills phase 3 geothermal power plant for an initial purchase price of approximately $59.3 million and for which it will pay additional installments that are expected to amount to approximately $9 million and can reach up to $22 million based on the actual generation. The Company will continue to consolidate, operate and maintain the power plant and will receive substantially all the distributable cash flow generated by the power plant and the private investor will receive substantially all of the tax attributes, as described below.

Pursuant to the transaction documents, prior to December 31, 2027 ("MGH3 Target Flip Date"), one of the Company's wholly owned subsidiaries receives substantially all of the distributable cash flow generated by the McGinness Hills phase 3 power plant, while the private investor receives substantially all of the tax attributes of the project. Following the later of the MGH3 Target Flip Date and the date on which the private investor reaches its target return, the Company will receive 97.5% of the distributable cash generated by the power plant and 95.0% of the tax attributes, on a go forward basis. In the event that the private investor will not reach its target return by the MGH3 Target Flip Date, then for the period between the MGH3 Target Flip Date and the date on which the private investor reaches its target return, the private investor will receive 100% of the distributable cash generated by the power plant and 99% of the tax attributes as long as the project is generating PTCs (and 5% of the tax attributes afterwards).

On the MGH3 Target Flip Date, the Company, through one of its wholly-owned subsidiaries, has the option to purchase the private investor's interests at the then-current fair market value, plus an amount that causes the private investor to reach its target return, if needed. If the Company exercises this purchase option, it will become the sole owner of the project again.

Tungsten Mountain tax monetization transaction

On May 17, 2018, one of the Company's wholly-owned subsidiaries that indirectly owns the Tungsten Mountain Geothermal power plant entered into a partnership agreement with a private investor. Under the transaction documents, the private investor acquired membership interests in the Tungsten Mountain Geothermal power plant project for an initial purchase price of approximately $33.4 million and for which it will pay additional installments that are expected to amount to approximately $13 million. The Company will continue to operate and maintain the power plant and will receive substantially all the distributable cash flow generated by the power plant, as described below.

Under the transaction documents, prior to December 31, 2026 ("Tungsten Mountain Target Flip Date"), the Company's wholly-owned subsidiary, Ormat Nevada Inc. ("Ormat Nevada"), receives substantially all of the distributable cash flow generated by the project, while the private investor receives substantially all of the tax attributes of the project. Following the later of the Tungsten Mountain Target Flip Date and the date on which the private investor reaches its target return, Ormat Nevada will receive 97.5% of the distributable cash and 95.0% of the taxable income, on a go forward basis. In the event that the private investor will not reach its target return by the Tungsten Mountain Target Flip Date, then for the period between the Tungsten Mountain Target Flip Date and the date on which the private investor reaches its target return, the private investor will receive 100% of the distributable cash generated by the power plant and 99% of the tax attributes as long as the project is generating PTCs (and 5% of the tax attributes afterwards).

On the Tungsten Mountain Target Flip Date, Ormat Nevada has the option to purchase the private investor's interests at the then-current fair market value, plus an amount that causes the private investor to reach its target return, if needed. If Ormat Nevada exercises this purchase option, it will become the sole owner of the project again.

Opal Geo tax monetization transaction

On December 16, 2016, Ormat Nevada entered into an equity contribution agreement (the "Equity Contribution Agreement") with OrLeaf LLC ("OrLeaf") and JPM with respect to Opal Geo. Also on December 16, 2016, OrLeaf, a newly formed limited liability company formed by Ormat Nevada and ORPD LLC, entered into an amended and restated limited liability company agreement of Opal Geo (the "LLC Agreement") with JPM. The transactions contemplated by the Equity Contribution Agreement and LLC Agreement will allow the Company to monetize federal PTCs and certain other tax benefits relating to the operation of five geothermal power plants located in Nevada, until JPM reaches its target internal rate of return which was expected to be on December 31, 2022. On December 22, 2022, the Equity Contribution Agreement was amended (the "Amendment") and the target internal rate of return date was postponed by an additional one year in order to allow allocation of additional PTCs to JPM, as further described below.

In connection with the transactions contemplated by the Equity Contribution Agreement and the LLC Agreement, Ormat Nevada transferred its indirect ownership interest in the McGinness Hills (Phase I and Phase II), Tuscarora, Jersey Valley and second phase of the Don A. Campbell ("DAC 2") geothermal power plants to Opal Geo. Prior to such transfer, Ormat Nevada held an approximately 63.25% indirect ownership interest in DAC 2 through ORPD LLC, a joint venture between Ormat Nevada and Northleaf Geothermal Holdings LLC ("Northleaf"), an affiliate of Northleaf Capital Partners, and held, directly or indirectly, a 100% ownership interest in the remaining geothermal power plants that were transferred to Opal Geo.

Pursuant to the Equity Contribution Agreement, in December 2016, JPM contributed approximately $62.1 million to Opal Geo in exchange for 100% of the Class B Membership Interests of Opal Geo. JPM also agreed to make deferred capital contributions to Opal Geo based on the amount of electricity generated by the DAC 2 and McGinness Hills Phase II power plants which are eligible for the federal PTC. The aggregate amount of such contributions totaled $15.3 million, as of December 31, 2022. Pursuant to the Amendment, JPM will not make additional deferred capital contributions during 2023, and the Company will indemnify JPM for tax losses incurred during the extended one year period.

Under the original LLC Agreement, until December 31, 2022, OrLeaf received distributions of 97.5% of any distributable cash generated by operation of the power plants while JPM received distributions of 2.5% of any distributable cash generated by operation of the power plants. Starting December 31, 2022, until JPM has achieved its target internal rate of return, JPM will receive 100% of any distributable cash generated by operation of the power plants. Thereafter, OrLeaf will receive distributions of 97.5%, and JPM will receive 2.5%, of any distributable cash generated by operation of the power plants.

Under the LLC Agreement, all items of Opal Geo income and loss, gain, deduction and credit (including the federal production tax credits relating to the operation of the two PTC eligible power plants) will be allocated, until JPM has achieved its target internal rate of return on its investment in Opal Geo (and for so long as the two PTC eligible power plants are generating PTCs), 99% to JPM and 1% to OrLeaf, or 5% to JPM and 95% to OrLeaf if PTCs are no longer available to either of the two PTC eligible power plants. Once JPM achieves its target internal rate of return, all items of Opal Geo income and loss, gain, deduction and credit will be allocated 5% to JPM and 95% to OrLeaf.

Under the LLC Agreement, OrLeaf, which owns 100% of the Class A Membership Interests in Opal Geo, serves as the managing member of Opal Geo and control the day-to-day management of Opal Geo and its portfolio of five power plants. However, in certain limited circumstances (such as bankruptcy of Orleaf, fraud or gross negligence by OrLeaf) JPM may remove OrLeaf as the managing member of Opal Geo. JPM, as the Class B Member of Opal Geo, has consent and approval rights with respect to certain items that are designated as major decisions for Opal Geo and the five power plants. In addition, by virtue of certain provisions in OrLeaf's own limited liability company agreement, and consistent with the ORPD LLC formation documents, Northleaf has similar consent and approval rights with respect to OrLeaf's determination of major decisions pertaining to the DAC 2 power plant. In both cases, these major decisions are generally equivalent to customary minority protection rights. As a result, the Company's wholly owned subsidiary, Ormat Nevada, which serves as the managing member of OrLeaf and as the managing member of ORPD LLC, effectively retains the day-to-day control and management of Opal Geo and its portfolio of five power plants.

The LLC Agreement contains certain customary restrictions on transfer applicable to both OrLeaf and JPM with respect to their respective Membership Interests in Opal Geo, and also provides OrLeaf with a right of first offer in the event JPM desires to transfer any of its Class B Membership Interests, pursuant to which OrLeaf may purchase such Class B Membership Interests. Following the Amendment to the LLC Agreement made on December 22, 2022, the Target Flip Date was extended to December 31, 2023, entitling JPM to receive a fee of $2 million on such date. During the extended period, JPM shall not be required to make deferred contributions.The OrLeaf option to purchase all of the Class B Membership Interests at a price equal to the greater of (i) the fair market value of the Class B Membership Interests as of the date of purchase (subject to certain adjustments) and (ii) $3 million, was extended to December 31, 2023.

Pursuant to the Equity Contribution Agreement, the Company has provided a guaranty for the benefit of JPM of certain of OrLeaf's indemnification obligations to JPM under the LLC Agreement. In addition, Ormat Nevada also provided a guaranty for the benefit of JPM of all present and future payment and performance obligations of OrLeaf under the LLC Agreement and each ancillary document to which OrLeaf is a party.

NOTE 14 — ASSET RETIREMENT OBLIGATION

The following table presents a reconciliation of the beginning and ending aggregate carrying amount of asset retirement obligation for the years presented below:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Balance at beginning of year	$ 84,891	$ 63,457	$ 50,183
Revision in estimated cash flows	(1,802)	10,504	(165)
Liabilities incurred and acquired	9,314	6,953	10,207
Accretion expense	5,257	3,977	3,232
Balance at end of year	$ 97,660	$ 84,891	$ 63,457

NOTE 15 — STOCK-BASED COMPENSATION

The Company makes an estimate of expected forfeitures and recognizes compensation costs only for those stock-based awards expected to vest. As of December 31, 2022, the total future compensation cost related to unvested stock-based awards that are expected to vest is $14.9 million, which will be recognized over a weighted average period of 1.29 years.

During the years ended December 31, 2022, 2021 and 2020, the Company recorded compensation related to stock-based awards as follows:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Cost of revenues	$ 6,382	$ 4,656	$ 4,435
Selling and marketing expenses	1,230	766	1,081
General and administrative expenses	4,034	3,746	4,314
Total stock-based compensation expense	11,646	9,168	9,830
Tax effect on stock-based compensation expense	1,270	872	858
Net effect of stock-based compensation expense	$ 10,376	$ 8,296	$ 8,972

During the fourth quarter of 2022, 2021 and 2020, the Company evaluated the trends the employees stock-based award forfeiture rate and determined that the actual rates are 11.5%, 11.1% and 10.8%, respectively. This represents an increase of 3.6%, 2.8%, and 0.9%, respectively, from prior estimates. As a result of the change in the estimated forfeiture rate, there was an immaterial impact on stock-based compensation expense for each of the respective periods.

Valuation assumptions

The Company estimates the fair value of the stock-based awards using the Complex Lattice, Tree-based option-pricing model. The dividend yield forecast is expected to be at least 20% of the Company's yearly net profit, which is equivalent to a 0.7% yearly weighted average dividend rate in the year ended December 31, 2022. The risk-free interest rate was based on the yield from U.S. constant treasury maturities bonds with an equivalent term. The forfeiture rate is based on trends in actual stock-based awards forfeitures.

The Company calculated the fair value of each stock-based award on the date of grant based on the following assumptions:

	Year Ended December 31,		
	2022	2021	2020
For stock based awards issued by the Company:			
Risk-free interest rates	1.7%	0.7%	0.4%
Expected lives (in weighted average years)	5.3	3.8	5.8
Dividend yield	0.7%	0.6%	0.6%
Expected volatility (weighted average)	34.6%	36.7%	28.8%

The Company estimated the forfeiture rate (on a weighted average basis) as follows:

	Year Ended December 31,		
	2022	2021	2020
Weighted average forfeiture rate	10.2%	6.1%	8.2%

Stock-based awards

The 2012 Incentive Compensation Plan

In May 2012, the Company's shareholders adopted the 2012 Incentive Plan, which provides for the grant of the following types of awards: incentive stock options, non-qualified stock options, restricted stock units ("RSUs"), stock appreciation rights ("SARs"), stock units, performance awards, phantom stock, incentive bonuses, and other possible related dividend equivalents to employees of the Company, directors and independent contractors. Under the 2012 Incentive Plan, a total of 4,000,000 shares of the Company's common stock were reserved for issuance, all of which could be issued as options or as other forms of awards. Options and SARs granted to employees under the 2012 Incentive Plan typically vest and become exercisable as follows: 50% on the second anniversary of the grant date and 25% on each of the third and fourth anniversaries of the grant date. Options granted to non-employee directors under the 2012 Incentive Plan will vest and become exercisable one year after the grant date. Restricted stock units granted to directors and members of senior management vest according

to a vesting schedule as follows: for the directors, 100% on the first anniversary of the grant date and for members of senior management, 25% on each of the first, second, third and fourth anniversaries of the grant date. The term of stock-based awards typically ranges from six to ten years from the grant date. The shares of common stock issued in respect of awards under the 2012 Incentive Plan are issued from the Company's authorized share capital upon exercise of options or SARs. The 2012 Incentive Plan expired in May 2018 upon adoption of the 2018 Incentive Compensation Plan ("2018 Incentive Plan"), except as to stock-based awards outstanding under the 2012 Incentive Plan on that date.

The 2018 Incentive Compensation Plan

In May 2018, the Company held its 2018 Annual Meeting of Stockholders at which the Company's stockholders approved the 2018 Incentive Plan. The 2018 Incentive Plan provides for the grant of the following types of awards: incentive stock options, RSUs, SARs, Performance Stock Units ("PSUs"), stock units, performance awards, phantom stock, incentive bonuses and other possible related dividend equivalents to employees of the Company, directors and independent contractors. Under the 2018 Incentive Plan, a total of 5,000,000 shares of the Company's common stock were authorized and reserved for issuance, all of which could be issued as options or as other forms of awards. SARs, RSUs and PSUs granted to employees under the 2018 Incentive Plan typically vest and become exercisable as follows: 50% on the second anniversary of the grant date and 25% on each of the third and fourth anniversaries of the grant date. SARs, RSUs and PSUs granted to directors under the 2018 Incentive Plan typically vest and become exercisable (100%) on the first anniversary of the grant date. The term of stock-based awards typically ranges from six to ten years from the grant date. The shares of common stock issued in respect of awards under the 2018 Incentive Plan are issued from the Company's authorized share capital upon exercise of options or SARs. In June 2022, the 2018 Incentive Compensation Plan was amended and restated to increase the number of shares authorized for issuance by 1,700,000 shares, to change the fungible ratio, and to implement a one-year mandatory minimum vesting period.

As of December 31, 2022, 3,562,094 shares of the Company's common stock are available for future grants under the 2018 Incentive Plan.

On November 30, 2022, the Company granted certain employees an aggregate of 19,750 RSUs under the Company's 2018 Incentive Plan. The RSUs have a vesting period of between 2 to 3 years from the grant date.

The average fair value of each RSU on the grant date was $89. The Company calculated the fair value of each RSU on the grant date using the complex lattice, tree-based option-pricing model based on the following assumptions:

Risk-free interest rates	4.13% - 4.38%
Expected life (in years)	2 - 3
Dividend yield	0.56%
Expected volatility (weighted average)	43.17% - 40.57%

On March 1, 2022, the Company granted certain directors, members of its management and employees an aggregate of 513,385 SARs, 72,303 RSUs and 19,581 PSUs under the Company's 2018 Incentive Plan. The exercise price of each SAR was $71.15 which represented the fair market value of the Company's common stock on the grant date. The SARs will expire in six years from date of the grant and the SARs, RSUs and PSUs have a vesting period of between 2 to 4 years from grant date.

The average fair value of each SAR, RSU and PSU on the grant date was $22.3, $69.6 and $75.3, respectively. The Company calculated the fair value of each SAR on the grant date using the complex lattice, tree-based option-pricing model based on the following assumptions:

Risk-free interest rates	1.31% - 1.62%
Expected life (in years)	2 - 6
Dividend yield	0.67%
Expected volatility (weighted average)	32.85% - 46.07%

On November 2021, the Company granted its directors an aggregate of 11,804 RSUs under the Company's 2018 Incentive Plan. The RSUs have a vesting period of one year from the grant date.

The average fair value of each RSU on the grant date was $76.2. The Company calculated the fair value of each RSU on the grant date using the complex lattice, tree-based option-pricing model based on the following assumptions:

Risk-free interest rates	0.14% - 0.16%
Expected life (in years)	1
Dividend yield	0.65%
Expected volatility (weighted average)	43.26%

On December 31, 2020, the Company granted certain members of its management an aggregate of 573 Stock Appreciation Rights ("SARs"), 2,103 RSUs and 1,952 Performance Stock Units ("PSUs") under the Company's 2018 Incentive Plan. The exercise price of each SAR was $90.28 which represented the fair market value of the Company's common stock on the grant date. The SARs will expire six years from date of the grant and the SARs, RSUs and PSUs have a vesting period of between 2 to 4 years from the grant date.

The average fair value of each SAR, RSU and PSU on the grant date was $25.50, $89.15 and $96.10, respectively. The Company calculated the fair value of each SAR on the grant date using the complex lattice, tree-based option-pricing model based on the following assumptions:

Risk-free interest rates	0.13% - 0.51%
Expected life (in years)	2 - 6
Dividend yield	0.61%
Expected volatility (weighted average)	37.68% - 30.15%

On November 3, 2020, the Company granted some of its directors an aggregate of 11,835 SARs and 10,010 RSUs under the Company's 2018 Incentive Plan. The exercise price of each SAR was $67.54 which represented the fair market value of the Company's common stock on the grant date. The SARs will expire in six years from date of the grant and the SARs and RSUs have a vesting period one year from the grant date.

The average fair value of each SAR and RSU on the grant date was $18.25 and $67.13, respectively. The Company calculated the fair value of each SAR on the grant date using the complex lattice, tree-based option-pricing model based on the following assumptions:

Risk-free interest rates	0.12% - 0.44%
Expected life (in years)	1 - 6
Dividend yield	0.61%
Expected volatility (weighted average)	45.2% - 29.4%

On May 12, 2020, the Company granted certain members of its management an aggregate of 46,795 SARs, 6,142 RSUs and 5,637 PSUs under the Company's 2018 Incentive Plan. The exercise price of each SAR was $68.34 which represented the fair market value of the Company's common stock on the grant date. The SARs will expire six years from date of grant and the SARs, RSUs and PSUs have a vesting period of between 2 to 4 years from the grant date.

The fair value of each SAR, RSU and PSU on the grant date was $17.6, $67.2 and $73.2, respectively. The Company calculated the fair value of each SAR on the grant date using the complex lattice, tree-based option-pricing model based on the following assumptions:

Risk-free interest rates	0.44%
Expected life (in years)	2 - 6
Dividend yield	0.63%
Expected volatility (weighted average)	28.14%

On June 15, 2020, the Company granted certain directors, members of its management and employees an aggregate of 852,475 SARs, 11,068 RSUs and 10,962 PSUs under the Company's 2018 Incentive Plan. The exercise price of each SAR was $69.14 which represented the fair market value of the Company's common stock on the grant date. The SARs will expire six years from date of grant, except for 1,156 SARs which have an expiration date of 5 months from the grant date, and the SARs, RSUs and PSUs have a vesting period of between 2 to 4 years from the grant date.

The fair value of each SAR, RSU and PSU on the grant date was $18.0, $68.0 and $65.0, respectively. The Company calculated the fair value of each SAR on the grant date using the complex lattice, tree-based option-pricing model based on the following assumptions:

Risk-free interest rates	0.44% - 0.28%
Expected life (in years)	2 - 6
Dividend yield	0.64%
Expected volatility (weighted average)	28.5% - 35.2%

On July 1, 2020, the Company granted its newly appointed CEO an aggregate of 45,365 SARs, 6,020 RSUs and 6,540 PSUs under the Company's 2018 Incentive Plan. The exercise price of each SAR was $63.40 which represented the fair market value of the Company's common stock on the grant date. The SARs will expire six years from date of grant and the SARs, RSUs and PSUs have a vesting period of between 2 to 4 years from the grant date.

The fair value of each SAR, RSU and PSU on the grant date was $16.5, $62.3 and $57.3, respectively. The Company calculated the fair value of each SAR on the grant date using the complex lattice, tree-based option-pricing model based on the following assumptions:

Risk-free interest rates	0.41% - 0.17%
Expected life (in years)	2 - 6
Dividend yield	0.64%
Expected volatility (weighted average)	28.5% - 35.7%

Information on the awards outstanding and the related weighted average exercise price as of and for the years ended December 31, 2022, 2021 and 2020 are presented in the table below:

	Year Ended December 31,					
	2022		2021		2020	
	Awards (In thousands)	Weighted Average Exercise Price	Awards (In thousands)	Weighted Average Exercise Price	Awards (In thousands)	Weighted Average Exercise Price
Outstanding at beginning of year	2,025	$ 58.70	2,240	$ 57.68	1,792	$ 50.39
Granted:						
SARs [1]	513	71.15	15	77.22	957	68.82
RSUs [2]	109	—	12	—	35	—
PSUs [3]	20	—	—	—	25	—
Exercised	(728)	52.73	(159)	40.47	(469)	45.71
Forfeited	(129)	62.27	(83)	64.34	(100)	55.05
Expired	—	—	—	—	—	—
Outstanding at end of year	1,810	60.08	2,025	58.70	2,240	57.68
Options and SARs exercisable at end of year	749	58.30	881	53.20	704	51.64
Weighted-average fair value of awards granted during the year		$ 33.02		$ 46.23		$ 20.84

(1) Upon exercise, SARs entitle the recipient to receive shares of common stock equal to the increase in value of the award between the grant date and the exercise date.

(2) An RSU represents the right to receive one share of common stock once certain vesting conditions are met. The value of an RSU is identical to the value of the underlying stock.

(3) The Performance shares units shall be paid out based on achievement of three-year relative total stockholder return compared to other companies in S&P 500 index.

The following table summarizes information about stock-based awards outstanding at December 31, 2022 (shares in thousands):

	Awards Outstanding			Awards Exercisable		
Exercise Price	Number of Stock-based Awards Outstanding	Weighted Average Remaining Contractual Life in Years	Aggregate Intrinsic Value	Number of Stock-based Awards Exercisable	Weighted Average Remaining Contractual Life in Years	Aggregate Intrinsic Value
$ —	157	2.1	$ 13,536	—	—	$ —
51.71	8	2.0	278	6	2.0	209
53.16	3	1.9	108	3	1.9	108
53.44	103	1.5	3,405	103	1.5	3,405
55.16	295	0.9	9,236	295	0.9	9,236
57.97	8	1.6	214	8	1.6	214
63.35	74	0.9	1,719	74	0.9	1,719
63.40	45	3.5	1,047	23	3.5	524
67.54	7	3.9	125	7	3.9	125
68.34	47	3.4	849	23	3.4	424
69.14	539	3.4	9,357	199	3.4	3,456
71.15	499	5.2	7,644	—	5.2	—
71.71	4	2.6	59	3	2.6	44
76.43	5	2.9	49	5	2.9	49
76.54	9	4.9	85	—	4.9	—
78.53	6	4.3	51	—	4.3	—
90.28	1	4.0	—	—	4	—
	1,810	3.1	$ 47,762	749	1.8	$ 19,513

The following table summarizes information about stock-based awards outstanding at December 31, 2021 (shares in thousands):

	Awards Outstanding			Awards Exercisable		
Exercise Price	Number of Stock-based Awards Outstanding	Weighted Average Remaining Contractual Life in Years	Aggregate Intrinsic Value	Number of Stock-based Awards Exercisable	Weighted Average Remaining Contractual Life in Years	Aggregate Intrinsic Value
$ —	66	1.3	$ 5,208	—	—	$ —
42.87	187	0.5	6,796	187	0.5	6,796
47.46	15	1.9	478	15	1.9	478
51.71	8	3.0	221	4	3.0	110
53.16	31	2.9	819	26	2.9	689
53.44	386	2.5	9,985	227	2.5	5,859
55.16	296	1.9	7,137	296	1.9	7,137
57.97	15	2.6	320	15	2.6	320
58.79	1	0.5	19	1	0.5	19
63.35	88	1.9	1,401	88	1.9	1,401
63.40	45	4.5	721	—	4.5	—
67.54	12	4.9	139	12	4.9	139
68.34	47	4.4	513	—	4.4	—
69.14	799	4.4	8,123	1	4.4	12
71.71	4	3.6	30	2	3.6	15
72.14	0	0	—	—	0	—
76.43	8	3.9	24	8	3.9	24
90.28	1	5	—	—	5	—
	2,025	3.0	$ 41,967	882	1.8	$ 22,999

The aggregate intrinsic value in the above tables represents the total pretax intrinsic value, based on the Company's stock price of $86.48 and $79.30 as of December 31, 2022 and 2021, respectively, which would have potentially been received by the stock-based award holders had all stock-based award holders exercised their stock-based award as of those dates. The total number of in-the-money stock-based awards exercisable as of December 31, 2022 and 2021 was 749,101 and 881,393, respectively.

The total pretax intrinsic value of options exercised during the year ended December 31, 2022 and 2021 was $21.9 million and $6.1 million, respectively, based on the average stock price of $82.8 and $78.4 during the years ended December 31, 2022 and 2021, respectively.

NOTE 16 — INTEREST EXPENSE, NET

The components of interest expense are as follows:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Interest related to sale of tax benefits	$ 14,853	$ 12,246	$ 9,344
Interest expense	91,617	84,994	$ 79,018
Less — amount capitalized	(18,727)	(14,582)	$ (10,409)
	$ 87,743	$ 82,658	$ 77,953

NOTE 17 — INCOME TAXES

U.S. and foreign components of income from continuing operations, before income taxes and equity in income (losses) of investees consisted of:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
U.S.	$ 23,709	$ 37,032	$ 43,273
Non-U.S. (foreign)	71,900	66,519	125,444
Total income from continuing operations, before income taxes and equity in losses	$ 95,609	$ 103,551	$ 168,717

The components of the provision (benefit) for income taxes, net are as follows:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Current:			
Federal	$ 641	$ —	$ —
State	2,227	400	363
Foreign	29,370	25,096	61,574
Total current income tax expense	$ 32,238	$ 25,496	$ 61,937
Deferred:			
Federal	(17,179)	(3,267)	22,682
State	2,649	9,301	7,277
Foreign	(2,966)	(6,680)	(24,893)
Total deferred tax provision (benefit)	(17,496)	(646)	5,066
Total Income tax provision	$ 14,742	$ 24,850	$ 67,003

Reconciliation of the U.S. federal statutory tax rate to the Company's effective income tax rate is as follows:

	Year Ended December 31,		
	2022	2021	2020
U.S. federal statutory tax rate	21.0%	21.0%	21.0%
Foreign tax credits	(3.8)	(0.4)	(0.3)
Withholding tax	0.2	6.0	4.4
Valuation allowance - U.S.	(9.3)	(10.4)	3.0
State income tax, net of federal benefit	5.3	8.8	3.8
Uncertain tax positions	0.9	3.6	(7.5)
Effect of foreign income tax, net	6.2	(5.2)	8.5
Production tax credits	(4.0)	(4.2)	(1.8)
Tax on global intangible low-tax income	4.8	9.3	11.1
Noncontrolling interest	(2.2)	(2.5)	(1.6)
Other, net	(3.7)	(1.9)	(0.9)
Effective tax rate	15.4%	24.0%	39.7%

The net deferred tax assets and liabilities consist of the following:

	December 31,	
	2022	2021
	(Dollars in thousands)	
Deferred tax assets (liabilities):		
Net foreign deferred taxes, primarily depreciation	$ (49,295)	$ (54,899)
Depreciation	50,214	(62,906)
Intangible drilling costs	(13,855)	(11,501)
Net operating loss carryforward - U.S.	26,824	32,848
Tax monetization transaction	(84,585)	(62,533)
Right-of-use assets	(5,824)	(5,101)
Lease liabilities	5,527	5,148
Production tax credits	109,109	108,103
Foreign tax credits	32,333	92,240
Withholding tax	(21,007)	(20,521)
Basis difference in partnership interest	(51,392)	(45,683)
Excess business interest	522	13,662
Sale and leaseback transaction	62,939	64,070
Other assets	13,655	12,998
Accrued liabilities and other	5,208	4,161
Total	80,373	70,086
Less - valuation allowance	(2,473)	(11,298)
Total, net	$ 77,900	$ 58,788

The following table presents a reconciliation of the beginning and ending valuation allowance:

	2022	2021
	(Dollars in thousands)	
Balance at beginning of the year	$ 11,298	$ 22,193
Additions to valuation allowance	35	2,029
Release of valuation allowance	(8,860)	(12,924)
Balance at end of the year	$ 2,473	$ 11,298

At December 31, 2022, the Company had U.S. federal net operating loss (“NOL”) carryforwards of approximately $42.0 million, all of which was generated before 2018 and expires by 2038.

At December 31, 2022, the Company had PTCs in the amount of $109.1 million. These PTCs are available for a 20-year period and begin to expire in 2026. At December 31, 2022, the Company had U.S. foreign tax credits (“FTCs”) in the amount of $32.3 million. These FTCs are available for a 10-year period and begin to expire in 2027.

At December 31, 2022, the Company had state NOL carryforwards of approximately $273.3 million, $268.7 million which expire between 2025 and 2042 and $4.6 million are available to be carried forward for an indefinite period. At December 31, 2022, the Company had state tax credits in the amount of $1.0 million. These state tax credits are available to be carried forward for an indefinite period.

The Company has recorded deferred tax assets for net operating losses, foreign tax credits, and production tax credits. Realization of the deferred tax assets and tax credits is dependent on generating sufficient taxable income in appropriate jurisdictions prior to expiration of the NOL carryforwards and tax credits. Based upon available evidence of the Company’s ability to generate additional taxable income in the future and historical losses in prior years, a valuation allowance in the amount of $2.5 million and $11.3 million is recorded against the U.S. deferred tax assets as of December 31, 2022 and 2021, respectively, as it is more likely than not that the deferred tax assets will not be realized. The overall decrease in the valuation allowance of $8.8 million is due to the release of the Company's valuation allowance on FTCs and PTCs. The Company is maintaining a valuation allowance of $2.5 million against a portion of its state NOLs and capital loss carryforward that are expected to expire before they can be utilized in future periods.

On April 24, 2018, the Company acquired 100% of stock of USG for approximately $110 million. Under the acquisition method of accounting, the Company recorded a net deferred tax asset of $1.7 million comprised primarily of federal and state NOLs netted against deferred tax liabilities for partnership basis differences and fixed assets. The total amount of acquired federal and state NOLs, which are subject to limitations under Section 382, were $113.9 million and $49.9 million, respectively. A valuation allowance of $1.8 million has been recorded against such acquired state NOLs, as it is more likely than not that the deferred tax asset will not be realized.

The FASB released guidance Staff Q&A, Topic 740, No. 5, that states a company can make an accounting policy election to either recognize deferred taxes related to GILTI or to provide for the GILTI tax expense in the year the tax is incurred as a period cost. The Company has elected to treat any GILTI inclusions as a period cost. We have elected and applied the tax law ordering approach when considering GILTI as part of our valuation allowance.

The following table presents the deferred taxes on the balance sheet as of the dates indicated:

	Year Ended December 31,	
	2022	2021
	(Dollars in thousands)	
Non-current deferred tax assets	$ 161,365	$ 143,450
Non-current deferred tax liabilities	(83,465)	(84,662)
Non-current deferred tax assets, net	77,900	58,788
Uncertain tax benefit offset [1]	(95)	(95)
	$ 77,805	$ 58,693

(1) The non-current deferred tax asset has been reduced by the uncertain tax benefit of $0.1 million in accordance with ASU 2013-11, Income Taxes.

At December 31, 2022, the Company is no longer indefinitely reinvested with respect to the earnings of its foreign subsidiaries due to forecasted changes in cash needs and the impact of U.S. tax reform. The Company has accrued withholding taxes that would be owed upon future distributions of such earnings. Accordingly, as of December 31, 2022, the Company has accrued $16.4 million of foreign withholding taxes on future distributions of foreign earnings.

Uncertain tax positions

The Company is subject to income taxes in the United States (federal and state) and numerous foreign jurisdictions. Significant judgment is required in evaluating the Company's tax positions and determining its provision for income taxes. During the ordinary course of business, there are many transactions and calculations for which the ultimate tax determination is uncertain. The Company establishes reserves for tax-related uncertainties based on estimates of whether, and the extent to which additional taxes will be due. These reserves are established when the Company believes that certain positions might be challenged despite evidence supporting the position. The Company adjusts these reserves in light of changing facts and circumstances, such as the outcome of tax audits. The provision for income taxes includes the impact of reserve positions and changes to reserves that are considered probable.

At December 31, 2022 and 2021, there are $6.6 million and $5.7 million of unrecognized tax benefits, respectively, that if recognized would reduce the effective tax rate. Interest and penalties assessed by taxing authorities on an underpayment of income taxes are included as a component of income tax provision in the consolidated statements of operations and comprehensive income.

A reconciliation of the Company's unrecognized tax benefits is as follows:

	Year Ended December 31,	
	2022	2021
	(Dollars in thousands)	
Balance at beginning of year	$ 5,076	$ 1,673
Additions based on tax positions taken in prior years	—	9
Additions based on tax positions taken in the current year	364	3,408
Reduction based on tax positions taken in prior years	(47)	(14)
Reduction based on tax positions taken in the current year	(93)	—
Balance at end of year	$ 5,300	$ 5,076

The Company and its U.S. subsidiaries file consolidated income tax returns for federal and state (where applicable) purposes. As of December 31, 2022, the Company has not been subject to U.S. federal or state income tax examinations.

The Company remains open to examination by the Internal Revenue Service for the years 2002-2021 and by local state jurisdictions for the years 2006-2021. These examinations may lead to ordinary course adjustments or proposed adjustments to the Company's taxes or the Company's net operating losses with respect to years under examination as well as subsequent periods.

The Company’s foreign subsidiaries remain open to examination by the local income tax authorities in the following countries for the years indicated:

Israel	2019 - 2022
Kenya	2018 - 2022
Guatemala	2018 - 2022
Honduras	2017 - 2022
Guadeloupe	2019 - 2022

Management believes that the liability for unrecognized tax benefits is adequate for all open tax years based on its assessment of many factors, including among others, past experience and interpretations of local income tax regulations. This assessment relies on estimates and assumptions and may involve a series of complex judgments about future events. As a result, it is possible that federal, state and foreign tax examinations will result in assessments in future periods. To the extent any such assessments occur, the Company will adjust its liability for unrecognized tax benefits. The Company is not able to reasonably estimate the amount of unrecognized tax benefits that will be reduced within the next twelve months.

Tax benefits in the United States

On August 16, 2022, the Inflation Reduction Act (IRA) was signed into law in the United States. The Company believes that the construction and operations of its geothermal power plants, recovered energy-based power plants, battery energy storage systems and solar PV will benefit in the future from the IRA and enhance the economic feasibility of projects in the United States. PTC’s can be generated from 2.75 cents per kWh, once the Wages & Apprenticeship rules are met, and if bonus credit requirements are met the credit could rise up to 3.30 cents per kWh. ITC’s can be earned on investments from 30.0%, once the Wages & Apprenticeship rules are met, and if bonus credit requirements are met the credit could rise up to 50.0%. Battery Energy Storage Systems are eligible for ITC for projects placed-in-service after December 31, 2022. In addition, the Company can now monetize PTC’s and ITC’s earned by transferring the credits to a third party without having to enter into a tax equity transaction.

The Company views the enactment of the IRA as favorable for the overall business climate for its sector. However, the Company continues to evaluate the overall impact and applicability of the IRA to the Company’s current and planned projects and the markets in which it seeks to sell its products.

Income taxes related to foreign operations

Guadeloupe - The Company's operations in Guadeloupe are taxed at a maximum rate of 31% in 2019, a rate of 28% in 2020, 26.5% in 2021 and 25% in 2022.

Guatemala — The enacted tax rate is 25%. Orzunil, a wholly owned subsidiary, was granted a benefit under a law which promotes development of renewable power sources. The law allows Orzunil to reduce the investment made in its geothermal power plant from income tax payable, which currently reduces the effective tax rate to zero. Ortitlan, another wholly owned subsidiary, was granted a tax exemption for a period of ten years ending August 2017. Starting August 2017, Ortitlan pays income tax of 7% on its Electricity revenues.

Honduras - The Company's operations in Honduras are exempt from income taxes for the first ten years starting at the commercial operation date of the power plant, which was in September 2017.

Israel — The Company's operations in Israel through its wholly owned Israeli subsidiary, Ormat Systems Ltd. ("Ormat Systems"), were taxed at a reduced corporate tax rate of 16% in 2017 and 23% in 2018 and 16% thereafter, under the "Benefited Enterprise" tax regime of the Encouragement of Capital Investments Law, 1959 (the "Investment Law"), with respect to two of its investment programs. In January 2011, new legislation amending the Investment Law by adding, inter alia, the Preferred Enterprise Regime was enacted. Under the Preferred Enterprise Regime, a uniform reduced corporate tax rate would apply to all qualified income of certain industrial companies, as opposed to the Investment Law incentives that are limited to income from a "Benefited Enterprise" during their benefits period. According to the amendment, the uniform tax rate applicable to the zone where the production facilities of Ormat Systems are located would be 16% in 2014 and thereafter. Ormat Systems decided to irrevocably comply with the new law starting in 2011.

On December 29, 2016, the Investment Law was amended ("73 Amendment"), which includes, inter alia, two new tax incentive opportunities. These are the Preferred Technological Enterprise ("PTE") and Special Preferred Technological Enterprise ("SPTE"). In order to benefit from either of these options, a Company must meet certain qualifications and receive formal approval from the Israel Innovation Authority ("IIA"). The Company received such approval on January 20, 2021, which allowed the Company to use the reduced corporate tax rate of 12% on its "Preferred Technological Income" for the tax years 2018, 2019 and 2020. The benefit of the reduced corporate tax rate has been reflected in these financial statements.

The Investment Law also included a specific order that allowed companies to distribute earnings that were previously untaxed after paying a reduced corporate tax rate of 10% versus 25% under the prior tax regime. Ormat elected to pay the 10% corporate rate on such previously untaxed earnings during 2021 which now allows such earnings to be dividended.

Kenya - The Company's operations in Kenya are taxed at the rate of 37.5%.

NOTE 18 — BUSINESS SEGMENTS

The Company has three reporting segments: the Electricity segment, the Product segment and the Energy Storage segment. These segments are managed and reported separately as each offers different products and serves different markets.

- Under the Electricity segment, the Company builds, owns and operates geothermal, solar PV and recovered energy-based power plants in the United States and geothermal power plants in foreign countries, and sell the electricity generated by those power plants.

- Under the Product segment, the Company designs, manufactures and sells equipment for geothermal and recovered energy-based electricity generation and provide services relating to the engineering, procurement and construction of geothermal and recovered energy-based power plants.

- Under the Energy Storage segment, the Company provides energy storage and related services as well as services relating to the engineering, procurement, construction, operation and maintenance of energy storage units.

Transfer prices between the operating segments were determined on current market values or cost plus markup of the seller's business segment.

Summarized financial information concerning the Company's reportable segments is shown in the following tables, including, as further described under Note 1 to the consolidated financial statements, the Company's disaggregated revenues from contracts with customers as required by ASC 606:

	Electricity	Product	Energy Storage	Consolidated
	(Dollars in thousands)			
Year Ended December 31, 2022:				
Revenues from external customers:				
United States [1]	$ 446,000	$ 7,037	$ 31,018	$ 484,055
Foreign [2]	185,727	64,377	—	250,104
Net revenues from external customers	631,727	71,414	31,018	734,159
Intersegment revenues	—	83,394	—	—
Depreciation and amortization expense	179,966	7,302	11,524	198,792
Operating income (loss)	156,178	(1,084)	(2,291)	152,803
Segment assets at period end [3] [*]	4,253,910	118,018	239,651	4,611,579
Expenditures for long-lived assets	462,269	16,352	84,855	563,476
* Including unconsolidated investments	115,693	—	—	115,693
Year Ended December 31, 2021:				
Revenues from external customers:				
United States [1]	404,303	5,414	30,393	440,110
Foreign [2]	181,468	41,506	—	222,974
Net revenues from external customers	$ 585,771	$ 46,920	$ 30,393	$ 663,084
Intersegment revenues	—	129,589	—	—
Depreciation and amortization expense	164,490	7,719	10,763	182,972
Operating income (loss)	171,550	(3,641)	1,448	169,357
Segment assets at period end [3] [*]	4,142,341	113,817	169,520	4,425,678
Expenditures for long-lived assets	383,307	10,687	25,278	419,272
* Including unconsolidated investments	105,886	—	—	105,886
Year Ended December 31, 2020:				
Revenues from external customers:				
United States [1]	341,399	5,800	15,824	363,023
Foreign [2]	199,994	142,325	—	342,319
Net revenues from external customers	541,393	148,125	15,824	705,342
Intersegment revenues	—	113,200	—	—
Depreciation and amortization expense	144,357	6,010	6,245	156,612
Operating income (loss)	205,256	13,145	(4,388)	214,013
Segment assets at period end [3] [*]	3,607,384	145,911	135,692	3,888,987
Expenditures for long-lived assets	267,843	18,011	34,884	320,738
* Including unconsolidated investments	98,217	—	—	98,217

[1] Electricity segment revenues in the United States are all accounted under lease accounting, except for $102.5 million, $83.4 million and $68.1 million for the years 2022, 2021 and 2020, which are accounted under ASC 606. Product and Energy Storage segment revenues in the United States are accounted under ASC 606, as further described under Note 1 to the consolidated financial statements.

[2] Electricity segment revenues in foreign countries are all accounted under lease accounting. Product and Energy Storage segment revenues in foreign countries are accounted under ASC 606 as further described under Note 1 to the consolidated financial statements.

[3] Electricity segment assets include goodwill in the amount of $85.7 million, $85.3 million and $20.5 million as of December 31, 2022, 2021 and 2020, respectively, $66.2 million of which was added in the third quarter of 2021 as a result of the Terra-Gen Transaction as further described under Note 2 to the consolidated financial statements. Energy Storage segment assets include goodwill in the amount of $4.6 million, $4.6 million and $4.1 million as of December 31, 2022, 2021 and 2020, respectively. No goodwill is included in the Product segment assets as of December 31, 2022, 2021 and 2020.

Reconciling information between reportable segments and the Company's consolidated totals is shown in the following table:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Revenues:			
Total segment revenues	$ 734,159	$ 663,084	$ 705,342
Intersegment revenues	83,394	129,589	113,200
Elimination of intersegment revenues	(83,394)	(129,589)	(113,200)
Total consolidated revenues	$ 734,159	$ 663,084	$ 705,342
Operating income (expense):			
Operating income	$ 152,803	$ 169,357	$ 214,013
Interest income	3,417	2,124	1,717
Interest expense, net	(87,743)	(82,658)	(77,953)
Derivatives and foreign currency transaction gains (losses)	(6,044)	(14,720)	3,802
Income attributable to sale of tax benefits	33,885	29,582	25,720
Other non-operating income (expense), net	(709)	(134)	1,418
Total consolidated income before income taxes and equity in earnings (losses) of investees	$ 95,609	$ 103,551	$ 168,717

The Company sells electricity, products and energy storage services mainly to the geographical areas set forth below based on the location of the customer. The following tables present certain data by geographic:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Revenues from external customers attributable to:			
United States	$ 484,055	$ 440,110	$ 363,023
Indonesia	15,631	8,056	—
Kenya	105,837	102,844	115,474
Turkey	1,961	2,723	65,535
Chile	579	7,035	32,418
Guatemala	28,831	26,868	27,391
New Zealand	17,130	6,770	34,985
Honduras	33,837	35,233	35,197
Other foreign countries	46,298	33,445	31,319
Consolidated total	$ 734,159	$ 663,084	$ 705,342

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Long-lived assets (primarily power plants and related assets) located in:			
United States	$ 2,857,503	$ 2,527,429	$ 2,084,021
Kenya	301,491	297,427	289,266
Other foreign countries	254,878	217,371	232,953
Consolidated total	$ 3,413,872	$ 3,042,227	$ 2,606,240

The following table presents revenues from major customers:

	Year Ended December 31,					
	2022		2021		2020	
	Revenues	%	Revenues	%	Revenues	%
	(Dollars in thousands)		(Dollars in thousands)		(Dollars in thousands)	
Southern California Public Power [1]	$ 157,663	21.5	$ 157,318	23.7	$ 145,450	20.6
Sierra Pacific Power Company and Nevada Power Company [1][2]	124,116	16.9	120,206	18.1	123,734	17.5
KPLC [1]	105,837	14.4	102,844	15.5	115,474	16.4

[1] Revenues reported in Electricity segment.

[2] Subsidiaries of NV Energy, Inc.

NOTE 19 — TRANSACTIONS WITH RELATED ENTITIES

There were no transactions between the Company and related entities, other than those disclosed elsewhere in these consolidated financial statements.

NOTE 20 — EMPLOYEE BENEFIT PLAN

401(k) Plan

The Company has a 401(k) Plan (the "Plan") for the benefit of its U.S. employees. Employees of the Company and its U.S. subsidiaries who have completed 60 days of employment are eligible to participate in the Plan. Contributions are made by employees through pre- and post-tax deductions up to 60% of their annual salary. In 2022, 2021 and 2020, the Company matched employee contributions, after completion of one year of service, up to a maximum of 5%, 4% and 4% of the employee's annual salary, respectively. The Company's contributions to the Plan were $2.6 million, $1.8 million and $1.6 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Severance plan

The Company, through Ormat Systems, provides limited non-pension benefits to all current employees in Israel who are entitled to benefits in the event of termination or retirement in accordance with the Israeli Government sponsored programs. These plans generally obligate the Company to pay one month's salary per year of service to employees in the event of involuntary termination. There is no limit on the number of years of service in the calculation of the benefit obligation. The liabilities for these plans are recorded at each balance sheet date by determining the undiscounted obligation as if it were payable at that point in time. Such liabilities have been presented in the consolidated balance sheets as "liabilities for severance pay". The Company has an obligation to partially fund the liabilities through regular deposits in pension funds and severance pay funds. The amounts funded are to $6.9 million and $9.1 million at December 31, 2022 and 2021, respectively, and have been presented in the consolidated balance sheets as part of "Deposits and other". The severance pay liability covered by the pension funds is not reflected in the financial statements as the severance pay risks have been irrevocably transferred to the pension funds. Under the Israeli severance pay law, restricted funds may not be withdrawn or pledged until the respective severance pay obligations have been met. As allowed under the program, earnings from the investment are used to offset severance pay costs. Severance pay expenses for the years ended December 31, 2022, 2021 and 2020 were $2.2 million, $2.0 million and $3.0 million, respectively, which are net of income (including loss) amounting to $(1.0) million, $1.3 million, and $0.9 million, respectively, generated from the regular deposits and amounts accrued in severance funds.

The Company expects to pay the following future benefits to its employees upon their reaching normal retirement age:

	(Dollars in thousands)
Year ending December 31:	
2023	$ 2,156
2024	81
2025	508
2026	406
2027	529
2028-2045	8,467
Total	$ 12,147

The above amounts were determined based on the employees' current salary rates and the number of years' service that will have been accumulated at their retirement date. These amounts do not include amounts that might be paid to employees that will cease working with the Company before reaching their normal retirement age.

On February 21, 2023, the Company adopted a new change in control severance plan for its management. For more information, see Note 23 – Subsequent Events.

NOTE 21 — COMMITMENTS AND CONTINGENCIES

Geothermal resources

The Company, through its project subsidiaries in the United States and other foreign locations, controls certain rights to geothermal fluids through certain leases with the BLM or through private leases. Royalties on the utilization of the geothermal resources are computed and paid to the lessors as defined in the respective agreements. Royalty expense under the geothermal resource agreements were $30.1 million, $25.2 million and $20.8 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Letters of credit

In the ordinary course of business with customers, vendors, and lenders, the Company is contingently liable for performance under letters of credit totaling $197.4 million at December 31, 2022. Management does not expect any material losses to result from these letters of credit because performance is not expected to be required.

Purchase commitments

The Company purchases raw materials for inventories, construction-in-process and services from a variety of vendors. During the normal course of business, in order to manage manufacturing lead times and help assure adequate supply, the Company enters into agreements with contract manufacturers and suppliers that either allow them to procure goods and services based upon specifications defined by the Company, or that establish parameters defining the Company's requirements. At December 31, 2022, total obligations related to such supplier agreements were approximately $569.9 million (out of which approximately $404.1 million relate to construction-in-process). All such obligations are payable in 2023.

Grants and royalties

The Company, through Ormat Systems, had historically, through December 31, 2003, requested and received grants for research and development from the Office of the Chief Scientist of the Israeli Government. Ormat Systems is required to pay royalties to the Israeli Government at a rate of 3.5% to 5.0% of the revenues derived from products and services developed using these grants. No royalties were paid for the years ended December 31, 2022, 2021 and 2020. The Company is not liable for royalties if the Company does not sell such products and services. Such royalties are capped at the amount of the grants received plus interest at LIBOR. The cap at December 31, 2022 and 2021, amounted to $2.3 million and $2.2 million, respectively, of which approximately $1.3 million and $1.2 million, represents interest based on the LIBOR rate, as defined above, for 2022 and 2021, respectively.

Lease commitments

The Company's lease commitments are detailed under Note 22, Leases to the consolidated financial statements.

Contingencies

- On December 15, 2021, the Center for Biological Diversity and the Fallon Paiute-Shoshone Tribe (the "Plaintiffs") filed a lawsuit in the U.S. District Court for the State of Nevada against the U.S. Department of the Interior, the Bureau of Land Management ("the BLM") and Jake Vialpando, in his official capacity as a field manager of the BLM, alleging that the defendants violated the National Environmental Protection Act and other federal laws by approving Ormat's Dixie Meadows project and the associated environmental assessment and Finding of No Significant Impact ("FONSI"). Plaintiffs additionally alleged that the project threatens the Dixie Valley Toad and infringes on the tribe's enjoyment of a religious sacred site. Plaintiffs sought for the court to vacate and set aside the environmental assessment, FONSI and the BLM's authorizations for the project and to enjoin project construction. Ormat intervened in the action on January 4, 2022. On January 14, 2022, the court granted a temporary, 90-day injunction pausing construction of the project while it ruled on the merits of the case. The Ninth Circuit subsequently set aside the temporary injunction, pending a hearing on June 15, 2022, and construction began in February 2022. On August 1, 2022 the Ninth Circuit issued an order in Ormat's favor, affirming the District Court's ruling that an injunction after 90-days was not warranted. On April 4, 2022, the U.S. Fish and Wildlife Services ("FWS") emergency listed the Dixie Valley Toad under the Endangered Species Act of 1973 (the "ESA"). On July 6, 2022 Plaintiffs amended their complaint to add causes of action related to the ESA listing against Ormat. The Company is currently working with the BLM and FWS in the Section 7 Consultation process including discussion and identification of potential additional mitigation measures, and has agreed to temporarily pause construction of the facility. The Company requested that the BLM amend the Decision Record to limit the scope of the project to the first planned phase of development, a single power plant of approximately 12 MW and the BLM granted that request. The Company further requested that the Court stay the litigation until the Section 7 Consultation process was complete, and the Court granted the motion to stay on February 14, 2023. The Company believes it has strong legal defenses against the present claims, however, there can be no assurances regarding the resolution of these proceedings. Any additional construction delays imposed by the court, any mitigation or other measures arising from the Dixie Valley Toad's emergency listing or any combination thereof could cause the Company to incur additional project costs, delay or impede the completion of the project and thus the eventual generation of revenues from the project and/or result in the renegotiation of the PPA for the project on less favorable terms. As a result, at this time, the Company cannot reasonably predict the ultimate outcome of this litigation or regulatory process or estimate the possible loss or range of loss it may bear, if any. As of December 31, 2022, the aggregated net book value of the Dixie Meadows project was approximately $84.4 million, which was included under "construction-in-process" in the consolidated balance sheets.

In addition, from time to time, the Company is named as a party to various other lawsuits, claims and other legal and regulatory proceedings that arise in the ordinary course of the Company's business. These actions typically seek, among other things, compensation for alleged personal injury, breach of contract, property damage, punitive damages, civil penalties or other losses, or injunctive or declaratory relief. With respect to such lawsuits, claims and proceedings, the Company accrues reserves when a loss is probable, and the amount of such loss can be reasonably estimated. It is the opinion of the Company's management that the outcome of these proceedings, individually and collectively, will not be material to the Company's consolidated financial statements as a whole.

Other matters

On March 2, 2021, the Company's board of directors established a Special Committee of independent directors to investigate, among other things, certain claims made in a report published by a short seller regarding the Company's compliance with anti-corruption laws. The Special Committee is working with outside legal counsel to investigate the claims made. All members of the Special Committee are "independent" in accordance with the Company's Corporate Governance Guidelines, the NYSE listing standards and SEC rules applicable to board of directors in general. The Company is also providing information as requested by the SEC and Department of Justice ("DOJ") related to the claims.

NOTE 22 — LEASES

The Company is a lessee in operating and finance lease transactions primarily consisting of land leases for its exploration and development activities and fleet vehicles, respectively. The Company is a lessor in PPAs that are accounted under lease accounting, as further described under Note 1 to the consolidated financial statements under "Revenues and cost of revenues" and "Leases".

A. Leases in which the Company is a lessee

The table below presents the effects on the amounts relating to total lease cost:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Lease cost			
Finance lease cost:			
Amortization of right-of-use assets	$ 2,861	$ 3,265	$ 3,422
Interest on lease liabilities	441	770	1,226
Operating lease cost	3,695	3,707	3,303
Variable lease cost	3,893	2,368	1,891
Short-term lease cost	—	—	—
Total lease cost	$ 10,890	$ 10,110	$ 9,842
Other information			
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows for finance leases	$ 441	$ 770	$ 1,226
Operating cash flows for operating leases	4,507	3,589	3,213
Financing cash flows for finance leases	2,983	3,181	2,890
Right-of-use assets obtained in exchange for new finance lease liabilities	2,473	948	1,028
Right-of-use assets obtained in exchange for new operating lease liabilities	6,286	5,227	2,614

Additional information as of the end of the year:	December 31, 2022	December 31, 2021
Weighted-average remaining lease term — finance leases (in years)	1.8	2.8
Weighted-average remaining lease term — operating leases (in years)	17.9	17.1
Weighted-average discount rate — finance leases (in percentage)	3%	3%
Weighted-average discount rate — operating leases (in percentage)	5%	5%

Future minimum lease payments under non-cancellable leases as of December 31, 2022 were as follows:

	Operating Leases	Finance Leases	Financing Liability [1]
	(Dollars in thousands)		
Year ending December 31,			
2023	$ 2,925	$ 1,710	$ 22,368
2024	2,547	1,031	102,074
2025	2,225	866	13,324
2026	2,086	483	18,118
2027	1,897	29	17,403
Thereafter	22,686	0	96,059
Total future minimum lease payments	34,366	4,119	269,346
Less imputed interest	12,231	276	27,317
Total	$ 22,135	$ 3,843	$ 242,029

[1] Financing liability was assumed as part of the Terra-Gen business combination transaction as further described under Note 2 to the consolidated financial statements and is related to the sale and lease-back transaction of the Dixie Valley geothermal assets.

B. Leases in which the Company is a lessor

The table below presents the lease income recognized as a lessor:

	Year Ended December 31,		
	2022	2021	2020
	(Dollars in thousands)		
Lease income relating to lease payments of operating leases	$ 529,264	$ 502,355	$ 473,260

NOTE 23 — SUBSEQUENT EVENTS

Cash dividend

On February 22, 2023, the Company's Board of Directors declared, approved and authorized payment of a quarterly dividend of $6.7 million ($0.12 per share) to all holders of the Company's issued and outstanding shares of common stock on March 8, 2023, payable on March 22, 2023.

Change in Control Severance Plan

On February 21, 2023, the Company adopted the Ormat Technologies, Inc. Change in Control Severance Plan (the "Severance Plan"), pursuant to which certain management employees, including the Company's named executive officers (the "Eligible Participants") may be eligible for certain payments and benefits upon certain terminations of employment in connection with a change in control of the Company. Pursuant to the Severance Plan, in the event that an Eligible Participant's employment is terminated by the Company without Cause within three months prior to and 24 months following a change in control, other than due to death or disability, or an Eligible Participant resigns for good reason (all as defined in the Severance Plan) and subject to the effectiveness of a release and continued compliance with restrictive covenants, the Eligible Participant is entitled to the following: (i) cash severance payable in a lump sum equal to 200% or 150% (depending on the Eligible Participant is designated as tier 1 or 2, respectively) of the sum of his/her base salary and target bonus; (ii) payment of a prorated target bonus in respect of the year of termination payable in a lump sum; (iii) for U.S. participants, eligibility for monthly reimbursements of COBRA premiums for 18 months; and (iv) accelerated vesting of all equity awards that were outstanding as of the change in control, with any performance-vesting awards to be deemed vested at actual level of performance determined at the time of such termination (or maximum target level if actual performance cannot reasonably be determined). The above severance benefits are in lieu of any other severance benefits to which the participant may be entitled, except for certain statutory severance entitlements under Israeli law. As a condition of participation, Eligible Participants must execute and comply with restrictive covenants, which generally provide for post-termination non-competition and employee and customer non-solicit restrictions for periods of 12 or 18 months for tiers 1 and 2, respectively, as well as perpetual confidentiality and non-disparagement provisions.

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

None.

ITEM 9A. *CONTROLS AND PROCEDURES*

Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to provide reasonable assurance that information required to be disclosed by us in reports that we file or submit under the Securities Exchange Act of 1934, as amended (the "Exchange Act") is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our CEO (principal executive officer) and CFO (principal financial officer), as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As required by SEC Rule 13a-15(e), we carried out an evaluation, under the supervision and with the participation of our management, including our CEO and CFO, of the effectiveness of our disclosure controls and procedures as of December 31, 2022. Based on this evaluation, our CEO and CFO concluded that our disclosure controls and procedures were effective as of December 31, 2022 to provide the reasonable assurance described above.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) of the Exchange Act. Under the supervision and with the participation of our management, including the CEO and the CFO, we carried out an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2022 using the criteria established in "Internal Control-Integrated Framework" (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on that evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

Our internal control over financial reporting as of December 31, 2022 has been audited by Kesselman & Kesselman, Certified Public Accountants (Isr.), an independent registered public accounting firm and a member of PricewaterhouseCoopers International Limited ("PwC"), as stated in their report which is included under "Item 8—Financial Statements."

ITEM 9B. *OTHER INFORMATION*

Item 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

Adoption of Change in Control Severance Plan

On February 21, 2023, the Compensation Committee (the "Compensation Committee") of the Board of Directors (the "Board") of the Company approved the Ormat Technologies, Inc. Change in Control Severance Plan (the "Severance Plan"), pursuant to which certain management employees, including the Company's named executive officers (the "Eligible Participants") may be eligible for certain payments and benefits upon certain terminations of employment in connection with a Change in Control (as defined in the Severance Plan) of the Company. The Severance Plan was adopted following a review of the severance provisions applicable to members of the Company's management team and in consultation with the Compensation Committee's independent compensation consultant, so as to standardize severance payments and benefits for Eligible Participants and to provide management and certain key employees with severance benefits in connection with a Change in Control that are consistent with market practice.

Pursuant to the Severance Plan, in the event that an Eligible Participant's employment is terminated by the Company without Cause within three months prior to and 24 months following a Change in Control, other than due to death or Disability, or an Eligible Participant resigns for Good Reason (all as defined in the Severance Plan) and subject to the effectiveness of a release and continued compliance with restrictive covenants, the Eligible Participant is entitled to the following: (i) cash severance payable in a lump sum equal to 200% or 150% (depending on the Eligible Participant is designated as tier 1 or 2, respectively) of the sum of his/her base salary and target bonus; (ii) payment of a prorated target bonus in respect of the year of termination payable in a lump sum; (iii) for U.S. participants, eligibility for monthly reimbursements of COBRA premiums for 18 months; and (iv) accelerated vesting of all equity awards that were outstanding as of the Change in Control, with any performance-vesting awards to be deemed vested at actual level of performance determined at the time of such termination (or maximum target level if actual performance cannot reasonably be determined). The above severance benefits are in lieu of any other severance benefits to which the participant may be entitled, except for certain statutory severance entitlements under Israeli law. As a condition of participation, Eligible Participants must execute and comply with restrictive covenants, which generally provide for post-termination non-competition and employee and customer non-solicit restrictions for periods of 12 or 18 months for tiers 1 and 2, respectively, as well as perpetual confidentiality and non-disparagement provisions.

The foregoing description of the Severance Plan does not purport to be complete and is subject to, and qualified in its entirety by reference to, the full text thereof, a copy of which is filed with this Annual Report as Exhibit 10.43 and incorporated by reference herein.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

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

Information required by this item is incorporated herein by reference to our definitive proxy statement for the 2022 annual meeting of stockholders, which is to be filed with the SEC (the "2022 Proxy Statement").

ITEM 11. *EXECUTIVE COMPENSATION*

Information required by this item is incorporated herein by reference to our 2023 Proxy Statement.

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

Information required by this item is incorporated herein by reference to our 2023 Proxy Statement.

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

Information required by this item is incorporated herein by reference to our 2023 Proxy Statement.

ITEM 14. *PRINCIPAL ACCOUNTANT FEES AND SERVICES*

Information required by this item is incorporated herein by reference to our 2023 Proxy Statement.

PART IV

ITEM 15. *EXHIBITS, FINANCIAL STATEMENT SCHEDULES*

(a) *(1) List of Financial Statements*

See Index to Financial Statements in Part II, Item 8 of this Annual Report.

(2) List of Financial Statement Schedules

All applicable schedule information is included in our Financial Statements in Part II, Item 8 of this Annual Report.

(b) Exhibit Index. We hereby file, as exhibits to this Annual Report, those exhibits listed on the Exhibit Index immediately following the signature page hereto.

Exhibit No.	Document
3.1	Fourth Amended and Restated Certificate of Incorporation, incorporated by reference to Exhibit 3.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on November 12, 2019.
3.2	Seventh Amended and Restated By-laws of Ormat Technologies, Inc., incorporated by reference to Exhibit 3.1 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the SEC on August 4, 2022.
3.3	Amended and Restated Limited Liability Company Agreement of ORPD LLC, dated April 30, 2015, by and among Ormat Nevada Inc., Northleaf Geothermal Holdings LLC, and ORPD Holding LLC incorporated by reference to Exhibit 3.5 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 7, 2015.
4.1	Form of Common Share Stock Certificate, incorporated by reference to Exhibit 4.1 to Ormat Technologies, Inc.'s Registration Statement on Form S-1 (File No. 333-117527) filed with the Securities and Exchange Commission on July 21, 2004.
4.2	Indenture of Trust and Security Agreement, dated September 23, 2011, among OFC 2 LLC, ORNI 15 LLC, ORNI 39 LLC, ORNI 42 LLC, HSS II, LLC, and Wilmington Trust Company, as Trustee and Depository, incorporated by reference to Exhibit 4.8 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on November 4, 2011.
4.3+	Description of Securities Registered under Section 12 of the Securities Exchange Act of 1934, incorporated by reference to Exhibit 4.4 to the Ormat Technologies, Inc.'s Annual Report on Form10-K filed with the Securities and Exchange Commission on February 26, 2021.
4.5	Deed of Trust, dated June 25, 2020, by and between Ormat Technologies, Inc. and Mishmeret Trust Services Company Ltd., as trustee, and a Form of Bonds (included in Schedule One to the Deed of Trust), incorporated by reference to Exhibit 4.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on July 1, 2020.
4.6	Indenture, dated June 27, 2022, between Ormat Technologies, Inc. and U.S. Bank Trust Company, National Association, incorporated by reference to Exhibit 4.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on June 27, 2022.
4.7	Form of 2.50% Senior Convertible Note due 2027 (included in Exhibit 4.6).
10.1	Agreement for Purchase of Membership Interests in ORPD LLC, dated February 5, 2015, by and between Ormat Nevada Inc. and Northleaf Geothermal Holdings LLC is incorporated by reference to Exhibit 3.5 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 7, 2015.

10.2 Agreement for Purchase of Membership Interests in ORNI 37 LLC, dated November 22, 2016, by and between Northleaf Geothermal Holdings LLC and Ormat Nevada Inc., incorporated by reference to Exhibit 10.1.13 to Ormat Technologies, Inc.'s Form 10-K filed with the Securities and Exchange Commission on March 1, 2017.

10.3 Amended and Restated Limited Liability Company Agreement of Opal Geo LLC, dated December 16, 2016, by and between OrLeaf LLC and JPM Capital Corporation, incorporated by reference to Exhibit 10.1.14 to Ormat Technologies, Inc.'s Form 10-K filed with the Securities and Exchange Commission on March 1, 2017.

10.4 Equity Contribution Agreement, dated December 16, 2016, by and among JPM Capital Corporation, Ormat Nevada Inc. and OrLeaf LLC, incorporated by reference to Exhibit 10.1.15 to Ormat Technologies, Inc.'s Form 10-K filed with the Securities and Exchange Commission on March 1, 2017.

10.5* Amended and Restated Ormat Technologies, Inc. 2012 Incentive Compensation Plan, incorporated by reference to Exhibit 10.2 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on February 11, 2014.

10.6* Form of Incentive Stock Option Agreement to Ormat Technologies, Inc.'s 2012 Incentive Compensation Plan, incorporated by reference to Exhibit 10.31.2 to Ormat Technologies, Inc.'s Annual Report on Form 10-K filed with the Securities and Exchange Commission on February 28, 2014.

10.7* Form of Freestanding Stock Appreciation Right Agreement to Amended and Restated Ormat Technologies, Inc.'s 2012 Incentive Compensation Plan,incorporated by reference to Exhibit 10.31.3 to Ormat Technologies, Inc.'s Annual Report on Form 10-K filed with the Securities and Exchange Commission on February 28, 2014.

10.8* Ormat Technologies, Inc.'s Annual Management Incentive Plan, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on February 29, 2016.

10.9* Form of Restricted Stock Unit Agreement under the Amended and Restated Ormat Technologies, Inc. 2012 Incentive Compensation Plan, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities Exchange Commission on November 9, 2017.

10.10* Ormat Technologies, Inc. Amended and Restated 2018 Incentive Compensation Plan, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on June 3, 2022.

10.11* Form of Restricted Stock Unit Grant Notice and Terms and Conditions (Executive Officers) to Ormat Technologies, Inc.'s Amended and Restated 2018 Incentive Compensation Plan, incorporated by reference to Exhibit 10.5 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 8, 2018.

10.12* Form of Restricted Stock Unit Grant Notice and Terms and Conditions (Directors) to Ormat Technologies, Inc.'s Amended and Restated 2018 Incentive Compensation Plan, incorporated by reference to Exhibit 10.4.11 to Ormat Technologies, Inc.'s Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 01, 2019

10.13* Form of Stock Appreciation Right Grant Notice and Terms and Conditions (Directors) to Ormat Technologies, Inc.'s Amended and Restated 2018 Incentive Compensation Plan.1, incorporated by reference to Exhibit 10.4.12 to Ormat Technologies, Inc.'s Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 01, 2019

10.14* Form of Performance Stock Unit Grant Notice and Terms and Conditions (Executive Officers) under Ormat Technologies, Inc.'s 2018 Amended and Restated Incentive Compensation Plan, incorporated by reference to Exhibit 10.4.3 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 6, 2020.

10.15* Form of Indemnification Agreement, incorporated by reference to Exhibit 10.11 to Ormat Technologies, Inc.'s Registration Statement Amendment No. 2 on Form S-1 (File No. 333-117527) filed with the Securities and Exchange Commission on October 20, 2004.

10.16 Note Purchase Agreement, dated November 29, 2016, among ORNI 47 LLC, MUFG Union Bank, N.A., Munich Reinsurance America, Inc. and Munich American Reassurance Company, incorporated by reference to Exhibit 4.1 to Ormat Technologies Inc.'s Current Report on Form 8-K/A filed with the Securities and Exchange Commission on December 6, 2016.

10.17 Third Amended and Restated Power Purchase Agreement for Olkaria III Geothermal Plants, dated November 26, 2014, between OrPower 4 Inc. and The Kenya Power and Lighting Company Limited, incorporated by reference to Exhibit 10.34 to Ormat Technologies, Inc.'s Annual Report on Form 10-K filed with the Securities and Exchange Commission on February 26, 2021.

10.18 Amendment of the Third Amended and Restated Power Purchase Agreement and Termination of Amended and Restated Olkaria III Project Security Agreement, dated October 30, 2015, between The Kenya Power and Lighting Company Limited and OrPower 4 Inc., incorporated by reference to Exhibit 10.35 to Ormat Technologies, Inc.'s Annual Report on Form 10-K filed with the Securities and Exchange Commission on February 26, 2021.

10.19 Second Amendment of the Third Amended and Restated Power Purchase Agreement, dated December 20, 2016, between The Kenya Power and Lighting Company Limited and OrPower 4 Inc., incorporated by reference to Exhibit 10.36 to Ormat Technologies, Inc.'s Annual Report on Form 10-K filed with the Securities and Exchange Commission on February 26, 2021.

10.20 Third Amendment of the Third Amended and Restated Power Purchase Agreement, dated February 19, 2021, between The Kenya Power and Lighting Company PLC and OrPower 4 Inc.

10.21 Note Purchase Agreement, dated September 23, 2011, among OFC 2 LLC, ORNI 15 LLC, ORNI 39 LLC, ORNI 42 LLC, and HSS II, LLC, as Issuers, OFC 2 Noteholder Trust, as Purchaser, John Hancock Life Insurance Company (U.S.A.), as Administrative Agent, and the United States Department of Energy (DOE), as Guarantor, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on November 4, 2011.

10.22 Finance Agreement, dated August 23, 2012, between OrPower 4, Inc., an indirect wholly-owned subsidiary of Ormat Technologies, Inc., and Overseas Private Investment Corporation, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on November 8, 2012.

10.23 Amendment No. 1 to the Finance Agreement, dated August 23, 2012, between OrPower 4, Inc., an indirect wholly-owned subsidiary of Ormat Technologies, Inc., and Overseas Private Investment Corporation, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on November 8, 2012.

10.24 Loan Agreement, dated March 22, 2018, by and among Ormat Technologies, Inc. and Migdal Insurance Company Ltd., Migdal's Makefet Pension and Provident Funds Ltd. and Yozma Pension Fund of Self Employed Ltd., incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on June 19, 2018.

10.25 First Addendum to Loan Agreement, dated March 25, 2019, by and among Ormat Technologies, Inc. and Migdal Insurance Company Ltd., Migdal Makefet Pension and Provident Funds Ltd. and Yozma Pension Fund of Self Employed Ltd., incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 8, 2019.

10.26 Second Addendum to Loan Agreement, dated April 13, 2020, between and among Ormat Technologies, Inc. and Migdal Insurance Company Ltd., Migdal Makefet Pension and Provident Funds Ltd. And Yozma Pension Fund of Self-Employed Ltd., incorporated by reference to Exhibit 10.2 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 6, 2020.

10.27 Finance Agreement, dated April 30, 2018 between Geotermica Platanares, S.A. DE C.V. and Overseas Private Investment Corporation incorporated by reference to Exhibit 10.2 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on June 19, 2018.

10.28 Amendment to Finance Agreement, dated October 17, 2018 between Geotermica Platanares, S.A. DE C.V. and Overseas Private Investment Corporation, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed on November 8, 2018.

10.29* Amended and Restated Employment Agreement, dated July 2, 2020, between Ormat Technologies, Inc., Ormat Systems, Ltd. and Doron Blachar incorporated by reference to Exhibit 10.1 and to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on July 6, 2020.

10.30 Commercial Cooperation Agreement, dated May 4, 2017, between Ormat Technologies, Inc. and ORIX Corporation, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on May 4, 2017.

10.31 Governance Agreement, dated May 4, 2017, between Ormat Technologies, Inc. and ORIX Corporation, incorporated by reference to Exhibit 10.2 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on May 4, 2017.

10.32 Registration Rights Agreement, dated May 4, 2017, between Ormat Technologies, Inc. and ORIX Corporation, incorporated by reference to Exhibit 10.3 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on May 4, 2017.

10.33 Registration Rights Agreement Amendment No. 1, dated November 16, 2022, between Ormat Technologies, Inc. and ORIX Corporation, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on November 18, 2022.

10.34 Governance Amendment Agreement, dated April 14, 2020, by and between Ormat Technologies, Inc. and ORIX Corporation, incorporated by reference to Exhibit 99.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on April 14, 2020.

10.35 Agreement for Purchase of Membership Interests, dated May 21, 2021, by and between TG Geothermal Portfolio, LLC and Deer Holdings, LLC, incorporated by reference to Exhibit .

10.36 Form of Capped Call Confirmation, incorporated by reference to Exhibit 10.1 to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on June 27, 2022.

10.37* Amended and Restated Employment Agreement, dated July 2, 2020, between Ormat Technologies, Inc., Ormat Systems, Ltd. and Doron Blachar incorporated by reference to Exhibit 10.1 and to Ormat Technologies, Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on July 6, 2020.

10.38* Employment Agreement, dated November 1, 2017, between Ormat Systems, Ltd. and Shlomi Argas, incorporated by reference to Exhibit 10.3 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 8, 2019.

10.39*	Employment Agreement, dated May 10, 2020, between Ormat Systems Ltd and Assaf Ginzburg, incorporated by reference to Exhibit 10.2 to Ormat Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 11, 2020.
10.40*	Employment Agreement, dated October 1, 2018, between Ormat Systems Ltd and Shimon Hatzir, incorporated by reference to Exhibit 10.4 to Ormat's Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 4, 2022.
10.41*	Employment Agreement, dated April 1, 2020, between Ormat Systems Ltd and Ofer Ben Yosef, incorporated by reference to Exhibit 10.5 to Ormat's Technologies, Inc.'s Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 4, 2022.
10.42*+	Employment Agreement dated February 21, 2023 beween Ormat Technologies, Inc. and Jessica Woelfel.
10.43*+	Ormat Technologies, Inc. Severance Plan.
10.44*+	Form of Notification Letter under Ormat Technologies, Inc. Change in Control Severance Plan (included as Exhibit [C] to the Exhibit 10.43)
21.1	Subsidiaries of Ormat Technologies, Inc., incorporated by reference to Exhibit 21.1 to the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission on February 25, 2022.
23.1+	Consent of Kesselman & Kesselman, Certified Public Accountants (Isr.), a member firm of PricewaterhouseCoopers International Limited, Independent Registered Public Accounting Firm.
31.1+	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2+	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1#	Certification of the Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2 #	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS+	Inline XBRL Instance Document.
101.SCH+	Inline XBRL Taxonomy Extension Schema Document.
101.CAL+	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF+	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB+	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE+	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104.1+	Cover Page Interactive Data File (Embedded within the Inline XBRL document and included in Exhibit 101).

* Management contract or compensatory plan in which directors and/or executive officers are eligible to participate.

\+ Filed herewith.

\# Furnished herewith.

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 report to be signed on its behalf by the undersigned, thereunto duly authorized.

ORMAT TECHNOLOGIES, INC.

By: /s/ Doron Blachar
Name: Doron Blachar
Title: Chief Executive Officer

Date: February 24, 2023

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Doron Blachar and Assaf Ginzburg, jointly and severally, his or her attorneys-in-fact, each with the power of substitution, for him or her in any and all capacities, to sign any amendments to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated on February 24, 2023.

Signature	Capacity	Date
/s/ Doron Blachar Doron Blachar	Chief Executive Officer (Principal Executive Officer)	February 24, 2023
/s/ Assaf Ginzburg Assaf Ginzburg	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	February 24, 2023
/s/ Isaac Angel Isaac Angel	Chairman of the Board of Directors	February 24, 2023
/s/Karin Corfee Karin Corfee	Director	February 24, 2023
/s/ David Granot David Granot	Director	February 24, 2023
/s/ Mike Nikkel Mike Nikkel	Director	February 24, 2023
/s/ Michal Marom Michal Marom	Director	February 24, 2023
/s/ Hidetake Takahashi Hidetake Takahashi	Director	February 24, 2023
/s/ Dafna Sharir Dafna Sharir	Director	February 24, 2023
/s/ Stanley B. Stern Stanley B. Stern	Director	February 24, 2023
/s/ Byron Wong Byron Wong	Director	February 24, 2023

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-250110) and Form S-8 (Nos. 333-181509, 333-224752 and 333-265432) of Ormat Technologies, Inc. of our report dated February 24, 2023 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ Kesselman & Kesselman
Certified Public Accountants (Isr.)
A member firm of PricewaterhouseCoopers International Limited
Tel Aviv, Israel
February 24, 2023

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15(d)-14(a), AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Doron Blachar, certify that:

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

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

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

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

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

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

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

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

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

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

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

By: /s/ Doron Blachar
Name: Doron Blachar
Title: Chief Executive Officer

Date: February 24, 2023

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15(d)-14(a), AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Assaf Ginzburg, certify that:

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

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

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

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

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

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

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

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

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

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

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

By: /s/ Assaf Ginzburg
Name: Assaf Ginzburg
Title: Chief Financial Officer

Date: February 24, 2023

Exhibit 32.1

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

I, Doron Blachar, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge, the Annual Report of Ormat Technologies, Inc. on Form 10-K for the year ended December 31, 2022 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition, results of operations and cash flows of Ormat Technologies, Inc. as of and for the periods presented in such Annual Report on Form 10-K. This written statement is being furnished to the Securities and Exchange Commission as an exhibit accompanying such Annual Report and shall not be deemed filed pursuant to the Securities Exchange Act of 1934.

By: /s/ Doron Blachar
Name: Doron Blachar
Title: Chief Executive Officer

Date: February 24, 2023

Exhibit 32.2

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

I, Assaf Ginzburg, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to the best of my knowledge, that the Annual Report of Ormat Technologies, Inc. on Form 10-K for the year ended December 31, 2022 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition, results of operations and cash flows of Ormat Technologies, Inc. as of and for the periods presented in such Annual Report on Form 10-K. This written statement is being furnished to the Securities and Exchange Commission as an exhibit accompanying such Annual Report and shall not be deemed filed pursuant to the Securities Exchange Act of 1934.

By: /s/ Assaf Ginzburg
Name: Assaf Ginzburg
Title: Chief Financial Officer

Date: February 24, 2023

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CORPORATE INFORMATION

Board of Directors

ISAAC ANGEL
Chairman of the Board
Former CEO of Ormat

KARIN CORFEE
Director
Founder and CEO of KC Strategies

DAVID GRANOT
Director
Former CEO of the First International Bank of Israel Ltd.

MICHAL MAROM
Director
Co-Founder and Former CFO of Linkury Ltd.

MIKE NIKKEL
Director
Senior Managing Director and Deputy Head of the Energy and Eco-Services Business Headquarters of ORIX

DAFNA SHARIR
Director
Consultant

STANLEY B. STERN
Lead Independent Director
Founder and Managing Partner of Alnitak Capital

HIDETAKE TAKAHASHI
Director
Managing Executive Officer and Head of Energy and Eco-Services Business Headquarters of ORIX

BYRON G. WONG
Director
Consultant

Senior Leadership

DORON BLACHAR
Chief Executive Officer

ASSAF GINZBURG
Chief Financial Officer

SHLOMI ARGAS
President and Head of Operations and Products

SHIMON HATZIR
Executive Vice President—Electricity Segment

OFER BEN YOSEF
Executive Vice President—Energy Storage and Business Development

JESSICA WOELFEL
General Counsel, Chief Compliance Officer, and Corporate Secretary

BOB SULLIVAN
Executive Vice President Business Development

LIZA TAVORI
Executive Vice President – Human Resources

Annual Meeting

The annual meeting of stockholders will be held virtually on May 9, 2023 at 10:00 a.m. EST. A formal notice of the meeting and proxy materials will be available to each shareholder at https://www.astproxyportal.com/ast/13766 and will be mailed to any shareholder who requests a printed copy.

Stock Listings

Ticker: ORA

The New York Stock Exchange

Tel Aviv Stock Exchange

Transfer Agent:

Stockholders wishing to update their address, transfer ownership of stock certificates, report lost certificates or inquire regarding other stock registration matters should contact:

AST

6201 15th Avenue,
Brooklyn, NY 11219

Contact Information

Information regarding Ormat Technologies, Inc. is available on our wesite:www.ormat.com

For additional information contact:

Ormat Technologies, Inc.

Investor Relations

investor.ormat.com

investor.ormat.com