NRG ENERGY, INC.
Form 10-K
February 28, 2019

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

x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the Fiscal Year ended December 31, 2018.

o TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the Transition period from to .

Commission file No. 001-15891

NRG Energy, Inc.
(Exact name of registrant as specified in its charter)

Delaware	41-1724239
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
804 Carnegie Center, Princeton, New Jersey	08540
(Address of principal executive offices)	(Zip Code)

(609) 524-4500
(Registrant's telephone number, including area code)

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

Title of Each Class	Name of Exchange on Which Registered
Common Stock, par value $0.01	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 x No o

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 o No x

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

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 x No o

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

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

Large accelerated filer x	Accelerated filer o	Non-accelerated filer o	Smaller reporting company o	Emerging growth company o

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. o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes o No x
As of the last business day of the most recently completed second fiscal quarter, the aggregate market value of the common stock of the registrant held by non-affiliates was approximately $7,964,294,696 based on the closing sale price of $30.70 as reported on the New York Stock Exchange.
Indicate the number of shares outstanding of each of the registrant's classes of common stock as of the latest practicable date.

Class	Outstanding at January 31, 2019
Common Stock, par value $0.01 per share	280,997,550

Documents Incorporated by Reference:
Portions of the Registrant's definitive Proxy Statement relating to its 2019 Annual Meeting of Stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K

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Glossary of Terms

When the following terms and abbreviations appear in the text of this report, they have the meanings indicated below:

2023 Term Loan Facility	The Company's $1.7 billion term loan facility due 2023, a component of the Senior Credit Facility
Adjusted EBITDA	Adjusted earnings before interest, taxes, depreciation and amortization
ARO	Asset Retirement Obligation
ASC	The FASB Accounting Standards Codification, which the FASB established as the source of authoritative GAAP
ASU	Accounting Standards Updates – updates to the ASC
Average realized prices	Volume-weighted average power prices, net of average fuel costs and reflecting the impact of settled hedges
Bankruptcy Code	Chapter 11 of Title 11 of the U.S. Bankruptcy Code
Bankruptcy Court	United States Bankruptcy Court for the Southern District of Texas, Houston Division
Baseload	Units expected to satisfy minimum baseload requirements of the system and produce electricity at an essentially constant rate and run continuously
BETM	Boston Energy Trading and Marketing LLC
BTU	British Thermal Unit
Business Solutions	NRG's business solutions group, which includes demand response, commodity sales, energy efficiency and energy management services
CAA	Clean Air Act
CAISO	California Independent System Operator
Carlsbad	Carlsbad Energy Center, a 528 MW natural gas-fired project located in Carlsbad, CA
CCF	Carbon Capture Facility
CDD	Cooling Degree Day
CDWR	California Department of Water Resources
CFTC	U.S. Commodity Futures Trading Commission
Chapter 11 Cases	Voluntary cases commenced by the GenOn Entities under the Bankruptcy Code in the Bankruptcy Court
C&I	Commercial, industrial and governmental/institutional
CES	Clean Energy Standard
Cleco	Cleco Corporate Holdings LLC
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalents
ComEd	Commonwealth Edison
Company	NRG Energy, Inc.
CPP	Clean Power Plan
CPUC	California Public Utilities Commission
CWA	Clean Water Act
D.C. Circuit	U.S. Court of Appeals for the District of Columbia Circuit
Distributed Solar	Solar power projects that primarily sell power to customers for usage on site, or are interconnected to sell power into a local distribution grid
DNREC	Delaware Department of Natural Resources and Environmental Control
Dominion	Dominion Resources, Inc.
DSI	Dry Sorbent Injection
DSU	Deferred Stock Unit
Economic gross margin	Sum of energy revenue, capacity revenue, retail revenue and other revenue, less cost of fuels and other cost of sales
EGU	Electric Generating Unit
Emani	European Mutual Association for Nuclear Insurance

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EME	Edison Mission Energy
EMAAC	Eastern Mid-Atlantic Area Council
Energy Plus Holdings	Energy Plus Holdings LLC
EPA	U.S. Environmental Protection Agency
EPC	Engineering, Procurement and Construction
EPSA	The Electric Power Supply Association
ERCOT	Electric Reliability Council of Texas, the Independent System Operator and the regional reliability coordinator of the various electricity systems within Texas
ESP	Electrostatic Precipitator
ESPP	NRG Energy, Inc. Amended and Restated Employee Stock Purchase Plan
ESPS	Existing Source Performance Standards
Exchange Act	The Securities Exchange Act of 1934, as amended
FASB	Financial Accounting Standards Board
FERC	Federal Energy Regulatory Commission
FGD	Flue gas desulfurization
FPA	Federal Power Act
Fresh Start	Reporting requirements as defined by ASC-852, Reorganizations
FTRs	Financial Transmission Rights
GAAP	Accounting principles generally accepted in the U.S.
GenConn	GenConn Energy LLC
GenOn	GenOn Energy, Inc.
GenOn Americas Generation	GenOn Americas Generation, LLC
GenOn Entities	GenOn and certain of its wholly owned subsidiaries, including GenOn Americas Generation, that filed voluntary petitions for relief under Chapter 11 of the Bankruptcy Code in the Bankruptcy Court on June 14, 2017
GenOn Mid-Atlantic	GenOn Mid-Atlantic, LLC and, except where the context indicates otherwise, its subsidiaries, which include the coal generation units at two generating facilities under operating leases
GHG	Greenhouse Gas
GIP	Global Infrastructure Partners
Green Mountain Energy	Green Mountain Energy Company
GW	Gigawatt
GWh	Gigawatt Hour
HAP	Hazardous Air Pollutant
HDD	Heating Degree Day
Heat Rate	A measure of thermal efficiency computed by dividing the total BTU content of the fuel burned by the resulting kWhs generated. Heat rates can be expressed as either gross or net heat rates, depending whether the electricity output measured is gross or net generation and is generally expressed as BTU per net kWh
HLBV	Hypothetical Liquidation at Book Value
HLW	High-level radioactive waste
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
Indexed Rate	An indexed rate means that the price of the electricity sold to the customer is tied to an underlying variable, or index, such as monthly closing of NYMEX natural gas
IPPNY	Independent Power Producers of New York
ISO	Independent System Operator, also referred to as RTOs
ISO-NE	ISO New England Inc.

ITC	Investment Tax Credit
kWh	Kilowatt-hour

LaGen	Louisiana Generating LLC
LIBOR	London Inter-Bank Offered Rate
LSE	Load Serving Entities
LTIPs	Collectively, the NRG LTIP and the NRG GenOn LTIP
LTSA	Long-Term Service Agreement
Mass Market	Residential and small commercial customers
MATS	Mercury and Air Toxics Standards promulgated by the EPA
MDth	Thousand Dekatherms
Merger	The merger completed on December 14, 2012 by NRG and GenOn pursuant to the Merger Agreement
Midwest Generation	Midwest Generation, LLC
MISO	Midcontinent Independent System Operator, Inc.
MMBtu	Million British Thermal Units
MSU	Market Stock Unit
MW	Megawatts
MWh	Saleable megawatt hour net of internal/parasitic load megawatt-hour
NAAQS	National Ambient Air Quality Standards
NEIL	Nuclear Electric Insurance Limited
NEPOOL	New England Power Pool
NERC	North American Electric Reliability Corporation
Net Capacity Factor	The net amount of electricity that a generating unit produces over a period of time divided by the net amount of electricity it could have produced if it had run at full power over that time period. The net amount of electricity produced is the total amount of electricity generated minus the amount of electricity used during generation
Net Exposure	Counterparty credit exposure to NRG, net of collateral
Net Generation	The net amount of electricity produced, expressed in kWhs or MWhs, that is the total amount of electricity generated (gross) minus the amount of electricity used during generation
NJBPU	New Jersey Board of Public Utilities
NOL	Net Operating Loss
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPNS	Normal Purchase Normal Sale
NQSO	Non-Qualified Stock Option
NRC	U.S. Nuclear Regulatory Commission
NRG	NRG Energy, Inc.
NRG GenOn LTIP	NRG 2010 Stock Plan for GenOn Employees (formerly the GenOn Energy, Inc. 2010 Omnibus Incentive Plan, which was assumed by NRG in connection with the Merger)
NRG LTIP	NRG Energy, Inc. Amended and Restated Long-Term Incentive Plan
NRG Yield, Inc.	NRG Yield, Inc., which changed it's name to Clearway energy, Inc. following the sale by NRG or NRG Yield and the Renewables Platform to GIP
Nuclear Decommissioning Trust Fund	NRG's nuclear decommissioning trust fund assets, which are for the Company's portion of the decommissioning of the STP, units 1 & 2
Nuclear Waste Policy Act	U.S. Nuclear Waste Policy Act of 1982
NYISO	New York Independent System Operator
NYMEX	New York Mercantile Exchange
NYSPSC	New York State Public Service Commission
OCI/OCL	Other Comprehensive Income/(Loss)
ORDC	Operating Reserve Demand Curve

PA PUC	Pennsylvania Public Utility Commission

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Peaking	Units expected to satisfy demand requirements during the periods of greatest or peak load on the system
PER	Peak Energy Rent
Petition Date	June 14, 2017
PG&E	PG&E Corporation (NYSE: PCG) and its primary operating subsidiary, Pacific Gas and Electric Company
Pipeline	Projects that range from identified lead to shortlisted with an offtake, and represents a lower level of execution certainty
PJM	PJM Interconnection, LLC
PM2.5	Particulate Matter that has a diameter of less than 2.5 micrometers
PPA	Power Purchase Agreement
PPM	Parts per million
PSU	Performance Stock Unit
PTC	Production Tax Credit
PUCT	Public Utility Commission of Texas
PURPA	Public Utility Regulatory Policies Act of 1978
RCRA	Resource Conservation and Recovery Act of 1976
Reliant Energy	Reliant Energy Retail Services, LLC
REMA	NRG REMA LLC, which leases a 100% interest in the Shawville generating facility and 16.7% and 16.5% interests in the Keystone and Conemaugh generating facilities, respectively
Renewables	Consist of the following projects retained by NRG: Agua, Ivanpah, Guam, NFL stadiums
Renewables Platform	The renewable operating and development platform sold to GIP with NRG's interest in NRG Yield.
Restructuring Support Agreement	Restructuring Support and Lock-Up Agreement, dated as of June 12, 2017 and as amended on October 2, 2017, by and among GenOn Energy, Inc., GenOn Americas Generation, LLC, and subsidiaries signatory thereto, NRG Energy, Inc. and the noteholders signatory thereto
Retail	Reporting segment that includes NRG's residential and small commercial businesses which go to market as Reliant, NRG and other brands owned by NRG, as well as Business Solutions
Revolving Credit Facility	The Company's $2.4 billion revolving credit facility, a component of the Senior Credit Facility, due 2021
RGGI	Regional Greenhouse Gas Initiative
RMR	Reliability Must-Run
ROFO	Right of First Offer
ROFO Agreement	Second Amended and Restated Right of First Offer Agreement by and between NRG Energy, Inc. and NRG Yield, Inc.
RPM	Reliability Pricing Model
RPS	Renewable Portfolio Standards
RPSU	Relative Performance Stock Unit
RSU	Restricted Stock Unit
RTO	Regional Transmission Organization
SCE	Southern California Edison Company
SCR	Selective Catalytic Reduction Control System
SDG&E	San Diego Gas & Electric
SEC	U.S. Securities and Exchange Commission
Securities Act	The Securities Act of 1933, as amended
Senior Credit Facility	NRG's senior secured credit facility, comprised of the Revolving Credit Facility and the 2023 Term Loan Facility Prior to June 30, 2016, the Company's senior secured facility, comprised of the Term Loan Facility and the Revolving Credit Facility. On June 30, 2016, the Company replaced the Senior

Credit Facility with the 2016 Senior Credit Facility

Senior Notes	As of December 31, 2018, NRG's $3.8 billion outstanding unsecured senior notes consisting of $733 million of 6.25% senior notes due 2024, $1.0 billion of the 7.25% senior notes due 2026, $1.23 billion of the 6.625% senior notes due 2027, and $821 million of 5.75% senior notes due 2028
Services Agreement	NRG provided GenOn with various management, personnel and other services, which include human resources, regulatory and public affairs, accounting, tax, legal, information systems, treasury, risk management, commercial operations, and asset management, as set forth in the services agreement with GenOn
Settlement Agreement	A settlement agreement and any other documents necessary to effectuate the settlement among NRG, GenOn, and certain holders of senior unsecured notes of GenOn Americas Generations and GenOn, and certain of GenOn's direct and indirect subsidiaries
SNF	Spent Nuclear Fuel
SO_2	Sulfur Dioxide
South Central Portfolio	NRG's South Central Portfolio, which owns and operates a 3,555 MW portfolio of generation assets consisting of 225 MW Bayou Cove, 430 MW Big Cajun-I, 1,461 MW Big Cajun-II, 1,263 MW Cottonwood and 176 MW Sterlington, and serves a customer base of cooperatives, municipalities and regional utilities under load contracts.
SPP	Solar Power Partners
S&P	Standard & Poor's
STP	South Texas Project — nuclear generating facility located near Bay City, Texas in which NRG owns a 44% interest
STPNOC	South Texas Project Nuclear Operating Company
Tax Act	The Tax Cuts and Jobs Act of 2017
Term Loan Facility	Prior to June 30, 2016, the Company's $2.0 billion term loan facility due 2018.
Texas Genco	Texas Genco LLC
TSA	Transportation Services Agreement
TSR	Total Shareholder Return
TWCC	Texas Westmoreland Coal Co.
TWh	Terawatt Hour
UPMC	University of Pittsburgh Medical Center
U.S.	United States of America
U.S. DOE	U.S. Department of Energy
Utility-Scale Solar	Solar power projects, typically 20 MW or greater in size (on an alternating current basis), that are interconnected into the transmission or distribution grid to sell power at a wholesale level
VaR	Value at Risk
VCP	Voluntary Clean-Up Program
VIE	Variable Interest Entity
WECC	Western Electricity Coordinating Council
ZECs	Zero Emissions Credits

PART I

Item 1 — Business

General

NRG Energy, Inc., or NRG or the Company, is an energy company built on dynamic retail brands with diverse generation assets. NRG brings the power of energy to consumers by producing, selling and delivering electricity and related products and services in major competitive power markets in the U.S. in a manner that delivers value to all of NRG's stakeholders. NRG is perfecting the integrated model by balancing retail load with generation supply within its deregulated markets, while evolving to a customer-driven business. The Company sells energy, services, and innovative, sustainable products and services directly to retail customers under the names "NRG" and "Reliant" and other brand names owned by NRG supported by approximately 23,000[(a)] MW of generation as of December 31, 2018. NRG was incorporated as a Delaware corporation on May 29, 1992.

Strategy

NRG's strategy is to maximize stockholder value through the safe production and sale of reliable power to its customers in the markets served by the Company, while positioning the Company to provide innovative solutions to the end-use energy consumer. This strategy is designed to enable the Company to optimize the integrated model to generate predictable cash flow, significantly strengthen earnings and cost competitiveness, and lower risk and volatility. Sustainability is an integral piece of NRG's strategy and ties directly to business success, reduced risks and brand value.

To effectuate the Company’s strategy, NRG is focused on: (i) serving the energy needs of end-use residential, commercial and industrial customers in competitive markets through multiple brands and channels with a variety of retail energy products and services differentiated by innovative features, premium service, sustainability, and loyalty/affinity programs; (ii) deploying innovative and renewable energy solutions for consumers within its retail businesses; (iii) excellence in operating performance of its existing assets including optimal hedging of generation assets and retail load operations; and (iv) engaging in a proactive capital allocation plan within the dictates of prudent balance sheet management.

Transformation Plan

NRG is well underway in executing its Transformation Plan. The Company expects to fully implement the Transformation Plan by the end of 2020 with a significant portion completed in 2018. The three-part, three-year plan is comprised of the following targets and the Company's achievements towards such targets are as follows:

Operations and Cost Excellence

Recurring cost savings and margin enhancement of $1,065 million, which consists of $590 million of cumulative cost savings, a $215 million net margin enhancement program, $50 million annual reduction in maintenance capital expenditures, and $210 million in permanent selling, general and administrative expense reduction associated with asset sales. The Company realized annual cost savings of $532 million and $32 million of margin enhancements during the year ended December 31, 2018 and is on track to realize $590 million of cost savings and $135 million of margin enhancements in 2019.

The Company expects to realize (i) $370 million of non-recurring working capital improvements through 2020 and (ii) approximately $290 million of one-time costs to achieve. By December 31, 2018, NRG has realized $333 million of non-recurring working capital improvements and $194 million of one-time costs to achieve, and expects to incur approximately $95 million of one-time costs to achieve in 2019.

Portfolio Optimization

Targeted and completed $3.0 billion of asset sale cash proceeds received through February 28, 2019.

Capital Structure and Allocation

As of December 31, 2018, the Company achieved the previously announced target of reducing consolidated corporate debt to 3.0x net debt / adjusted EBITDA[(b)] credit ratio on a pro forma basis that includes the South Central Portfolio sale proceeds. As of February 28, 2019, the Company completed $1.5 billion of share repurchases.

(a) excluding discontinued operations and held for sale
(b) adjusted EBITDA as defined per the Senior Credit Facility

Business Overview

As of December 31, 2018, the Company’s core businesses include (i) retail electricity and natural gas for residential, industrial and commercial consumers, including personal power solutions and Business Solutions, which includes C&I customers and other distributed and reliability products, and (ii) wholesale conventional generation primarily to support the retail business. The Company is committed to continuing to evaluate and streamline its generation portfolio to focus on locational value and supporting the retail business in each of the markets where the Company participates. In furtherance of this goal, during 2018, NRG divested non-core businesses which included, among others: (i) NRG Yield, Inc. and the Company's Renewables Platform, and (ii) the Company's South Central Portfolio. The Company previously had an ownership interest in GenOn Energy, Inc. which filed for bankruptcy on June 14, 2017. As a result of the bankruptcy filing, NRG determined it no longer controlled GenOn and deconsolidated GenOn and its subsidiaries for financial reporting purposes. On December 14, 2018, GenOn emerged from bankruptcy as a standalone company no longer owned by NRG.

Retail

Retail provides energy and related services to residential, industrial and commercial consumers through various brands and sales channels across the U.S. In 2018, Retail delivered approximately 67 TWhs of electricity and 11 MDth of natural gas and served approximately 3.1 million customers. Retail's results make it one of the largest competitive energy retailers in the U.S. As of the end of 2018, Retail has recurring electricity and/or natural gas sales in 19 U.S. states, the District of Columbia, and 2 provinces in Canada. Retail's brands, collectively, are the largest providers of electricity in Texas.

Residential and small commercial (Mass Market) consumers make purchase decisions based on a variety of factors, including price, customer service, brand, product choices and value-added features. These consumers purchase products through a variety of sales channels, including direct sales, call centers, websites, brokers and brick-and-mortar stores. Through its broad range of service offerings and value propositions, Retail is able to attract, retain, and increase the value of its customer relationships. Retail's brands are recognized for exemplary customer service, innovative smart energy and technology product offerings and environmentally friendly solutions.

Included in Retail is the Company's Business Solutions group, which includes demand response, commodity sales, energy efficiency and energy management solutions. An integrated provider of supply and distributed energy resources, Business Solutions focuses on distributed products and services as businesses seek greater reliability, cleaner power or other benefits that they cannot obtain from the grid. These solutions include system power, distributed generation, solar and wind products, carbon management and specialty services, backup generation, storage and distributed solar, demand response and energy efficiency and advisory services. In providing on-site energy solutions, the Company often benefits from its ability to supply energy products from its wholesale generation portfolio to commercial and industrial retail customers. In 2018, Business Solutions delivered approximately 21 TWhs of electricity and managed approximately 2,000 MWs of demand response positions across its portfolio.

Generation

The Company’s wholesale power generation business includes plant operations, commercial operations, EPC, asset management, energy services and other critical related functions.

The wholesale generation business is capital-intensive and commodity-driven with numerous industry participants that compete on the basis of the location of their plants, fuel mix, plant efficiency and reliability services. The Company owns a diversified power generation portfolio with approximately 23,000[(a)] MW of fossil fuel, nuclear and renewable generation capacity at 37 plants as of December 31, 2018. In addition, the Company operates approximately 8,200 MW of coal and natural gas generation at 17 plants on behalf of third parties as of December 31, 2018. The Company's power generation assets are diversified by fuel-type, dispatch level and region, which helps mitigate the risks associated with fuel price volatility and market demand cycles. NRG's U.S. baseload and intermediate facilities provide the Company with a significant source of cash flow. Many of NRG's generation facilities are located near population centers, which often translates into higher revenue. Additionally, NRG's peaking facilities provide opportunities to capture significant upside potential during periods of high demand, which typically drive higher energy prices.

(a) excluding discontinued operations and held for sale

Wholesale power generation is a regional business that is currently highly fragmented and diverse in terms of industry structure. As such, there is a wide variation in terms of the capabilities, resources, nature and identities of the companies the Company competes with depending on the market. Competitors include regulated utilities, municipalities, cooperatives, other independent power producers, and power marketers or trading companies, including those owned by financial institutions. Many of the Company's generation assets, however, are located within densely populated areas that tend to have higher wholesale pricing as a result of relatively favorable local supply-demand balance. The Company believes that its extensive generation portfolio provides asset optimization opportunities. NRG continuously evaluates opportunities for development of new generation, on both a merchant and contracted basis.

NRG Operations

The NRG businesses described above are supported through the NRG operational infrastructure, which begins with the Company’s asset fleet and the associated commercial and retail operations. The images below illustrate NRG's U.S. power generation, net capacity and retail capabilities as of December 31, 2018, excluding discontinued operations:

The following table summarizes NRG's global generation portfolio as of December 31, 2018:

	Global Generation Portfolio[a][b][c] (In MW) Generation			
Generation Type	Texas[f]	East/West[d][e]	Other	Total Global
Natural gas	4,739	5,248	—	9,987
Coal	4,174	3,745	—	7,919
Oil	—	3,621	—	3,621
Nuclear	1,126	—	—	1,126
Wind	—	75	—	75
Utility Scale Solar	—	322	—	322
Battery Storage & Distributed Solar	2	—	60	62
Total generation capacity	10,041	13,011	60	23,112

(a) All Utility Scale Solar and Distributed Solar facilities are described in MW on an alternating current basis. MW figures provided represent nominal summer net MW capacity of power generated as adjusted for the Company's owned or leased interest excluding capacity from inactive/mothballed units
(b) The NRG Yield Inc. and the Renewables Platform businesses, which represented 3,428 MW of global generation, were sold on August 31, 2018
(c) Excludes the South Central Portfolio, except for Cottonwood, which was sold on February 4, 2019, as well as the 528 MW natural gas-fired project in Carlsbad, California that was sold on February 27, 2019
(d) Includes the 1,263 MW Cottonwood facility that was sold to Cleco on February 4, 2019, which the Company is leasing until 2025
(e) Includes International and Renewables
(f) Does not include plants outside of the ERCOT market or the Sherbino wind farm, which are included in East/West

The Company has the advantage of being able to supply its retail businesses with its own generation, which can reduce the need to sell and buy power from other institutions and intermediaries, resulting in lower transaction costs and credit exposures. This combination of generation and retail allows for a reduction in actual and contingent collateral, through offsetting transactions and by reducing the need to hedge the retail power supply through third parties.
The generation and retail combination also provides stability in cash flows, as changes in commodity prices generally have offsetting impacts between the two businesses. This offsetting nature, in relation to changes in market prices, is an integral part of NRG's goal of providing a reliable source of future cash flow for the Company.
NRG's portfolio diversification and commercial operations hedging strategy provides the Company with reliable future cash flows. NRG has hedged a portion of its coal and nuclear capacity with decreasing hedge levels through 2022. In addition, NRG's cleared capacity revenues not only enhance the reliability of future cash flows but are not correlated to natural gas prices during the contracted period. As of December 31, 2018, the Company had purchased fuel forward under fixed price contracts, with contractually-specified price escalators, for approximately 68% of its expected coal requirement from 2019 to 2020. The Company enters into additional hedges when it believes market conditions are favorable.

Commercial Operations Overview
NRG seeks to maximize profitability and manage cash flow volatility through the marketing, trading and sale of energy, capacity and ancillary services into spot, intermediate and long-term markets and through the active management and trading of transmission rights, emissions allowances, renewable energy credits, fuel supplies and transportation-related services. The Company's principal objectives are the realization of the full market value of its overall portfolio, including the capture of its extrinsic value, the management and mitigation of commodity market risk and the reduction of cash flow volatility over time.

NRG enters into supply contracts, power sales and hedging arrangements via a wide range of products and contracts, including PPAs, fuel supply contracts, capacity auctions, natural gas derivative instruments and other financial instruments. In addition, because changes in power prices in the markets where NRG operates are generally correlated to changes in natural gas prices, NRG uses hedging strategies that may include power and natural gas forward purchases and sales contracts to manage the commodity price risk. The objective of these hedging strategies is to stabilize the cash flow generated by NRG's overall portfolio.

In addition to power purchases and sales and hedging arrangements, NRG trades electric power, natural gas and related commodity and financial products, including forwards, futures, options and swaps. The Company seeks to generate profits from volatility in the price of electricity, capacity, fuels and transmission congestion by buying and selling contracts in wholesale markets under guidelines approved by the Company's risk management committee.

Retail Operations

NRG's retail businesses sell electricity to residential, commercial and industrial consumers at either fixed, indexed or variable prices. Residential and smaller commercial consumers typically contract for terms ranging from one month to five years while industrial contracts are often between one year and five years in length. In 2018, NRG's retail businesses sold approximately 67 TWhs of electricity and 11 MDth of natural gas. In any given year, the quantity of TWhs and MDth sold can be affected by weather, economic conditions and competition. The wholesale supply is typically purchased as the anticipated load is contracted from a combination of NRG's wholesale portfolio and other third parties. The ability to choose supply from the market or the Company's portfolio allows for an optimal combination to support and stabilize retail margins.

Capacity and Other Contracted Revenue Sources

NRG's revenues and cash flows benefit from capacity/demand payments and other contracted revenue sources, originating from market clearing capacity prices, Resource Adequacy contracts, tolling arrangements and other long-term contractual arrangements:

Capacity auctions — The Company's largest sources of capacity revenues are capacity auctions in PJM and ISO-NE. Both PJM and ISO-NE operate a pay-for-performance model where capacity payments are modified based on real-time performance, where NRG's actual revenues will be the combination of revenues based on the cleared auction MWs plus the net of any over- and under-performance of NRG's fleet.

2021/2022 PJM Auction Results — On May 23, 2018, PJM announced the results of its 2021/2022 base residual auction. NRG cleared approximately 4,619 MW of Capacity Performance product for the generation fleet. NRG's expected capacity revenues from the base residual auction for the 2021/2022 delivery year are approximately $322 million. The table below provides a detailed description of NRG’s 2021/2022 base residual auction results from May 23, 2018:

Zone	Generation Cleared Capacity (MW)	Price ($/MW-day)
COMED	3,995	$ 195.55
EMAAC	552	$ 165.73
PEPCO	72	$ 140.00
Total	4,619	

NRG through its demand response business received a capacity award of 3,194 MWs at a volume weighted average price of $155.16 per MW-day, or $181 million of revenue, and pays out a portion of these revenues to our customers reflected as cost of sales.

2022/2023 ISO-NE Auction Results - On February 6, 2019 ISO-NE announced the results of its 2022/2023 forward capacity auction. NRG cleared 1,517 MW of capacity. NRG's expected capacity revenues from the auction for the 2022/2023 delivery year are approximately $69 million.

Resource adequacy and bilateral contracts — In California, there is a resource adequacy requirement which is primarily satisfied through bilateral contracts. Such bilateral contracts are typically short-term resource adequacy contracts. When bilateral contracting does not satisfy the resource adequacy need, such shortfalls can be addressed through procurement tools administered by the CAISO, including the capacity procurement mechanism or reliability must-run contracts.

Bilateral contracts — The Company enters into physical power bilateral contracts for the sale of energy from our generation fleet as part of the Company's portfolio optimization strategy. Counterparties to the contracts are either third parties or our Retail segment. The Company primarily sells physical capacity forward through bilateral contracts for our New York assets. To the extent NRG is not able to enter into a physical bilateral contract, NRG will sell the remaining capacity into the NYISO six month strip, monthly or spot auctions.

Fuel Supply and Transportation

NRG's fuel requirements consist of various forms of fossil fuel (including coal, natural gas and oil) and nuclear fuel. The prices of fossil fuels are highly volatile. The Company obtains its fossil fuels from multiple suppliers and through multiple transporters. Although availability is generally not an issue, localized shortages, transportation availability, delays arising from extreme weather conditions and supplier financial stability issues can and do occur. The preceding factors related to the sources and availability of raw materials are fairly uniform across the Company's businesses and fuel products used.

Coal — The Company believes it is adequately hedged, using forward coal supply agreements, for its domestic coal consumption for 2019. NRG actively manages its coal requirements based on forecasted generation, market volatility and its inventory on site. As of December 31, 2018, NRG had purchased forward contracts to provide fuel for approximately 68% of the Company's expected requirements from 2019 through 2020. NRG purchased approximately 23 million tons of coal in 2018, almost all of which was Powder River Basin coal. For fuel transport, NRG has entered into various rail and barge transportation and rail car lease agreements with varying tenures that provide for most of the Company's transportation requirements of Powder River Basin coal for the next 2 years.

The following table shows the percentage of the Company's coal requirements from 2019 through 2020 that have been purchased forward as of December 31, 2018:

	Percentage of Company's Requirement
2019	100 %
2020	36 %

Natural Gas — NRG operates a fleet of mid-merit and peaking natural gas plants across all its U.S. wholesale regions. Fuel needs are managed on a spot basis, especially for peaking assets, as the Company does not believe it is prudent to forward purchase natural gas for these types of units, the dispatch of which is highly unpredictable. The Company contracts for natural gas storage services as well as natural gas transportation services to deliver natural gas when needed.

Nuclear Fuel — STP's owners satisfy their fuel supply requirements by: (i) acquiring uranium concentrates and contracting for conversion of the uranium concentrates into uranium hexafluoride; (ii) contracting for enrichment of uranium hexafluoride; and (iii) contracting for fabrication of nuclear fuel assemblies. Through its proportionate participation in STPNOC, which is the NRC-licensed operator of STP and responsible for all aspects of fuel procurement, NRG is party to a number of long-term forward purchase contracts with many of the world's largest suppliers covering STP's requirements for uranium concentrates with only approximately 25% of STP's requirements outstanding for the duration of the original operating license. Similarly, NRG is party to long-term contracts to procure STP's requirements for conversion and enrichment services and fuel fabrication for the life of the operating license. Since the operating license was renewed for another 20 years in September 2017, STPNOC has begun to review a second phase of fuel purchasing.

Operational Statistics

Retail

The following are industry statistics for the Company's customer count, load and economic gross margin per MWh:

	Years ended December 31,		
	2018	2017	2016
Sales volumes (in GWh)			
Mass electricity - Texas	37,846	36,169	35,102
Mass electricity - All other regions	7,968	6,221	6,764
C&I electricity - Texas	20,192	19,586	17,540
C&I electricity - All other regions	984	814	1,366
Total Load	66,990	62,790	60,772
Customer count - Electricity (in thousands)			
Texas			
Average Retail Mass	2,176	2,139	2,058
Ending Retail Mass	2,291	2,159	2,102
All other regions			
Average Retail Mass	790	675	679
Ending Retail Mass	903	673	671
Customer count - Natural gas (in thousands)			
Average Retail Mass	64	11	8
Ending Retail Mass	99	15	9
Gross margin and economic gross margin			
Gross margin (in millions)	$2,055	$1,778	$2,006
Economic gross margin (in millions)	1,802	1,602	1,649
Gross margin per MWh	30.68	28.32	33.01
Economic gross margin per MWh	26.91	25.51	27.13
Customer contract mix			
Term	65 %	70 %	70 %
Variable	25 %	22 %	23 %
Indexed	10 %	8 %	7 %
	100 %	100 %	100 %

Generation

The following are industry statistics for the Company's fossil and nuclear plants, as defined by the NERC, and are more fully described below:

Annual Equivalent Availability Factor, or EAF — Measures the percentage of maximum generation available over time as the fraction of net maximum generation that could be provided over a defined period of time after all types of outages and deratings, including seasonal deratings, are taken into account.

Net Heat Rate — The net heat rate represents the total amount of fuel in BTU required to generate one net kWh provided.

Net Capacity Factor — The net amount of electricity that a generating unit produces over a period of time divided by the net amount of electricity it could have produced if it had run at full power over that time period. The net amount of electricity produced is the total amount of electricity generated minus the amount of electricity used during generation.

The tables below present these performance metrics for the Company's global power generation portfolio, including leased facilities and those accounted for through equity method investments, for the years ended December 31, 2018 and 2017:

	Year Ended December 31, 2018				
			Fossil and Nuclear Plants [a]		
	Net Owned Capacity (MW)	Net Generation (MWh) (In thousands) [a]	Annual Average Equivalent Availability Factor	Net Heat Rate BTU/kWh	Net Capacity Factor
Generation					
Texas	10,161	38,214	85.2%	10,423	44.7 %
East/West/Other [b]	13,037	21,089	82.8%	9,711	17.8 %
Other [c]	60				

	Year Ended December 31, 2017				
			Fossil and Nuclear Plants [a]		
	Net Owned Capacity (MW)	Net Generation (MWh) (In thousands) [a]	Annual Average Equivalent Availability Factor	Net Heat Rate BTU/kWh	Net Capacity Factor
Generation					
Texas	10,159	38,694	90.4%	10,490	45.0 %
East/West/Other [b]	14,594	21,338	84.7%	9,738	16.4 %
Other [c]	114				

(a) Net generation excludes equity method investments

(b) Includes International, NRG renewable assets, Sherbino and the 1,263 MW Cottonwood facility, which NRG will lease back

(c) The net capacity figure within "Other" includes the aggregate production capacity of installed and activated residential solar energy systems

The generation performance by region for the three years ended December 31, 2018, 2017 and 2016, is shown below:

	Net Generation		
	2018	2017	2016
	(In thousands of MWh)		
Generation			
Texas			
Coal	24,781	24,757	21,738
Gas	4,415	4,428	6,379

Nuclear [(a)]	9,018	9,509	9,559
Total Texas	38,214	38,694	37,676
East/West			
Coal	7,965	8,403	9,931
Oil	544	319	318
Gas	11,797	10,949	11,671
Renewables	783	1,667	1,828
Total East/West	21,089	21,338	23,748

(a) MWh information reflects the Company's undivided interest in total MWh generated by STP

Greenhouse Gas Emissions — NRG emits CO_2 and small quantities of other GHGs (0.6% of total) when generating electricity at a majority of its facilities. The graphs presented below illustrate NRG's domestic emissions of CO_{2e} for the 2014 through 2018 period. A significant majority (>99%) of NRG's emission sources are subject to federal (U.S. EPA) GHG reporting requirements programs. From 2014 to 2018, the Company's CO_{2e} emissions decreased from 72 million metric tons to 46 million metric tons, representing a 36% reduction. The primary factor leading to the decreased emissions include reductions in fleet net generation due to a market-driven shift from coal as a primary fuel to natural gas. The Company's goal is to reduce CO_{2e} emissions by 50% by 2030, and 90% by 2050, using 2014 as a baseline.

As of December 31, 2018, less than 25% of the Company's consolidated operating revenues were derived from coal-fired operating assets.

The effects from federal, regional or state regulation of GHGs on the Company's financial performance will depend on a number of factors, including the outcome of the legal challenges and actions of the current U.S. presidential administration.

Segment Review

The Company's segment structure reflects how management currently makes financial decisions and allocates resources. The Company's businesses are segregated as follows: Retail, which includes Mass customers and Business Solutions, which includes C&I customers and other distributed and reliability products; and Generation, which includes all power plant activities, domestic and international, as well as renewables. Intersegment sales are accounted for at market. The Company has recast data from prior periods to reflect changes in reportable segments to conform to the current year presentation.

As further described in Note 3, Acquisitions, Discontinued Operations and Dispositions, the Company is treating the following businesses as discontinued operations, which have been recast to present in the corporate segment:

•South Central Portfolio
•NRG Yield, Inc. and its Renewables Platform
•Carlsbad
•GenOn

Revenues

The following table contains a summary of NRG's operating revenues by segment for the years ended December 31, 2018, 2017 and 2016, as discussed in Item 15 — Note 17, Segment Reporting, to the consolidated financial statements. Refer to that footnote for additional financial information about NRG's business segments including a profit measure and total assets. In addition, refer to Item 2 — Properties, to the consolidated financial statements for information about facilities in each of NRG's business segments.

	Year Ended December 31, 2018						
	Energy Revenues	Capacity Revenues	Retail Revenues	Mark-to-Market Activities	Contract Amortization	Other Revenues[a]	Total Operating Revenues[b]
	(In millions)						
Generation	$2,677	$ 670	$ —	$ (202)	$ —	$ 287	$ 3,432
Retail	—	—	7,110	(7)	—	—	7,103
Corporate and Eliminations [b]	(1,129)	—	(5)	79	—	(2)	(1,057)
Total	$1,548	$ 670	$ 7,105	$ (130)	$ —	$ 285	$ 9,478

(a) Consists operation and maintenance revenues and unrealized trading activities, primarily at BETM (Generation segment)

(b) Energy revenues include inter-segment sales primarily between Generation and Retail

	Year Ended December 31, 2017						
	Energy Revenues	Capacity Revenues	Retail Revenues	Mark-to-Market Activities	Contract Amortization	Other Revenues[c]	Total Operating Revenues[d]
	(In millions)						
Generation	$2,725	$ 618	$ —	$ 37	$ —	$ 235	$ 3,615
Retail	—	—	6,374	(4)	(1)	—	6,369
Corporate and Eliminations [d]	(1,089)	(6)	4	219	—	(38)	(910)
Total	$1,636	$ 612	$ 6,378	$ 252	$ (1)	$ 197	$ 9,074

(c) Consists of operation and maintenance revenues and energy service revenues, primarily at BETM (Generation segment)

(d) Energy revenues include inter-segment sales primarily between Generation and Retail

	Year Ended December 31, 2016						
	Energy Revenues	Capacity Revenues	Retail Revenues	Mark-to-Market Activities	Contract Amortization	Other Revenues[e]	Total Operating Revenues[f]
	(In millions)						
Generation	$3,243	$ 642	$ —	$ (565)	$ —	$ 313	$ 3,633

Retail	—	—	6,332	(1)	(1)	—	6,330
Corporate and Eliminations[f]	(974)	(5)	36	(70)	—	(35)	(1,048)
Total	$2,269	$ 637	$ 6,368	$ (636)	$ (1)	$ 278	$ 8,915

(e) Consists of operation and maintenance revenues and energy service revenues, primarily at BETM (Generation segment)

(f) Energy revenues include inter-segment sales primarily between Generation and Retail

Seasonality and Price Volatility

Annual and quarterly operating results of the Company's wholesale power generation segments can be significantly affected by weather and energy commodity price volatility. Significant other events, such as the demand for natural gas, interruptions in fuel supply infrastructure and relative levels of hydroelectric capacity can increase seasonal fuel and power price volatility. The preceding factors related to seasonality and price volatility are fairly uniform across the Company's wholesale generation business segments.

The sale of electric power to retail customers is also a seasonal business with the demand for power generally peaking during the summer months. As a result, net working capital requirements for the Company's retail operations generally increase during summer months along with the higher revenues, and then decline during off-peak months. Weather may impact operating results and extreme weather conditions could materially affect results of operations. The rates charged to retail customers may be impacted by fluctuations in total power prices and market dynamics like the price of natural gas, transmission constraints, competitor actions, and changes in market heat rates.

Market Framework

Retail

NRG's retail businesses sell energy and related services as well as portable power and battery solutions to customers across the country. In most of the states that have introduced retail consumer choice, NRG's retail businesses competitively offer retail power, natural gas, portable power and other value-enhancing services to end-use customers. Each retail choice state establishes its own retail competition laws and regulations, and the specific operational, licensing, and compliance requirements vary on a state-by-state basis. In the East markets, incumbent utilities currently provide default service and as a result typically serve a majority of residential customers. In Texas, NRG’s retail business activities are subject to standards and regulations adopted by the PUCT and ERCOT, including the requirement for retailers to be certified by the PUCT in order to contract with end-users to sell electricity. A majority of the retail load is in the ERCOT market region and is served by competitive retail suppliers, except certain areas that are served by municipal utilities and electric cooperatives that have not opted into competitive choice. Regulated terms and conditions of default service, as well as any movement to replace default service with competitive services, as is done in ERCOT, can affect customer participation in retail competition. The attractiveness of NRG's retail offerings in each state may be impacted by the rules, regulations, market structure and communication requirements from public utility commissions in each state across the country.

Wholesale

NRG's fleet operates in organized energy markets, known as RTOs or ISOs. Each organized market administers day-ahead and real-time centralized bid-based energy and ancillary services markets pursuant to tariffs approved by FERC, or in the case of ERCOT, market rules approved by the PUCT. These tariffs and rules dictate how the energy markets operate, how market participants make bilateral sales with one another, and how entities with market-based rates are compensated. Established prices reflect the value of energy at the specific location and time it is delivered, which is known as the Locational Marginal Price, or LMP. Each market is subject to market mitigation measures designed to limit the exercise of locational market power. These market structures facilitate NRG's sale of power and capacity products at market-based rates.

Other than ERCOT, each of the ISO regions also operates a capacity or resource adequacy market that provides an opportunity for generating and demand response resources to earn revenues to offset their fixed costs that are not recovered in the energy and ancillary services markets. The ISOs are also responsible for transmission planning and operations.

Texas

NRG's Texas wholesale power generation business is located in the ERCOT market. The ERCOT market is one of the nation's largest and historically fastest growing power markets. ERCOT is an energy- only market, and has implemented market rule changes referred to as the Operating Reserve Demand Curve (ORDC) to provide pricing more reflective of higher energy value when operating reserves are scarce or constrained. The PUCT directed the implementation of the ORDC in 2014 to act as the primary scarcity pricing mechanism and has modified it several times since then, including as recently as January 2019.

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East/West

NRG's generation and demand response assets located in the East region of the U.S. are within the control areas of ISO-NE, MISO, NYISO and PJM. Each of the market regions in the East region provides for robust competition in the day-ahead and real-time energy and ancillary services markets. Additionally, the East region receives a significant portion of its revenues from capacity markets in ISO-NE, MISO, NYISO and PJM. PJM and ISO-NE use a three-year forward capacity auction, while NYISO uses a month-ahead capacity auction. MISO has an annual auction, known as the Planning Resource Auction. Capacity market prices are sensitive to design parameters, as well as additions of new capacity. Both ISO-NE and PJM operate a pay-for-performance model where capacity payments are modified based on real-time generator performance. In such markets, NRG's actual revenues will be the combination of cleared auction prices times the quantity of MWs cleared, plus the net of any over-performance "bonus payments" and any under-performance charges. In both markets, bidding rules allow for the incorporation of a risk premium into generator bids.

In the West region, NRG operates a fleet of natural gas fired facilities located entirely within the CAISO footprint. The CAISO operates day-ahead and real-time locational markets for energy and ancillary services, while managing congestion primarily through nodal prices. The CAISO system facilitates NRG's sale of power, ancillary services and capacity products at market-based rates, either within the CAISO's centralized energy and ancillary service markets or bilaterally pursuant to tolling arrangements or other capacity sales with California's LSEs. The CPUC also determines capacity requirements for LSEs and for specified local areas utilizing inputs from the CAISO. Both the CAISO and CPUC rules require LSEs to contract with sufficient generation resources in order to maintain minimum levels of generation within defined local areas. Additionally, the CAISO has independent authority to contract with needed resources under certain circumstances, typically either when LSEs have failed to procure sufficient resources, or system conditions change unexpectedly.

The Company's Agua Caliente and Ivanpah projects are party to PPAs with PG&E. Both projects have project financing with the U.S. DOE, and Agua Caliente Borrower 1 LLC, along with Agua Caliente Borrower 2 LLC, which is owned by Clearway Energy Inc., are party to a back leverage financing related to the Agua Caliente project. On January 29, 2019, PG&E Corp. and subsidiary utility PG&E filed for Chapter 11 bankruptcy protection. For further discussion see Item 1 - Energy Regulatory Matters, Note 11 - Debt and Capital Leases and Note 15 - Investments Accounted for by the Equity Method and Variable Interest Entities.

Energy Regulatory Matters

As owners of power plants and participants in retail and wholesale energy markets, certain NRG entities are subject to regulation by various federal and state government agencies. These include the CFTC, FERC, NRC and the PUCT, as well as other public utility commissions in certain states where NRG's generating or distributed generation assets are located. In addition, NRG is subject to the market rules, procedures and protocols of the various ISO and RTO markets in which it participates. Likewise, certain NRG entities participating in the retail markets are subject to rules and regulations established by the states in which NRG entities are licensed to sell at retail. NRG must also comply with the mandatory reliability requirements imposed by NERC and the regional reliability entities in the regions where NRG operates.

NRG's operations within the ERCOT footprint are not subject to rate regulation by FERC, as they are deemed to operate solely within the ERCOT market and not in interstate commerce. These operations are subject to regulation by the PUCT, as well as to regulation by the NRC with respect to NRG's ownership interest in STP.

Federal Energy Regulation

Complaints Ahead of PG&E Corporation Bankruptcy Filing — On January 18, 2019, NextEra filed a petition for declaratory order requesting that FERC assert its jurisdiction over PG&E's wholesale contracts prior to PG&E's formal bankruptcy filing. Exelon Corporation and EDF Renewables filed similar complaints. On January 25, 2019, FERC found that it and the bankruptcy courts have concurrent jurisdiction to review and address the disposition of wholesale power contracts. The matter is in litigation.

State Energy Regulation

State Out-Of-Market Subsidy Proposals — NRG has opposed efforts to provide out-of-market subsidies and intends to continue opposing them in the future. NRG has petitioned the Supreme Court of the United States to hear cases from the Seventh and Second Circuit Courts regarding ZECs in Illinois and New York, respectively. NRG is also currently

participating in the NJBPU's proceeding regarding ZECs, and is involved in the informational meetings that the PA PUC is holding regarding the nuclear subsidy issue.

Regional Regulatory Developments

NRG is affected by rule/tariff changes that occur in the ISO regions. For further discussion on regulatory developments see Item 15 — Note 22, Regulatory Matters, to the Consolidated Financial Statements.

PJM

Capacity Market Reforms Filing — FERC is considering various proposals to reform the PJM capacity market, including whether to accommodate state subsidies in the wholesale market or to mitigate subsidized resources, along with other changes. As part of this process, FERC established a procedural timetable and delayed the 2019 Base Residual Auction until August 2019. Decisions around harmonizing federal and state policy initiatives is a critical factor for setting future prices.

New England

ISO-NE Retention of Mystic Units — ISO-NE is currently engaged in extensive litigation at FERC regarding how to ensure system reliability in a gas-constrained system. In particular, FERC has approved ISO-NE's proposal to retain units at the Mystic generating station, which utilizes liquefied natural gas for fuel security. Among other things, FERC specifically will allow resources retained for fuel security to enter a zero bid in the Forward Capacity Auction. On January 2, 2019, multiple parties filed for rehearing. The motions for rehearing are pending at FERC. The outcome of this matter will potentially affect future capacity market prices.

New York

Independent Power Producers of New York Complaint — A variety of generators have requested that FERC address the market impacts of out-of-market payments to existing generation in the NYISO. This request was prompted by the ZEC program initiated by the NYSPSC in 2013, with various requests for FERC to act since. The generators asked FERC to direct the NYISO to require that capacity from existing generation resources that would have exited the market but for out-of-market payments be mitigated. Failure to implement buyer-side mitigation measures could result in uneconomic entry, which artificially decreases capacity prices below competitive market levels.

New York Public Service Commission Retail Energy Market Proceedings — On February 23, 2016, the NYSPSC issued what it refers to as its "Retail Reset" order. Among other things, the Reset Order placed a price cap on energy supply offers and imposed burdensome new regulations on customers. Various parties have challenged the NYPSC's authority to regulate prices charged by competitive suppliers, and that litigation is ongoing.

Texas

ORDC Reforms — In January 2019, the PUCT directed ERCOT to implement changes to its scarcity pricing structure, known as the ORDC, which is designed to increase the likelihood of scarcity pricing to support existing generation and new investment. The PUCT directed ORDC reforms to be implemented in two phases of gradually increasing magnitude. The first phase will become effective prior to the summer of 2019 and the second phase will become effective prior to the summer of 2020.

Environmental Regulatory Matters

NRG is subject to numerous environmental laws in the development, construction, ownership and operation of projects. These laws generally require that governmental permits and approvals be obtained before construction and during operation of power plants. Federal and state environmental laws historically have become more stringent over time. Future laws may require the addition of emissions controls or other environmental controls or impose restrictions on our operations, which could affect the Company's operations. Complying with environmental laws often involves significant capital and operating expenses, as well as occasionally curtailing operations. NRG decides to invest capital for environmental controls based on the relative certainty of the requirements, an evaluation of compliance options, and the expected economic returns on capital.

A number of regulations that may affect the Company are under review by the EPA, including ESPS for GHGs, ash disposal requirements, NAAQS revisions and implementation and effluent limitation guidelines. NRG will evaluate the impact of these regulations as they are revised but cannot fully predict the impact of each until anticipated revisions and legal challenges are resolved.

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Air

The CAA and the resulting regulations (as well as similar state and local requirements) have the potential to affect air emissions, operating practices and pollution control equipment required at power plants. Under the CAA, the EPA sets NAAQS for certain pollutants including SO_2, ozone, and PM2.5. Many of the Company's facilities are located in or near areas that are classified by the EPA as not achieving certain NAAQS (non-attainment areas). The relevant NAAQS have become more stringent. The Company maintains a comprehensive compliance strategy to address continuing and new requirements. Complying with increasingly stringent air regulations could require the installation of additional emissions control equipment at some NRG facilities or retiring of units if installing such controls is not economic. Significant changes to air regulatory programs affecting the Company are described below.

MATS — In 2012, the EPA promulgated standards (the MATS rule) to control emissions of HAPs from coal and oil-fired electric generating units. The rule established limits for mercury, non-mercury metals, certain organics and acid gases, which had to be met beginning in April 2015. In December 2018, the EPA proposed a finding that regulating HAPs was not "appropriate and necessary" because the costs far exceed the benefits. Nonetheless, the EPA proposed keeping the substantive requirements of the MATS rule. While NRG cannot predict the final outcome of this rulemaking, NRG believes that because it has already invested in pollution controls and cleaner technologies, the fleet is well-positioned to comply with the MATS rule.

Clean Power Plan — The attention in recent years on GHG emissions has resulted in federal regulations and state legislative and regulatory action. In October 2015, the EPA finalized the CPP, addressing GHG emissions from existing EGUs. On February 9, 2016, the U.S. Supreme Court stayed the CPP. The D.C. Circuit heard oral argument on the legal challenges to the CPP in September 2016. At the EPA's request, the D.C. Circuit agreed on April 28, 2017 to hold the case in abeyance. On October 16, 2017, the EPA proposed a rule to repeal the CPP. In August 2018, the EPA published the proposed Affordable Clean Energy, or ACE, rule to replace the CPP. The ACE rule proposes that the EPA would provide guidelines for states to in turn require heat rate improvements at coal-fired EGUs to reduce GHG emissions.

Byproducts, Wastes, Hazardous Materials and Contamination

In April 2015, the EPA finalized the rule regulating byproducts of coal combustion (e.g., ash and gypsum) as solid wastes under the RCRA. In September 2017, the EPA agreed to reconsider the rule. On July 30, 2018, the EPA promulgated a rule that amends the existing ash rule by extending some of the deadlines and providing more flexibility for compliance. On August 21, 2018, the D.C. Circuit found, among other things, that the EPA had not adequately regulated unlined ponds and legacy ponds. Accordingly, we anticipate that the EPA will promulgate new regulations to address these issues (including compliance deadlines) as it reconsiders other aspects of the existing rule. The EPA has stated that it intends to further revise the rule. The Company will provide estimates of the cost of compliance after the rule is revised.

Domestic Site Remediation Matters

Under certain federal, state and local environmental laws, a current or previous owner or operator of a facility, including an electric generating facility, may be required to investigate and remediate releases or threatened releases of hazardous or toxic substances or petroleum products. NRG may be responsible for property damage, personal injury and investigation and remediation costs incurred by a party in connection with hazardous material releases or threatened releases. These laws impose liability without regard to whether the owner knew of or caused the presence of the hazardous substances, and the courts have interpreted liability under such laws to be strict (without fault) and joint and several. Cleanup obligations can often be triggered during the closure or decommissioning of a facility, in addition to spills during its operations. Further discussions of affected NRG sites can be found in Item 15 — Note 23, Environmental Matters, to the Consolidated Financial Statements.

Nuclear Waste — The federal government's program to construct a nuclear waste repository at Yucca Mountain, Nevada was discontinued in 2010. Since 1998, the U.S. DOE has been in default of the federal government's obligations to begin accepting spent nuclear fuel, or SNF, and high-level radioactive waste, or HLW, under the Nuclear Waste Policy Act. Owners of nuclear plants, including the owners of STP, had been required to enter into contracts setting out the obligations of the owners and the U.S. DOE, including the fees to be paid by the owners for the U.S. DOE's services to license a spent fuel repository. Effective May 16, 2014, the U.S. DOE stopped collecting the fees.

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On February 5, 2013, STPNOC entered into a settlement agreement with the U.S. DOE for payment of damages relating to the U.S. DOE's failure to accept SNF and HLW under the Nuclear Waste Policy Act through December 31, 2013, which was extended through an addendum dated January 24, 2014, to December 31, 2016. On December 12, 2016, STPNOC received the federal government's offer of another three-year extension of payment for continued failure to accept SNF and HLW. The proposal was reviewed and accepted. There are no facilities for the reprocessing or permanent disposal of SNF currently in operation in the U.S., nor has the NRC licensed any such facilities. STPNOC currently stores all SNF generated by its nuclear generating facilities in on-site storage pools. Since STPNOC's SNF storage pools do not have sufficient storage capacity for the life of the units, STPNOC is proceeding to construct dry cask storage capability on-site. STPNOC plans to continue to assert claims against the U.S. DOE for damages relating to the U.S. DOE's failure to accept SNF and HLW.

Under the federal Low-Level Radioactive Waste Policy Act of 1980, as amended, the state of Texas is required to provide, either on its own or jointly with other states in a compact, for the disposal of all low-level radioactive waste generated within the state. STP's warehouse capacity is adequate for on-site storage until a site in Andrews County, Texas becomes fully operational.

Water

The Company is required under the CWA to comply with intake and discharge requirements, requirements for technological controls and operating practices. As with air quality regulations, federal and state water regulations have become more stringent and imposed new requirements.

Once Through Cooling Regulation — In August 2014, EPA finalized the regulation regarding the use of water for once through cooling at existing facilities to address impingement and entrainment concerns. While NRG anticipates that more stringent requirements will be incorporated into some of its water discharge permits over the next several years as NPDES permits are renewed, the Company anticipates the cost of complying with these restrictions to be immaterial.

Effluent Limitations Guidelines — In November 2015, the EPA revised the Effluent Limitations Guidelines for Steam Electric Generating Facilities, which would have imposed more stringent requirements (as individual permits were renewed) for wastewater streams from flue gas desulfurization, fly ash, bottom ash, and flue gas mercury control. In April 2017, the EPA granted two petitions to reconsider the rule and also administratively stayed some of the deadlines. On September 18, 2017, the EPA promulgated a final rule that (i) postpones the compliance dates to preserve the status quo for FGD wastewater and bottom ash transport water by two years to November 2020 until the EPA completes its next rulemaking and (ii) withdrew the April 2017 administrative stay. The legal challenges have been suspended while the EPA reconsiders and likely modifies the rule. Accordingly, the Company has eliminated its estimate of the environmental capital expenditures that would have been required to comply with permits incorporating the revised guidelines. The Company will revisit these estimates after the rule is revised.

Regional Environmental Developments

Burton Island Old Ash Landfill — In January 2006, NRG's Indian River Power LLC was notified that it may be a potentially responsible party with respect to Burton Island Old Ash Landfill, a historic captive landfill located at the Indian River facility. On October 1, 2007, NRG signed an agreement with DNREC to investigate the site through the Voluntary Clean-up Program, or the VCP. On February 4, 2008, DNREC issued findings that no further action was required in relation to surface water and that a previously planned shoreline stabilization project would satisfactorily address shoreline erosion. The landfill itself required a Remedial Investigation and Feasibility Study to determine the type and scope of any additional required work. DNREC approved the Feasibility Study in December 2012. In January 2013, DNREC proposed a remediation plan based on the Feasibility Study. The remediation plan was approved in October 2013. In December 2015, DNREC approved the Company's remediation design, the Company's Closure Report and the Company's Long Term Stewardship Plan. The cost of completing the work required by the approved remediation plan is consistent with amounts budgeted in early 2016 and remediation was completed in 2017. The estimated cost to comply with the Long-Term Stewardship Plan was added to the liability in 2016.

In addition to the VCP, on May 29, 2008, DNREC requested that NRG's Indian River Power LLC participate in the development and performance of a Natural Resource Damage Assessment at the Burton Island Old Ash Landfill. NRG is working with DNREC and other trustees to close out the assessment process.

Customers

NRG sells to a wide variety of customers. ERCOT accounted for 11% of NRG's total revenue in 2018. The Company owns and operates power plants to generate and sell power to wholesale customers such as utilities and other intermediaries. The Company also directly sells to end-use customers in the residential, commercial and industrial sectors. NRG also receives significant revenues from PJM in its capacity as the regional transmission organization for the PJM footprint.

Employees

As of December 31, 2018, NRG and its consolidated subsidiaries had 4,862 employees, approximately 26% of whom were covered by U.S. bargaining agreements. During 2018, the Company did not experience any labor stoppages or labor disputes at any of its facilities.

Available Information

NRG's annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to section 13(a) or 15(d) of the Exchange Act are available free of charge through the Company's website, www.nrg.com, as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. The Company also routinely posts press releases, presentations, webcasts, sustainability reports and other information regarding the Company on the Company's website. The information posted on the Company's website is not a part of this report.

Item 1A — Risk Factors Related to NRG Energy, Inc.

Risks Related to the Operation of NRG's Business

NRG adopted and initiated the Transformation Plan. If the Transformation Plan does not achieve its expected benefits, there could be negative impacts to NRG’s business, results of operations and financial condition.

NRG adopted and initiated the Transformation Plan, designed to significantly strengthen earnings and cost competitiveness, lower risk and volatility, and create significant shareholder value. The three-part, three-year plan is comprised of the following components: (i) operations and cost excellence; (ii) portfolio optimization; and (iii) capital structure and allocation enhancements.

NRG may be unable to fully implement the components of the Transformation Plan, in which case, NRG would not realize the anticipated benefits. Alternatively, such components of the Transformation Plan, even if implemented, may not result in the anticipated benefits to NRG’s business, results of operations and financial condition in a timely manner if at all. Further, NRG could experience unexpected delays, business disruptions resulting from supporting these initiatives during and following completion of these activities, decreased productivity, adverse effects on employee morale and employee turnover as a result of such initiatives, any of which may impair NRG’s ability to achieve anticipated results or otherwise harm NRG’s business, results of operations and financial condition.

NRG's financial performance may be impacted by price fluctuations in the retail and wholesale power and natural gas markets, as well as fluctuations in coal and oil markets and other market factors that are beyond the Company's control.

Market prices for power, capacity, ancillary services, natural gas, coal and oil are unpredictable and tend to fluctuate substantially. Unlike most other commodities, electric power can only be stored on a very limited basis and generally must be produced concurrently with its use. As a result, power prices are subject to significant volatility due to supply and demand imbalances, especially in the day-ahead and spot markets. Long- and short-term power prices may also fluctuate substantially due to other factors outside of the Company's control, including:

- changes in generation capacity in the Company’s markets, including the addition of new supplies of power as a result of the development of new plants, expansion of existing plants, the continued operation of uneconomic power plants due to state subsidies, or additional transmission capacity;
- environmental regulations and legislation;
- electric supply disruptions, including plant outages and transmission disruptions;
- changes in power transmission infrastructure;
- fuel transportation capacity constraints or inefficiencies;
- changes in law, including judicial decisions;
- weather conditions, including extreme weather conditions and seasonal fluctuations, including the effects of climate change;
- changes in commodity prices and the supply of commodities, including but not limited to natural gas, coal and oil;
- changes in the demand for power or in patterns of power usage, including the potential development of demand-side management tools and practices, distributed generation, and more efficient end-use technologies;
- development of new fuels, new technologies and new forms of competition for the production of power;
- fuel price volatility;
- economic and political conditions;
- regulations and actions of the ISOs and RTOs;
- federal and state power regulations and legislation;
- changes in prices related to RECs; and
- changes in capacity prices and capacity markets.

While retail rates are generally designed to allow retail sellers of electricity and natural gas to pass through price fluctuations, the Company may not be able to pass through all such fluctuations to customers. For example, the Company engages in some sales of power at fixed prices. Additionally, increases in wholesale costs to retail customers may cause additional customer defaults or increased customer attrition, or may be limited by regulatory

rules.

Such factors and the associated fluctuations in power prices have affected the Company's wholesale and retail profitability in the past and will continue to do so in the future.

Some of NRG's businesses operate, wholly or partially, without long-term power sale agreements.

Some of NRG's businesses operate without long-term contracts. In retail, many of NRG's customers are contracted for a period of one year or less, and NRG may or may not hedge its retail power sales exposure, or may hedge in a manner that is not effective at managing quantity or price risk in the retail market. In generation, many of NRG's facilities operate as "merchant" facilities without long-term power sales agreements for some or all of their generating capacity and output and therefore are exposed to market fluctuations. Without the benefit of long-term power sales or purchase agreements, and without long-term load obligations, NRG cannot be sure that it will be able to sell or purchase power at commercially attractive rates or that its generation facilities will be able to operate profitably. This could lead to future impairments of the Company's property, plant and equipment, the closing of certain of its facilities or the loss of retail customers, which could have a material adverse effect on the Company's results of operations, financial condition or cash flows.

The Company's retail businesses may lose a significant number of retail customers due to competitive marketing activity by other retail electricity providers which could adversely affect the financial performance of the Company's retail businesses.

The Company's retail businesses face competition for customers. Competitors may offer different products, lower prices, and other incentives, which may attract customers away from NRG's retail businesses. In some retail electricity markets, the principal competitor may be the incumbent utility. The incumbent utility has the advantage of long-standing relationships with its customers and strong brand recognition. Furthermore, NRG's retail businesses may face competition from a number of other energy service providers, other energy industry participants, or nationally branded providers of consumer products and services, who may develop businesses that will compete with NRG and its retail businesses.

NRG's costs, results of operations, financial condition and cash flows could be adversely impacted by disruption of its fuel supplies.

NRG relies on natural gas, coal and oil to fuel a majority of its power generation facilities. Its retail operations can likewise be affected by changes in commodity costs. Grid operations depend on the continuing financial viability of contractual counterparties as well as upon the infrastructure (including rail lines, rail cars, barge facilities, roadways, riverways and natural gas pipelines) available to serve generation facilities and to ensure that there is sufficient power produced to meet retail demand. As a result, the Company's wholesale generating facilities are subject to the risks of disruptions or curtailments in the production of power at its generation facilities if no fuel is available at any price or if a counterparty fails to perform or if there is a disruption in the fuel delivery infrastructure. The Company's retail operations are likewise subject to many of the same constraints.

NRG routinely hedges both its wholesale sales and purchases to support its retail load obligations. In order to hedge these obligations, the Company may enter into long-term and short-term contracts for the purchase and delivery of fuel. Many of the forward power sales contracts do not allow the Company to pass through changes in fuel costs or discharge the power sale obligations in the case of a disruption in fuel supply due to force majeure events or the default of a fuel supplier or transporter. Disruptions in the Company's fuel supplies or power supply arrangements may therefore require it to find alternative fuel sources at higher costs, to find other sources of power to deliver to retail customers or other counterparties at a higher cost, or to pay damages to counterparties for failure to deliver power or sell electricity or natural gas as contracted. Any such event could have a material adverse effect on the Company's financial performance.

NRG also buys significant quantities of electricity and fuel on a short-term or spot market basis. Prices sometimes rise or fall significantly over a relatively short period of time. The price NRG can obtain for the sale of energy may not rise at the same rate, or may not rise at all, to match a rise in fuel or delivery costs. Retail rates may also not rise at the same rate, or may not rise at all. This may have a material adverse effect on the Company's financial performance.

Changes in market prices for electricity, natural gas, coal and oil may result from the following:

- weather conditions;
- seasonality;
- demand for energy commodities and general economic conditions;
- disruption or other constraints or inefficiencies of electricity, gas or coal transmission or transportation;
- additional generating capacity;
- availability and levels of storage and inventory for fuel stocks;
- natural gas, crude oil, refined products and coal production levels;
- changes in market liquidity;
- federal, state and foreign governmental regulation and legislation; and
- the creditworthiness and liquidity and willingness of fuel suppliers/transporters to do business with the Company.

NRG's plant operating characteristics and equipment, particularly at its coal-fired plants, often dictate the specific fuel quality to be combusted. The availability and price of specific fuel qualities may vary due to supplier financial or operational disruptions, transportation disruptions and force majeure. At times, coal of specific quality may not be available at any price, or the Company may not be able to transport such coal to its facilities on a timely basis. In this case, the Company may not be able to run the coal facility even if it would be profitable. Operating a coal facility with different quality coal can lead to emission or operating problems. If the Company had sold forward the power from such a coal facility, it could be required to supply or purchase power from alternate sources, perhaps at a loss. This could have a material adverse impact on the financial results of specific plants and on the Company's results of operations.

Changes in the price of coal and natural gas could cause the Company to hold excess coal inventories and incur contract termination costs.

Low natural gas prices can cause natural gas to be the more cost-competitive fuel compared to coal for generating electricity. Because the Company enters into guaranteed supply contracts to provide for the amount of coal needed to operate its base load coal-fired generating facilities, the Company may experience periods where it holds excess amounts of coal if fuel pricing results in the Company reducing or idling coal-fired generating facilities. In addition, the Company may incur costs to terminate supply contracts for coal in excess of its generating requirements.

Volatile power supply costs and demand for power could adversely affect the financial performance of NRG's retail businesses.

Although NRG is the primary provider of its retail businesses' wholesale electricity supply requirements, the retail businesses purchase a significant portion of their supply requirements from third parties. As a result, financial performance depends on the ability to obtain adequate supplies of electric generation from third parties at prices below the prices it charges its customers. Consequently, the Company's earnings and cash flows could be adversely affected in any period in which the retail businesses' wholesale electricity supply costs rise at a greater rate than the rates it charges to customers. The price of wholesale electricity supply purchases associated with the retail businesses' energy commitments can be different than that reflected in the rates charged to customers due to, among other factors:

- varying supply procurement contracts used and the timing of entering into related contracts;
- subsequent changes in the overall price of natural gas;
- daily, monthly or seasonal fluctuations in the price of natural gas relative to the 12-month forward prices;
- transmission constraints and the Company's ability to move power to its customers; and
- changes in market heat rate (i.e., the relationship between power and natural gas prices).

The retail businesses' earnings and cash flows could also be adversely affected in any period in which its customers' actual usage of electricity significantly varies from the forecasted usage, which could occur due to, among other factors, weather events, competition and economic conditions.

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NRG's trading operations and use of hedging agreements could result in financial losses that negatively impact its results of operations.

The Company typically enters into hedging agreements, including contracts to purchase or sell commodities at future dates and at fixed prices, to manage the commodity price risks inherent in its power generation and retail operations. The Company’s risk management policies and hedging procedures may not mitigate risk as planned, and the Company may fail to fully or effectively hedge its commodity supply and price risk. In addition, these activities, although intended to mitigate price volatility, expose the Company to other risks. When the Company sells or buys power forward, it gives up the opportunity to buy or sell power at the future price, which not only may result in lost opportunity costs but also may require the Company to post significant amounts of cash collateral or other credit support to its counterparties. The Company also relies on counterparty performance under its hedging agreements and is exposed to the credit quality of its counterparties under those agreements. Further, if the values of the financial contracts change in a manner that the Company does not anticipate, or if a counterparty fails to perform under a contract, it could harm the Company's business, operating results or financial position.

NRG does not typically hedge the entire exposure of its operations against commodity price volatility. To the extent it does not hedge against commodity price volatility, the Company's results of operations and financial position may be improved or diminished based upon movement in commodity prices.

NRG may engage in trading activities, including the trading of power, fuel and emissions allowances that are not directly related to the operation of the Company's generation facilities or the management of related risks. These trading activities take place in volatile markets and some of these trades could be characterized as speculative. The Company would expect to settle these trades financially rather than through the production of power or the delivery of fuel. This trading activity may expose the Company to the risk of significant financial losses which could have a material adverse effect on its business and financial condition.

There may be periods when NRG will not be able to meet its commitments under forward sale or purchase obligations at a reasonable cost or at all.

The Company may sell fixed price gas as a proxy for power. Because the obligations under most of these agreements are not contingent on a unit being available to generate power, NRG is generally required to deliver power to the buyer, even in the event of a plant outage, fuel supply disruption or a reduction in the available capacity of the unit. To the extent that the Company does not have sufficient lower-cost capacity to meet its commitments under its forward sale obligations, the Company would be required to supply replacement power either by running its other, higher cost power plants or by obtaining power from third-party sources at market prices that could substantially exceed the contract price. If NRG fails to deliver the contracted power, it would be required to pay the difference between the market price at the delivery point and the contract price, and the amount of such payments could be substantial.

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fuel. This trading activity may expose the Company to the risk of significant financial losses which could have a material adverse effect on its business and financial condition.

NRG may not have sufficient liquidity to hedge market risks effectively.

The Company is exposed to market risks through its retail and wholesale business, which involves the purchase of electricity for resale, the sale of energy, capacity and related products, and the purchase and sale of fuel, transmission services and emission allowances. These market risks include, among other risks, volatility arising from location and timing differences that may be associated with buying and transporting fuel, converting fuel into energy and delivering energy to a buyer.

NRG undertakes these marketing activities through agreements with various counterparties. Many of the Company's agreements with counterparties include provisions that require the Company to provide guarantees, offset or netting arrangements, letters of credit, a first lien on assets and/or cash collateral to protect the counterparties against the risk of the Company's default or insolvency. The amount of such credit support that must be provided typically is based on the difference between the price of the commodity in a given contract and the market price of the commodity. Significant movements in market prices can result in the Company being required to provide cash collateral and letters of credit in very large amounts. The effectiveness of the Company's strategy may depend on the amount of collateral available to enter into or maintain these contracts, and liquidity requirements may be greater than the Company anticipates or will be able to meet. Without a sufficient amount of working capital to post as collateral in support of performance guarantees or as a cash margin, the Company may not be able to manage price volatility effectively or to implement its strategy. An increase in the amount of letters of credit or cash collateral required to be provided to the Company's counterparties may negatively affect the Company's liquidity and financial condition.

Further, if any of NRG's facilities experience unplanned outages, or if retail customers use more power than expected, the Company may be required to procure additional power at spot market prices to fulfill contractual commitments. Without adequate liquidity to meet margin and collateral requirements, the Company may be exposed to significant losses, may miss significant opportunities, and may have increased exposure to the volatility of spot markets.

The accounting for NRG's hedging activities may increase the volatility in the Company's quarterly and annual financial results.

NRG engages in commodity-related marketing and price-risk management activities in order to financially hedge its exposure to market risk with respect to electricity sales from its generation assets, fuel utilized by those assets and emission allowances, as well as retail sales of electricity.

NRG generally attempts to balance its fixed-price physical and financial purchases and sales commitments in terms of contract volumes and the timing of performance and delivery obligations through the use of financial and physical derivative contracts. These derivatives are accounted for in accordance with the FASB ASC 815, Derivatives and Hedging, or ASC 815, which requires the Company to record all derivatives on the balance sheet at fair value with changes in the fair value resulting from fluctuations in the underlying commodity prices immediately recognized in earnings, unless the derivative qualifies for cash flow hedge accounting treatment. Whether a derivative qualifies for cash flow hedge accounting treatment depends upon it meeting specific criteria used to determine if the cash flow hedge is and will remain appropriate for the term of the derivative. All economic hedges may not necessarily qualify for cash flow hedge accounting treatment. As a result, the Company's quarterly and annual results are subject to significant fluctuations caused by changes in market prices.

Competition in power markets may have a material adverse effect on NRG's results of operations, cash flows and the market value of its assets.

NRG has numerous competitors in all aspects of its business, and additional competitors may enter the industry. New parties may offer retail electricity bundled with other products or at prices that are below the Company’s rates. Because many of the Company's facilities are older, newer plants owned by the Company's competitors are often more efficient than NRG's aging plants, which may put some of the Company's plants at a competitive disadvantage to the extent the Company's competitors are able to consume the same or less fuel as the Company's plants consume. Over time, the Company's plants may be squeezed out of their markets or may be unable to compete with these more efficient plants.

Other companies with which NRG competes may have greater liquidity, greater access to credit and other financial resources, lower cost structures, more effective risk management policies and procedures, greater ability to incur losses, longer-standing relationships with customers, greater potential for profitability from retail sales or greater flexibility in the timing of their sale of generation capacity and ancillary services than NRG does. Competitors may

also have better access to subsidies or other out-of-market payments that put NRG at a competitive disadvantage.

NRG's competitors may be able to respond more quickly to new laws or regulations or emerging technologies, or to devote greater resources to marketing of retail power than NRG can. In addition, current and potential competitors may make strategic acquisitions or establish cooperative relationships among themselves or with third parties. Accordingly, it is possible that new competitors or alliances among current and new competitors may emerge and rapidly gain significant market share. There can be no assurance that NRG will be able to compete successfully against current and future competitors, and any failure to do so would have a material adverse effect on the Company's business, financial condition, results of operations and cash flow.

Operation of power generation facilities involves significant risks and hazards customary to the power industry that could have a material adverse effect on NRG's revenues and results of operations, and NRG may not have adequate insurance to cover these risks and hazards.

The ongoing operation of NRG's facilities involves risks that include the breakdown or failure of equipment or processes, performance below expected levels of output or efficiency and the inability to transport the Company's product to its customers in an efficient manner due to a lack of transmission capacity. Unplanned outages of generating units, including extensions of scheduled outages due to mechanical failures or other problems occur from time to time and are an inherent risk of the Company's business. Unplanned outages typically increase the Company's operation and maintenance expenses and may reduce the Company's revenues as a result of selling fewer MWh or non-performance penalties or require NRG to incur significant costs as a result of running one of its higher cost units or obtaining replacement power from third parties in the open market to satisfy the Company's forward power sales obligations. NRG's inability to operate the Company's plants efficiently, manage capital expenditures and costs, and generate earnings and cash flow from the Company's asset-based businesses could have a material adverse effect on the Company's results of operations, financial condition or cash flows. While NRG maintains insurance, obtains warranties from vendors and obligates contractors to meet certain performance levels, the proceeds of such insurance, warranties or performance guarantees may not be adequate to cover the Company's lost revenues, increased expenses or liquidated damages payments should the Company experience equipment breakdown or non-performance by contractors or vendors.

In addition, NRG provides plant operations and commercial services to a variety of third-parties. There is a risk that mistakes, mis-operations, or actions taken by these third-parties could be attributed to NRG, including the risk of investigation or penalties being assessed to NRG in connection with the services it offers, or that regulators could question whether NRG had the appropriate safeguards in place.

Power generation involves hazardous activities, including acquiring, transporting and unloading fuel, operating large pieces of rotating equipment and delivering electricity to transmission and distribution systems. In addition to natural risks such as earthquake, flood, lightning, hurricane and wind, other hazards, such as fire, explosion, structural collapse and machinery failure are inherent risks in the Company's operations. These and other hazards can cause significant personal injury or loss of life, severe damage to and destruction of property, plant and equipment, contamination of, or damage to, the environment and suspension of operations. The occurrence of any one of these events may result in NRG being named as a defendant in lawsuits asserting claims for substantial damages, including for environmental cleanup costs, personal injury and property damage and fines and/or penalties. NRG maintains an amount of insurance protection that it considers adequate, but the Company cannot provide any assurance that its insurance will be sufficient or effective under all circumstances and against all hazards or liabilities to which it may be subject. A successful claim for which the Company is not fully insured could hurt its financial results and materially harm NRG's financial condition. NRG cannot provide any assurance that its insurance coverage will continue to be available at all or at rates or on terms similar to those presently available. Any losses not covered by insurance could have a material adverse effect on the Company's financial condition, results of operations or cash flows.

Maintenance, expansion and refurbishment of power generation facilities involve significant risks that could result in unplanned power outages or reduced output and could have a material adverse effect on NRG's results of operations, cash flows and financial condition.

Many of NRG's facilities require periodic maintenance and repair. Any unexpected failure, including failure associated with breakdowns, forced outages or any unanticipated capital expenditures could result in reduced profitability.

NRG cannot be certain of the level of capital expenditures that will be required due to changing environmental and safety laws (including changes in the interpretation or enforcement thereof), needed facility repairs and unexpected events (such as natural disasters or terrorist attacks). The unexpected requirement of large capital expenditures could have a material adverse effect on the Company's liquidity and financial condition.

If NRG significantly modifies a unit, the Company may be required to install the best available control technology or to achieve the lowest achievable emission rates as such terms are defined under the new source review provisions of the CAA, which would likely result in substantial additional capital expenditures.

NRG and its subsidiaries have guaranteed the performance of third parties, which may result in substantial costs in the event of non-performance.

NRG and its subsidiaries have issued certain guarantees of the performance of others, which obligate NRG and its subsidiaries to perform in the event that the third parties do not perform. In the event of non-performance by the third parties, NRG could incur substantial cost to fulfill their obligations under these guarantees. Such performance guarantees could have a material impact on the operating results, financial condition, or cash flows of the Company.

Supplier and/or customer concentration at certain of NRG's facilities may expose the Company to significant financial credit or performance risks.

NRG often relies on a single contracted supplier or a small number of suppliers for the provision of fuel, transportation of fuel, chemicals and other services required for the operation of certain of its facilities. If these suppliers cannot perform, the Company utilizes the marketplace to provide these services. There can be no assurance that the marketplace can provide these services as, when and where required or at comparable prices.

At times, NRG may rely on a single customer or a few customers to purchase all or a significant portion of a facility's output, in some cases under long-term agreements that account for a substantial percentage of the anticipated revenue from a given facility. The Company has also hedged a portion of its exposure to power price fluctuations through forward fixed price power sales and natural gas price swap agreements. Counterparties to these agreements may breach or may be unable to perform their obligations. NRG may not be able to enter into replacement agreements on terms as favorable as its existing agreements, or at all. If the Company was unable to enter into replacement PPAs, the Company would sell its plants' power at market prices. If the Company is unable to enter into replacement fuel or fuel transportation purchase agreements, NRG would seek to purchase the Company's fuel requirements at market prices, exposing the Company to market price volatility and the risk that fuel and transportation may not be available during certain periods at any price.

The failure of any supplier or customer to fulfill its contractual obligations to NRG could have a material adverse effect on the Company's financial results. Consequently, the financial performance of the Company's facilities is dependent on the credit quality of, and continued performance by, suppliers and customers.

NRG relies on power transmission and distribution facilities that it does not own or control and that are subject to transmission constraints within a number of the Company's core regions.

NRG depends on transmission and distribution facilities owned and operated by others to deliver wholesale power sales and retail power sales to its customers. If transmission or distribution is disrupted, including by force majeure events, or if the transmission or distribution infrastructure is inadequate, NRG's ability to sell and deliver wholesale power may be adversely impacted. The Company also cannot predict whether transmission or distribution facilities will be expanded in specific markets to accommodate competitive access to those markets.

In addition, in certain of the markets in which NRG operates, energy transmission congestion may occur and the Company may be deemed responsible for congestion costs associated with wholesale power sales or purchases, or retail sales, particularly where the Company’s load is not co-located with its retail sales obligations. If NRG were liable for such congestion costs, the Company's financial results could be adversely affected.

Because NRG owns less than a majority of the ownership interests of some of its project investments, the Company cannot exercise complete control over their operations.

NRG has limited control over the operation of some project investments and joint ventures because the Company's investments are in projects where it beneficially owns less than a majority of the ownership interests. NRG seeks to exert a degree of influence with respect to the management and operation of projects in which it owns less than a majority of the ownership interests by negotiating to obtain positions on management committees or to receive certain limited governance rights, such as rights to veto significant actions. However, the Company may not always succeed in such negotiations. NRG may be dependent on its co-venturers to operate such projects. The Company's co-venturers may not have the level of experience, technical expertise, human resources management and other attributes necessary to operate these projects optimally. The approval of co-venturers also may be required for NRG to receive distributions of funds from projects or to transfer the Company's interest in projects.

NRG may be unable to integrate the operations of acquired entities in the manner expected.

NRG enters into acquisitions that result in various benefits, including, among other things, cost savings and operating efficiencies. Achieving the anticipated benefits of these acquisitions depends on whether the businesses can be integrated into NRG in an efficient and effective manner. The integration process could take longer than anticipated and could result in the loss of valuable employees, the disruption of NRG's businesses, processes and systems or inconsistencies in standards, controls, procedures, practices, policies and compensation arrangements, any of which could adversely affect the Company's ability to achieve the anticipated benefits of the acquisitions. NRG may have difficulty addressing possible differences in corporate cultures and management philosophies. Failure to achieve these anticipated benefits could result in increased costs or decreases in the amount of expected revenues and could adversely affect NRG's future business, financial condition, operating results and prospects.

Future acquisition or disposition activities could involve unknown risks and may have materially adverse effects and NRG may be subject to trailing liabilities from businesses that it disposes of or that are inactive.

NRG may in the future make acquisitions or dispositions of businesses or assets, acquire or sell books of retail customers, or pursue other business activities, directly or indirectly through subsidiaries, that involve a number of risks. The acquisition of companies and assets is subject to substantial risks, including the failure to identify material problems during due diligence, the risk of over-paying for assets or customers, the ability to retain customers and the inability to arrange financing for an acquisition as may be required or desired. Further, the integration and consolidation of acquisitions requires substantial human, financial and other resources and, ultimately, the Company's acquisitions may not be successfully integrated. In the case of dispositions, such risks may relate to employment matters, counterparties, regulators and other stakeholders in the disposed business, risks relating to separating the disposed assets from NRG’s business, risks related to the management of NRG’s ongoing business, risks unknown to NRG at the time, and other financial, legal and operational risks related to such disposition. In addition, NRG may be subject to material trailing liabilities from disposed businesses such as Clearway Energy Inc., and its Renewables Platform. Any such risk may result in one or more costly disputes or litigation. There can be no assurances that any future acquisitions will perform as expected or that the returns from such acquisitions will support the indebtedness incurred to acquire them or the capital expenditures needed to develop them. There can also be no assurances that NRG will realize the anticipated benefits from any such dispositions. The failure to realize the anticipated returns or benefits from an acquisition or disposition could adversely affect NRG's results of operations, cash flows and financial condition.

NRG's business, financial condition and results of operations could be adversely impacted by strikes or work stoppages by its unionized employees or inability to replace employees as they retire.

As of December 31, 2018, approximately 26% of NRG's employees at its U.S. generation plants were covered by collective bargaining agreements. In the event that the Company's union employees strike, participate in a work stoppage or slowdown or engage in other forms of labor strife or disruption, NRG would be responsible for procuring replacement labor or the Company could experience reduced power generation or outages. Although NRG's ability to procure such labor is uncertain, contingency staffing planning is completed as part of each respective contract negotiations. Strikes, work stoppages or the inability to negotiate future collective bargaining agreements on favorable terms could have a material adverse effect on the Company's business, financial condition, results of operations and cash flows. In addition, a number of the Company's employees at NRG's plants are close to retirement. The Company's inability to replace retiring workers could create potential knowledge and expertise gaps as such workers retire.

Changes in technology may impair the value of NRG's power plants and the attractiveness of its retail products.

Research and development activities are ongoing to provide alternative and more efficient technologies to produce power, including wind, photovoltaic (solar) cells, energy storage, and improvements in traditional technologies and equipment, such as more efficient gas turbines. Advances in these or other technologies could reduce the costs of power production to a level below what the Company has currently forecasted, which could adversely affect its cash flows, results of operations or competitive position. Technology, including distributed technology or changes in retail rate structures, may also have a material impact on the Company’s ability to retain retail customers.

The Company may potentially be affected by emerging technologies that may over time affect change in capacity markets and the energy industry overall with the inclusion of distributed generation and clean technology.

Some emerging technologies like distributed renewable energy technologies, broad consumer adoption of electric vehicles and energy storage devices could affect the price of energy. These emerging technologies may affect the financial viability of utility counterparties and could have significant impacts on wholesale market prices, which could ultimately have a material adverse effect on NRG's financial condition, results of operations and cash flows.

Risks that are beyond NRG's control, including but not limited to acts of terrorism or related acts of war, natural disaster, hostile cyber intrusions or other catastrophic events could have a material adverse effect on NRG's financial condition, results of operations and cash flows.

NRG's generation facilities and the facilities of third parties on which they rely may be targets of terrorist activities, as well as events occurring in response to or in connection with them, that could cause environmental repercussions and/or result in full or partial disruption of the facilities ability to generate, transmit, transport or distribute electricity or natural gas. Strategic targets, such as energy-related facilities, may be at greater risk of future terrorist activities than other domestic targets. Hostile cyber intrusions, including those targeting information systems as well as electronic control systems used at the generating plants and for the distribution systems, could severely disrupt business operations and result in loss of service to customers, as well as significant expense to repair security breaches or system damage. Any such environmental repercussions or disruption 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 Company's financial condition, results of operations and cash flows. In addition, significant weather events or terrorist actions could damage or shut down the power transmission and distribution facilities upon which the Company's retail businesses are dependent. Power supply may be sold at a loss if these events cause a significant loss of retail customer load.

The operation of NRG’s businesses is subject to cyber-based security and integrity risk.

Numerous functions affecting the efficient operation of NRG’s businesses depend on the secure and reliable storage, processing and communication of electronic data and the use of sophisticated computer hardware and software systems. The operation of NRG’s generation plants, including STP, and of NRG's energy and fuel trading businesses rely on cyber-based technologies and, therefore, subject to the risk that such systems could be the target of disruptive actions, particularly through cyber-attack or cyber intrusion, including by computer hackers, foreign governments and cyber terrorists, or otherwise be compromised by unintentional events. As a result, operations could be interrupted, property could be damaged and sensitive customer information could be lost or stolen, causing NRG to incur significant losses of revenues, other substantial liabilities and damages, costs to replace or repair damaged equipment and damage to NRG's reputation. In addition, NRG may experience increased capital and operating costs to implement increased security for its cyber systems and plants.

The Company's retail businesses are subject to the risk that sensitive customer data may be compromised, which could result in an adverse impact to its reputation and/or the results of operations of the Company's retail businesses.

The Company's retail businesses require access to sensitive customer data in the ordinary course of business. Examples of sensitive customer data are names, addresses, account information, historical electricity usage, expected patterns of use, payment history, credit bureau data, credit and debit card account numbers, driver's license numbers, social security numbers and bank account information. NRG's retail businesses may need to provide sensitive customer data to vendors and service providers, who require access to this information in order to provide services, such as call center operations, to NRG's retail businesses. If a significant breach occurred, the reputation of NRG and its retail businesses may be adversely affected, customer confidence may be diminished, or NRG and its retail businesses may be subject to legal claims, any of which may contribute to the loss of customers and have a negative impact on the business and/or results of operations.

Risks Related to Governmental Regulation and Laws

NRG's business is subject to substantial energy regulation and may be adversely affected by legislative or regulatory changes, as well as liability under, or any future inability to comply with, existing or future energy regulations or requirements.

NRG's business is subject to extensive U.S. federal, state and local laws and foreign laws. Compliance with the requirements under these legal and regulatory regimes may cause the Company to incur significant additional costs, reduce the Company's ability to sell retail power within certain states or to certain classes of retail customers; or restrict the Company’s marketing practices, its ability to pass through costs to retail customers, or its ability to compete on favorable terms with competitors, including the incumbent utility. Retail competition is regulated on a state-by-state level and is highly dependent on state laws, regulations and policies, which could change at any moment.

Failure to comply with such requirements could result in the shutdown of a non-complying facility, the imposition of liens, fines, and/or civil or criminal liability.

Public utilities under the FPA are required to obtain FERC acceptance of their rate schedules for wholesale sales of electricity. Except for ERCOT generating facilities and power marketers, all of NRG's non-qualifying facility generating companies and power marketing affiliates in the U.S. make sales of electricity in interstate commerce and are public utilities for purposes of the FPA. FERC has granted each of NRG's generating and power marketing companies that make sales of electricity outside of ERCOT the authority to sell electricity at market-based rates. FERC's orders that grant NRG's generating and power marketing companies market-based rate authority reserve the right to revoke or revise that authority if FERC subsequently determines that NRG can exercise market power in transmission or generation, create barriers to entry, or engage in abusive affiliate transactions. In addition, NRG's market-based sales are subject to certain market behavior rules, and if any of NRG's generating and power marketing companies were deemed to have violated those rules, they are subject to potential disgorgement of profits associated with the violation and/or suspension or revocation of their market-based rate authority. If NRG's generating and power marketing companies were to lose their market-based rate authority, such companies would be required to obtain FERC's acceptance of a cost-of-service rate schedule and could become subject to the accounting, record-keeping, and reporting requirements that are imposed on utilities with cost-based rate schedules. This could have a material adverse effect on the rates NRG charges for power from its facilities.

Substantially all of the Company's generation assets are also subject to the reliability standards promulgated by the designated Electric Reliability Organization (currently NERC) and approved by FERC. If NRG fails to comply with the mandatory reliability standards, NRG could be subject to sanctions, including substantial monetary penalties and increased compliance obligations. NRG is also affected by legislative and regulatory changes, as well as changes to market design, market rules, tariffs, cost allocations, and bidding rules that occur in the existing ISOs. The ISOs that oversee most of the wholesale power markets impose, and in the future may continue to impose, mitigation, including price limitations, offer caps, non-performance penalties and other mechanisms to address some of the volatility and the potential exercise of market power in these markets. These types of price limitations and other regulatory mechanisms may have a material adverse effect on the profitability of NRG's generation facilities that sell energy and capacity into the wholesale power markets.

The regulatory environment has undergone significant changes in the last several years due to state and federal policies affecting wholesale and retail competition and the creation of incentives for the addition of large amounts of new renewable generation and, in some cases, transmission. These changes are ongoing, and the Company cannot predict the future design of the wholesale power markets or the ultimate effect that the changing regulatory environment will have on NRG's business. In addition, in some of these markets, interested parties have proposed material market design changes, including the elimination of a single clearing price mechanism, as well as proposals to reinstate the vertical monopoly utility of the markets or require divestiture by generating companies to reduce their market share. If competitive restructuring of the electric power markets is reversed, discontinued, or delayed, the Company's business prospects and financial results could be negatively impacted. In addition, since 2010, there have been a number of reforms to the regulation of the derivatives markets, both in the United States and internationally. These regulations, and any further changes thereto, or adoption of additional regulations, including any regulations relating to position limits on futures and other derivatives or margin for derivatives, could negatively impact NRG’s ability to hedge its portfolio in an efficient, cost-effective manner by, among other things, potentially decreasing liquidity in the forward commodity and derivatives markets or limiting NRG’s ability to utilize non-cash collateral for derivatives transactions.

NRG’s business may be affected by state interference in the competitive wholesale marketplace.

NRG’s generation and competitive retail businesses rely on a competitive wholesale marketplace. The competitive wholesale marketplace may be impacted by out-of-market subsidies provided by states or state entities, including bailouts of uneconomic nuclear plants, imports of power from Canada, renewable mandates or subsidies, mandates to sell power below its cost of acquisition and associated costs, as well as out-of-market payments to new or existing generators. These out-of-market subsidies to existing or new generation undermine the competitive wholesale marketplace, which can lead to premature retirement of existing facilities, including those owned by the Company. If these measures continue, capacity and energy prices may be suppressed, and the Company may not be successful in its efforts to insulate the competitive market from this interference. The Company's retail businesses may be materially

impacted by rules or regulations that allow regulated utilities to participate in competitive retail markets or own and operate facilities that could be provided by competitive market participants.

The integration of the Capacity Performance product into the PJM market and the Pay-for-Performance mechanism in ISO-NE could lead to substantial changes in capacity income and non-performance penalties, which could have a material adverse effect on NRG's results of operations, financial condition and cash flows.

Both ISO-NE and PJM operate a pay-for-performance model where capacity payments are modified based on real-time generator performance. Capacity market prices are sensitive to design parameters, as well as additions of new capacity. NRG may experience substantial changes in capacity income and non-performance penalties, which could have a material adverse effect on NRG's results of operations, financial condition and cash flows.

NRG's ownership interest in a nuclear power facility subjects the Company to regulations, costs and liabilities uniquely associated with these types of facilities.

Under the Atomic Energy Act of 1954, as amended, or AEA, ownership and operation of STP, of which NRG indirectly owns a 44% interest, is subject to regulation by the NRC. Such regulation includes licensing, inspection, enforcement, testing, evaluation and modification of all aspects of nuclear reactor power plant design and operation, environmental and safety performance, technical and financial qualifications, decommissioning funding assurance and transfer and foreign ownership restrictions. The current facility operating licenses for STP expire on August 20, 2047 (Unit 1) and December 15, 2048 (Unit 2).

There are unique risks to owning and operating a nuclear power facility. These include liabilities related to the handling, treatment, storage, disposal, transport, release and use of radioactive materials, particularly with respect to spent nuclear fuel, and uncertainties regarding the ultimate, and potential exposure to, technical and financial risks associated with modifying or decommissioning a nuclear facility. The NRC could require the shutdown of the plant for safety reasons or refuse to permit restart of the unit after unplanned or planned outages. New or amended NRC safety and regulatory requirements may give rise to additional operation and maintenance costs and capital expenditures. Additionally, aging equipment may require more capital expenditures to keep each of these nuclear power plants operating efficiently. This equipment is also likely to require periodic upgrading and improvement. Any unexpected failure, including failure associated with breakdowns, forced outages, or any unanticipated capital expenditures, could result in reduced profitability. STP will be obligated to continue storing spent nuclear fuel if the U.S. DOE continues to fail to meet its contractual obligations to STP made pursuant to the U.S. Nuclear Waste Policy Act of 1982 to accept and dispose of STP's spent nuclear fuel. See also Item 1 — Regulatory Matters — Nuclear Operations - Decommissioning Trusts and Item 1 — Environmental Matters — Federal Environmental Initiatives — Nuclear Waste for further discussion. Costs associated with these risks could be substantial and could have a material adverse effect on NRG's results of operations, financial condition or cash flow to the extent not covered by the Decommissioning Trusts or recovered from ratepayers. In addition, to the extent that all or a part of STP is required by the NRC to permanently or temporarily shut down or modify its operations, or is otherwise subject to a forced outage, NRG may incur additional costs to the extent it is obligated to provide power from more expensive alternative sources — either NRG's own plants, third party generators or the ERCOT — to cover the Company's then existing forward sale obligations. Such shutdown or modification could also lead to substantial costs related to the storage and disposal of radioactive materials and spent nuclear fuel.

While STP maintains property and liability insurance for losses related to nuclear operations, there may be limitations on the amounts and types of insurance commercially available. See also Item 15 — Note 21, Commitments and Contingencies, Nuclear Insurance. An accident at STP or another nuclear facility could have a material adverse effect on NRG's financial condition, its operational results, or liquidity as losses may exceed the insurance coverage available and/or may result in the obligation to pay retrospective premium obligations.

NRG is subject to environmental laws that impose extensive and increasingly stringent requirements on the Company's ongoing operations, as well as potentially substantial liabilities arising out of environmental contamination. These environmental requirements and liabilities could adversely impact NRG's results of operations, financial condition and cash flows.

NRG is subject to the environmental laws of foreign and U.S., federal, state and local authorities. The Company must comply with numerous environmental laws and obtain numerous governmental permits and approvals to build and operate the Company's plants. Federal and state environmental laws generally have become more stringent over time. Should NRG fail to comply with any environmental requirements that apply to its operations, the Company could be subject to administrative, civil and/or criminal liability and fines, and regulatory agencies could take other actions seeking to curtail the Company's operations. In addition, when new requirements take effect or when existing environmental requirements are revised, reinterpreted or subject to changing enforcement policies, NRG's business, results of operations, financial condition and cash flows could be adversely affected.

NRG's businesses are subject to physical, market and economic risks relating to potential effects of climate change. Fluctuations in weather and other environmental conditions, including temperature and precipitation levels, may affect consumer demand for electricity. In addition, the potential physical effects of climate change, such as increased

frequency and severity of storms, floods and other climatic events, could disrupt NRG's operations and supply chain, and cause them to incur significant costs in preparing for or responding to these effects. These or other meteorological changes could lead to increased operating costs, capital expenses or power purchase costs. NRG's commercial and residential customers may also experience the potential physical impacts of climate change and may incur significant costs in preparing for or responding to these efforts, including increasing the mix and resiliency of their energy solutions and supply.

Climate change could also affect the availability of a secure and economical supply of water in some locations, which is essential for the continued operation of NRG's generation plants. NRG 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.

GHG regulation could increase the cost of electricity generated by fossil fuels, and such increases could reduce demand for the power NRG generates and markets. Also, demand for NRG's energy-related services could be similarly impacted by consumers' preferences or market factors favoring energy efficiency, low-carbon power sources or reduced electricity usage.

Policies at the national, regional and state levels to regulate GHG emissions, as well as mitigate climate change, could adversely impact NRG's results of operations, financial condition and cash flows.

NRG's GHG emissions for 2018 can be found in Item 1, Business — Operational Statistics. In 2015, the EPA promulgated the final GHG emissions rules for new and existing fossil-fuel-fired electric generating units, which have been stayed by the U.S. Supreme Court and the EPA has proposed repealing.

The Company operates generating units in Connecticut, Delaware, Maryland, and New York which are subject to RGGI, which is a regional cap and trade system for CO2. In 2013, each of these states finalized a rule that reduced and will continue to reduce the number of allowances through 2020. The nine RGGI states re-evaluated the program and published a model rule to further reduce the number of allowances. The revisions being currently contemplated could adversely impact NRG's results of operations, financial condition and cash flows.

California has a CO_2 cap and trade program for electric generating units greater than 25 MW. The impact on the Company depends on the cost of the allowances and the ability to pass these costs through to customers.

Hazards customary to the power production industry include the potential for unusual weather conditions, which could affect fuel pricing and availability, the Company's route to market or access to customers, i.e., transmission and distribution lines, or critical plant assets. The contribution of climate change to the frequency or intensity of weather-related events could affect NRG's operations and planning process.

NRG's retail businesses are subject to changing state rules and regulations that could have a material impact on the profitability of its business lines.

The competitiveness of NRG's retail businesses partially depends on state regulatory policies that establish the structure, rules, terms and conditions on which services are offered to retail customers. These state policies, which can include controls on the retail rates NRG's retail businesses can charge, the imposition of additional costs on sales, restrictions on the Company's ability to obtain new customers through various marketing channels and disclosure requirements, which can affect the competitiveness of NRG's retail businesses. The Company's retail businesses may be materially impacted by rules or regulations that allow regulated utilities to participate in competitive retail markets or own and operate facilities that could be provided by competitive market participants. Additionally, state or federal imposition of net metering or RPS programs can make it more or less expensive for retail customers to supplement or replace their reliance on grid power. NRG's retail businesses have limited ability to influence development of these policies, and its business model may be more or less effective, depending on changes to the regulatory environment.

The Company's international operations are exposed to political and economic risks, commercial instability and events beyond the Company's control in the countries in which it operates, which risks may negatively impact the Company's business.

The Company's international operations depend on products manufactured, purchased and sold in the U.S. and internationally, including in countries with political and economic instability. In some cases, these countries have greater political and economic volatility and greater vulnerability to infrastructure and labor disruptions than in NRG's other markets. Operating and seeking to expand business in a number of different regions and countries exposes the Company to a number of risks, including:

- multiple and potentially conflicting laws, regulations and policies that are subject to change;
- imposition of currency restrictions on repatriation of earnings or other restraints;
- imposition of burdensome tariffs or quotas;
- national and international conflict, including terrorist acts; and
- political and economic instability or civil unrest that may severely disrupt economic activity in affected countries.

The occurrence of one or more of these events may negatively impact the Company's business, results of operations and financial condition.

Risks Related to Economic and Financial Market Conditions

NRG's level of indebtedness could adversely affect its ability to raise additional capital to fund its operations or return capital to stockholders. It could also expose it to the risk of increased interest rates and limit its ability to react to changes in the economy or its industry.

NRG's substantial debt could have negative consequences, including:

- increasing NRG's vulnerability to general economic and industry conditions;
- requiring a substantial portion of NRG's cash flow from operations to be dedicated to the payment of principal and interest on its indebtedness, therefore reducing NRG's ability to pay dividends to holders of its preferred or common stock or to use its cash flow to fund its operations, capital expenditures and future business opportunities;
- limiting NRG's ability to enter into long-term power sales or fuel purchases which require credit support;
- exposing NRG to the risk of increased interest rates because certain of its borrowings, including borrowings under its senior secured credit facility are at variable rates of interest;
- limiting NRG's ability to obtain additional financing for working capital including collateral postings, capital expenditures, debt service requirements, acquisitions and general corporate or other purposes; and
- limiting NRG's ability to adjust to changing market conditions and placing it at a competitive disadvantage compared to its competitors who have less debt.

The indentures for NRG's notes and senior secured credit facility contain financial and other restrictive covenants that may limit the Company's ability to return capital to stockholders or otherwise engage in activities that may be in its long-term best interests. Furthermore, financial and other restrictive covenants contained in any project level subsidiary debt may limit the ability of NRG to receive distributions from such subsidiary. NRG's failure to comply with those covenants could result in an event of default which, if not cured or waived, could result in the acceleration of all of the Company's indebtedness.

In addition, NRG's ability to arrange financing, either at the corporate level, a non-recourse project-level subsidiary or otherwise, and the costs of such capital, are dependent on numerous factors, including:

- general economic and capital market conditions;
- credit availability from banks and other financial institutions;
- investor confidence in NRG, its partners and the regional wholesale power markets;
- NRG's financial performance and the financial performance of its subsidiaries;
- NRG's level of indebtedness and compliance with covenants in debt agreements;
- maintenance of acceptable credit ratings;
- cash flow; and
- provisions of tax and securities laws that may impact raising capital.

NRG may not be successful in obtaining additional capital for these or other reasons. The failure to obtain additional capital from time to time may have a material adverse effect on its business and operations.

Adverse economic conditions could adversely affect NRG’s business, financial condition, results of operations and cash flows.

Adverse economic conditions and declines in wholesale energy prices, partially resulting from adverse economic conditions, may impact NRG’s earnings. The breadth and depth of negative economic conditions may have a wide-ranging impact on the U.S. business environment, including NRG’s businesses. In addition, adverse economic conditions also reduce the demand for energy commodities. Reduced demand from negative economic conditions continues to impact the key domestic wholesale energy markets NRG serves. The combination of lower demand for power and increased supply of natural gas has put downward price pressure on wholesale energy markets in general, further impacting NRG’s energy marketing results. In general, economic and commodity market conditions will continue to impact NRG’s unhedged future energy margins, liquidity, earnings growth and overall financial condition. In addition, adverse economic conditions, declines in wholesale energy prices, reduced demand for power and other factors may negatively impact the trading price of NRG’s common stock and impact forecasted cash flows, which may require NRG to evaluate its goodwill and other long-lived assets for impairment. Any such impairment could have a material impact on NRG’s financial statements.

Goodwill and/or other intangible assets not subject to amortization that NRG has recorded in connection with its acquisitions are subject to mandatory annual impairment evaluations and as a result, the Company could be required to write off some or all of this goodwill and other intangible assets, which may adversely affect the Company's financial condition and results of operations.

In accordance with ASC 350, Intangibles — Goodwill and Other, or ASC 350, goodwill is not amortized but is reviewed annually or more frequently for impairment and other intangibles are also reviewed at least annually or more frequently, if certain conditions exist, and may be amortized. Any reduction in or impairment of the value of goodwill or other intangible assets will result in a charge against earnings which could materially adversely affect NRG's reported results of operations and financial position in future periods.

The Company has made investments, and may continue to make investments, in new business initiatives predominantly focused on consumer products and in markets that may not be successful, may not achieve the intended financial results or may result in product liability and reputational risk that could adversely affect the Company.

NRG continues to pursue growth in its existing businesses and markets and further diversification across the competitive energy value chain. NRG is continuing to pursue investment opportunities in renewables, consumer products and distributed generation. Such initiatives may involve significant risks and uncertainties, including distraction of management from current operations, inadequate return on capital, and unidentified issues not discovered in the diligence performed prior to launching an initiative or entering a market.

As part of these initiatives, the Company may be liable to customers for any damage caused to customers’ homes, facilities, belongings or property during the installation of Company products and systems, such as residential solar systems and mass market back-up generators. In addition, shortages of skilled labor for Company projects could significantly delay a project or otherwise increase its costs. The products that the Company sells or manufactures may expose the Company to product liability claims relating to personal injury, death, or environmental or property damage, and may require product recalls or other actions. Although the Company maintains liability insurance, the Company cannot be certain that its coverage will be adequate for liabilities actually incurred or that insurance will continue to be available to the Company on economically reasonable terms, or at all. Further, any product liability claim or damage caused by the Company could significantly impair the Company’s brand and reputation, which may result in a failure to maintain customers and achieve the Company’s desired growth initiatives in these new businesses.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING INFORMATION

This Annual Report on Form 10-K of NRG Energy, Inc., or NRG or the Company, includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or Exchange Act. The words "believes," "projects," "anticipates," "plans," "expects," "intends," "estimates" and similar expressions are intended to identify forward-looking statements. These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause NRG's actual results, performance and achievements, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. These factors, risks and uncertainties include the factors described under Item 1A — Risk Factors Related to NRG Energy, Inc. and the following:

- NRG's ability to achieve the expected benefits of its Transformation Plan;
- NRG's ability to engage in successful sales and divestitures as well as mergers and acquisitions activity;
- NRG's ability to obtain and maintain retail market share;
- General economic conditions, changes in the wholesale power markets and fluctuations in the cost of fuel;
- Volatile power supply costs and demand for power;
- Changes in law, including judicial decisions;
- Hazards customary to the power production industry and power generation operations such as fuel and electricity price volatility, unusual weather conditions, catastrophic weather-related or other damage to facilities, unscheduled generation outages, maintenance or repairs, unanticipated changes to fuel supply costs or availability due to higher demand, shortages, transportation problems or other developments, environmental incidents, or electric transmission or gas pipeline system constraints and the possibility that NRG may not have adequate insurance to cover losses as a result of such hazards;
- The effectiveness of NRG's risk management policies and procedures, and the ability of NRG's counterparties to satisfy their financial commitments;
- Counterparties' collateral demands and other factors affecting NRG's liquidity position and financial condition;
- NRG's ability to operate its businesses efficiently and generate earnings and cash flows from its asset-based businesses in relation to its debt and other obligations;
- NRG's ability to enter into contracts to sell power and procure fuel on acceptable terms and prices;
- The liquidity and competitiveness of wholesale markets for energy commodities;
- Government regulation, including changes in market rules, rates, tariffs and environmental laws;
- Price mitigation strategies and other market structures employed by ISOs or RTOs that result in a failure to adequately and fairly compensate NRG's generation units;
- NRG's ability to mitigate forced outage risk for units subject to capacity performance requirements in PJM, performance incentives in ISO-NE, and scarcity pricing in ERCOT;
- NRG's ability to borrow funds and access capital markets, as well as NRG's substantial indebtedness and the possibility that NRG may incur additional indebtedness going forward;
- Operating and financial restrictions placed on NRG and its subsidiaries that are contained in the indentures governing NRG's outstanding notes, in NRG's Senior Credit Facility, and in debt and other agreements of certain of NRG subsidiaries and project affiliates generally;
- Cyber terrorism and inadequate cybersecurity, or the occurrence of a catastrophic loss and the possibility that NRG may not have adequate insurance to cover losses resulting from such hazards or the inability of NRG's insurers to provide coverage;
- NRG's ability to develop and build new power generation facilities;
- NRG's ability to develop and innovate new products as retail and wholesale markets continue to change and evolve;
- NRG's ability to implement its strategy of finding ways to meet the challenges of climate change, clean air and protecting natural resources while taking advantage of business opportunities;
- NRG's ability to increase cash from operations through operational and commercial initiatives, corporate efficiencies, asset strategy, and a range of other programs throughout NRG to reduce costs or generate revenues;
- NRG's ability to achieve its strategy of regularly returning capital to stockholders;
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NRG's ability to successfully evaluate investments and achieve intended financial results in new business and growth initiatives;

- NRG's ability to successfully integrate, realize cost savings and manage any acquired businesses; and
- NRG's ability to develop and maintain successful partnering relationships.

Forward-looking statements speak only as of the date they were made, and NRG Energy, Inc. undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. The foregoing review of factors that could cause NRG's actual results to differ materially from those contemplated in any forward-looking statements included in this Annual Report on Form 10-K should not be construed as exhaustive.

Item 1B — Unresolved Staff Comments

None.

Item 2 — Properties

Listed below are descriptions of NRG's interests in facilities, operations and/or projects owned or leased as of December 31, 2018. The MW figures provided represent nominal summer net MW capacity of power generated as adjusted for the Company's owned or leased interest excluding capacity from inactive/mothballed units as of December 31, 2018. The following table summarizes NRG's power production and cogeneration facilities by region:

Name of Facility	Power Market	Plant Type	Primary Fuel	Location	Rated MW Capacity	Net MW Capacity[a]	% Owned
Texas							
Cedar Bayou	ERCOT	Fossil	Natural Gas	TX	1,494	1,494	100.0
Cedar Bayou 4	ERCOT	Fossil	Natural Gas	TX	504	252	50.0
Elbow Creek	ERCOT	Other	Battery Storage	TX	2	2	100.0
Greens Bayou	ERCOT	Fossil	Natural Gas	TX	330	330	100.0
Gregory	ERCOT	Fossil	Natural Gas	TX	365	365	100.0
Limestone	ERCOT	Fossil	Coal	TX	1,660	1,660	100.0
Petra Nova Cogen	ERCOT	Fossil	Natural Gas	TX	38	19	50.0
San Jacinto	ERCOT	Fossil	Natural Gas	TX	160	160	100.0
South Texas Project[b]	ERCOT	Nuclear	Uranium	TX	2,559	1,126	44.0
T.H. Wharton	ERCOT	Fossil	Natural Gas	TX	1,001	1,001	100.0
W.A. Parish	ERCOT	Fossil	Coal	TX	2,514	2,514	100.0
W.A. Parish	ERCOT	Fossil	Natural Gas	TX	1,118	1,118	100.0
Total Texas					11,745	10,041	
East/West							
Agua Caliente	WECC	Renewable	Solar	AZ	290	102	35.0
Arthur Kill	NYISO	Fossil	Natural Gas	NY	865	865	100.0
Astoria Turbines	NYISO	Fossil	Natural Gas	NY	415	415	100.0
Chalk Point	PJM	Fossil	Natural Gas	MD	80	80	100.0
Connecticut Jet Power	ISO-NE	Fossil	Oil	CT	142	142	100.0
Cottonwood[c]	MISO	Fossil	Natural Gas	TX	1,263	1,263	100.0
Devon	ISO-NE	Fossil	Oil	CT	133	133	100.0
Doga		Fossil	Natural Gas	Turkey	180	144	80.0
Fisk	PJM	Fossil	Oil	IL	171	171	100.0
Gladstone		Fossil	Coal	AUS	1,613	605	37.5
Indian River	PJM	Fossil	Coal	DE	410	410	100.0
Indian River	PJM	Fossil	Oil	DE	16	16	100.0
Ivanpah	CAISO	Renewable	Solar	CA	393	214	54.5
Joliet[e]	PJM	Fossil	Natural Gas	IL	1,326	1,326	100.0
Long Beach	CAISO	Fossil	Natural Gas	CA	252	252	100.0
Middletown	ISO-NE	Fossil	Oil	CT	762	762	100.0
Midway-Sunset	CAISO	Fossil	Natural Gas	CA	226	113	50.0
Montville	ISO-NE	Fossil	Oil	CT	491	491	100.0
Oswego	NYISO	Fossil	Oil	NY	1,638	1,638	100.0
Powerton[e]	PJM	Fossil	Coal	IL	1,538	1,538	100.0
Sherbino Wind Farm	ERCOT	Renewable	Wind	TX	150	75	50.0
Stadiums		Renewable	Solar	various	6	6	100.0
Sunrise	CAISO	Fossil	Natural Gas	CA	586	586	100.0
Vienna	PJM	Fossil	Oil	MD	167	167	100.0

Watson	CAISO	Fossil	Natural Gas	CA	416	204	49.0
Waukegan	PJM	Fossil	Coal	IL	682	682	100.0

Name of Facility	Power Market	Plant Type	Primary Fuel	Location	Rated MW Capacity	Net MW Capacity[a]	% Owned
Waukegan	PJM	Fossil	Oil	IL	101	101	100.0
Will County	PJM	Fossil	Coal	IL	510	510	100.0
Total East/West					14,822	13,011	
Other							
Residential solar		Renewable	Solar	various	60	60	100.0
Total Other					60	60	
Total Continuing Operations, excluding Held for Sale					26,627	23,112	
Held for Sale and Discontinued Operations							
Bayou Cove[c]	MISO	Fossil	Natural Gas	LA	225	225	100.0
Big Cajun I[c]	MISO	Fossil	Natural Gas	LA	430	430	100.0
Big Cajun II[c]	MISO	Fossil	Coal	LA	580	580	100.0
Big Cajun II[c]	MISO	Fossil	Natural Gas	LA	540	540	100.0
Big Cajun II[c]	MISO	Fossil	Coal	LA	588	341	58.0
Carlsbad[f]	CAISO	Fossil	Natural Gas	CA	528	528	100.0
Guam[d]	GPA	Renewable	Solar	Guam	26	26	100.0
Sterlington[c]	MISO	Fossil	Natural Gas	LA	176	176	100.0
Total Held for Sale and Discontinued Operations					3,093	2,846	
Total Fleet					29,720	25,958	

(a) Actual capacity can vary depending on factors including weather conditions, operational conditions, and other factors. Additionally, ERCOT requires periodic demonstration of capability, and the capacity may vary individually and in the aggregate from time to time

(b) Generation capacity figure consists of the Company's 44% interest in the two units at STP

(c) Assets that are part of NRG's South Central Portfolio. The entire South Central Portfolio, including Cottonwood, was sold on February 4, 2019. NRG will continue to operate the Cottonwood facility under a lease agreement through 2025

(d) Guam was classified as held for sale as of December 31, 2018. The sale was completed on February 20, 2019

(e) NRG leases 100% interests in the Powerton facility and Units 7 and 8 of the Joliet facility through facility lease agreements expiring in 2034 and 2030, respectively. NRG owns 100% interest in Joliet Unit 6. NRG operates the Powerton and Joliet facilities

(f) On February 6, 2018, the Company entered into an agreement with NRG Yield, Inc. and GIP to sell 100% of NRG's membership interests in Carlsbad Energy Holdings LLC, which owns the Carlsbad project, a 528 MW natural gas-fired project in Carlsbad, California pursuant to the ROFO Agreement. The transaction closed on February 27, 2019

Other Properties

NRG owns several real properties and facilities related to its generation assets, other vacant real property unrelated to the Company's generation assets, interests in construction projects, and properties not used for operational purposes.

NRG believes it has satisfactory title to its plants and facilities in accordance with standards generally accepted in the electric power industry, subject to exceptions that, in the Company's opinion, would not have a material adverse effect on the use or value of its portfolio.

NRG leases its financial and commercial corporate headquarters at 804 Carnegie Center, Princeton, New Jersey, its operational headquarters in Houston, Texas, its retail business offices and call centers, and various other office space.

Item 3 — Legal Proceedings

See Item 15 — Note 21, Commitments and Contingencies, to the Consolidated Financial Statements for discussion of the material legal proceedings to which NRG is a party.

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 Information and Holders

NRG's authorized capital stock consists of 500,000,000 shares of common stock and 10,000,000 shares of preferred stock. A total of 25,000,000 shares of the Company's common stock are authorized for issuance under the NRG LTIP. No shares of NRG common stock were available for future issuance under the NRG GenOn LTIP. For more information about the NRG LTIP and the NRG GenOn LTIP, refer to Item 12 — Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters and Item 15 — Note 19, Stock-Based Compensation, to the Consolidated Financial Statements.

NRG had 283,650,039 shares outstanding as of December 31, 2018. As of January 31, 2019, there were 280,997,550 shares outstanding, and there were 19,691 common stockholders of record.

NRG currently anticipates continuing to pay comparable cash dividends in the future.

Issuer Purchases of Equity Securities

In 2018, the Company's board of directors authorized the Company to repurchase $1.5 billion of its common stock. During the year ended December 31, 2018, the Company repurchased a total of 35,234,664 shares under these programs for $1.25 billion, and the remaining $250 million was repurchased by February 28, 2019. The average price paid per share for the $1.5 billion share repurchase was $36.24. In addition, the Company's board of directors authorized in February 2019 an additional $1.0 billion share repurchase program to be executed in 2019.

The table below sets forth the information with respect to purchases made by or on behalf of NRG or any "affiliated purchaser" (as defined in Rule 10b-18(a)(3) under the Exchange Act), of NRG's common stock during the quarter ended

December 31, 2018.

For the three months ended December 31, 2018	Total Number of Shares Purchased	Average Price Paid per Share[a]	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs[b]
Month #1 (October 1, 2018 to October 31, 2018)	—	$ —	—	$500,000,000
Month #2 (November 1, 2018 to November 30, 2018)	1,964,808	$ 38.59	1,964,808	$424,174,905
Month #3 (December 1, 2018 to December 31, 2018)[c]	4,725,163	$ 36.87	4,725,163	$249,951,196
Total at December 31, 2018	6,689,971	$ 37.38	6,689,971	

(a) The average price paid per share excludes commissions of $0.01 per share paid in connection with the open market share repurchases

(b) Includes commissions of $0.01 per share paid in connection with the open market share repurchases

(c) Includes 486,618 of additional shares delivered upon settlement of an ASR agreement executed in September 2018

Stock Performance Graph

The performance graph below compares NRG's cumulative total stockholder return on the Company's common stock for the period December 31, 2013 through December 31, 2018 with the cumulative total return of the Standard & Poor's 500 Composite Stock Price Index, or S&P 500, and the Philadelphia Utility Sector Index, or UTY. NRG's common stock trades on the New York Stock Exchange under the symbol "NRG."

The performance graph shown below is being furnished and compares each period assuming that $100 was invested on December 31, 2013, in each of the common stock of NRG, the stocks included in the S&P 500 and the stocks included in the UTY, and that all dividends were reinvested.

Comparison of Cumulative Total Return

	Dec-2013	Dec-2014	Dec-2015	Dec-2016	Dec-2017	Dec-2018
NRG Energy, Inc.	$ 100.00	$ 95.52	$ 42.95	$ 45.71	$ 106.82	$ 149.10
S&P 500	100.00	113.69	115.26	129.05	157.22	150.33
UTY	100.00	128.94	120.87	141.90	160.09	165.72

Item 6 — Selected Financial Data

The following table presents NRG's historical selected financial data. This historical data should be read in conjunction with the Consolidated Financial Statements and the related notes thereto in Item 15 and Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations. The Company has completed several acquisitions and dispositions, as described in Item 15 — Note 3, Acquisitions, Discontinued Operations and Dispositions.

	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(In millions except ratios and per share data)				
Statement of income data:					
Total operating revenues	$9,478	$9,074	$8,915	$10,842	$11,387
Total operating costs and other expenses [a]	(8,929)	(8,953)	(9,208)	(11,010)	(11,606)
Impairment losses [b]	(99)	(1,534)	(483)	(4,823)	(5)
Operating income/(loss)	982	(741)	33	(4,347)	537
Impairment losses on investments	(15)	(79)	(268)	(40)	—
Income/(loss) from continuing operations, net	460	(1,345)	(956)	(6,379)	(223)
(Loss)/income from discontinued operations, net	(192)	(992)	65	(57)	355
Net income/(loss) attributable to NRG Energy, Inc.	$268	$(2,153)	$(774)	$(6,382)	$134
Common share data:					
Basic shares outstanding — average	304	317	316	329	334
Diluted shares outstanding — average	308	317	316	329	339
Shares outstanding — end of year	284	317	315	314	337
Per share data:					
Net income/(loss) attributable to NRG — basic	$0.88	$(6.79)	$(2.22)	$(19.46)	$0.23
Net income/(loss) attributable to NRG — diluted	0.87	(6.79)	(2.22)	(19.46)	0.23
Dividends declared per common share	0.12	0.12	0.24	0.58	0.54
Book value	$(4.35)	$6.20	$14.09	$17.29	$34.68
Business metrics:					
Cash flow from operations	$1,377	$1,610	$1,908	$1,419	$1,620
Liquidity position [c]	1,977	2,760	1,768	2,102	2,136
Return on equity	(21.72)%	(109.40)%	(17.41)%	(117.45)%	1.15 %
Ratio of debt to total capitalization	126.12 %	81.40 %	68.26 %	63.96 %	46.61 %
Balance sheet data:					
Current assets	$3,600	$4,437	$6,747	$8,231	$9,454
Current liabilities	2,398	3,354	4,736	5,215	5,732
Property, plant and equipment, net	3,048	5,974	7,877	8,283	11,823
Total assets	10,628	23,355	30,716	33,738	41,551
Long-term debt, including current maturities, and capital leases	6,521	9,384	10,071	10,867	11,184
Total stockholders' equity	$(1,234)	$1,968	$4,446	$5,434	$11,695

(a) Excludes impairment losses and impairment losses on investments

(b) Includes goodwill impairment as described in Item 15 - Note 10, Goodwill and Other Intangibles, to the Consolidated Financial Statements

(c) Liquidity position is determined as disclosed in Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, Liquidity and Capital Resources, Liquidity Position. It excludes collateral funds deposited by counterparties of $33 million, $37 million and $2 million as of December 31, 2018, 2017 and 2016, respectively, which represents cash held as collateral from hedge counterparties in support of energy risk management activities. It is the Company's intention to limit the use of these funds for repayment of the related current liability for collateral received in support of energy risk management activities

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The following table provides the details of NRG's operating revenues:

	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(In millions)				
Energy revenue	$2,677	$2,725	$3,243	$4,131	$4,215
Capacity revenue	670	618	642	781	690
Retail revenue	7,110	6,374	6,332	6,907	7,371
Mark-to-market for economic hedging activities	(209)	33	(566)	(138)	684
Contract amortization	—	(1)	(1)	(1)	1
Other revenues	287	235	313	202	313
Corporate/Eliminations	(1,057)	(910)	(1,048)	(1,040)	(1,887)
Total operating revenues[(a)]	$9,478	$9,074	$8,915	$10,842	$11,387

[(a)] Inter-segment sales and net derivative gains and losses included in operating revenues

Energy revenue consists of revenues received from third parties as well as from the Company's retail businesses, for sales of electricity in the day-ahead and real-time markets, as well as bilateral sales. It also includes energy sold through long-term PPAs for renewable facilities. In addition, energy revenue includes revenues from the settlement of financial instruments and net realized trading revenues.

Capacity revenue consists of revenues received from a third party at either the market or negotiated contract rates for making installed generation capacity available in order to satisfy system integrity and reliability requirements. Capacity revenue also includes revenues from the settlement of financial instruments. In addition, capacity revenue includes revenues received under tolling arrangements, which entitle third parties to dispatch NRG's facilities and assume title to the electrical generation produced from that facility.

Retail revenue, representing operating revenues of NRG's retail businesses, consists of revenues from retail sales to residential, small business, commercial, industrial and governmental/institutional customers, revenues from the sale of excess supply into various markets, primarily in Texas, as well as product sales.

Mark-to-market for economic hedging activities includes asset-backed hedges that have not been designated as cash flow hedges and ineffectiveness on cash flow hedges.

Contract amortization revenue consists of the amortization of the intangible assets for net in-market C&I contracts established in connection with the acquisitions of Reliant Energy and Green Mountain Energy. These amounts are amortized into revenue over the term of the underlying contracts based on contracted volumes.

Other revenues consists of operations and maintenance fees, or O&M fees, construction management services, or CMA fees, sale of natural gas and emission allowances, and revenues from ancillary services. O&M fees consist of revenues received from providing certain third party and unconsolidated affiliates with services under long-term operating agreements. CMA fees are earned where NRG provides certain management and oversight of construction projects pursuant to negotiated agreements. Ancillary services are comprised of the sale of energy-related products associated with the generation of electrical energy such as spinning reserves, reactive power and other similar products. Other revenues also include unrealized trading activities.

Item 7 — Management's Discussion and Analysis of Financial Condition and Results of Operations

The discussion and analysis below has been organized as follows:

- Executive Summary, including the business environment in which NRG Energy Inc., or NRG or the Company, operates, a discussion of regulation, weather, competition and other factors that affect the business, Transformation Plan update, and other significant events that are important to understanding the results of operations and financial condition;
- Results of operations, including an explanation of significant differences between the periods in the specific line items of NRG's Consolidated Statements of Operations;
- Financial condition addressing credit ratings, liquidity position, sources and uses of cash, capital resources and requirements, commitments, and off-balance sheet arrangements; and
- Critical accounting policies which are most important to both the portrayal of the Company's financial condition and results of operations, and which require management's most difficult, subjective or complex judgment.

As you read this discussion and analysis, refer to NRG's Consolidated Statements of Operations to this Form 10-K, which presents the results of the Company's operations for the years ended December 31, 2018, 2017, and 2016, and also refer to Item 1 to this Form 10-K for more detailed discussion about the Company's business.

As further described in Note 3, Acquisitions, Discontinued Operations and Dispositions, the Company is treating the following businesses as discontinued operations, which have been recast to present in the corporate segment:

- South Central Portfolio
- NRG Yield, Inc. and its Renewables Platform
- Carlsbad
- GenOn

Executive Summary

NRG is an energy company built on dynamic retail brands with diverse generation assets. NRG brings the power of energy to consumers by producing, selling and delivering electricity and related products and services in major competitive power markets in the U.S. in a manner that delivers value to all of NRG's stakeholders. The Company sells energy, services, and innovative, sustainable products and services directly to retail customers under the names "NRG" and "Reliant" and other brand names owned by NRG supported by approximately 23,000[(a)] MW of generation as of December 31, 2018.

Business Environment

The industry dynamics and external influences affecting the Company and its businesses, and the power generation and retail energy industry in general in 2018 and for the future medium term include:

Commodities Markets — The price of natural gas plays an important role in setting the price of electricity in many of the regions where NRG operates. Natural gas prices are driven by variables including demand from the industrial, residential, and electric sectors, productivity across natural gas supply basins, costs of natural gas production, changes in pipeline infrastructure, and the financial and hedging profile of natural gas consumers and producers. In 2018, average natural gas prices at Henry Hub was 1.0% lower than in 2017.

If long-term gas prices decrease, the Company is likely to encounter lower realized energy prices, leading to lower energy revenues as higher priced hedge contracts mature and are replaced by contracts with lower gas and power prices. NRG's retail gross margins have historically improved as natural gas prices decline and are likely to partially offset the impact of declining gas prices on conventional wholesale power generation. To further mitigate this impact, NRG may increase its percentage of coal and nuclear capacity sold forward using a variety of hedging instruments, as described under the heading "Energy-Related Commodities" in Item 15 — Note 5, Accounting for Derivative Instruments and Hedging Activities, to the Consolidated Financial Statements.

Natural gas prices are a primary driver of coal demand. The low-priced commodity environment has stressed coal equities, leading coal suppliers to file for bankruptcy protection, launch debt exchanges, rationalize assets, and cut production. If multiple parties withdraw from the market, liquidity could be challenged in the short term. Inventory overhang will be utilized to offset production losses. Coal prices are typically affected by the price of natural gas.

(a) excluding discontinued operations and held for sale

Electricity Prices — The price of electricity is a key determinant of the profitability of the Company. Many variables such as the price of different fuels, weather, load growth and unit availability all coalesce to impact the final price for electricity and the Company's profitability. An increase in supply cost volatility in the competitive retail markets may result in smaller companies choosing to exit the market, which may result in further consolidation in the competitive retail space. The following table summarizes average on-peak power prices for each of the major markets in which NRG operates for the years ended December 31, 2018, 2017, and 2016. Power prices were higher for the year ended December 31, 2018 as compared to the same period in 2017 and 2016. ERCOT power prices were higher primarily due to the continued effect of lower reserve margins as a result of asset retirements in the region. Power prices in East region increased for the year ended December 31, 2018 as compared to the same period in 2017 and 2016 primarily driven by higher winter demand and higher natural gas prices in the fourth quarter of 2018.

	Average On-Peak Power Price ($/MWh)				
	Year Ended December 31			2018 vs 2017 Change	2017 vs 2016 Change
Region	2018	2017	2016	%	%
Texas [a]					
ERCOT - Houston[a]	$37.29	$33.95	$26.91	10 %	26 %
ERCOT - North[a]	36.26	25.86	24.53	40 %	5 %
East/West					
MISO - Louisiana Hub[b]	43.70	40.02	34.30	9 %	17 %
NY J/NYC[b]	47.19	38.34	35.29	23 %	9 %
NEPOOL[b]	49.96	37.18	35.05	34 %	6 %
COMED (PJM)[b]	34.60	32.46	32.11	7 %	1 %
PJM West Hub[b]	41.66	34.14	33.79	22 %	1 %
CAISO - SP15[b]	47.33	36.48	31.17	30 %	17 %

(a) Average on-peak power prices based on real time settlement prices as published by the respective ISOs
(b) Average on-peak power prices based on day ahead settlement prices as published by the respective ISOs

The following table summarizes average realized power prices for each region in which NRG operates for the years ended December 31, 2018, 2017, and 2016, which reflects the impact of settled hedges.

	Average Realized Power Price ($/MWh)				
	Year Ended December 31			2018 vs 2017 Change	2017 vs 2016 Change
Region	2018	2017	2016	%	%
Texas	$37.12	$33.45	$40.49	11 %	(17)%
East/West	43.70	46.48	47.14	(6)%	(1)%

The average realized power prices for December 31, 2018 as compared to the same period in 2017, increased in Texas as a result of higher power prices, and decreased in East/West as a result of the roll off of hedges. The average realized power prices for December 31, 2017 as compared to the same period in 2016 decreased in both Texas and East/West as a result of the roll off of hedges.

Clean Infrastructure Development — Policy mechanisms at the state and federal level including production and investment tax credits, cash grants, loan guarantees, accelerated depreciation tax benefits, RPS, and carbon trading plans, have supported and continue to support the development of renewable generation, demand-side and smart grid,

and other clean infrastructure technologies. In addition, the costs associated with the development of clean infrastructure, such as wind and solar generating facilities, continues to decline. These factors continue to drive increases in the development of clean infrastructure in the markets where the Company participates, which may impact the ability of the Company's generating facilities to participate in those markets. According to ERCOT, Inc., more than 30% of 2018 energy consumption in the ERCOT market was generated from carbon-free resources with wind power contributing 19%. Certainly, subsidies and incentives have contributed to the increase in renewable power sources, but it is also true that customer awareness/preferences have shifted toward sustainable solutions. Alternatively, increased demand for sustainable energy products from both residential and commercial consumers creates opportunities for diversified product offerings in competitive retail markets.

Digitization and Customization — The electric industry is experiencing major technology changes in the way power is distributed and used by end-use customers. The electric grid is shifting from a centralized analog system, where power is generated from limited sources and flows in one direction, to a decentralized multidirectional system, where power can be generated from a number of distributed resources and stored or dispatched on an as-needed basis. In addition, consumers are seeking new ways to engage with their power providers. Technologies like smart thermostats, appliances and electric vehicles are giving individuals more choice and control over their electricity usage.

Weather — Weather conditions in the regions of the U.S. in which NRG does business influence the Company's financial results. Weather conditions can affect the supply and demand for electricity and fuels and may also impact the availability of the Company's generating assets. Changes in energy supply and demand may impact the price of these energy commodities in both the spot and forward markets, which may affect the Company's results in any given period. Typically, demand for and the price of electricity is higher in the summer and the winter seasons, when temperatures are more extreme. The demand for and price of natural gas is also generally higher in the winter. However, all regions of the U.S. typically do not experience extreme weather conditions at the same time, thus NRG is typically not exposed to the effects of extreme weather in all parts of its business at once.

Other Factors — A number of other factors significantly influence the level and volatility of prices for energy commodities and related derivative products for NRG's business. These factors include:

- seasonal, daily and hourly changes in demand;
- extreme peak demands;
- available supply resources;
- transportation and transmission availability and reliability within and between regions;
- location of NRG's generating facilities relative to the location of its load-serving opportunities;
- procedures used to maintain the integrity of the physical electricity system during extreme conditions; and
- changes in the nature and extent of federal and state regulations

These factors can affect energy commodity and derivative prices in different ways and to different degrees. These effects may vary throughout the country as a result of regional differences in:

- weather conditions;
- market liquidity;
- capability and reliability of the physical electricity and gas systems;
- local transportation systems; and
- the nature and extent of electricity deregulation

Environmental Matters, Regulatory Matters and Legal Proceedings — Details of environmental matters are presented in Item 15 — Note 23, Environmental Matters, to the Consolidated Financial Statements and Item 1— Business, Environmental Matters, section. Details of regulatory matters are presented in Item 15 — Note 22, Regulatory Matters, to the Consolidated Financial Statements and Item 1— Business, Regulatory Matters, section. Details of legal proceedings are presented in Item 15 — Note 21, Commitments and Contingencies, to the Consolidated Financial Statements. Some of this information relates to costs that may be material to the Company's financial results.

Transformation Plan

NRG is well underway in executing its Transformation Plan. The Company expects to fully implement the Transformation Plan by the end of 2020 with a significant portion completed in 2018. The three-part, three-year plan is comprised of the following targets and the Company's achievements towards such targets are as follows:

Operations and Cost Excellence

Recurring cost savings and margin enhancement of $1,065 million, which consists of $590 million of cumulative cost savings, a $215 million net margin enhancement program, $50 million annual reduction in maintenance capital expenditures, and $210 million in permanent selling, general and administrative expense reduction associated with asset sales. The Company realized annual cost savings of $532 million and $32 million of margin enhancements during the year ended December 31, 2018 and is on track to realize $590 million of cost savings and $135 million of margin enhancements in 2019.

The Company expects to realize (i) $370 million of non-recurring working capital improvements through 2020 and (ii) approximately $290 million one-time costs to achieve. By December 31, 2018, NRG has realized $333 million of non-recurring working capital improvements and $194 million of one-time costs to achieve. The Company expects to incur approximately $95 million of one-time costs to achieve in 2019.

Portfolio Optimization

Targeted and completed $3.0 billion of asset sale cash proceeds received through February 28, 2019, as described below:

- In 2017, NRG executed asset sales of 322 MW for aggregate cash of $150 million, which includes sales to NRG Yield, Inc. and the sale of Minnesota wind projects to third parties
- On March 30, 2018, the Company completed the sale of 100% of its ownership interest in Buckthorn Solar to NRG Yield, Inc. for cash consideration of approximately $42 million
- On August 1, 2018, the Company completed the sale of 100% of its ownership interests in BETM to Diamond Energy Trading and Marketing, LLC for $70 million, excluding working capital adjustments. The sale also resulted in the release and return of approximately $119 million of letters of credit, $32 million of parent guarantees, and $4 million of net cash collateral to NRG
- On August 31, 2018, the Company completed the sale of its interest in NRG Yield, Inc. and its Renewables Platform to GIP, for approximately $1.348 billion in cash proceeds
- On November 1, 2018, the Company offered to Clearway Energy, Inc. its ownership interest in Agua Caliente Borrower 1, LLC, for approximately $120 million, which owns a 35% interest in AGua Caliente, a 290 MW utility scale solar project. The offer expired on January 31, 2019 with no action taken by Clearway Energy, Inc. As a result of this expiration, the Company has removed this asset from the target asset sale cash proceeds under the Transformation Plan.
- During the twelve months ended December 31, 2018, the Company completed the sale of various other assets for approximately $28 million
- On February 4, 2019, NRG sold the South Central portfolio, a 3,555 MW portfolio of generation assets, for cash consideration of $1 billion, excluding working capital and other adjustments
- On February 20, 2019, NRG completed the sale of Guam for cash consideration of approximately $8 million
- On February 27, 2019, NRG sold the Carlsbad project, a 528 MW natural gas-fired power plant, for cash consideration of $387 million, excluding working capital and other adjustments

Capital Structure and Allocation

As of December 31, 2018, the Company achieved the previously announced target of reducing consolidated corporate debt to 3.0x net debt / adjusted EBITDA[(a)] credit ratio on a pro forma basis that includes the South Central Portfolio sale proceeds. To achieve this ratio, the Company completed the following:

- Reduction of $9.2 billion in non-recourse debt related to the sale of NRG Yield, Inc. and the Renewable Platform, which includes the debt for Carlsbad Energy Center, as well as the impact of deconsolidation of Agua Caliente and Ivanpah
- The Company has completed its targeted $640 million of debt reduction through the redemption of $485 million of its outstanding 6.250% senior notes due 2022 and the Term Loan prepayment of $155 million. The annualized interest savings related to these activities to date totals $37 million

In 2018, the Company's board of directors authorized the Company to repurchase $1.5 billion of its common stock. As of February 28, 2019, the Company completed $1.5 billion of repurchases at an average price of $36.24 per share. In addition, the Company's board of directors authorized in February 2019 an additional $1 billion share repurchase program to be executed in 2019.

(a) adjusted EBITDA as defined per the Senior Credit Facility

Other Significant Events

The following additional significant events occurred during 2018:

XOOM Energy Acquisition

- On June 1, 2018, the Company completed the acquisition of XOOM Energy, LLC, an electricity and natural gas retailer operating in 19 states, Washington, D.C. and Canada for approximately $213 million in cash. See Note 3, Acquisitions, Discontinued Operations and Dispositions for further discussion on purchase price allocation. The acquisition increased NRG's retail portfolio by approximately 300,000 customers.

Agua Caliente and Ivanpah Deconsolidation

- During the third quarter of 2018, the Company, recognized a gain of $8 million on the deconsolidation and subsequent recognition of its 35% interest in Agua Caliente as an equity method investment, as discussed in more detail in Note 3 Acquisitions, Discontinued Operations and Dispositions

During the second quarter of 2018, the Company, recognized a loss of $22 million on the deconsolidation and subsequent recognition of its 54.6% interest in Ivanpah as an equity method investment, as discussed in more detail in Note 15, Investments Accounted for by the Equity Method and Variable Interest Entities.

Financing Activities

- On March 21, 2018, the Company repriced the 2023 Term Loan Facility, reducing the interest rate margin by 50 basis points to LIBOR plus 1.75% and reducing the LIBOR floor to 0.00%. As a result of the repricing, the Company expects approximately $47 million in interest savings over the remaining life of the loan.
- On May 24, 2018, the Company issued $575 million in aggregate principal amount at par of 2.75% convertible senior notes due 2048, as discussed in more detail in Note 11, Debt and Capital Leases.
- During the year ended December 31, 2018, the Company completed senior note repurchases of $1,061million in aggregate principal of its senior notes for $1,106 million, including accrued interest, as discussed in more detail in Note 11, Debt and Capital Leases.
- The annualized interest savings related to these activities to date totals $20 million

Consolidated Results of Operations for the years ended December 31, 2018 and 2017

The following table provides selected financial information for the Company:

(in millions except otherwise noted)	Year Ended December 31, 2018	2017	Change
Operating Revenues			
Energy revenue [a]	$1,548	$1,636	$(88)
Capacity revenue [a]	670	612	58
Retail revenue	7,105	6,378	727
Mark-to-market for economic hedging activities	(130)	252	(382)
Contract amortization	—	(1)	1
Other revenues [b]	285	197	88
Total operating revenues	9,478	9,074	404
Operating Costs and Expenses			
Cost of sales [b]	5,878	5,432	(446)
Mark-to-market for economic hedging activities	(144)	46	190
Contract and emissions credit amortization [c]	27	34	7
Operations and maintenance	1,083	1,097	14
Other cost of operations	264	277	13
Total cost of operations	7,108	6,886	(222)
Depreciation and amortization	421	596	175
Impairment losses	99	1,534	1,435
Selling, general and administrative	799	836	37
Reorganization costs	90	44	(46)
Development costs	11	22	11
Total operating costs and expenses	8,528	9,918	1,390
Other income - affiliate	—	87	(87)
Gain on sale of assets	32	16	16
Operating Income/(Loss)	982	(741)	1,723
Other Income/(Expense)			
Equity in earnings of unconsolidated affiliates	9	(14)	23
Impairment losses on investments	(15)	(79)	64
Other income, net	18	51	(33)
Net loss on debt extinguishment	(44)	(49)	5
Interest expense	(483)	(557)	74
Total other expenses	(515)	(648)	133
Income/(Loss) from Continuing Operations Before Income Taxes	467	(1,389)	1,856
Income tax expense/(benefit)	7	(44)	51
Income/(Loss) from Continuing Operations	460	(1,345)	1,805
Loss from discontinued operations, net of income tax	(192)	(992)	800
Net Income/(Loss)	268	(2,337)	2,605
Less: Net loss attributable to noncontrolling interests and redeemable noncontrolling interests	—	(184)	184
Net Income/(Loss) Attributable to NRG Energy, Inc.	$268	$(2,153)	$2,421
Business Metrics			
Average natural gas price — Henry Hub ($/MMBtu)	$3.09	$3.11	(1)%

(a) Includes realized gains and losses from financially settled transactions

(b) Includes unrealized trading gains and losses

(c) Includes amortization of SO_2 and NO_x credits and excludes amortization of RGGI credits

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Economic Gross Margin

In addition to gross margin, the Company evaluates its operating performance using the measure of economic gross margin, which is not a GAAP measure and may not be comparable to other companies' presentations or deemed more useful than the GAAP information provided elsewhere in this report. Economic gross margin should be viewed as a supplement to and not a substitute for the Company's presentation of gross margin, which is the most directly comparable GAAP measure. Economic gross margin is not intended to represent gross margin. The Company believes that economic gross margin is useful to investors as it is a key operational measure reviewed by the Company's chief operating decision maker. Economic gross margin is defined as the sum of energy revenue, capacity revenue and other revenue, less cost of fuels and other cost of sales.

Economic gross margin does not include mark-to-market gains or losses on economic hedging activities, contract amortization, emission credit amortization, or other operating costs.

The tables below present the composition and reconciliation of gross margin and economic gross margin which reflects the Company's current view of reporting segments for the years ended December 31, 2018 and 2017:

	Year Ended December 31, 2018					
		Generation				
(In millions except otherwise noted)	Retail	Texas	East/West/Other[a][b]	Subtotal	Corporate/Eliminations	Total
Energy revenue	$—	$1,585	$ 1,092	$2,677	$ (1,129)	$1,548
Capacity revenue	—	1	669	670	—	670
Retail revenue	7,110	—	—	—	(5)	7,105
Mark-to-market for economic hedging activities	(7)	(174)	(28)	(202)	79	(130)
Other revenue	—	84	203	287	(2)	285
Operating revenue	7,103	1,496	1,936	3,432	(1,057)	9,478
Cost of fuel	(23)	(734)	(557)	(1,291)	(4)	(1,318)
Other costs of sales[c]	(5,285)	(133)	(275)	(408)	1,133	(4,560)
Mark-to-market for economic hedging activities	260	2	(39)	(37)	(79)	144
Contract and emission credit amortization	—	(26)	(1)	(27)	—	(27)
Gross margin	$2,055	$605	$ 1,064	$1,669	$ (7)	$3,717
Less: Mark-to-market for economic hedging activities, net	253	(172)	(67)	(239)	—	14
Less: Contract and emission credit amortization, net	—	(26)	(1)	(27)	—	(27)
Economic gross margin	$1,802	$803	$ 1,132	$1,935	$ (7)	$3,730
Business Metrics						
MWh sold (thousands)		42,701	$ 24,988			
MWh generated (thousands)		38,214	$ 21,089			

(a) Includes International, Renewables, and Generation eliminations

(b) Includes Agua, BETM and Ivanpah which were sold or deconsolidated as of August, July and April 2018, respectively

(c) Includes purchased energy, capacity and emissions credits

	Year Ended December 31, 2017					
		Generation				
(In millions except otherwise noted)	Retail	Texas	East/West/Other[a]	Subtotal	Corporate/Eliminations	Total
Energy revenue	$—	$1,427	$ 1,298	$2,725	$ (1,089)	$1,636
Capacity revenue	—	22	596	618	(6)	612
Retail revenue	6,374	—	—	—	4	6,378
Mark-to-market for economic hedging activities	(4)	94	(57)	37	219	252
Contract amortization	(1)	—	—	—	—	(1)
Other revenue	—	35	200	235	(38)	197
Operating revenue	6,369	1,578	2,037	3,615	(910)	9,074
Cost of fuel	(13)	(732)	(542)	(1,274)	1	(1,286)
Other costs of sales[b]	(4,759)	(137)	(370)	(507)	1,120	(4,146)
Mark-to-market for economic hedging activities	181	(21)	13	(8)	(219)	(46)
Contract and emission credit amortization	—	(30)	(4)	(34)	—	(34)
Gross margin	$1,778	$658	$ 1,134	$1,792	$ (8)	$3,562
Less: Mark-to-market for economic hedging activities, net	177	73	(44)	29	—	206
Less: Contract and emission credit amortization, net	(1)	(30)	(4)	(34)	—	(35)
Economic gross margin	$1,602	$615	$ 1,182	$1,797	$ (8)	$3,391
Business Metrics						
MWh sold (thousands)		42,662	27,923			
MWh generated (thousands)		38,694	21,338			

(a) Includes International, Renewables, and Generation eliminations

(b) Includes purchased energy, capacity and emissions credits

The table below represents the weather metrics for 2018 and 2017:

	Years ended December 31,		Quarters ended December 31,		Quarters ended September 30,		Quarters ended June 30,		Quarters ended March 31,	
Weather Metrics	Texas	East/West/Other	Texas	East/West/Other	Texas	East/West/Other	Texas	East/West/Other	Texas	East/West/Other
2018										
CDDs[a]	3,130	1,213	228	74	1,657	856	1,101	265	144	18
HDDs[a]	1,874	3,393	815	1,214	1	26	90	425	968	1,728
2017										
CDDs	3,068	1,155	311	84	1,568	770	966	281	223	20
HDDs	1,270	3,198	665	1,157	1	33	32	380	572	1,628
10 year average										
CDDs	3,023	1,059	264	69	1,654	714	1,004	259	101	17
HDDs	1,728	3,459	695	1,214	3	40	56	429	974	1,776

(a) National Oceanic and Atmospheric Administration-Climate Prediction Center - A Cooling Degree Day, or CDD, represents the number of degrees that the mean temperature for a particular day is above 65 degrees Fahrenheit in each region. A Heating Degree Day, or HDD, represents the number of degrees that the mean temperature for a particular day is below 65 degrees Fahrenheit in each region. The CDDs/HDDs for a period of time are calculated by adding the CDDs/HDDs for each day during the period.

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Retail gross margin and economic gross margin

The following is a discussion of gross margin and economic gross margin for Retail.

	Years ended December 31,	
(In millions except otherwise noted)	2018	2017
Retail revenue	$6,775	$6,104
Supply management revenue	174	187
Capacity revenues	161	83
Customer mark-to-market	(7)	(4)
Contract amortization	—	(1)
Operating revenue [(a)]	7,103	6,369
Cost of sales [(b)]	(5,308)	(4,772)
Mark-to-market for economic hedging activities	260	181
Gross margin	$2,055	$1,778
Less: Mark-to-market for economic hedging activities, net	253	177
Less: Contract and emission credit amortization	—	(1)
Economic gross margin	$1,802	$1,602
Business Metrics		
Mass electricity sales volume (GWh) - Texas	37,846	36,169
Mass electricity sales volume (GWh) - All other regions	7,968	6,221
C&I electricity sales volume (GWh) All regions [(b)]	21,176	20,400
Natural gas sales volumes (MDth)	11,253	3,212
Average Retail Mass customer count (in thousands)	3,063	2,862
Ending Retail Mass customer count (in thousands)	3,320	2,876

(a) Includes intercompany sales of $5 million and $5 million in 2018 and 2017, respectively, representing sales from Retail to the Texas region

(b) Includes intercompany purchases of $1,163 million and $1,090 million in 2018 and 2017, respectively

Retail gross margin increased $277 million and retail economic gross margin increased $200 million for the year ended December 31, 2018, compared to the same period in 2017, due to:

	(In millions)
Higher gross margin driven by margin enhancement initiatives enhancing customer product, retention, term and mix of $3.30 per MWh, or $208 million partially offset by higher supply costs due to increased power prices in ERCOT of $2.40 MWh, or $150 million.	$ 58
Higher gross margin due to higher volumes from net higher average customer counts primarily driven by XOOM acquisition in June 2018	60
Higher gross margin from the favorable impact of weather due to $44 million from an increase in load in 2018 of 1,893,000 MWh partially offset by an unfavorable impact of $14 million from selling back additional excess supply in 2018 as well as $16 million due to the impacts of Hurricane Harvey in 2017	46
Higher gross margin due to an increase in capacity revenues from the business solutions unit mainly due to approximately 1,600 additional MWs sold and margin enhancements from the sale of additional capacity of $11 million	36
Increase in economic gross margin	$ 200
Increase in mark-to-market for economic hedging primarily due to net unrealized gains/losses on open positions related to economic hedges	76
Increase in contract and emission credit amortization	1
Increase in gross margin	$ 277

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Generation gross margin and economic gross margin

Generation gross margin decreased $123 million and generation economic gross margin increased $138 million, both of which include intercompany sales, during the year ended December 31, 2018, compared to the same period in 2017.

The tables below describe the change in Generation gross margin and generation economic gross margin:

Texas Region

	(In millions)
Higher gross margin due to a 11% increase in average realized prices	$ 153
Higher gross margin from sales of NOx emission credits	36
Higher gross margin from commercial optimization activities	5
Higher gross margin due to margin enhancement initiatives from reduced fuel supply costs	3
Lower gross margin driven by planned outages for both units at STP in 2018 as compared to a single unit planned outage in 2017	(9)
Lower gross margin due to an increase in tolling purchases in 2018 as a result of increased demand and the cancellation of the Greens Bayou RMR agreement in 2017	(9)
Other	9
Increase in economic gross margin	$ 188
Decrease in mark-to-market for economic hedging primarily due to net unrealized gains/losses on open positions related to economic hedges	(245)
Increase in contract and emission credit amortization	4
Decrease in gross margin	$ (53)

East/West Region

	(In millions)
Lower gross margin primarily due to Ivanpah and Agua Caliente being deconsolidated in April 2018 and August 2018, respectively	$ (123)
Lower gross margin driven by a 26% decrease in realized capacity pricing in New York and expiration of the Long Beach capacity toll in July 2017	(51)
Lower gross margin mainly due to an 11% decrease in average realized prices, primarily at Midwest Generation	(42)
Lower gross margin due to decreased load contract volumes coupled with lower prices	(29)
Lower gross margin at Sunrise in 2018 due to planned major maintenance activities that extended into a forced outage.	(17)
Higher gross margin due to a 32% increase in PJM capacity prices and a 51% increase in NEISO capacity prices	132
Higher gross margin from commercial optimization activities	35
Higher gross margin due to 2017 lower cost of market adjustment for fuel inventory	31
Higher gross margin as a result of trading activity at BETM	8
Higher gross margin due to margin enhancement initiatives from reduced fuel supply costs	4
Other	2
Decrease in economic gross margin	$ (50)
Decrease in mark-to-market for economic hedging primarily due to net unrealized gains/losses on open positions related to economic hedges	(23)
Increase in contract and emission credit amortization	3
Decrease in gross margin	$ (70)

Mark-to-market for Economic Hedging Activities

Mark-to-market for economic hedging activities includes asset-backed hedges that have not been designated as cash flow hedges. Total net mark-to-market results decreased by $192 million during the year ended December 31, 2018, compared to the same period in 2017.

The breakdown of gains and losses included in operating revenues and operating costs and expenses by region was as follows:

	Year Ended December 31, 2018				
		Generation			
	Retail	Texas	East/West/Other	Elimination[a]	Total
	(In millions)				
Mark-to-market results in operating revenues					
Reversal of previously recognized unrealized (gains)/losses on settled positions related to economic hedges	$(2)	$32	$ (3)	$ (104)	$(77)
Net unrealized (losses)/gains on open positions related to economic hedges	(5)	(206)	(25)	183	(53)
Total mark-to-market (losses)/gains in operating revenues	$(7)	$(174)	$ (28)	$ 79	$(130)
Mark-to-market results in operating costs and expenses					
Reversal of previously recognized unrealized (gains)/losses on settled positions related to economic hedges	$(81)	$(6)	$ (13)	$ 104	$4
Reversal of acquired gain positions related to economic hedges.	(10)	—	—	—	(10)
Net unrealized gains/(losses) on open positions related to economic hedges	351	8	(26)	(183)	150
Total mark-to-market gains/(losses) in operating costs and expenses	260	$2	$ (39)	$ (79)	$144

(a) Represents the elimination of the intercompany activity between Retail and Generation

The breakdown of gains and losses included in operating revenues and operating costs and expenses by region was as follows:

	Year Ended December 31, 2017				
		Generation			
	Retail	Texas	East/West/Other	Elimination[a]	Total
	(In millions)				
Mark-to-market results in operating revenues					
Reversal of previously recognized unrealized (gains)/losses on settled positions related to economic hedges	$(2)	$140	$ (72)	$ 64	$130
Net unrealized (losses)/gains on open positions related to economic hedges	(2)	(46)	15	155	122
Total mark-to-market (losses)/gains in operating revenues	$(4)	$94	$ (57)		