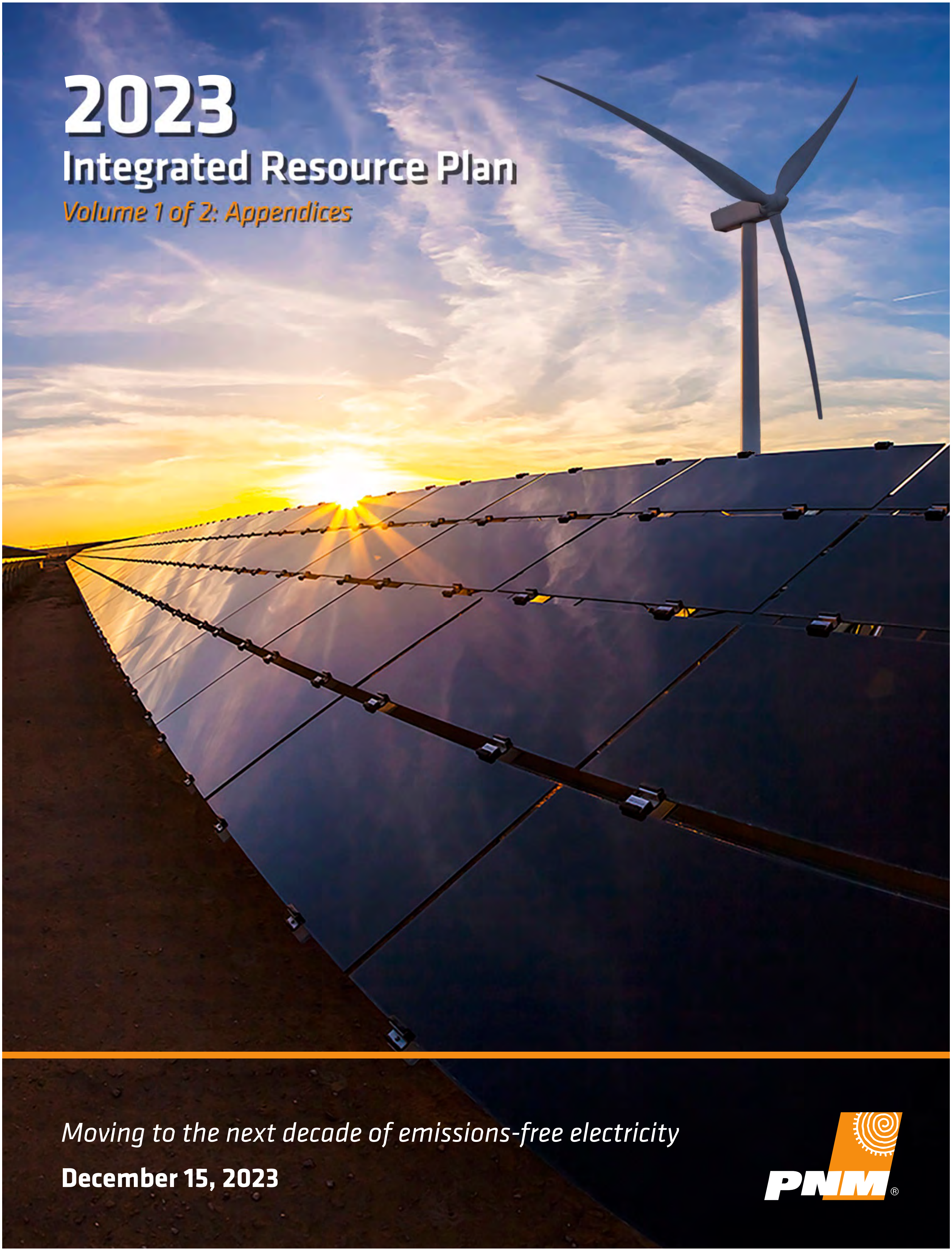
2023

Integrated Resource Plan

Volume 1 of 2: Appendices



Moving to the next decade of emissions-free electricity

December 15, 2023

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PNM 2023 INTEGRATED RESOURCE PLAN APPENDICES – VOLUME 1 OF 2

TABLE OF CONTENTS

Appendix A. Acronym List

ADMS	Advanced Distribution Management Systems
AEG	Applied Energy Group
AMI	Advanced Metering Infrastructure
APS	Arizona Public Service Company
ATB	Annual Technologies Baseline
BAA	Balancing Authority Area
BEVs	Battery Electric Vehicles
BTM	Behind-The-Meter
CAES	Compressed air energy storage
CAISO	California Independent System Operator
CATF	Clean Air Task Force
CCN	Certificate of Convenience & Necessity
CCS	Carbon Capture and Storage
CES	Clean Energy Standard
CTP	Current Trends & Policy future
CTs	Combustion Turbines
DERMS	Distributed Energy Resource Management Systems
DGPV	Distributed Generation Photovoltaic
DR	Demand Response
DSM	demand-side management
E3	Energy and Environmental Economics, Inc.
EDAM	Extended Day-Ahead Market
EDF	Environmental Defense Fund
EE	Energy Efficiency
EIM	Energy Imbalance Market
EIP	Eastern Interconnect Project
ELCC	Effective Load Carrying Capacity
EPE	El Paso Electric Company
EPNG	El Paso Natural Gas
ERCOT	Electric Reliability Council of Texas
ESA	Energy Storage Agreement
ESIG	Energy Systems Integration Group
ETA	Energy Transition Act
EUE	Expected Unserved Energy
EUEA	Efficient Use of Energy Act
EV	Electric Vehicles
FCPP	Four Corners Power Plant
FERC	Federal Energy Regulatory Commission
GE	General Electric
GHG	Greenhouse Gas
HEG	High Economic Growth future
HILF	High Impact, Low Freqeuncy
IAS	Iron-Air Storage
IIJA	Infrastructure Investment and Jobs Act
ILR	inverter loading ratio
INL	Idaho National Laboratory
IPP	Independent Power Producer
IRA	Inflation Reduction Act
IRP	Integrated Resource Plan
ITC	Investment Tax Credit
kV	Kilovolt
LADWP	Los Angeles Department of Water & Power
LAES	Liquid air energy storage
LBNL	Lawrence Berkeley National Laboratory
LDES	Long-Duration Energy Storage
LED	Light Emitting Diode
LEG	Low Economic Growth future
LOLE	Loss of Load Expectation
LOLH	Loss of Load Hours
LOLP	Loss of Load Probability
MCEP	Most Cost-Effective Portfolio
MRO	Midwest Reliability Organization
MWh	Megawatt-hours
NCP	National Climate Policy future

NERC	North American Electric Reliability Corporation
NMAC	New Mexico Administrative Code
NMWEC	New Mexico Wind Energy Center
NOx	Nitrogen Oxides
NPCC	Northeast Power Coordinating Council
NREL	National Renewable Energy Laboratory
NTEC	Navajo Transitional Energy Company
NYISO	New York Independent System Operator
O&M	Operating and Maintenance
OATT	Open Access Transmission Tariff
OLE	Ojo Line Extension
PCC	Planning Coordination Committee
PEM	Proton Exchange Membranes
PHEVs	plug-in hybrid electric vehicles
PHS	Pumped Hydro Storage
PJM	Pennsylvania-New Jersey-Maryland Interconnection
PNM	Public Service Company of New Mexico
PPA	Power Purchase Agreement
PRM	Planning Reserve Margin
PSH	Pumped Storage Hydro
PTC	Production Tax Credit
PV	Photovoltaic
PVNGS	Palo Verde Nuclear Generating Station
PVRR	Present Value Revenue Requirement
REC	Renewable Energy Credit
RFI	Requests for Information
RFP	Request for Proposal
RPS	Renewables Portfolio Standard
SERVM	Strategic Energy & Risk Valuation Model
SJGC	San Juan Generating Station
SO2	Sulfur Dioxides
SOx	Sulfur Oxides
SPP	Southwest Power Pool
SPS	Southwestern Public Service
SRSG	Southwest Reserve Sharing Group
STP	Subregional Transmission Planning
SWAT	Southwest Area Transmission Planning Oversight Committee
TEP	Tucson Electric Power
TOU	Time-Of-Use
UCAP	Unforced Capacity
UCT	Utility Cost Test
WAPA	Western Area Power Administration
WECC	Western Electricity Coordinating Council
WMEG	Western Market Exploratory Group
WPP	Western Power Pool
WRAP	Western Resource Adequacy Program

Appendix B. Glossary of Terms

ACE Diversity Interchange: Power system control areas within three major (and essentially separate) areas of North America are interconnected electrically, thus enjoying vastly improved reliability and economy of operation compared to operating in isolation. Each must continually balance load, interchange, and generation to minimize adverse influence on neighboring control areas and interconnection frequency. This requires investment in control systems and the sacrifice of some fuel conversion efficiencies to achieve the objective of complying with minimum control performance standards set by the North American Electric Reliability Council (NERC). Control also increases wear and tear on machinery in the pursuit of these goals. Area control area (ACE) and area diversity interchange (ADI) offer a means of reducing this control burden without undue investment or sacrifice by any participant in a group. (Source: IEEE, http: //ieeexplore.ieee.org/Xplore/login.jsp?url=/iel1/59/8797/00387953.pdf?arnumber=387953)

Accredited capacity: The amount of capacity that each generation resource contributes to meeting PNM's planning reserve margin requirement. This is typically less than a generator's **nameplate capacity** to reflect the various limitations and constraints on each resource that may impact its ability to generate when needed. *See also* ***unforced capacity*** *and* ***effective load carrying capability***.

Aeroderivative: A type of gas turbine for electrical power generation

Availability factor: The ratio of the time a generating facility is available to produce energy at its rated capacity, to the total amount of time in the period being measured, as defined by the IRP Rule

Avoided costs: The incremental cost to a utility for capacity and/or energy that could be avoided if another incremental resource addition such as energy efficiency were added that deferred or eliminated the need for the original addition

Baseload: A resource that is most economically used by running at a capacity factor of 65% or greater on an annual basis. *See also* ***capacity factor***.

Biomass resource: As defined by the IRP Rule, a recognized renewable resource type that uses renewable fuels such as agriculture or animal waste, small diameter timber, salt cedar and other phreatophyte or woody vegetation removed from river basins or watersheds, landfill gas and anaerobically digested waste biomass. *See also* ***renewable energy***.

Cap and trade: A regulatory body sets a cap on emissions of a designated pollutant, and sells permits equivalent to a firm's emissions. Firms that need to increase their emission permits must buy them from those who require fewer permits.

Capacity factor: Actual energy generated over a certain time period divided by theoretical ability to generate electricity over that same time period. Capacity factor is most often referenced as an annual calculation.

Capacity uprate: The maximum power level at which a nuclear power plant may operate

Carbon capture & sequestration (CCS): A technology that allows for carbon dioxide to be captured during the combustion of fossil fuels and subsequently stored in underground geologic formations, reducing and/or eliminating greenhouse gas emissions resulting from fossil fuel combustion.

Carbon dioxide: Carbon dioxide (CO_2) is an important greenhouse gas because it is thought to contribute to global warming. Although it is not currently a regulated pollutant, it is the subject of pending federal legislation seeking to make it a regulated pollutant. That legislation would seek to reduce its CO_2 production by penalizing power plants for their emission into the atmosphere. An NMPRC Order in Case No. 06-00448-UT requires that electric utilities use the following standardized prices for carbon emissions in their IRP filing: $8, $20, and $40 per metric ton for their low, medium, and high price sensitivities, respectively.

Climate change: A significant change in measures of climate, including temperature, precipitation, or wind, that lasts for an extended period of time, resulting from natural factors or human activities that change the atmosphere's composition and the land surface

Combined cycle gas turbine: For electric generation, *combined cycle* refers to a gas turbine that generates electricity and heat in the exhaust used to make steam, which then drives a steam turbine to generate additional electricity.

Compressed air energy storage (CAES): A form of energy storage that uses surplus electricity to compress air to a high pressure; air is subsequently stored in subterranean geologic formations and can later be withdrawn to power an electric turbine. Because of the requirement for specific geologic formations, CAES is highly site-specific but can provide durations of 24 hours or longer depending on site characteristics.

Constrained transmission: A transmission system that can no longer accommodate additional capacity to meet demand is constrained.

Conventional resources: Coal, nuclear, and natural gas resources that have historically been the most commonly used to supply electricity (also referred to as *traditional resources*)

Crediting: A billing mechanism that credits distribution generation system owners for electricity they add to the grid. When a home or business is net-metered, electricity generated is credited against what electricity is consumed when the home or business electricity use exceeds the system's output. Customers are only billed for their "net" energy use.

Demand response (DR) : A resource comprising programs that compensate electricity users in exchange for the ability to interrupt or reduce their electric consumption when system demand is particularly high and/or system reliability is at risk.

Demand: Usage at a point in time, measured in MW or kW

Demand-side resources: As defined by the IRP Rule, energy efficiency, and load management, as those terms are defined in the Efficient Use of Energy Act

Dispatchability: The ability of a generating unit to increase or decrease generation, or to be brought online or shut down at the request of a utility's system operator

Distributed generation: Electric generation that is sited at a customer's premises, providing energy to the customer load at that site and/or providing electric energy for use by multiple customers in contiguous distribution substation areas. In this report, it refers to PNM customer-sited, renewable, distributed generation program for solar photovoltaic systems less than 10 kilowatts in size.

Duty cycle: Generating facility design that determines how a facility is operated. Duty cycle classifications for firm resources include **baseload**, **intermediate**, **peaking**. While the concept of "duty cycle" is not directly applicable to non-firm resources, these can nonetheless generally be classified as intermittent and storage.

Dynamic balancing resources: that provide operators the tools to balance the supply and demand for electricity on an instantaneous basis, recognizing that the generation profiles of many of PNM's carbon-free resources will not coincide naturally with electricity demand. Examples include shorter-duration energy storage, aeroderivative combustion turbines, and demand response. This classification is one of three general types of resources PNM identifies in its **Statement of Need**. *See also* ***firm generating resources, dynamic balancing resources***.

EE Rule: Energy Efficiency Rule (17.7.2 New Mexico Administrative Code)

Effective load carrying capability (ELCC): a measure used to translate the contributions of **non-firm resources** towards resource adequacy into equivalent "perfect" capacity derived through loss of load probability modeling. The use of ELCC to account for the capacity contributions of non-firm resources allows our planning reserve margin requirement to capture the needs of our system (and the contributions these resource make towards them) across all conditions, and is therefore an essential component of our planning approach.

Electrolysis: A process by which electricity is used to split water molecules into hydrogen and oxygen; the hydrogen can subsequently be used to generate electricity in thermal generators or fuel cells or used for other applications.

Emergency energy: Energy purchases to meet unserved load

Energy efficiency: Measures, including energy conservation measures or programs that target consumer behavior, equipment, or devices to result in a decrease in consumption of electricity without reducing the amount or quality of energy services, as defined by the **IRP Rule**

Energy: Usage over a period of time, measured in GWh, MWh, or kWh

Energy storage: various technologies that allow for the storage of surplus electricity so that it can later be provided back to the grid. *See also* ***compressed air energy storage***, ***flow battery***, ***iron-air storage***, ***liquid air energy storage***, ***lithium ion battery***, ***pumped hydro storage***

Energy storage agreement (ESA): a contractual agreement between two parties (often a utility and a developer) through which the utility assumes the rights to the output produced by a specific energy storage resources.

EnCompass: the primary resource portfolio modeling software that PNM uses for resource plan optimization. The model includes both capacity expansion and production simulation functionality.

Equivalent availability: Typically referred to as *Equivalent Availability Factor* (*EAF*), the proportion of hours in a given time period that a resource is available to generate at full capacity

Expected unserved energy (EUE): a probabilistic measure of the amount of load shed that a portfolio of resources might experience, as measured in expected amount of load that cannot be served. *See also* ***resource adequacy, loss of load expectation, loss of load hours***.

Financial risk: Expected cost to the customer and the variability and uncertainty of future cost outcomes.

Firm generating resources: generating resources capability of producing stable, predictable output over sustained periods of time (absent forced outages), which typically include nuclear, coal, and natural gas and may in the future include hydrogen and various long-duration storage technologies. This classification is one of three general types of resources PNM identifies in its **Statement of Need**. *See also* ***low-cost carbon-free energy resources, dynamic balancing resources***.

Fixed cost: Costs that are independent of output. *See also* ***variable costs***.

Flow battery: a form of chemical storage that can be used to store surplus electricity and discharge back to the grid. Flow batteries are anticipated to provide storage duration in the range of 8-10 hours.

Forced outage rate: Percentage of time a unit is not operational when it is expected to be in service

Geothermal: Electric generation fueled by heat from geologic formations, which qualifies as a renewable resource under 17.9.572 NMAC

Heat rate: The ratio of energy inputs used by a generating facility expressed in BTUs (British Thermal Units) to the energy output of that facility expressed in kilowatt-hours, as defined by the IRP Rule

Hydrogen: a carbon-free fuel that may be used to generate electricity through either combustion in a thermal resource or use in a fuel cell. While the direct use of hydrogen to generate electricity does not produce any carbon emissions, the fuel may have implied emissions embedded in it depending on how it was produced.

Hydrogen-ready combustion turbine: a peaking resource that generates electricity through combustion of a blend of hydrogen and natural gas and that may be retrofit in the future to operate using 100% hydrogen fuel.

Inflation Reduction Act (IRA): federal legislation passed in 2022 that created broad tax credits and other financial incentives to support the development of clean energy resources.

Infrastructure Investment and Jobs Act (IIJA): federal legislation passed in 2022 to complement complement the IRA by providing additional funding to the energy sector in support of industrial development.

Intermediate: A resource that is most economically run at capacity factors between 20% and 65% of the time on an annual basis. *See also* ***capacity factor***, ***duty cycle***.

Independent Power Producer (IPP): Third party producers who sell capacity and/or energy to utilities

IRP Rule: Integrated Resource Plan for Electric Utilities, NMPRC Rule 17.7.3 New Mexico Administrative Code (17.7.3 NMAC).

Iron-air energy storage: a form of energy storage that utilizes the natural rusting process to store electricity. Iron-air storage is a long duration storage technology that typically has a duration of 100 hours.

Integrated system planning (ISP): a coordinated process in which a utility develops a single long-term plan that links together the different elements of its system – which may include generation, transmission, distribution, and customer programs.

Jurisdictional load: Case 3137 Stipulation identifies jurisdictional load as New Mexico retail load and wholesale firm requirement customers contracted prior to September 2, 2002.

Linear generator: a type of thermal generating resource that uses combustion of various fuels to drive the oscillation of copper coils attached to magnets; the back-and-forth motion of the magnets produces electricity. Linear generators are expected to be capable of operating using multiple fuels (e.g. natural gas, hydrogen).

Liquid air energy storage (LAES): a type of thermal generating resource that uses combustion of fuels to a form of energy storage that uses surplus electricity to chill air to very low temperatures so that it can be stored in liquid phase and subsequently depressurized to power an electric turbine. LAES is expected to provide storage duration of approximately 8-10 hours.

Lithium ion battery: a form of chemical storage that can be used to store surplus electricity and discharge back to the grid. Lithium ion batteries are typically current configured to provide storage with duration up to four hours.

Load and resources: A load and resources table shows annual balance between load and the resources to meet the load, and includes the reserve margin calculation

Load factor: Peak demand divided by average demand

Load forecasting: The prediction of the demand for electricity over the planning period for the utility, as defined by the IRP Rule

Load management: Measures or programs that target equipment or devices to decrease peak electricity demand or shift demand from peak to off-peak periods, as defined by the IRP Rule

Load-following resource: This resource has a response rate that can meet normal fluctuations in load.

Loss of load expectation (LOLE): a probabilistic measure of the expected frequency that a portfolio of resources would have insufficient capability to serve loads, as measured in expected number of days per year. *See also* ***resource adequacy***, ***expected unserved energy***, ***loss of load hours***.

Loss of load hours (LOLH): a probabilistic measure of the amount of time that a portfolio of resources would have insufficient capability to serve loads, as measured in expected number of hours per year. *See also* ***resource adequacy***, ***loss of load expectation***, ***expected unserved energy***.

Low-cost carbon-free energy resources: resources with the capability to produce clean energy to meet a majority of customers' energy needs throughout the year. Examples available today include solar PV, wind, and energy efficiency. This classification is one of three general types of resources PNM identifies in its **Statement of Need**. *See also* ***firm generating resources***, ***dynamic balancing resources***.

Marginal cost: The highest system resource cost for the hour

Monte Carlo: Risk analysis technique utilizing multiple iterations calculated using random draws for sensitivity variables from a defined distribution for the variables

Most cost-effective resource portfolio: Those supply-side resources and demand-side resources that minimize the net present value of revenue requirements proposed by the utility to meet electric system demand during the planning period consistent with reliability and risk considerations, as defined by the **IRP Rule**.

Nameplate capacity: The rated output of an electrical generator; it can also refer to the rated capacity of a power plant (also referred to as *installed capacity*).

Net present value: The difference between the present values of cash inflows and the present value of cash outflows

Network transmission service: The transmission of capacity and energy from network generating resources to PNM's load.

Non-firm resources: generating resources with limitations on their ability to produce sustained, constant production of energy, including wind and solar (whose intermittency and variability limit their production) and storage and demand response (whose limited duration affects their ability to produce power for sustained periods). *See also* ***firm resources***, ***effective load carrying capability***.

Non-spinning reserves: The extra generating capacity that is not currently synchronized with the system, but can become available after a short delay

Particulate matter: A complex mix of extremely small particles and liquid droplets, including acids, organic chemicals, metals, and soil and dust, creating particle pollution

Peak demand: Occurs when demand for energy is at its greatest

Peak shaving: A strategy used to reduce electricity use during times of peak demand, typically employed through demand response programs

Peaking: A resource that is most economically run at a capacity factor of less than 20%. *See also* ***capacity factor***, ***duty cycle***.

Planning period: The future period for which a utility develops its IRP. For purposes of this rule, the planning period is 20 years, from 2023-2042.

Planning reserve margin (PRM): A measure of the amount of capacity in a portfolio in excess of a utility's peak demand. The capacity contributions of different types of resources towards this requirement are measured using **effective load carrying capability** (renewables, storage, and demand response) and **unforced capacity** (nuclear, coal, and gas). The use of these metrics allows the PRM to reflect supply needs across all hours of the year, not just during peak periods. *See also* ***resource adequacy***.

Plug-in hybrids: Hybrid automobiles whose batteries are recharged by plugging into an electric socket

Point-to-point transmission service: Delivery of power from one location to another, without branching to other locations

Portfolio: A combination of resource additions/assets over the planning period that meet the reserve margin criteria

Power purchase agreement (PPA): an contractual agreement between two parties (often a utility and a developer) through which the utility assumes the rights to energy and/or capacity provided by a specific generating resource.

Present Value Revenue Requirement (PVRR): a calculation of the cumulative **revenue requirement** over the planning horizon, discounted to the beginning of the period based on a specified discount rate (typically the utility's weighted average cost of capital.

Public utility: As defined by the IRP Rule, public utility or utility has the same meaning as in the Public Utility Act, except that it does not include a distribution cooperative utility, as defined in the Efficient Use of Energy Act

Pumped hydro storage: A form of mechanical storage that stores electricity by pumping water into a reservoir and subsequently using that water to generate electricity using hydroelectric turbines. The duration of pumped storage hydro storage varies based on site-specific parameters and hydrologic conditions but can range from short (<8 hours) to long (100+ hours) depending upon the size of the reservoirs.

Request for Information (RFI): a process by which a utility issues a solicitation to project developers to provide information on potential new resources with the purpose of gathering market intelligence. PNM periodically issues RFIs to ensure that planning assumptions reflect the best and most current available information in the market.

Request for Proposals (RFP): a process in which a utility issues a solicitation to developers to provide competitive bids for potential resources that will be evaluated by the utility to fill a specified procurement need.

Qualifying facilities: FERC established a new class of generating facilities that would receive special rate and regulatory treatment to support implementation of the Public Utility Regulatory Policies Act of 1978. Generating facilities fall into two categories: qualifying small power production facilities and qualifying cogeneration facilities.

Rate rider: According to State Statute 62-3-3-H, "Rate" means every rate, tariff, charge, or other compensation for utility service rendered or to be rendered by a utility and every rule, regulation, practice, act, requirement, or privilege in any way relating to such rate, tariff, charge, or other compensation and any schedule or tariff or part of a schedule or tariff thereof.

Reasonable Cost Threshold: A customer protection mechanism that limits the customer bill impact resulting from renewable energy procurements by utilities. It is the cost level established by the Commission above which a public utility shall not be required to add renewable energy to its electric energy supply portfolio pursuant to the renewable portfolio standard.

Resource Adequacy: The ability of a portfolio of resources to supply enough generation to meet demand across the year according to a predetermined reliability standard. PNM's standard for resource adequacy is based on a **loss of load expectation** of 0.1 days per year. To meet this standard, PNM plans to meet a minimum **planning reserve margin** requirement.

Regional Entity: According to NERC, "NERC works with eight regional entities to improve the reliability of the bulk power system. The members of the regional entities come from all segments of the electric industry: investor-owned utilities; federal power agencies; rural electric cooperatives; state, municipal and provincial utilities; independent power producers; power marketers; and end-use customers. These entities account for virtually all the electricity supplied in the United States, Canada, and a portion of Baja California Norte, Mexico."

Regional haze: According to the EPA, regional haze is visibility impairment that is produced by activity that emits fine particles and their precursors over a geographic area.

Reliability: The ability of the electric system to supply the demand and energy requirements of the customers when needed and to withstand sudden disturbances.

Renewable energy: As defined by the IRP Rule, electrical energy generated by means of a low or zero emissions generation technology with substantial long-term production potential and generated by use of renewable energy resources that may include solar, wind, hydropower, geothermal, fuel cells that are not fossil fueled, and biomass resources.

Renewable Energy Procurement Plan (REPP): PNM annual filing at the NMPRC that discusses plans to meet the Renewable Portfolio Standard set by the NMPRC.

Renewable resources: Generation resources that are based on a renewable fuel supply

Resilience: as defined by FERC, "the ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event."

Retail sales: The sale of energy to end users

Revenue requirement: Total sum of annual costs for meeting the system's energy requirements with all resources. This includes the costs associated with existing utility-owned resources (depreciation and taxes, operations and maintenance, and fuel costs), existing power purchase agreements and energy storage agreements, and the costs of all new future resources included in the planning horizon.

Scenario: A combination of sensitivity values used to generate portfolios

Sensitivity: A variable that has a significant impact on risk evaluation

Solar photovoltaic (solar PV): Electric generation that uses photovoltaic panels to convert sunlight directly to energy

Spinning reserves: Backup energy production capacity that can be available to a transmission system within 10 minutes and can operate continuously for at least two hours after being brought online

Spot prices: The price quoted for immediate settlement (payment) of a commodity

Statement of Need: as defined by the IRP Rule, "a description and explanation of the amount and the types of new resources, including the technical characteristics of any proposed new resources, to be procured, expressed in terms of energy or capacity, necessary to reliably meet an identified level of electricity demand in the planning horizon and to effect state policies." The Statement of Need is one of the primary outputs of the IRP process.

Thermal energy storage: various energy storage technologies that use electricity to heat materials or working fluids that can be stored at high temperatures and later used to transfer heat to generate electricity using a steam turbine. Thermal energy storage technologies offer potential for long-duration storage, providing duration of up to a week of storage.

Variable costs: Costs that change with unit output. *See also* ***fixed costs***.

Water intensity: A measure of the water resource needed to generate over a defined period

Wheeling: Transportation of electric power over transmission lines

Wind: Electric generation fueled by wind turbines

Appendix C. Load Forecast Details

This appendix provides details surrounding the assumptions and development of our load forecast. Table C-1 summarizes the general assumptions used in each of the different load forecast scenarios developed for the IRP. Table C-2 show our energy and peak demand forecasts across the range of scenarios and sensitivities considered in the IRP. These forecasts are shown in two ways: (1) with the effects of future energy efficiency embedded, and (2) with an adjustment to remove the effects of future energy efficiency to allow its treatment as a resource in the IRP analysis. The subsequent sections provide details behind the load forecasting approach (including data required by the IRP Rule).

Table C-1. Overview of assumptions used in load forecast futures and sensitivities

Future	Economic Forecast	Economic Dev Loads	BTM PV	EV Adoption	Building Elec	TOU Pricing Impacts	Weather
Current Trends & Policy	Mid	Limited	Mid	Mid	Mid	No	Normal
High Economic Growth[A]	**High**	**Stable**	Mid	Mid	Mid	No	Normal
Low Economic Growth	**Low**	Limited	**Low**	**Low**	Mid	No	Normal
National Carbon Policy[A]	Mid	**Stable**	**High**	**High**	**High**	No	Normal
Sensitivity	**Economic Forecast**	**Economic Dev Loads**	**BTM PV**	**EV Adoption**	**Building Elec**	**TOU Pricing Impacts**	**Weather**
Stable Economic Development	Mid	**Stable**	Mid	Mid	Mid	No	Normal
High BTM PV[B]	Mid	Limited	**High**	Mid	Mid	No	Normal
Low BTM PV[B]	Mid	Limited	**Low**	Mid	Mid	No	Normal
Zero Incremental PV[B]	Mid	Limited	**Zero Inc PV**	Mid	Mid	No	Normal
Zero PV[B]	Mid	Limited	**Zero PV**	Mid	Mid	No	Normal
High EV Adoption	Mid	Limited	Mid	**High**	Mid	No	Normal
Low EV Adoption[B]	Mid	Limited	Mid	**Low**	Mid	No	Normal
High Building Electrification	Mid	Limited	Mid	Mid	**High**	No	Normal
TOU Pricing	Mid	Limited	Mid	Mid	Mid	**Yes**	Normal
Extreme Weather	Mid	Limited	Mid	Mid	Mid	No	**Extreme**

Table Notes

A. The use of the “Stable” forecast of economic development loads in the High Economic Growth and National Carbon Policy futures requires an explicit adjustment to the original load forecasts. In the subsequent tables, those forecasts are shown both prior to that adjustment (e.g. “High Economic Growth”) and with that adjustment (e.g. “High Economic Growth + ED”). The latter are used in the IRP analysis.

B. These forecasts were developed to examine the impacts of various load modifiers but were not ultimately analyzed in the IRP sensitivity analysis.

Table C-2. Annual peak demand forecasts under various futures and sensitivities (MW)

Peak Demand - EE Embedded (MW)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Current Trends & Policy	2,029	2,054	2,119	2,150	2,142	2,151	2,152	2,155	2,164	2,177	2,194	2,211	2,230	2,251	2,277	2,307	2,340	2,363	2,385	2,413
High Economic Growth	2,031	2,061	2,132	2,174	2,176	2,196	2,205	2,218	2,238	2,261	2,289	2,316	2,341	2,372	2,408	2,449	2,493	2,526	2,558	2,597
High Economic Growth + ED	2,031	2,061	2,132	2,207	2,221	2,285	2,377	2,467	2,558	2,653	2,753	2,852	2,950	3,050	3,157	3,264	3,375	3,479	3,588	3,686
Low Economic Growth	2,024	2,046	2,104	2,126	2,109	2,109	2,101	2,095	2,096	2,100	2,108	2,120	2,130	2,142	2,159	2,180	2,204	2,218	2,231	2,250
National Carbon Policy	2,028	2,053	2,121	2,156	2,152	2,171	2,181	2,190	2,208	2,231	2,263	2,295	2,325	2,357	2,394	2,437	2,484	2,518	2,551	2,591
National Carbon Policy + ED	2,028	2,053	2,121	2,189	2,196	2,258	2,352	2,439	2,528	2,622	2,725	2,828	2,929	3,034	3,142	3,253	3,366	3,471	3,581	3,679
Stable Econ Dev (ED)	2,029	2,054	2,119	2,184	2,187	2,240	2,324	2,403	2,485	2,569	2,659	2,748	2,835	2,928	3,025	3,122	3,223	3,316	3,414	3,501
High BTM PV	2,027	2,051	2,112	2,139	2,127	2,138	2,139	2,139	2,146	2,162	2,183	2,204	2,222	2,243	2,267	2,297	2,330	2,352	2,373	2,401
Low BTM PV	2,030	2,058	2,125	2,161	2,157	2,170	2,170	2,169	2,180	2,195	2,215	2,234	2,250	2,268	2,290	2,318	2,351	2,374	2,397	2,426
Zero Incremental PV	2,043	2,089	2,169	2,216	2,222	2,244	2,252	2,260	2,277	2,296	2,320	2,343	2,363	2,385	2,412	2,444	2,479	2,502	2,525	2,554
Zero PV	2,201	2,245	2,325	2,370	2,374	2,396	2,404	2,410	2,423	2,439	2,460	2,479	2,495	2,512	2,534	2,561	2,591	2,610	2,630	2,659
High EV Adoption	2,029	2,056	2,122	2,156	2,150	2,163	2,169	2,177	2,192	2,211	2,236	2,260	2,286	2,315	2,349	2,389	2,433	2,465	2,494	2,531
Low EV Adoption	2,028	2,053	2,116	2,146	2,136	2,142	2,139	2,138	2,143	2,151	2,162	2,176	2,189	2,205	2,224	2,246	2,272	2,288	2,304	2,326
High Building Electrification	2,029	2,054	2,124	2,161	2,158	2,173	2,177	2,184	2,198	2,216	2,237	2,258	2,277	2,302	2,331	2,365	2,402	2,428	2,453	2,484
TOU Pricing	2,029	2,054	2,118	2,150	2,142	2,151	2,152	2,106	2,115	2,127	2,146	2,167	2,185	2,205	2,230	2,259	2,291	2,315	2,337	2,366
Extreme Weather	2,128	2,154	2,220	2,253	2,247	2,258	2,254	2,257	2,267	2,281	2,299	2,316	2,331	2,348	2,374	2,406	2,440	2,463	2,485	2,514

Peak Demand - EE Removed (MW)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Current Trends & Policy	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
High Economic Growth	2,069	2,116	2,204	2,273	2,310	2,368	2,414	2,452	2,497	2,556	2,582	2,639	2,690	2,718	2,766	2,806	2,863	2,907	2,945	2,978
High Economic Growth + ED	2,069	2,116	2,204	2,306	2,355	2,456	2,589	2,705	2,823	2,950	3,046	3,176	3,300	3,402	3,523	3,630	3,755	3,871	3,988	4,078
Low Economic Growth	2,062	2,102	2,176	2,225	2,243	2,280	2,307	2,326	2,355	2,395	2,401	2,439	2,470	2,479	2,507	2,526	2,562	2,587	2,611	2,628
National Carbon Policy	2,065	2,108	2,193	2,254	2,285	2,336	2,379	2,419	2,467	2,524	2,549	2,605	2,654	2,681	2,730	2,776	2,838	2,887	2,930	2,968
National Carbon Policy + ED	2,065	2,108	2,193	2,288	2,330	2,425	2,551	2,668	2,787	2,916	3,013	3,142	3,264	3,365	3,486	3,594	3,721	3,840	3,960	4,057
Stable Econ Dev (ED)	2,066	2,110	2,191	2,282	2,321	2,412	2,534	2,640	2,747	2,865	2,952	3,072	3,185	3,276	3,386	3,483	3,596	3,701	3,807	3,886
High BTM PV	2,065	2,106	2,184	2,238	2,261	2,303	2,337	2,368	2,405	2,452	2,465	2,509	2,547	2,563	2,603	2,636	2,684	2,721	2,753	2,778
Low BTM PV	2,068	2,113	2,197	2,259	2,291	2,342	2,382	2,413	2,451	2,498	2,510	2,557	2,600	2,620	2,660	2,691	2,739	2,775	2,805	2,829
Zero Incremental PV	2,080	2,146	2,243	2,317	2,359	2,421	2,470	2,510	2,557	2,613	2,635	2,690	2,739	2,763	2,808	2,844	2,897	2,939	2,974	3,002
Zero PV	2,237	2,301	2,398	2,471	2,511	2,573	2,622	2,662	2,708	2,765	2,784	2,837	2,882	2,902	2,944	2,974	3,024	3,061	3,092	3,115
High EV Adoption	2,067	2,112	2,194	2,254	2,284	2,335	2,374	2,406	2,451	2,507	2,529	2,583	2,631	2,656	2,702	2,741	2,797	2,839	2,875	2,909
Low EV Adoption	2,066	2,108	2,188	2,244	2,270	2,314	2,347	2,371	2,402	2,446	2,456	2,497	2,531	2,543	2,574	2,594	2,631	2,658	2,683	2,703
High Building Electrification	2,066	2,110	2,196	2,260	2,292	2,344	2,386	2,418	2,457	2,511	2,531	2,582	2,626	2,648	2,689	2,721	2,771	2,808	2,839	2,864
TOU Pricing	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,343	2,375	2,422	2,437	2,483	2,522	2,538	2,575	2,602	2,647	2,682	2,713	2,739
Extreme Weather	2,166	2,209	2,292	2,352	2,381	2,429	2,466	2,494	2,529	2,576	2,593	2,640	2,681	2,699	2,738	2,767	2,814	2,848	2,876	2,898

Table C-3. Annual energy demand under various futures and sensitivities

Annual Energy - EE Embedded (GWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Current Trends & Policy	10,250	10,492	11,063	11,192	11,146	11,146	11,103	11,061	11,028	11,013	10,982	10,978	10,981	11,001	11,007	11,026	11,049	11,075	11,082	11,102
High Economic Growth	10,264	10,524	11,127	11,301	11,301	11,346	11,348	11,350	11,362	11,393	11,406	11,449	11,498	11,565	11,618	11,684	11,755	11,829	11,884	11,953
High Economic Growth + ED	10,264	10,524	11,127	11,572	11,665	12,042	12,693	13,334	13,920	14,530	15,110	15,715	16,341	17,001	17,589	18,217	18,852	19,508	20,119	20,738
Low Economic Growth	10,227	10,449	10,988	11,076	10,989	10,947	10,864	10,781	10,709	10,654	10,584	10,541	10,503	10,483	10,449	10,428	10,411	10,396	10,364	10,344
National Carbon Policy	10,249	10,484	11,073	11,220	11,191	11,208	11,180	11,155	11,142	11,149	11,141	11,163	11,193	11,242	11,278	11,330	11,386	11,447	11,489	11,542
National Carbon Policy + ED	10,249	10,484	11,073	11,491	11,556	11,904	12,525	13,138	13,700	14,287	14,845	15,430	16,037	16,678	17,249	17,863	18,483	19,125	19,724	20,327
Stable Econ Dev (ED)	10,250	10,492	11,063	11,463	11,511	11,842	12,448	13,044	13,586	14,150	14,685	15,245	15,825	16,437	16,979	17,559	18,146	18,753	19,317	19,887
High BTM PV	10,246	10,476	11,032	11,144	11,079	11,057	10,990	10,924	10,870	10,833	10,781	10,758	10,741	10,741	10,729	10,731	10,736	10,745	10,737	10,742
Low BTM PV	10,255	10,506	11,091	11,238	11,213	11,231	11,204	11,179	11,164	11,169	11,156	11,173	11,197	11,238	11,265	11,307	11,353	11,403	11,434	11,479
Zero Incremental PV	10,291	10,610	11,255	11,458	11,483	11,553	11,575	11,600	11,636	11,691	11,728	11,795	11,869	11,962	12,038	12,131	12,226	12,329	12,409	12,503
Zero PV	10,773	11,093	11,737	11,939	11,965	12,035	12,056	12,081	12,117	12,174	12,209	12,276	12,350	12,445	12,520	12,612	12,708	12,811	12,890	12,985
High EV Adoption	10,253	10,499	11,076	11,212	11,176	11,188	11,159	11,133	11,119	11,125	11,115	11,136	11,164	11,213	11,247	11,297	11,353	11,411	11,448	11,498
Low EV Adoption	10,248	10,485	11,049	11,171	11,116	11,104	11,046	10,987	10,935	10,899	10,846	10,818	10,795	10,787	10,763	10,751	10,741	10,734	10,711	10,701
High Building Electrification	10,250	10,492	11,091	11,248	11,229	11,255	11,237	11,219	11,209	11,217	11,208	11,226	11,250	11,290	11,315	11,354	11,395	11,441	11,468	11,507
TOU Pricing	10,250	10,492	11,063	11,192	11,146	11,146	11,103	11,038	11,005	10,990	10,959	10,955	10,957	10,977	10,983	11,001	11,024	11,049	11,056	11,075
Extreme Weather	10,501	10,747	11,320	11,452	11,410	11,413	11,370	11,328	11,296	11,282	11,251	11,248	11,252	11,273	11,279	11,299	11,322	11,349	11,356	11,376

Annual Energy - EE Removed (GWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Current Trends & Policy	10,333	10,653	11,303	11,536	11,601	11,719	11,795	11,876	11,964	12,072	12,066	12,166	12,262	12,297	12,379	12,386	12,470	12,557	12,622	12,627
High Economic Growth	10,347	10,684	11,368	11,646	11,755	11,919	12,040	12,166	12,298	12,452	12,490	12,637	12,779	12,861	12,990	13,044	13,176	13,312	13,424	13,478
High Economic Growth + ED	10,347	10,684	11,368	11,917	12,120	12,615	13,385	14,149	14,856	15,589	16,194	16,903	17,623	18,296	18,961	19,577	20,273	20,990	21,659	22,263
Low Economic Growth	10,310	10,610	11,228	11,420	11,443	11,521	11,556	11,597	11,645	11,713	11,668	11,729	11,785	11,779	11,821	11,788	11,832	11,879	11,904	11,868
National Carbon Policy	10,332	10,644	11,314	11,564	11,646	11,781	11,872	11,971	12,079	12,209	12,226	12,351	12,475	12,537	12,650	12,690	12,807	12,929	13,029	13,067
National Carbon Policy + ED	10,332	10,644	11,314	11,835	12,011	12,477	13,217	13,954	14,637	15,346	15,929	16,618	17,319	17,973	18,621	19,223	19,904	20,608	21,264	21,852
Stable Econ Dev (ED)	10,333	10,653	11,303	11,807	11,965	12,415	13,140	13,860	14,522	15,209	15,769	16,433	17,106	17,733	18,351	18,919	19,567	20,236	20,857	21,412
High BTM PV	10,329	10,637	11,272	11,488	11,533	11,630	11,682	11,740	11,806	11,892	11,865	11,946	12,023	12,037	12,101	12,091	12,157	12,227	12,277	12,266
Low BTM PV	10,338	10,667	11,332	11,583	11,667	11,804	11,896	11,994	12,100	12,228	12,240	12,361	12,478	12,534	12,637	12,667	12,774	12,885	12,974	13,003
Zero Incremental PV	10,374	10,771	11,496	11,802	11,938	12,126	12,267	12,415	12,572	12,751	12,812	12,983	13,150	13,258	13,410	13,491	13,647	13,811	13,948	14,028
Zero PV	10,856	11,253	11,977	12,284	12,419	12,608	12,748	12,897	13,053	13,233	13,294	13,465	13,632	13,740	13,892	13,972	14,129	14,294	14,430	14,509
High EV Adoption	10,336	10,660	11,316	11,556	11,630	11,761	11,851	11,949	12,055	12,184	12,200	12,324	12,446	12,508	12,619	12,657	12,774	12,893	12,987	13,022
Low EV Adoption	10,331	10,645	11,290	11,516	11,570	11,677	11,738	11,802	11,871	11,958	11,930	12,006	12,076	12,082	12,135	12,111	12,162	12,216	12,251	12,225
High Building Electrification	10,333	10,653	11,331	11,592	11,683	11,828	11,929	12,034	12,146	12,276	12,292	12,414	12,531	12,586	12,687	12,714	12,816	12,923	13,008	13,032
TOU Pricing	10,333	10,653	11,303	11,536	11,600	11,719	11,794	11,854	11,941	12,049	12,043	12,143	12,239	12,273	12,355	12,361	12,445	12,531	12,596	12,600
Extreme Weather	10,584	10,907	11,560	11,797	11,865	11,986	12,062	12,144	12,232	12,341	12,335	12,437	12,533	12,569	12,651	12,659	12,743	12,831	12,896	12,901

Draft PNM Integrated Resource Plan Forecast Scenarios

Stuart McMenamin
Itron, Inc.

December, 2022

Agenda

» Economic Data and Forecasts

» Weather Data, Normal and Extreme Weather

» Behind the Meter PV Data and Forecasts

» Electric Vehicle Forecast

» Other Scenario Inputs (Electrification, TOU)

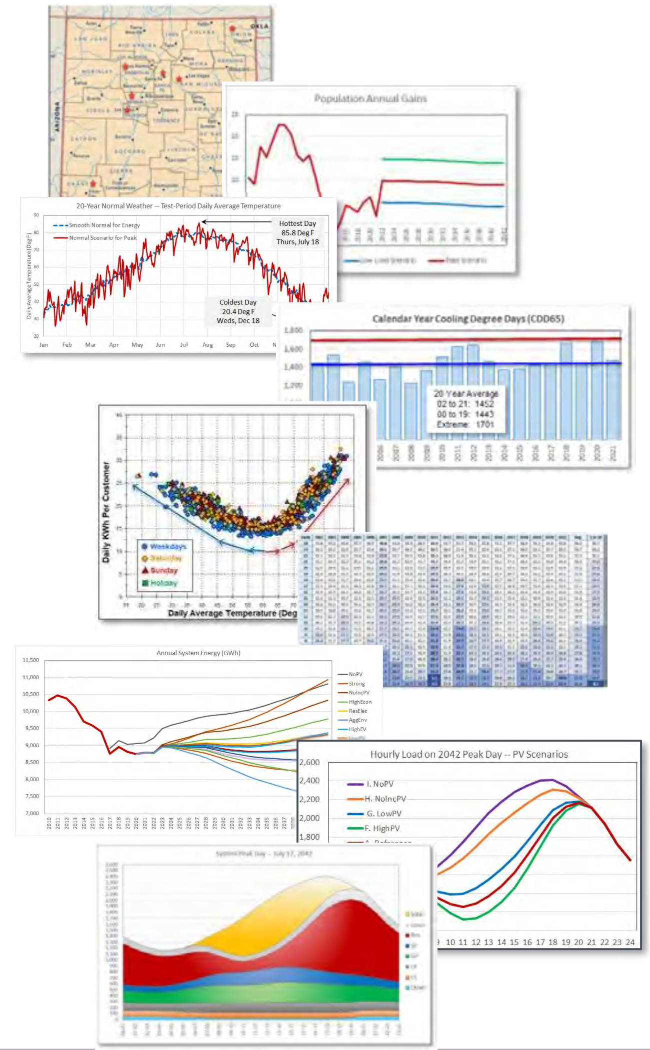
» Energy Modeling and Forecasts

- Customer growth forecast
- Statistically Adjusted End Use (SAE) Method
- Use per customer models
- Energy and peak forecast summary

» Hourly System Load and Peak Demand Forecasts

- Bottom-up load shape and peak demand forecast

» Forecast Scenarios and Results



Economic Data and Forecasts

Economic Data and Forecast

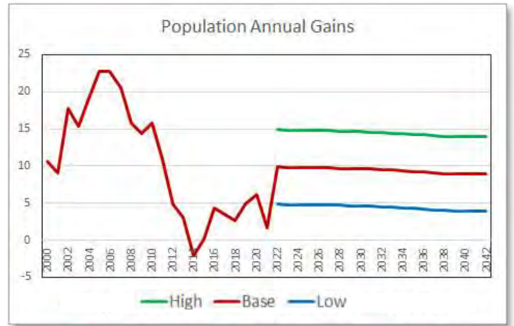
» Forecast provided by Woods and Poole
» Annual history from 1950 to 2021
» Annual forecast to 2050
» State and County level data
» Used data for PNM counties:
  - North: Bernalillo, San Miguel, Sandoval
    Santa Fe, Union, Valencia
  - South: Grant, Hidalgo, Luna, Otero
» Annual data converted to monthly using centered moving averages

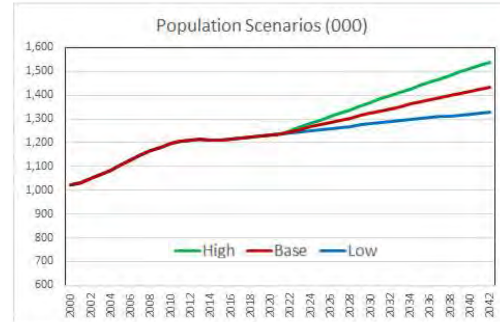
Economic Scenarios

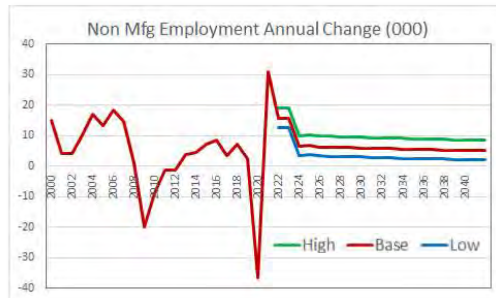
» Population Annual Gains
- High Case: 14,400
- Base Case: 9,400
- Low Case: 4,400

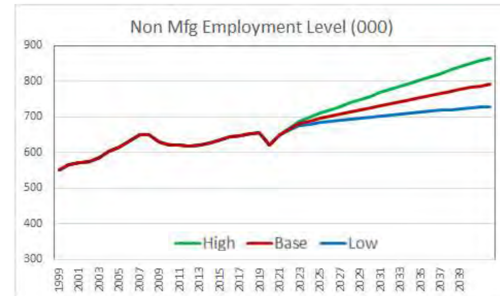
» Non Mfg. Employment Annual Gains
- High Case: 9,300
- Base Case: 5,800
- Low Case: 2,800

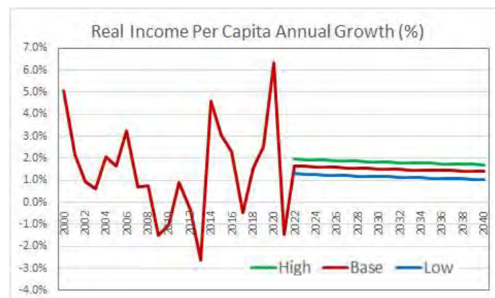
» Real Per Capita Income Growth
- High Case: 1.8%
- Base Case: 1.5%
- Low Case: 1.1%









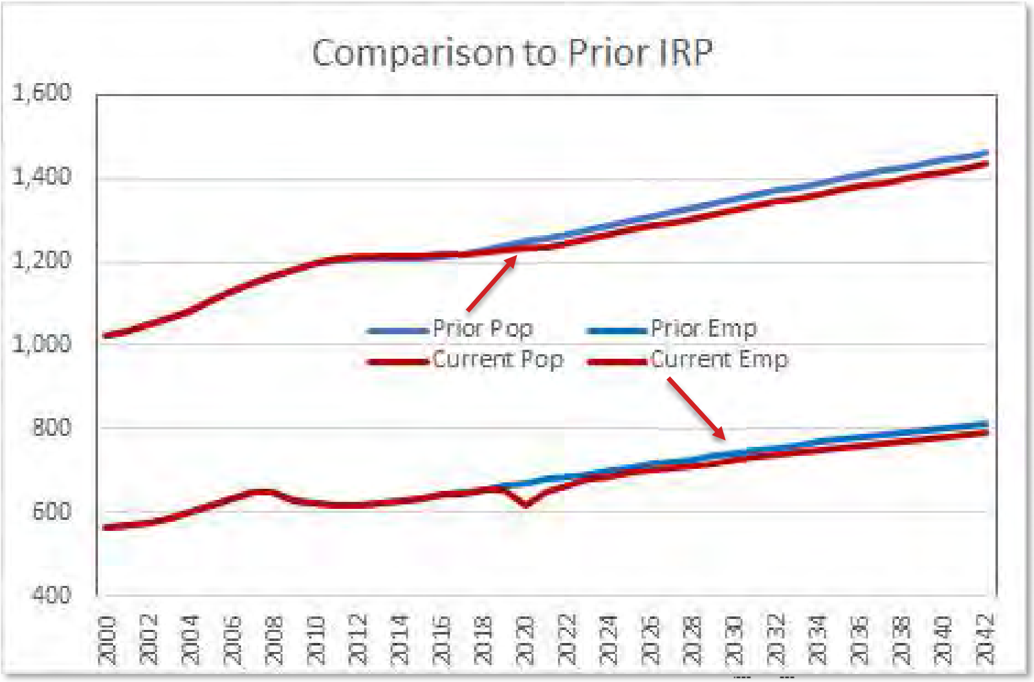


Comparison with Prior IRP

» Main drivers of growth are Population and Nonmanufacturing Employment

» Current forecasts are slightly weaker
- Population in 2042 down 28k
- Employment in 2042 down 19k

» Most of the difference is in place by the end of 2022, so gains beyond 2022 are about the same.



Weather Data and Normal Weather

Weather Data and Daily Scenarios

» Hourly weather data from AccuWeather
- Temperature – Used to compute Degree Days
- Global horizontal irradiation (GHI) – Used for solar generation

» 4 Stations
- North: Albuquerque (KABQ), Santa Fe (KSAF)
- South: Deming (KDMN), Alamogordo (KALM)

» Station weights for weather variables
- Based on monthly billed sales
- Heating Degree weights based on winter sales
- Cooling Degree weights based on summer sales
- Solar GHI weights based on annual sales

Station	Heating Degrees	Cooling Degrees	Solar GHI
KABQ	75.0%	77.8%	76.3%
KALM	3.0%	3.2%	3.1%
KDMN	9.0%	8.4%	8.9%
KSAF	13.0%	10.5%	11.7%

Hottest Days 2002 to 2021 (Rank by Season)

Rank	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg	1 in 10
1	84.8	87.5	82.6	83.6	85.1	84.4	83.2	85.2	85.4	84.8	87.1	89.0	86.5	86.5	86.2	87.6	86.7	84.8	87.8	86.3	85.8	88.4
2	84.6	86.9	81.7	83.2	84.5	84.2	83.1	85.0	85.1	84.8	86.5	86.5	85.4	85.0	85.4	86.8	85.5	84.7	87.6	85.9	85.1	87.2
3	83.8	85.9	81.2	82.9	83.7	83.4	82.3	84.9	84.9	84.7	85.1	85.6	83.8	83.0	84.9	85.9	85.2	84.7	86.8	85.8	84.4	86.3
4	83.6	85.8	81.2	82.7	83.6	83.1	82.3	84.5	84.5	84.6	84.5	84.4	83.6	82.8	84.7	83.6	85.2	83.7	85.4	85.6	84.0	85.7
5	82.5	85.6	81.0	82.7	83.6	83.1	82.0	84.3	84.4	84.3	84.4	84.2	82.3	82.4	84.6	83.6	84.8	83.4	84.8	84.5	83.6	85.2
6	82.4	85.5	80.8	82.3	83.5	82.9	81.7	83.9	83.8	84.2	84.3	83.2	82.0	82.0	84.5	83.5	84.5	82.9	83.8	84.4	83.3	85.0
7	82.0	85.3	80.7	82.1	83.3	82.9	81.7	83.8	83.7	84.1	84.0	82.9	81.9	81.8	84.3	83.4	83.7	82.9	83.8	84.3	83.1	84.8
8	82.0	85.0	80.6	82.0	83.0	82.8	81.6	83.7	82.8	83.9	83.9	82.0	81.7	81.8	84.3	83.1	83.7	82.8	83.5	84.3	82.9	84.4
9	81.7	84.8	80.5	82.0	82.9	82.8	81.1	83.5	82.8	83.7	83.8	82.0	81.5	81.3	84.1	83.0	83.5	82.1	83.5	83.5	82.7	84.3
10	81.6	84.4	80.3	81.9	82.9	82.5	80.8	83.0	82.7	83.6	83.7	81.8	81.3	81.2	83.8	82.9	83.4	81.9	83.5	83.2	82.5	84.1
11	81.4	84.4	80.2	81.8	82.7	82.5	80.6	82.9	82.5	83.5	83.6	81.6	81.1	81.1	83.6	82.9	83.1	81.7	83.3	82.2	82.3	84.0
12	81.4	84.1	80.1	81.8	82.6	82.3	80.5	82.9	82.3	83.5	83.3	81.3	81.1	80.8	83.5	82.3	83.0	81.6	83.1	82.0	82.2	83.8
13	81.3	83.6	80.0	81.6	82.0	82.1	80.4	82.5	82.2	83.0	83.2	81.3	81.0	80.8	83.4	82.1	82.8	81.5	82.7	81.9	82.0	83.5
14	81.1	83.6	80.0	81.6	82.0	82.1	80.3	82.2	82.0	82.9	83.0	81.3	81.0	80.7	83.3	81.7	82.7	81.5	82.6	81.6	81.9	83.5
15	80.9	83.4	79.7	81.5	81.8	82.0	79.7	82.0	81.9	82.9	82.9	81.2	80.7	80.6	83.2	81.4	82.7	81.3	82.5	81.3	81.7	83.3
16	80.7	83.4	79.5	81.4	81.7	82.0	79.6	81.1	81.8	82.8	82.8	81.2	80.3	80.1	83.2	81.0	82.7	81.3	82.4	80.9	81.5	83.3
17	80.7	83.3	79.4	81.1	81.5	81.4	79.0	80.8	81.4	82.8	82.7	81.0	80.3	80.1	82.6	80.8	82.0	81.1	82.3	80.9	81.3	83.0
18	80.7	83.2	79.2	81.1	81.4	81.2	79.0	80.7	81.4	82.7	81.8	80.8	80.3	80.0	82.4	80.2	81.9	81.1	82.3	80.7	81.1	83.0
19	80.5	82.8	79.2	80.9	81.2	81.1	79.0	80.7	81.3	82.7	81.8	80.3	80.2	79.9	82.3	80.1	81.7	81.0	82.1	80.5	81.0	82.7
20	80.4	82.4	79.2	80.7	81.0	80.9	78.8	80.7	80.8	82.7	81.6	80.2	79.9	79.9	82.2	80.0	81.7	80.8	82.1	80.1	80.8	82.6
21	80.3	82.4	79.1	80.6	80.9	80.8	78.6	80.3	80.6	82.3	81.4	80.2	79.7	79.6	82.1	80.0	81.6	80.7	82.1	80.0	80.7	82.3
22	80.3	82.4	79.0	80.5	80.4	80.7	78.5	79.9	80.5	82.2	81.1	80.1	79.6	79.4	82.0	79.8	81.5	80.6	81.9	79.7	80.5	82.3
23	80.2	82.3	78.9	80.5	80.2	80.6	78.3	79.9	80.4	82.2	81.1	80.1	79.4	79.4	81.7	79.6	81.4	80.6	81.9	79.5	80.4	82.3
24	80.1	82.2	78.8	80.4	80.0	80.6	78.3	79.9	80.2	82.1	81.0	80.0	79.3	79.3	81.6	79.6	81.0	80.5	81.6	79.3	80.3	82.2

>88

>85

>82

Used in Base Scenario

Used in Extreme Scenario

Coldest Days 2002-2021 (Rank by Season)

Rank	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg	1 in 10
24	33.6	35.2	32.8	35.7	34.0	30.4	33.8	34.9	34.5	30.9	35.7	31.5	35.5	32.8	33.2	37.7	34.9	33.1	33.8	35.8	34.0	30.7
23	33.1	35.2	32.6	35.7	33.4	30.1	33.7	34.0	34.2	30.5	34.8	31.4	35.3	32.6	33.2	37.3	34.9	33.1	33.7	35.5	33.7	30.3
22	33.1	35.1	32.3	35.6	33.4	29.8	33.7	34.0	33.8	30.3	34.8	31.4	35.2	32.2	33.2	37.2	34.4	32.7	33.6	35.1	33.5	30.1
21	33.1	34.7	32.3	35.1	33.2	29.8	33.3	33.9	33.7	30.3	34.6	31.3	34.9	32.1	33.2	37.1	34.4	32.3	33.0	34.4	33.3	30.0
20	32.8	34.4	32.2	34.8	33.1	29.6	33.1	33.9	33.7	29.9	34.6	30.5	34.9	30.9	33.1	37.0	34.4	32.2	32.9	33.6	33.1	29.8
19	32.8	33.9	32.2	34.7	33.0	29.5	31.4	33.8	33.6	29.7	34.3	30.5	34.9	30.4	32.9	36.7	34.3	32.1	32.9	33.5	32.8	29.6
18	32.4	33.8	31.7	34.4	32.9	29.1	31.3	33.8	33.6	28.6	33.7	28.6	34.3	30.4	32.7	36.7	34.0	31.7	32.4	33.1	32.5	28.6
17	32.1	33.6	31.5	34.3	32.8	28.7	31.1	33.1	33.5	28.0	33.5	27.9	33.4	29.9	32.5	36.6	33.7	31.6	32.3	32.5	32.1	28.0
16	31.9	33.5	31.3	34.0	32.7	28.7	30.9	32.7	32.5	27.8	33.2	27.9	32.8	29.8	32.1	36.3	33.6	31.0	31.9	32.4	31.9	27.9
15	31.4	33.3	30.7	33.3	32.5	28.7	29.9	32.6	32.5	26.5	33.2	27.2	31.7	29.2	31.5	35.6	33.3	30.8	31.6	32.3	31.4	26.9
14	31.2	33.1	30.6	33.1	32.3	28.7	29.9	32.2	32.2	26.4	33.1	26.5	31.5	29.0	31.3	35.6	32.1	30.3	31.4	31.9	31.1	26.4
13	30.9	32.8	30.1	32.6	31.7	28.6	29.8	32.2	32.1	25.7	33.1	26.2	30.6	29.0	30.7	35.3	31.6	30.3	30.8	31.9	30.8	26.0
12	30.5	32.7	29.4	32.3	31.3	28.3	29.6	31.4	31.7	25.6	32.8	25.9	30.2	28.9	30.5	34.1	31.5	30.1	30.6	31.2	30.4	25.8
11	30.2	32.3	29.3	32.1	30.8	28.2	29.2	30.9	31.4	25.4	32.5	25.3	30.2	28.6	30.4	33.7	31.4	29.3	30.3	31.1	30.1	25.3
10	30.2	31.9	29.1	31.3	30.5	27.7	28.3	30.3	31.4	24.4	32.2	24.4	29.2	28.5	30.1	33.1	31.4	28.4	29.9	31.1	29.7	24.4
9	29.8	31.6	27.7	31.0	30.0	27.2	28.0	30.3	31.3	21.1	31.9	23.9	28.9	28.1	30.1	32.1	30.5	28.2	29.6	30.7	29.1	22.5
8	28.4	31.3	27.7	30.7	29.6	25.8	26.6	30.1	31.1	21.0	31.9	23.7	28.7	27.9	30.0	31.9	30.5	28.0	29.6	30.5	28.8	22.4
7	28.3	31.1	27.0	30.6	29.5	25.7	26.2	28.1	30.5	20.9	31.4	22.7	27.9	27.3	29.5	31.5	29.6	26.8	29.4	30.1	28.2	21.8
6	28.3	30.0	26.0	30.0	29.2	23.3	26.2	27.1	30.4	20.7	31.4	22.2	27.7	26.9	29.5	30.0	28.2	26.5	29.0	29.8	27.6	21.4
5	27.9	29.2	24.7	29.9	29.1	23.1	25.6	27.0	30.3	18.8	28.1	21.7	26.4	26.8	29.4	29.3	27.9	26.4	28.7	28.4	26.9	20.3
4	26.8	29.1	24.2	28.7	29.0	22.0	24.8	25.9	30.0	17.3	28.0	21.4	26.1	25.3	28.7	27.5	24.2	26.2	28.3	28.1	26.1	19.3
3	26.3	28.6	22.7	28.6	28.9	21.8	24.2	25.6	28.7	15.2	27.4	20.9	25.1	24.6	27.7	27.3	22.9	21.4	26.8	26.7	25.1	18.0
2	24.5	24.6	22.5	25.2	23.4	21.3	23.6	25.1	25.1	5.2	26.3	19.3	22.1	24.5	26.6	26.2	18.7	21.1	26.7	18.0	22.5	11.6
1	24.4	23.2	20.6	21.1	20.2	21.0	21.4	21.5	19.5	3.5	25.8	17.1	18.9	24.2	25.8	25.3	18.1	19.9	22.8	12.9	20.4	8.2

Used in Base Scenario

Used in Extreme Scenario

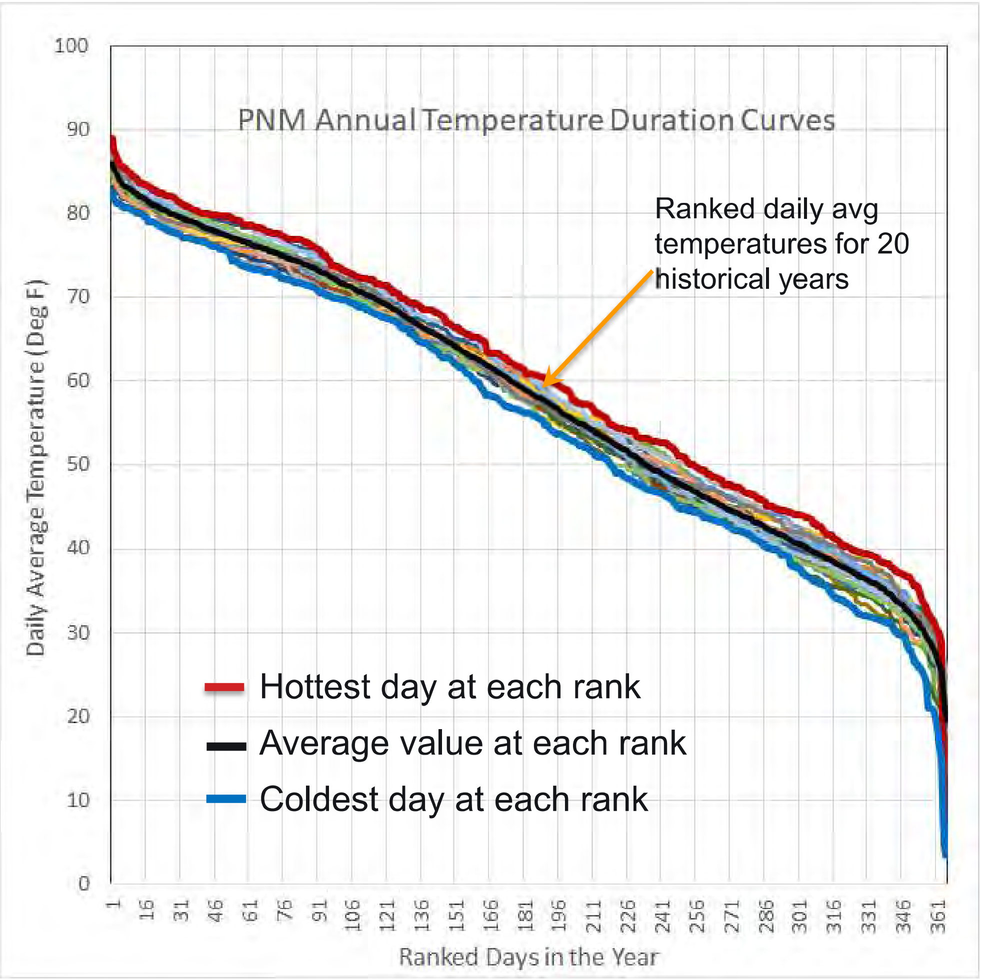
<30

<25

<10

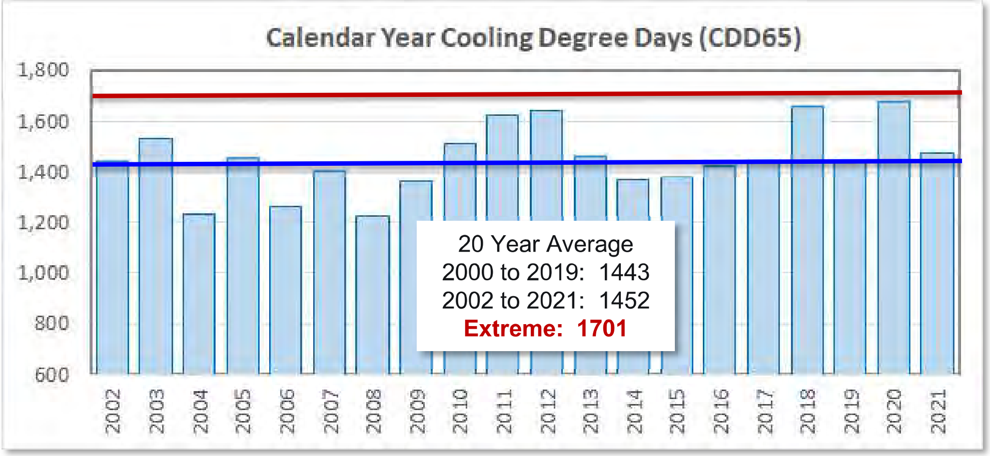
WEATHER SCENARIOS

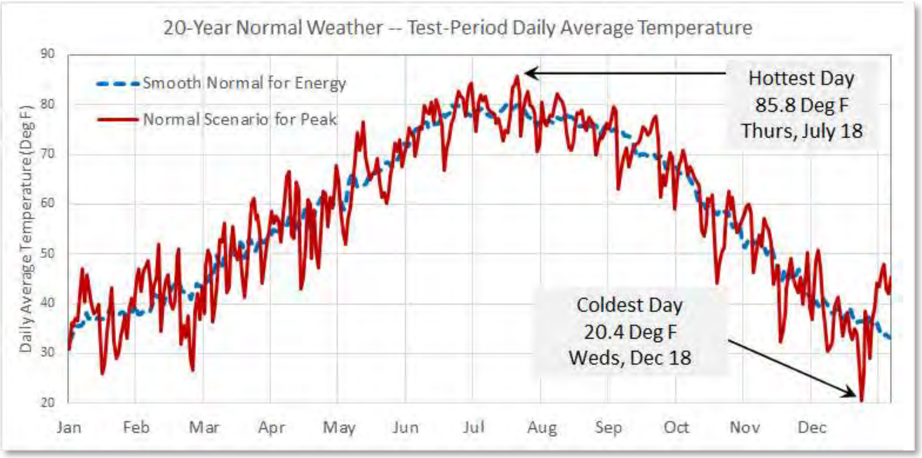
» Daily weather for hourly models
- For each year, rank daily data by season
  -- Hottest day to coldest day
- Base/Normal = Average for each rank
  -- Thick black line in the chart
  -- Typical Hottest day: 85.8
  -- Typical Coldest day: 20.4
- Extreme = 1 in 10 weather
  -- Thick red line is Extreme hot weather
  -- Thick blue line is Extreme cold weather
  -- Computed as average of 2 in 20
  -- Hottest day: 88.4
  -- Coldest day: 8.2
- Assign base and extreme daily weather to a consistent daily pattern to use in hourly forecast models

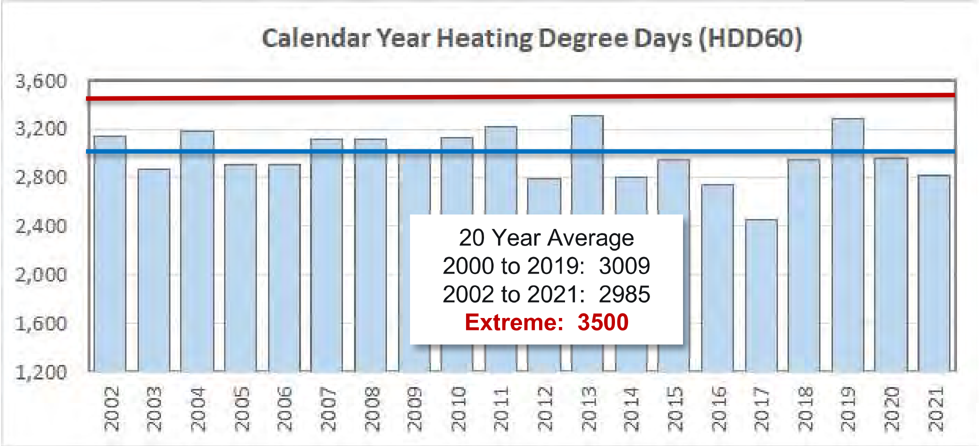


Normal Monthly Weather

» Normal Weather: 20-year normal
  - Compute daily average temperature
  - Compute daily CD (base 55, 60, 65, 70, 75)
  - Compute daily HD (base 60, 55, 50, 45)
  - Average by date for energy forecast
    -- Avg Jan 1 values, Jan 2 values, …
  - Results in a "smooth normal pattern"
  - Monthly HDD, CDD computed from daily







WEATHER RESPONSE MODELING

Weather Response Analysis

» Load Research data provide hourly and daily use estimates for a statistical sample

» Daily use shows a strong response to daily weather

» Response of load to weather is non linear

» Load research data are used to calculate HD and CD weights

- Daily regression models
- Y is daily sales per customer
- X variables are daily CD and HD values
- Calculate weights for low, medium, and high-powered degrees

Residential Weights

Spline	Wgt
HD60	0.285
HD55	0.422
HD45	0.293
CD60	0.188
CD65	0.286
CD70	0.526

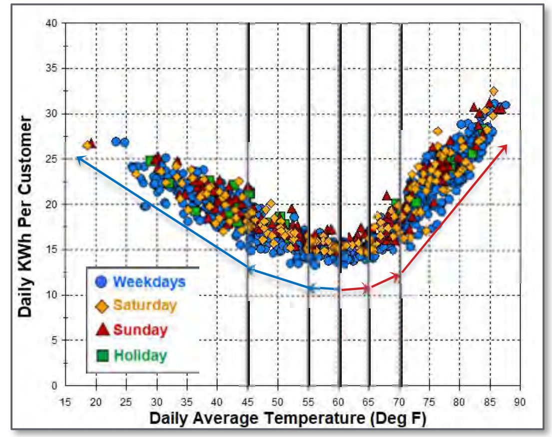
Small Power Weights

Spline	Wgt
HD55	0.572
HD45	0.428
CD55	0.237
CD65	0.629
CD75	0.134

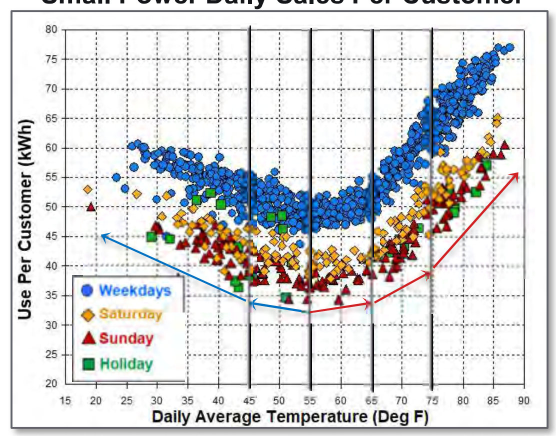
General Power Weights

Spline	Wgt
HD55	0.307
HD45	0.693
CD55	0.448
CD65	0.552

Residential Daily Sales Per Customer



Small Power Daily Sales Per Customer



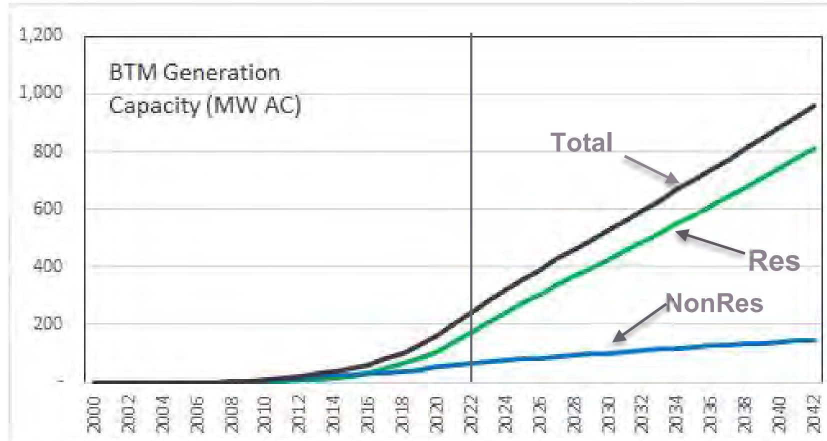
Behind the Meter (BTM) Solar Data and Forecasts

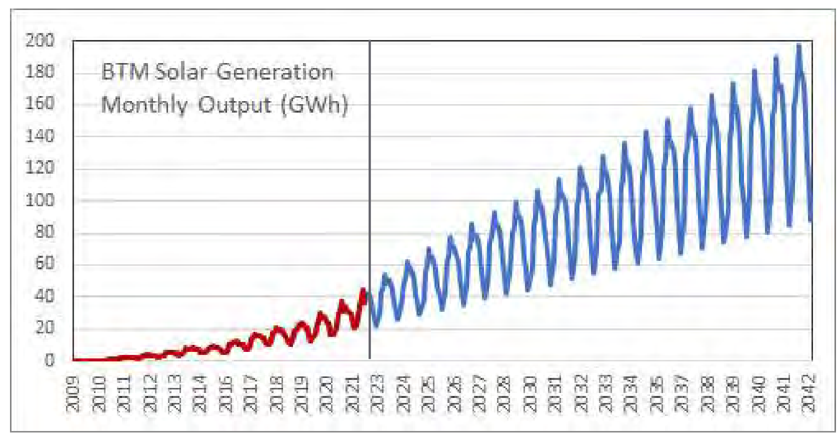
Behind the Meter (BTM) Solar Capacity and Generation

» Solar Generation Capacity (KW)
- Output capacity (AC) for new systems in KW
- Aggregated by month (Res & NonRes)
- Forecasted through 2042

» Solar Generation Data (KWh)
- All solar customers have generation output meters
- Data are gathered monthly on a billing-cycle basis
- Totals are calculated by billing month and rate class

» Solar Generation Model (Daily and Hourly)
- Y = Daily average KWh output per KW capacity
- X = Daily average GHI Sum
- Daily forecast allocated to hours based on hourly GHI
- Forecasts of PV generation output
  - GWh = Capacity (KW) * KWhPerKW / 1,000,000

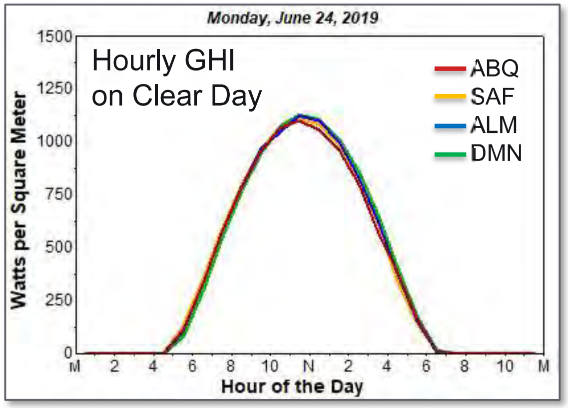


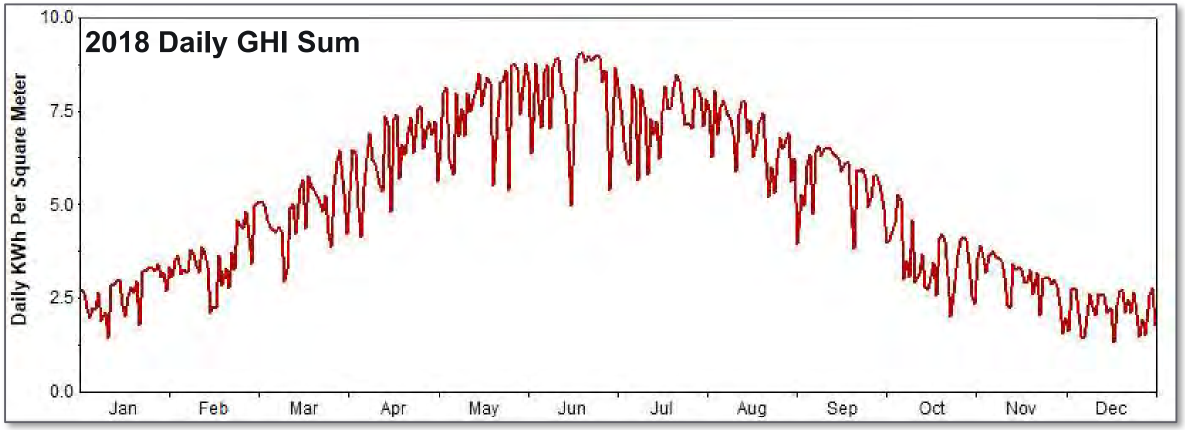


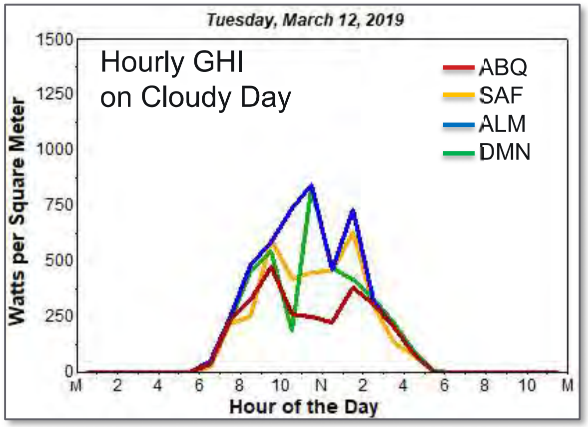
Global Horizontal Irradiation (GHI) Data

» Global Horizontal Irradiation (GHI) from AccuWeather
- Hourly GHI data for four weather stations
- Daily sums and monthly sums used in modeling

» 2018 pattern used for daily & hourly forecasting
- 2018 Annual GHI within .3% of 20-year average
- Rotated to forecast days based on daily temperature pattern
- No change from prior IRP

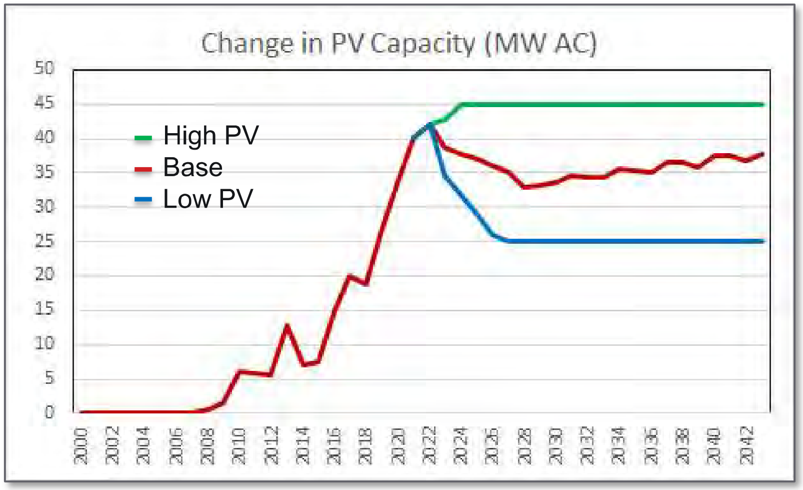


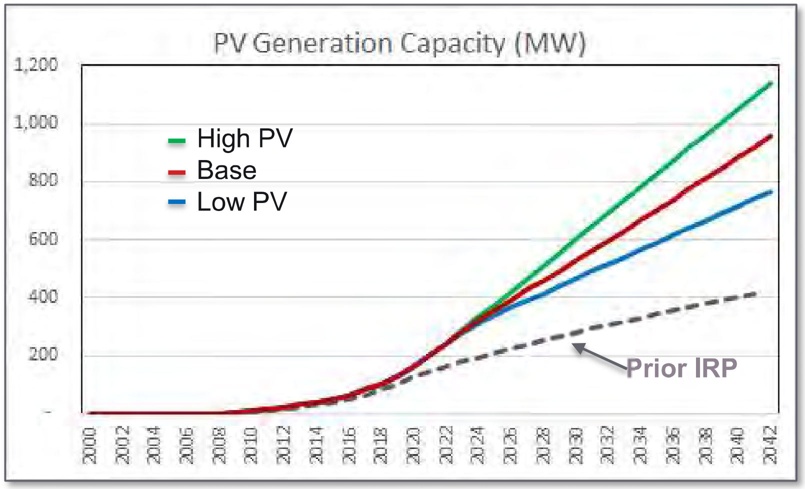




PV Scenarios

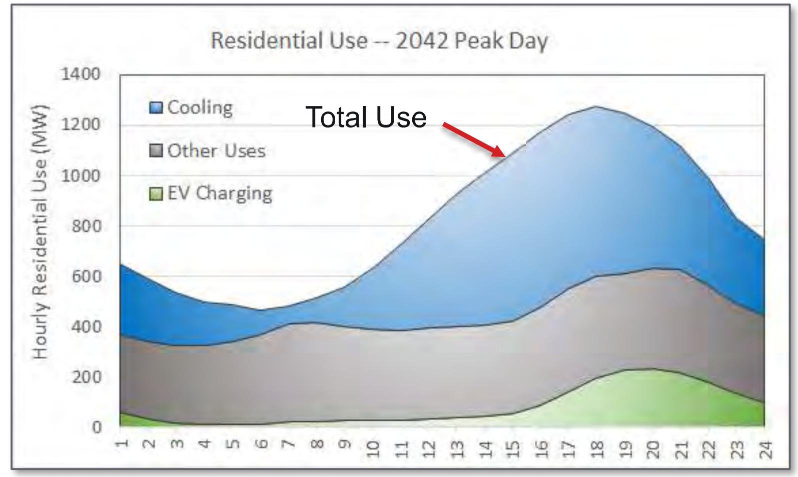
- » Base Forecast is consistent with recent Annual Energy Outlook forecasts for the region assuming continuation of investment tax credits.
- » 2022 Generation Capacity: 243 MW AC
- » Annual PV Capacity Additions 2022 to 2040
  - High PV: 45 MW/year
  - Base PV: ~35 MW/year
  - Low PV: 25 MW/year
- » 2042 Generation Capacity (MW)
  - High PV: 1,141 MW
  - Base PV: 958 MW
  - Low PV: 765 MW

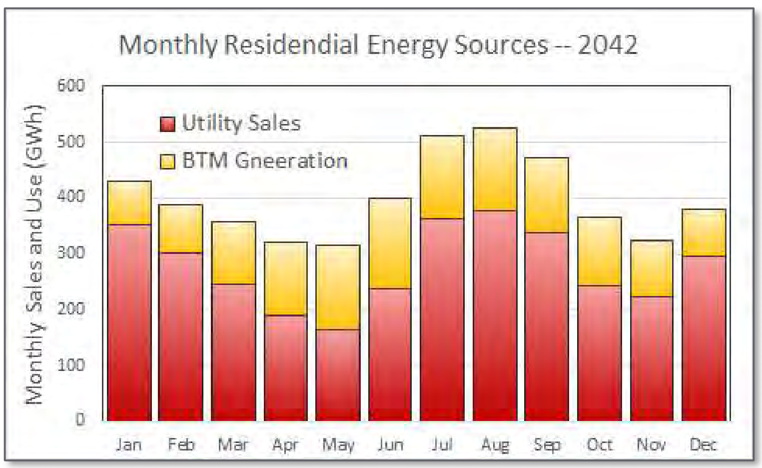


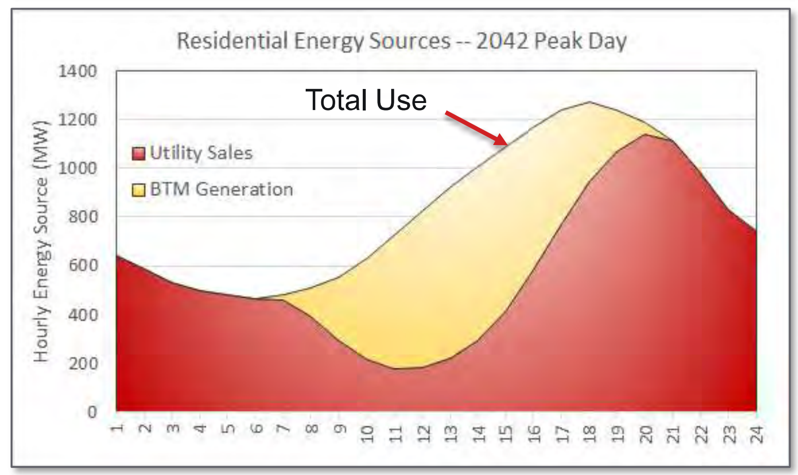


Use vs. Sales

- The presence of BTM Solar masks customer loads (end-use consumption).
- This impact is biggest for the residential class.
- Measured sales is the part of use that is supplied by utility generation.
- Models forecast customer use. Subtract generation to forecast utility sales.



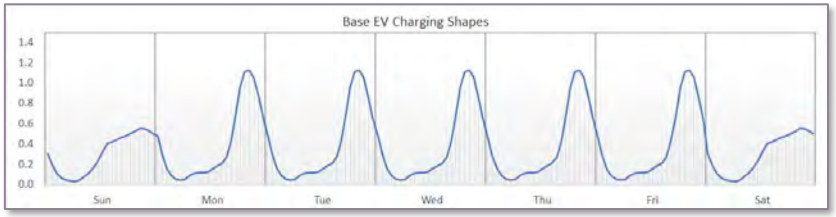


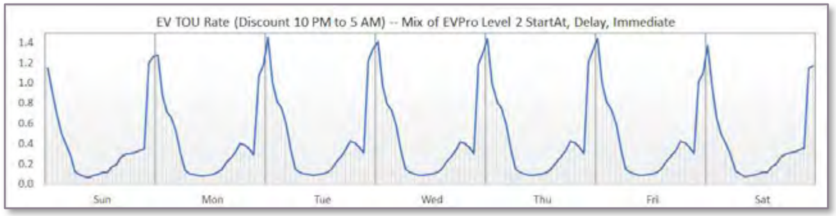


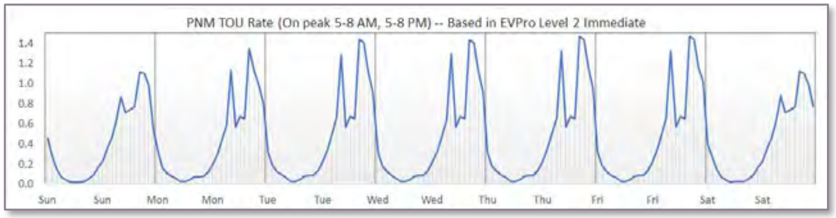
Electric Vehicle Forecast

ELECTRIC VEHICLE FORECAST

- Forecasts are based on fractions of new car sales
  - Total New Mexico annual car sales are about 87,000
  - US EV adoption forecast is the main driver
    - Rapidly increasing share of new cars (5% now, 60% by 2042)
  - NM adoption is about 41% of US adoption
  - 75% of NM adoptions are in PNM territory
  - EV annual energy use is about 4 MWh per vehicle
  - About 80% of charging is residential
- Charging profiles based on National Labs data
  - Base shape – Idaho National labs
  - TOU shapes based on NREL EV-Pro strategies
    - Scheduled Start (Start at specified time)
    - Delayed Start (Charge by specified time)
    - Immediate (Unscheduled, like base shape)





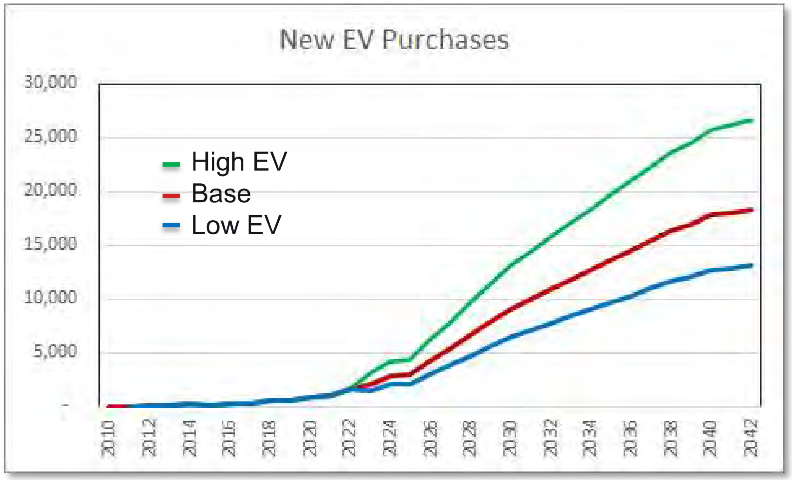


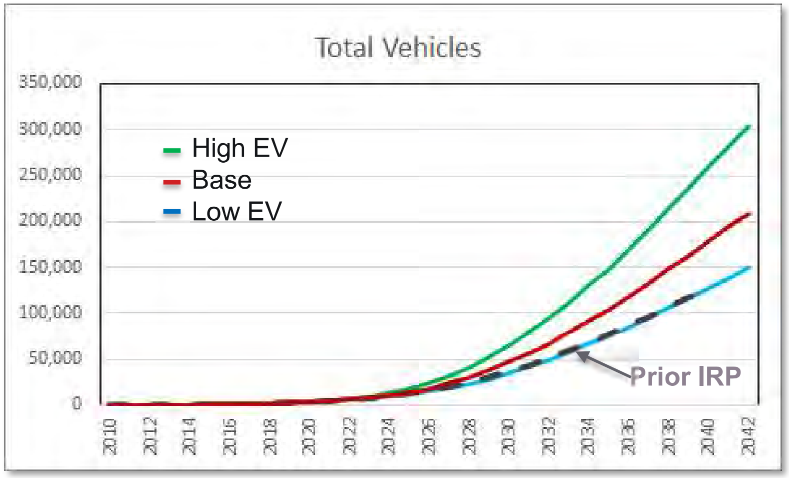
EV SCENARIOS

» Annual EV Additions 2023 to 2042
  - High EV: Grows to 27,000 by 2042
  - Base EV: Grows to 18,000 by 2042
  - Low EV: Grows to 13,000 by 2042

» 2042 Electric Vehicle Count
  - High EV: 304,000
  - Base EV: 209,000
  - Low EV: 138,000

» Higher than prior IRP forecast
  - 40% higher in 2040
  - Driven by faster US adoption forecast
  - Prior IRP similar to current Low case

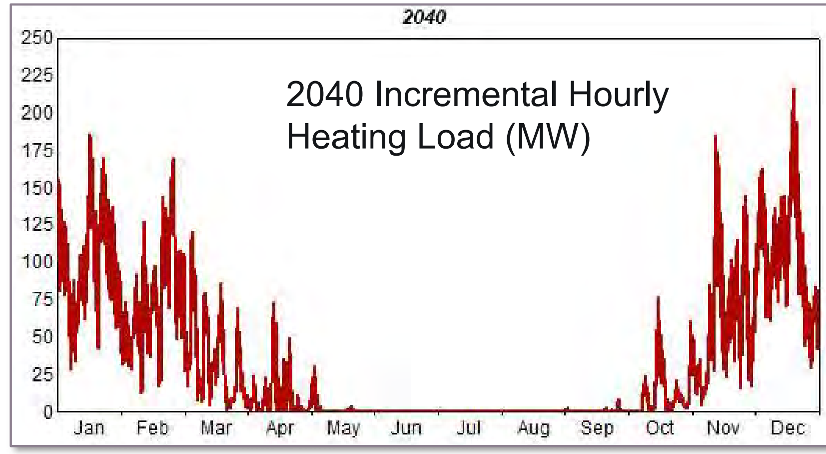


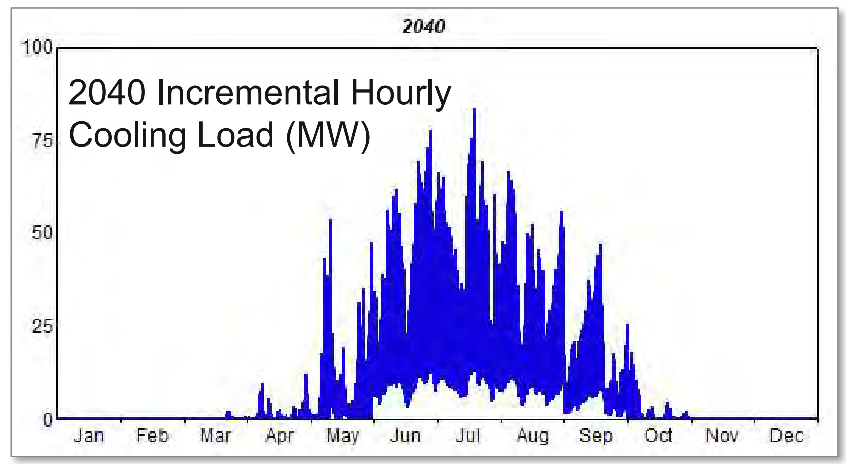


Other Scenario Inputs

Building Electrification

- » New homes starting in 2025
  - Natural Gas and Propane not allowed
  - Electric heat share goes from 15% to 90%
  - Mostly heat pumps, 80% of the increase
  - Less evaporative cooling, more central air
- » Existing homes converted to heat pumps
  - About 2% per year (7,000 homes)
  - Evaporative cooling displaced in 40% of the 2%
  - Incremental cooling UEC is 1700 KWh
- » Heat pump heating UEC averages 2400 KWh
- » Overall electric heating share increases:
  - 15.5% in 2020 to 45% in 2040
- » Heating/Cooling shapes from load research



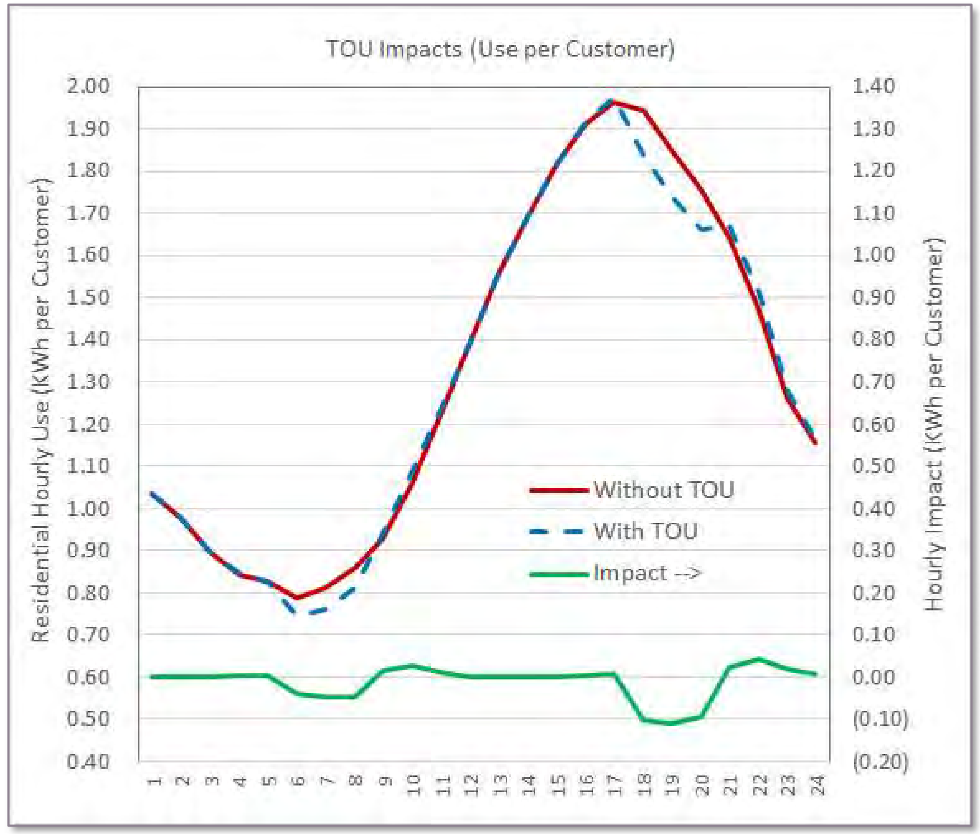


Residential Time of Use Rates

» Introduce Residential TOU in 2030
- Pilots through 2029
- Full Opt-out program in 2030
- On-peak 5-8 AM, 5-8 PM.
- Assume 20% opt out, 80% do not
- Applies also to EV not on WHEV rate

» EV impacts modeled separately

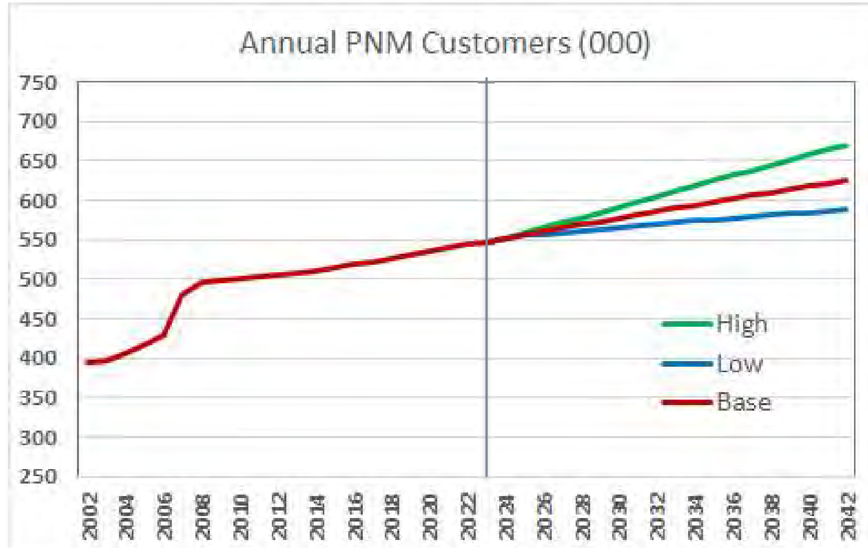
» Energy impact levels from summary report by ACEEE of 50 pricing pilots (on/off price ratio ~ 2)
- On-Peak reduction: 6%
- Average energy reduction: 1%



Energy Modeling and Forecasts

PNM Customer Forecast

- » Residential trend model through 2024
  - Population elasticity model after 2024
- » Small Power trend model through 2024
  - Pop/Emp elasticity model after 2024
- » Regression model for General Power (GP)
  - Population and Non-Manufacturing Employment
- » Elasticity model for Large Power (LP4)
  - Non-Manufacturing Employment
- » Manual Adjustment for Industrial Loads
  - LP4 addition in 2023
  - LS30 expansion in 2022 to 2024
- Scenarios reflect High/Low Economics
- Very little change from prior IRP

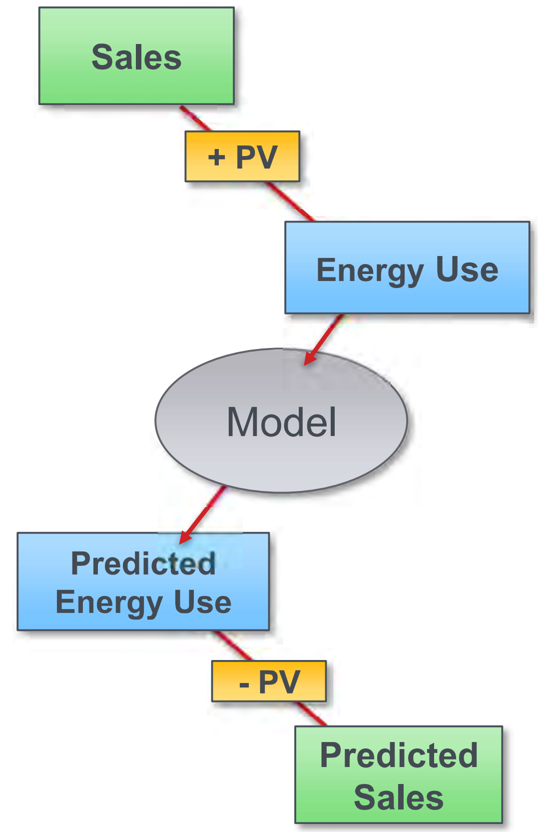


Range	Average Annual Customer Gain				
Range	Res	SP	GP	LP	Total
2012-2022	3,449.4	382.6	-12.8	-6.6	3,810.2
2022-2032	3,814.5	411.4	10.7	0.2	4,236.6
2032-2042	3,580.4	385.7	9.5	0.3	3,975.9
	Average Annual Growth Rate				
Range	Res	SP	GP	LP	Total
2012-2022	0.74%	0.73%	-0.30%	-3.23%	0.73%
2022-2032	0.76%	0.73%	0.26%	0.10%	0.75%
2032-2042	0.67%	0.64%	0.22%	0.17%	0.66%

*Total excludes lighting classes

Energy Use and Energy Sales

- » Same approach as in prior IRP
- » Monthly sales and monthly energy use:
  - Sales = net delivery of energy through the customer meter
  - Energy use = consumption of appliances and equipment
  - Energy use is bigger than sales because of PV generation
  - Models explain energy use
- » Monthly Use Models
  - Regression models
  - Y is energy use per customer (UPC)
  - X variables are end-use drivers and weighted CD and HD variables
- » PNM Sales and Load
  - Sales computed as Energy Use – PV Generation



Statistically Adjusted End-Use Framework

» Residential and commercial models use Statistically Adjusted End-Use (SAE) Model

» SAE models account for:
  - Appliance saturation and equipment density
  - Appliance and equipment efficiency
  - Thermal efficiency of buildings

» Efficiency and saturation data initialized using 2021 EIA data for Mountain region

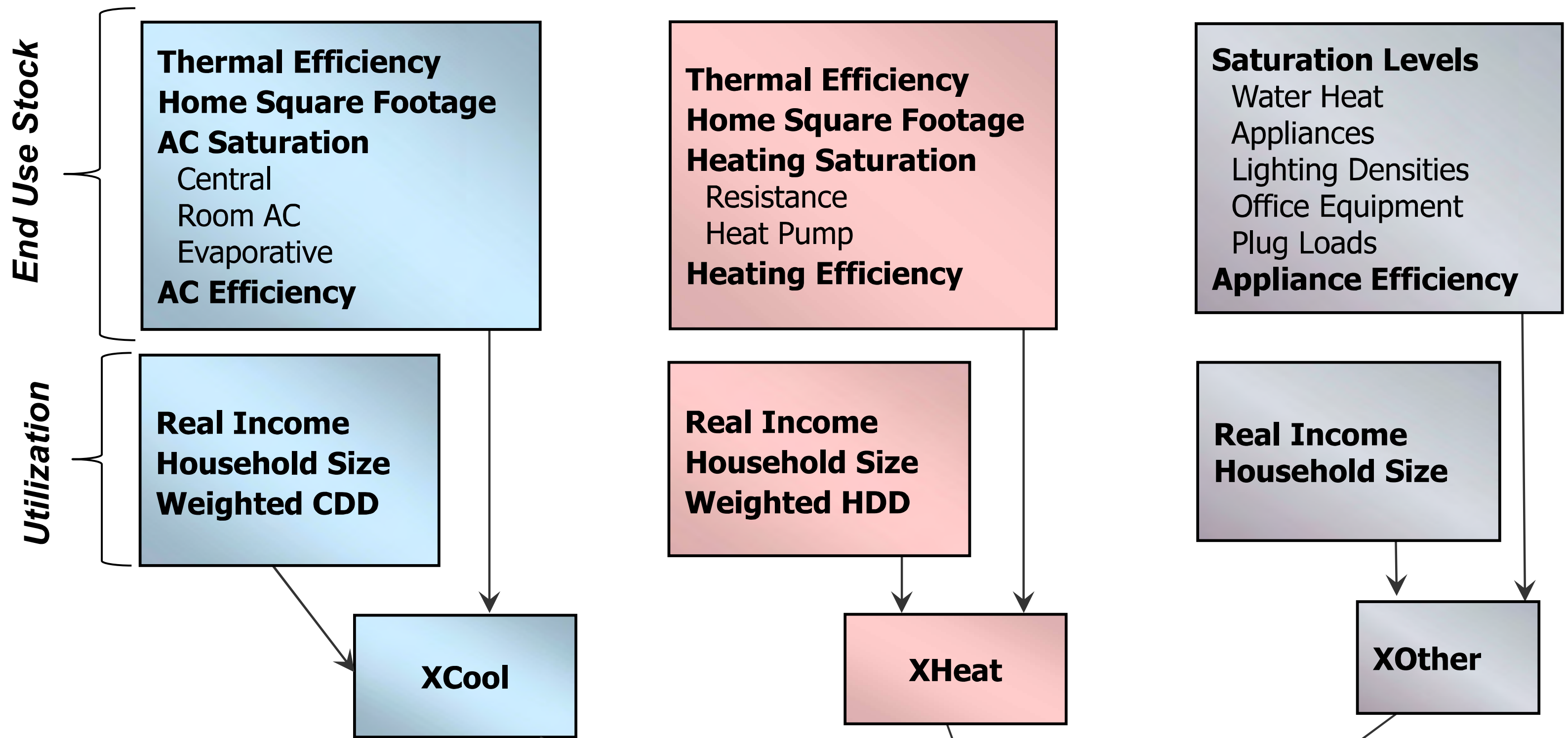
» Saturation and intensity values are modified to agree with PNM data
  - Base-year intensities and saturations from PNM Efficiency Potential Study

» Residential framework is shown on the next slide

» Commercial framework is similar (applied to SP, GP, LP4)

Residential SAE Modeling Framework

SAE = Statistically Adjusted End-Use



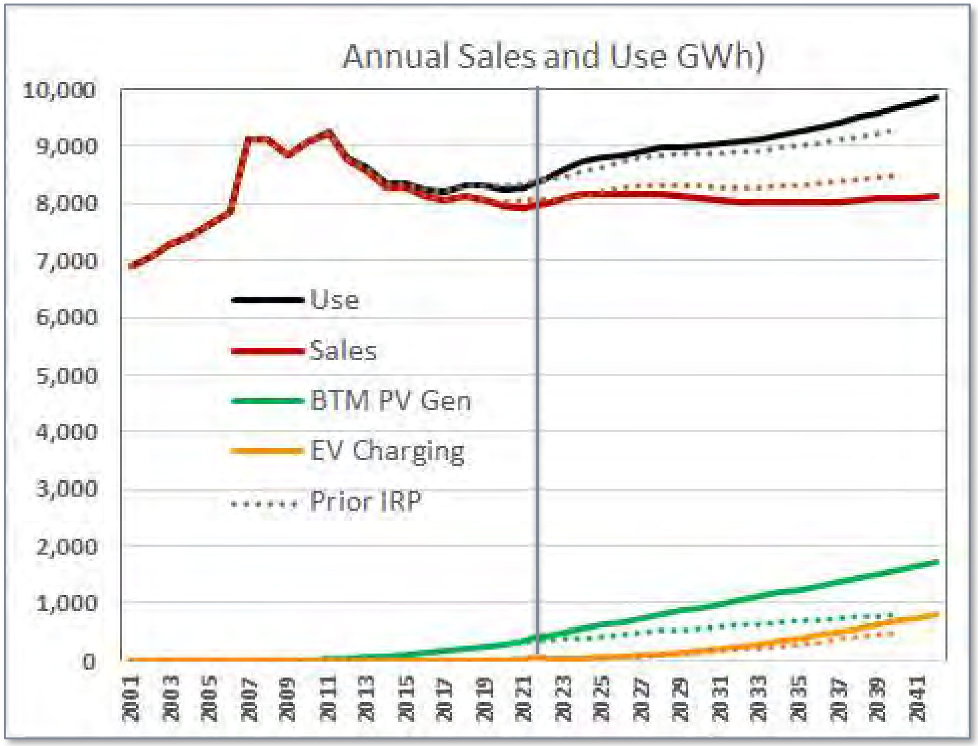
$$\mathrm{Sales}_m + \mathrm{PVGen}_m = a + b_c \times \mathrm{XCool}_m + b_h \times \mathrm{XHeat}_m + b_o \times \mathrm{XOther}_m + e_m$$

Energy Forecast Summary

Year	Customers	Sales (GWh)	EV Sales (GWh)	PV Output (GWh)
2012	505,407	8,560.3	0.4	37.5
2017	521,850	8,129.0	4.9	158.8
2022	543,509	8,105.1	21.5	410.5
2027	564,851	8,160.3	85.3	744.6
2032	585,874	8,018.0	250.6	1,055.1
2037	606,132	8,060.7	503.6	1,372.8
2042	625,633	8,152.7	809.1	1,707.8

Year Range	Customers AGR	Sales AGR	Year	EV % of Sales	PV % of Sales
			2010	0.00%	0.44%
2012 to 2017	0.64%	-1.03%	2015	0.06%	1.95%
2017 to 2022	0.82%	-0.06%	2020	0.26%	5.06%
2022 to 2027	0.77%	0.14%	2025	1.04%	9.12%
2027 to 2032	0.73%	-0.35%	2030	3.13%	13.16%
2032 to 2037	0.68%	0.11%	2035	6.25%	17.03%
2037 to 2042	0.64%	0.23%	2040	9.92%	20.95%

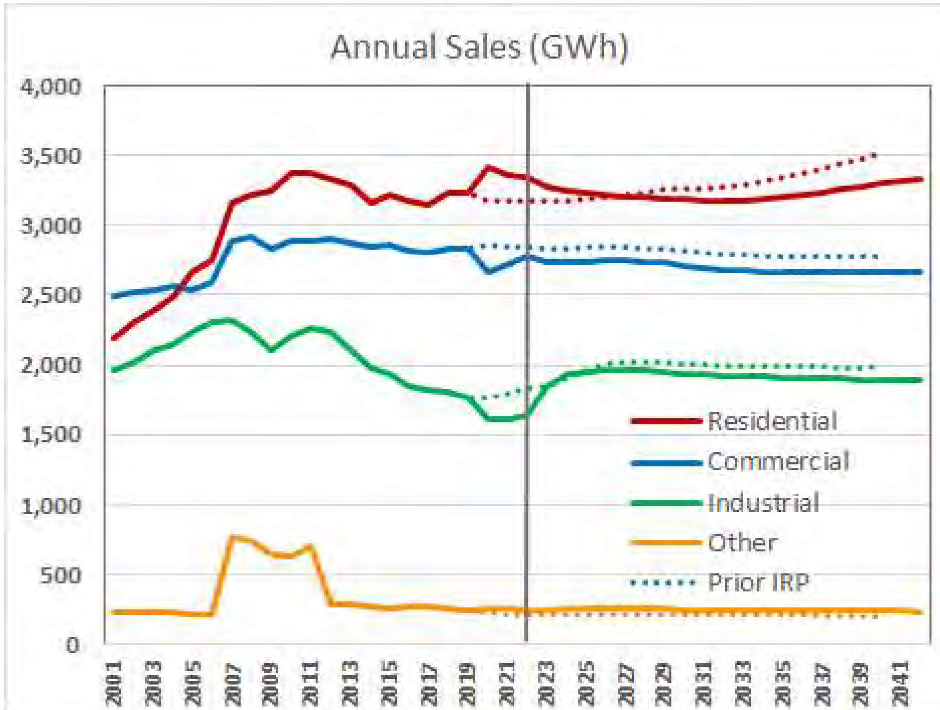
Excludes LS36B and incremental economic development loads



Energy Sales Forecast by Customer Class

Energy Sales in GWh					
Year	Residential	Commercial	Industrial	Other	Total
2012	3,295	2,880	2,103	282.5	8,560
2017	3,233	2,830	1,805	261.5	8,129
2022	3,271	2,737	1,849	248.9	8,105
2027	3,206	2,740	1,960	254.0	8,160
2032	3,177	2,672	1,922	247.3	8,018
2037	3,257	2,660	1,903	241.7	8,061
2042	3,348	2,674	1,894	236.6	8,153

Annual Growth Rate for Energy Sales					
Year Range	Residential	Commercia	Industrial	Other	Total
2012 to 2017	-0.37%	-0.35%	-3.02%	-1.54%	-1.03%
2017 to 2022	0.23%	-0.66%	0.48%	-0.98%	-0.06%
2022 to 2027	-0.40%	0.02%	1.18%	0.40%	0.14%
2027 to 2032	-0.18%	-0.50%	-0.40%	-0.53%	-0.35%
2032 to 2037	0.50%	-0.09%	-0.20%	-0.46%	0.11%
2037 to 2042	0.55%	0.11%	-0.09%	-0.42%	0.23%

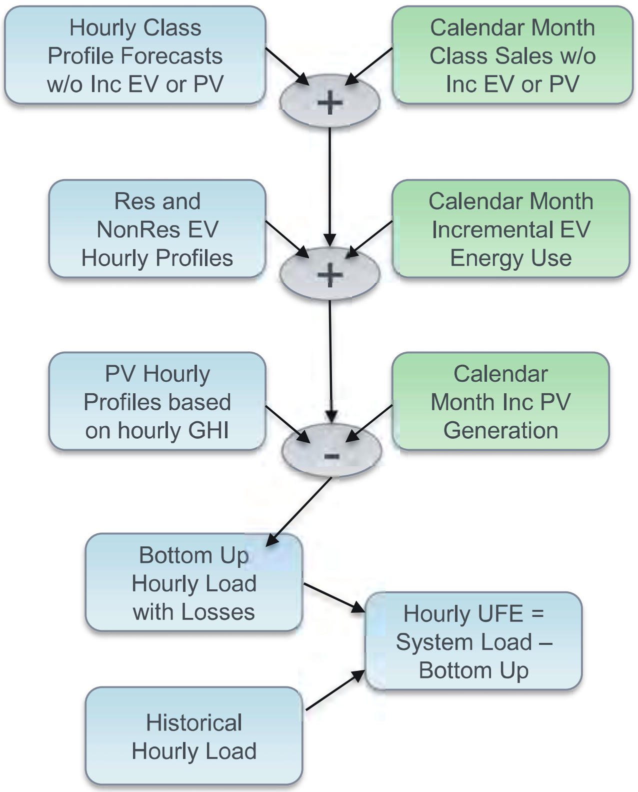


Commercial is Small Power + General Power
Industrial is Large Power + Large Service
Other is Irrigation, Water, and Lighting
Industrial excludes LS30B and incremental economic development loads

Hourly Load and Peak Demand Forecast

Hourly Load and Peak Load Forecasts

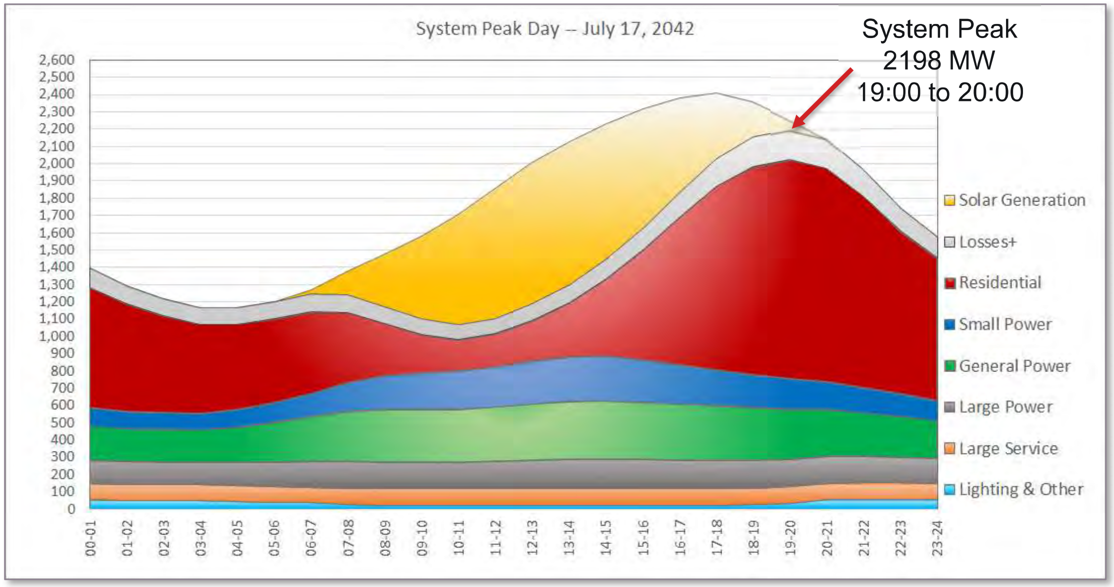
- » Hourly load models for each class
  - Estimated with hourly load research data for 2015 to 6/2022
  - Forecasted using normal daily weather pattern
- » Hourly shapes for EV and PV
  - EV shapes: Idaho National Labs, NREL EV Pro
  - PV shapes based on hourly GHI data
- » Bottom-up logic
  - Calendar month sales forecast without incremental EV or PV
  - Calibrate class hourly profile to calendar month energy value
  - Scale EV profile to incremental EV energy, add to class load
  - Scale PV profile to incremental PV energy, subtract from class load
  - Multiply by annual loss factor based on voltage level
  - Add across classes
- » Compute and apply UFE adjustment factors by month and hour

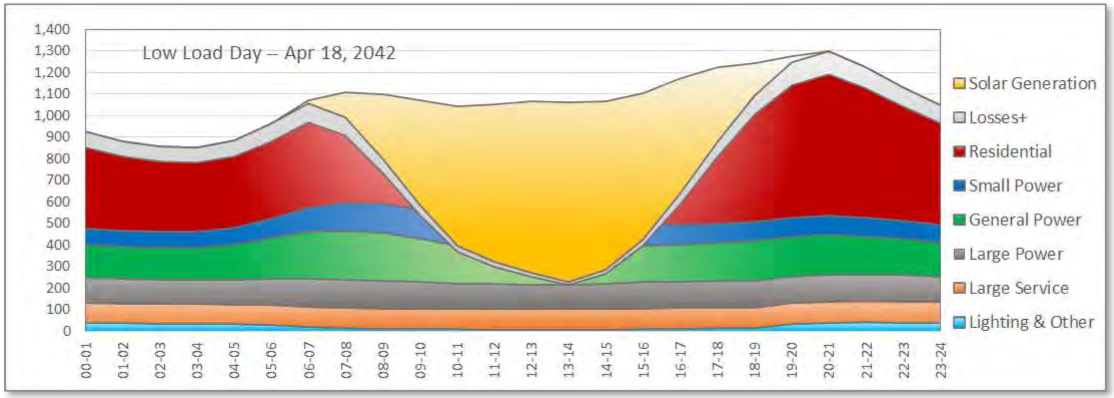


Hourly Loads

» Bottom-up process depiction
- Class loads are at the meter
- Excludes rate class LS36 and post 2024 economic development loads
- Loss estimate based on loss factors by delivery voltage
- Includes allocation of UFE

» Solar is total BTM generation at the customer meter



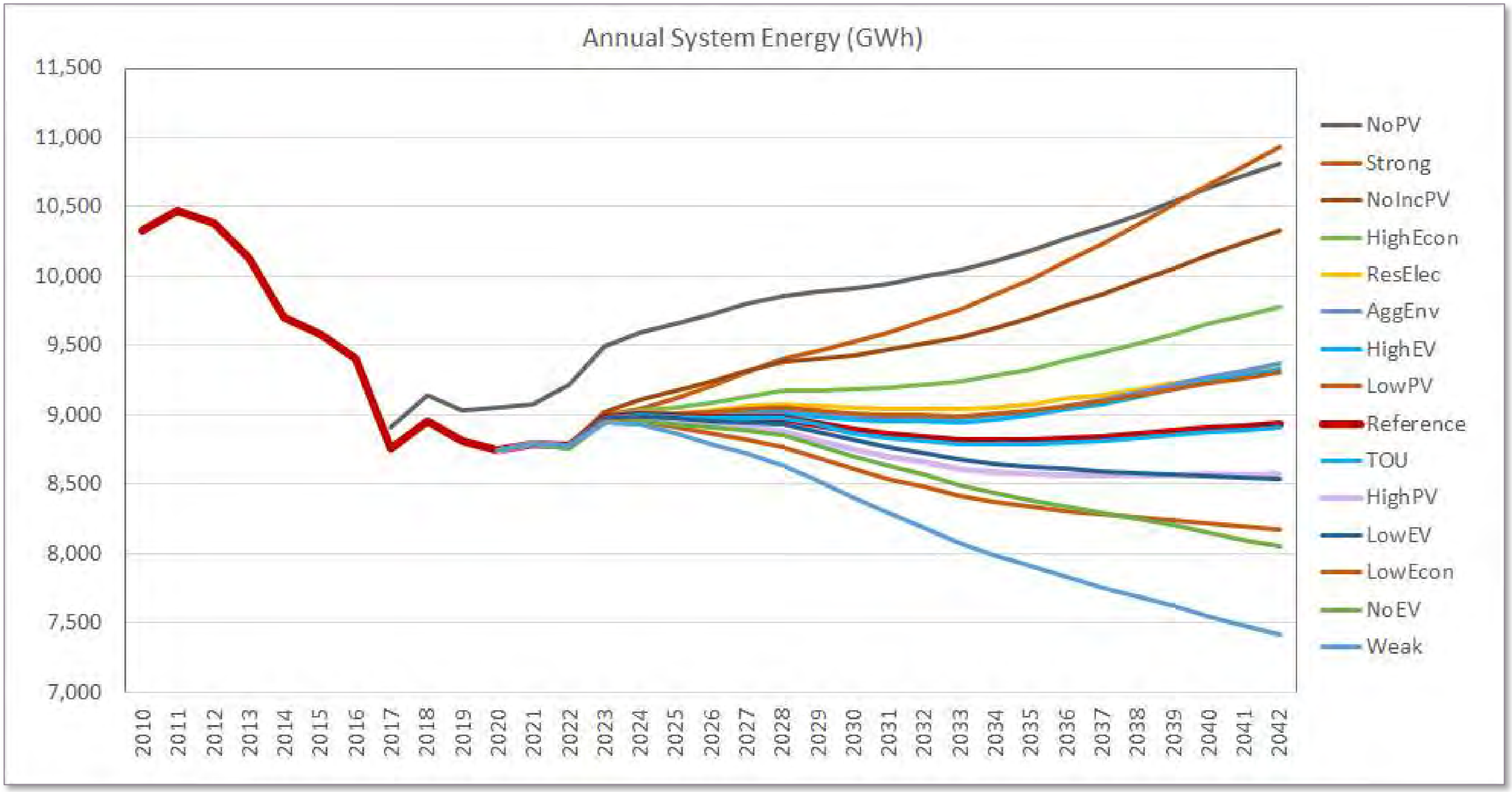


Forecast Scenarios

Scenario Definitions

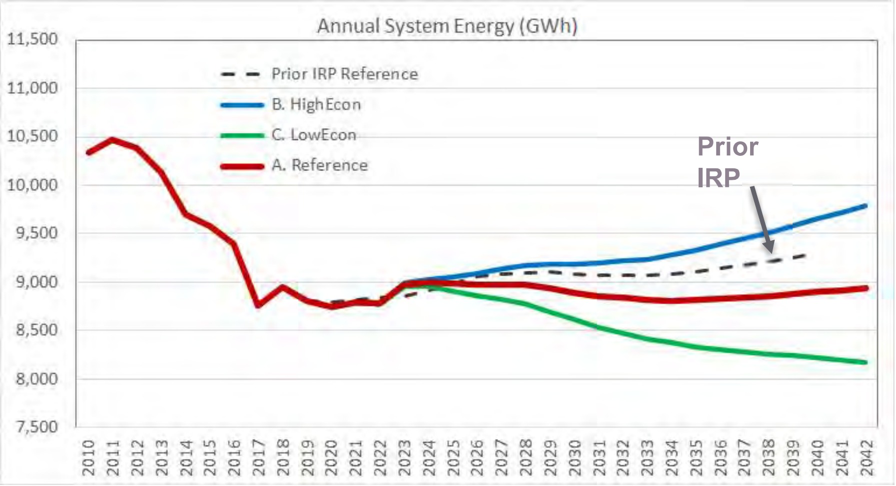
	Scenario	Economic Forecast	BTM PV	EV Adoption	Building Electrification	TOU	Weather	Description
A	Reference Forecast	Mid	Mid	Mid	Mid	No	Normal	**Base Forecast**
B	High Economics	**High**	Mid	Mid	Mid	No	Normal	Strong Econ, Misc. End Use
C	Low Economics	**Low**	Mid	Mid	Mid	No	Normal	Weak Econ, Misc End Use
D	Strong Energy Growth	**High**	LowPV	**High**	**High**	No	Normal	Strong Econ, Misc End Use,` Weak PV, Strong EV, Add Res Electrification
E	Weak Energy Growth	**Low**	HighPV	**Low**	Mid	No	Normal	Weak Econ, Misc End Use Strong PV, Weak EV
F	High BTM PV	Mid	**HighPV**	Mid	Mid	No	Normal	Strong PV
G	Low BTM PV	Mid	**LowPV**	Mid	Mid	Mid	Normal	Weak PV
H	Zero Incremental PV	Mid	**Zero Inc PV**	Mid	Mid	Mid	Normal	Zero Incremental PV
I	Zero PV	Mid	**Zero PV**	Mid	Mid	No	Normal	No PV Ever
J	High EV Adoption	Mid	Mid	**High**	Mid	No	Normal	Strong EV
K	Low EV Adoption	Mid	Mid	**Low**	Mid	No	Normal	Weak EV
L	Aggressive Environmental Regulation	Mid	**HighPV**	**High**	**High**	No	Normal	Strong PV, Strong EV, **Add Res Electrification**
M	High Building Electrification	Mid	Mid	Mid	**High**	No	Normal	**Add Res Electrification**
N	TOU Pricing	Mid	Mid	Mid	Mid	**Yes**	Normal	**Add TOU Impacts**
O	Extreme Weather Scenario	Mid	Mid	Mid	Mid	No	Extreme	Repeat Base case with Extreme weather. Hot summer, Cold winter, Incorpoate weather trend

Annual System Energy Scenarios

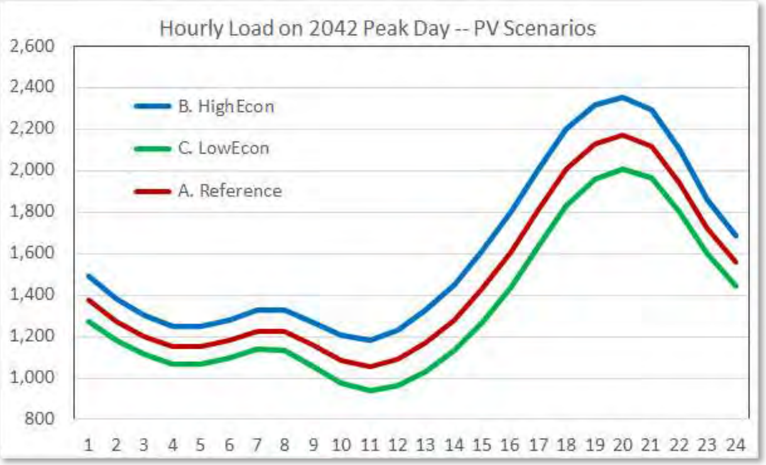


Growth Scenarios

- » Reference Case
- » High Economic Growth
  - High Population, Employment, Income
  - High Miscellaneous end-use growth
- » Low Economic Growth
  - Low Population, Employment, Income
  - Low Miscellaneous end-use growth

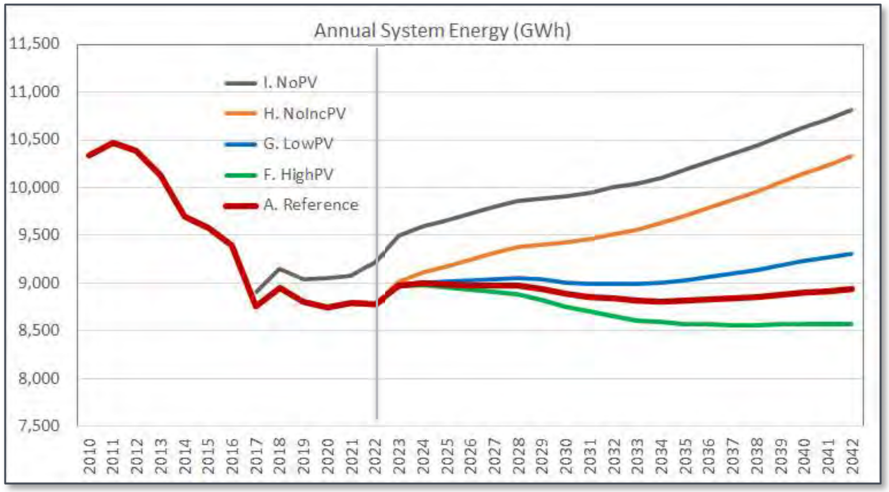


Year	Annual System Energy (GWh)			Annual Peak (MW)		
	Base	High Econ	Low Econ	Base	High Econ	Low Econ
2022	8,777	8,777	8,777	1,961	1,961	1,961
2027	8,978	9,132	8,820	1,898	1,932	1,865
2032	8,838	9,218	8,480	1,933	2,017	1,856
2037	8,839	9,449	8,281	2,033	2,164	1,915
2042	8,934	9,785	8,176	2,169	2,353	2,006

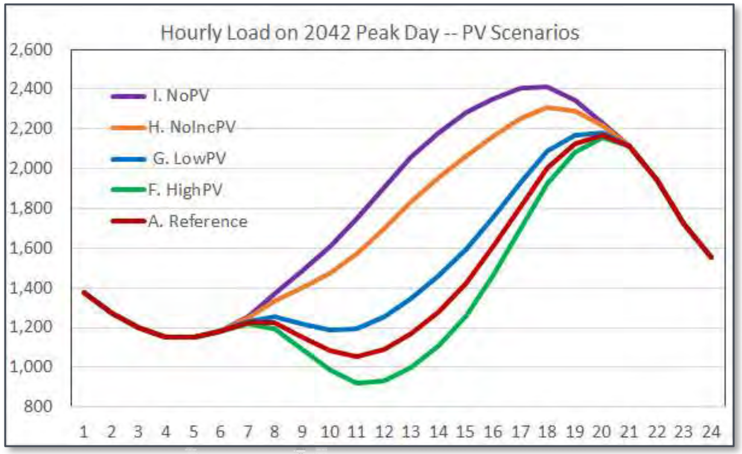


Behind the Meter PV Scenarios

- PV Capacity in 2042
  - Base – 1,141 MW
  - High – 958 MW
  - Low – 765 MW
  - No Incremental – 243 MW (same as 2022)
- Peak Hour
  - Without PV, hour ending 18 (5 pm to 6 pm)
  - With PV, hour ending 20 (7 pm to 8 pm)



Year	Annual System Energy (GWh)					Annual Peak (MW)				
	Base	High PV	Low PV	NoIncPV	No PV	Base	High PV	Low PV	NoIncPV	No PV
2022	8,777	8,777	8,777	8,777	9,218	1,961	1,961	1,961	1,961	2,087
2027	8,978	8,910	9,044	9,315	9,796	1,898	1,883	1,913	1,975	2,127
2032	8,838	8,659	8,994	9,517	10,000	1,933	1,918	1,951	2,052	2,193
2037	8,839	8,561	9,097	9,870	10,351	2,033	2,023	2,046	2,168	2,288
2042	8,934	8,573	9,310	10,335	10,816	2,169	2,157	2,182	2,310	2,415

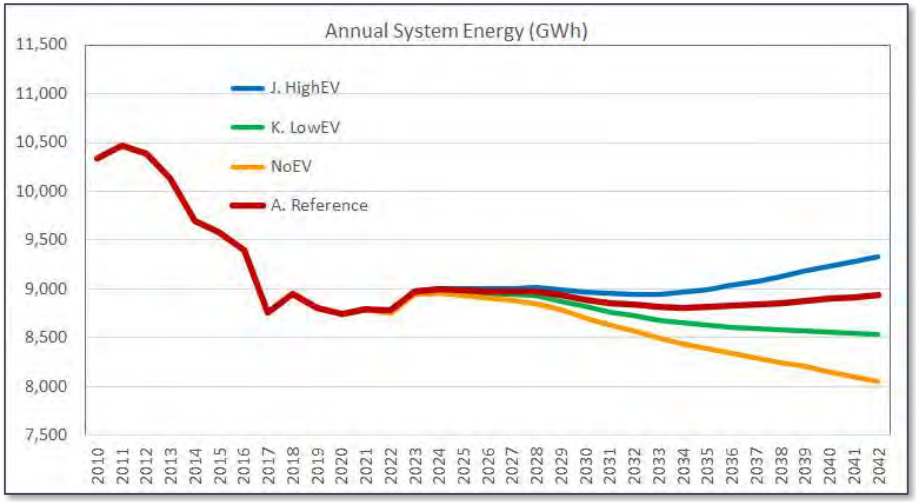


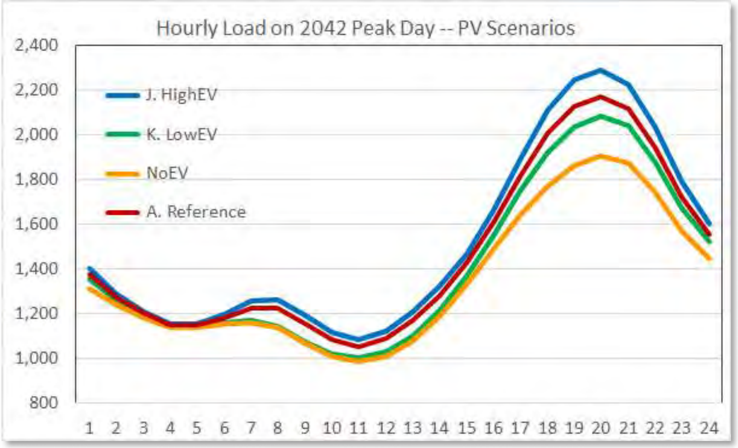
Electric Vehicle Scenarios

» The Reference forecast includes base levels of EV adoption. In the three scenarios, the number of vehicles in 2042 are as follows:
- High PV: 304,000
- Base PV: 209,000
- Low PV: 150,000

» Annual sales and peak results are summarized below

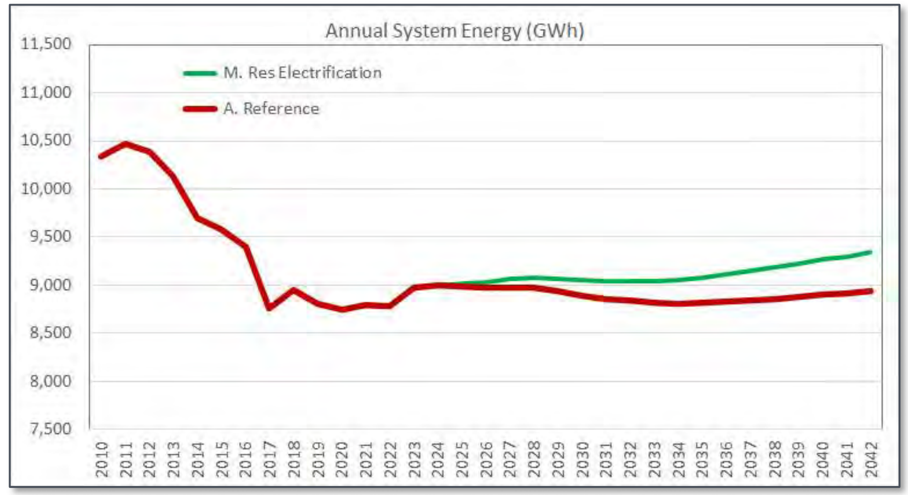
Year	Annual System Energy (GWh)				Annual Peak (MW)			
	Base	High EV	Low EV	No EV	Base	High EV	Low EV	No EV
2022	8,777	8,777	8,777	8,754	1,961	1,961	1,961	1,956
2027	8,978	9,007	8,947	8,885	1,898	1,906	1,892	1,873
2032	8,838	8,950	8,725	8,566	1,933	1,967	1,907	1,850
2037	8,839	9,079	8,595	8,292	2,033	2,105	1,980	1,869
2042	8,934	9,329	8,532	8,055	2,169	2,287	2,082	1,906



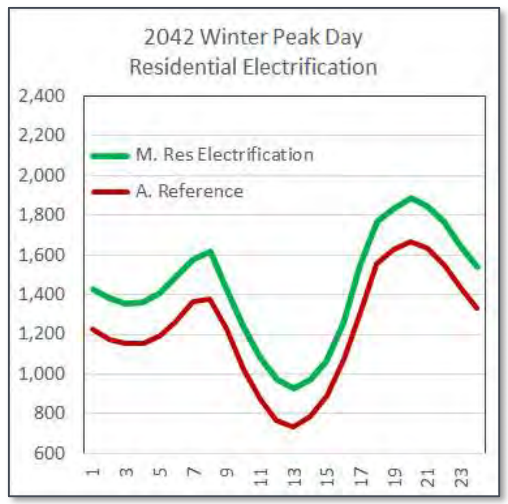


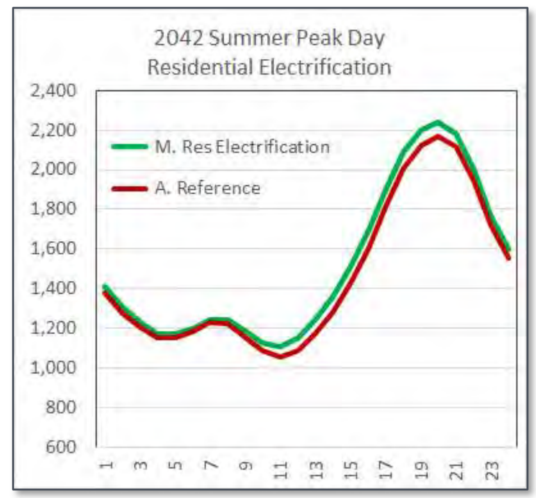
Residential Electrification

» Residential Electrification Scenario
  - Gas/Propane not allowed in new homes
  - Conversion incentives for existing homes
  - Electric heat share rises from 15% to 45%
  - Increased cooling loads as heat pumps replace evaporative cooling



Year	Annual System Energy (GWh) Base	Annual System Energy (GWh) Building Electrification	Annual Peak (MW) Base	Annual Peak (MW) Building Electrification
2022	8,777	8,777	1,961	1,961
2027	8,978	9,060	1,898	1,914
2032	8,838	9,043	1,933	1,972
2037	8,839	9,147	2,033	2,087
2042	8,934	9,339	2,169	2,240

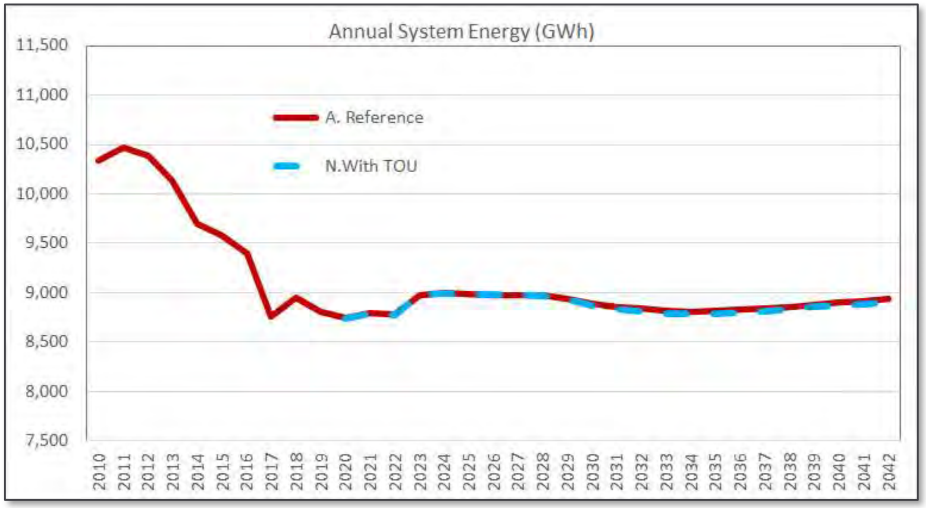


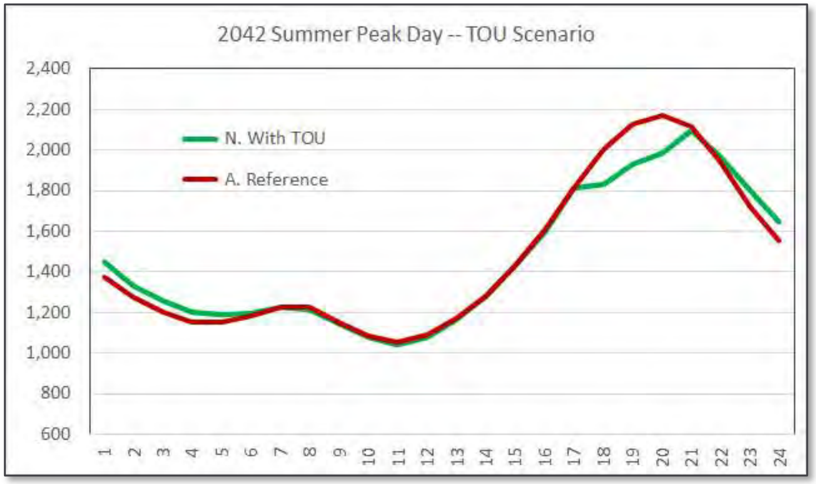


TOU Scenario

- The TOU scenario introduces residential TOU rate pilots in 2025, and full programs in 2030
  - Whole house EV Rate (10 pm to 5 am)
  - Opt-out TOU Rate (5-8 am, 5-8 pm)
- EV impacts based on EVPro profiles and PNM rate parameters.
- Non EV impacts based on TOU rate impact studies.

Year	Annual System Energy (GWh)		Annual Peak (MW)	
	Base	With TOU	Base	With TOU
2022	8,777	8,777	1,961	1,961
2027	8,978	8,977	1,898	1,890
2032	8,838	8,816	1,933	1,865
2037	8,839	8,814	2,033	1,968
2042	8,934	8,907	2,169	2,095



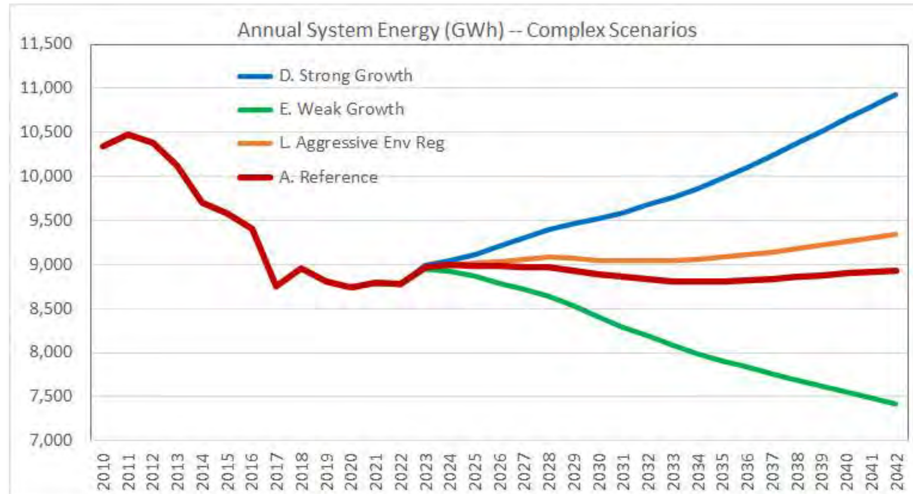


Complex Scenarios

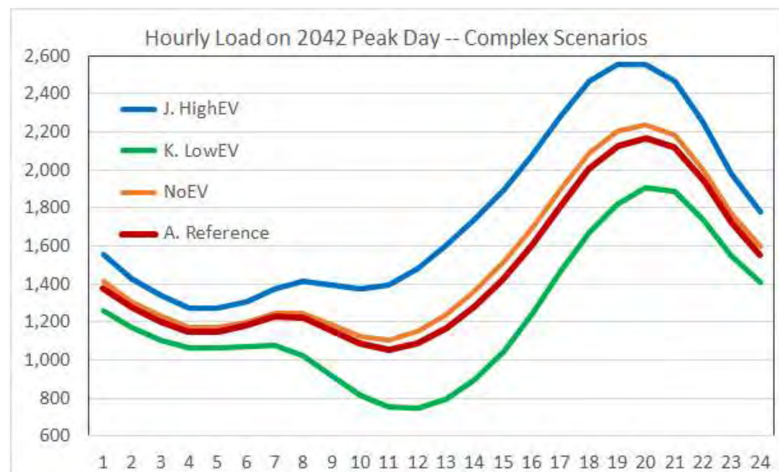
» Strong Growth Scenario
  - High Econ Growth, Weak PV, Strong EV, Residential Electrification

» Weak Growth
  - Low Econ Growth, Strong PV, Weak EV

» Aggressive Environmental Regulation
  - Strong PV, Strong EV, Residential Electrification

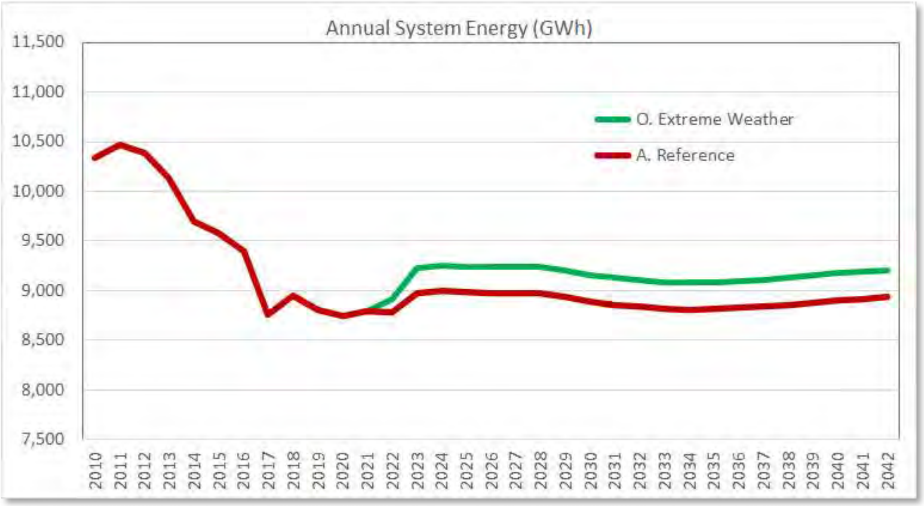


Year	Annual System Energy (GWh)				Annual Peak (MW)			
	Base	Strong Growth	Weak Growth	Aggressive Env Reg	Base	Strong Growth	Weak Growth	Aggressive Env Reg
2022	8,777	8,777	8,777	8,777	1,961	1,961	1,961	1,961
2027	8,978	9,307	8,723	9,060	1,898	1,970	1,843	1,914
2032	8,838	9,678	8,186	9,043	1,933	2,106	1,818	1,972
2037	8,839	10,236	7,759	9,147	2,033	2,313	1,852	2,087
2042	8,934	10,933	7,413	9,339	2,169	2,556	1,907	2,240

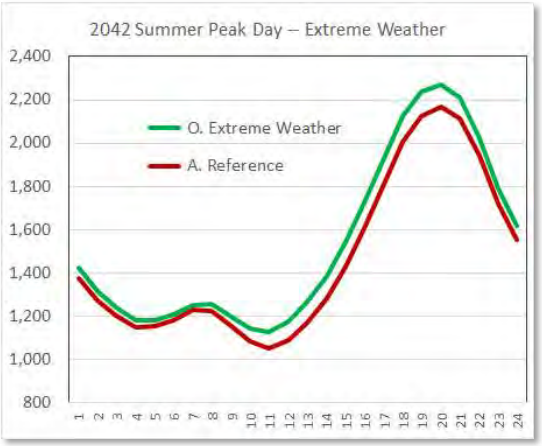


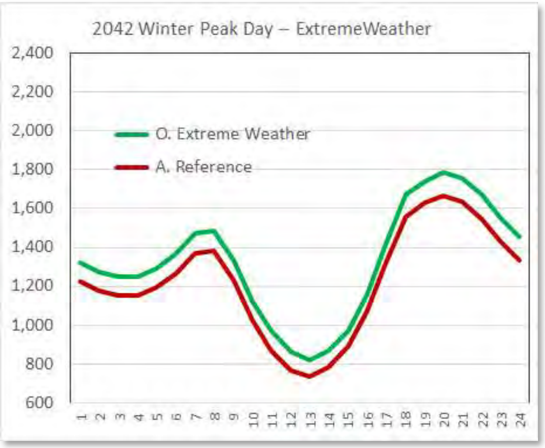
EXTREME WEATHER

- » Reference uses rank and average
- » Extreme uses rank and average of top 2
  - » Summer peak day is 2.6 degrees warmer
  - » Winter peak day is 12.2 degrees colder
  - » Monthly HDD60 is 17% higher than normal
  - » Monthly CDD65 is 17% higher than normal



	Annual System GWh		Summer Peak (MW)		Winter Peak (MW)	
Year	Base	Extreme Weather	Base	Extreme Weather	Base	Extreme Weather
2023	8,975	9,225	1,883	1,983	1,371	1,491
2027	8,978	9,242	1,898	2,003	1,435	1,559
2032	8,838	9,108	1,933	2,037	1,487	1,610
2037	8,839	9,111	2,033	2,130	1,583	1,705
2042	8,934	9,208	2,169	2,270	1,668	1,788





Putting EE on the Supply Side

» The forecast scenarios all include strong impacts from continued energy efficiency gains.

» To put EE on an equal footing with supply-side options, the scenario forecasts are adjusted upward to remove the impacts of incremental program activity, including:
- The Program bundle for 2023 to 2027
- Bundles A to E for 2028 and beyond

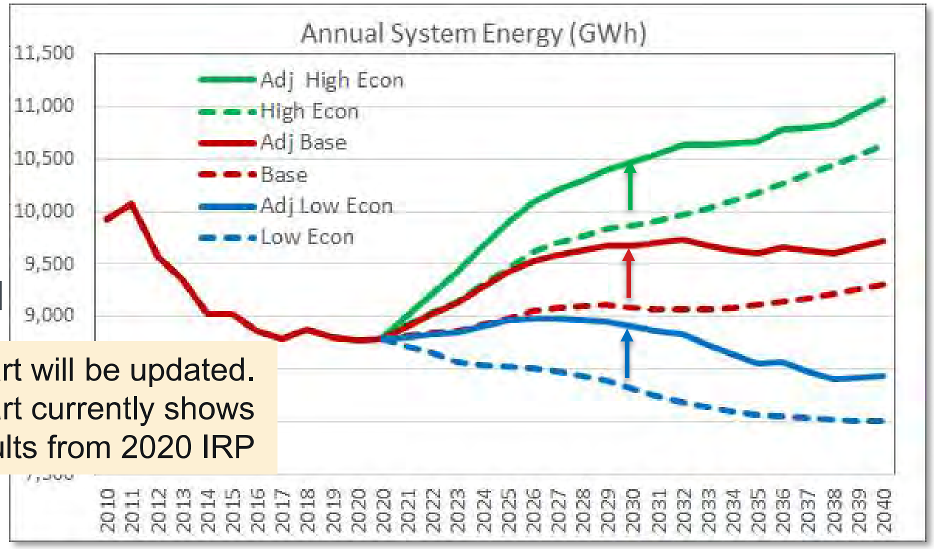


Chart will be updated. Chart currently shows results from 2020 IRP

» To compute the adjustments, load shape impacts by EE bundle are accumulated across years based on average measure life of each bundle. The cumulative impacts are then added to the hourly scenario forecast. The resulting adjusted hourly load shapes are the basis for the IRP process treating EE programs as a supply-side resource. The chart depicts the impact of this adjustment process for annual system energy in the three economic growth scenarios.

THANK YOU

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Appendix D. Description of Balancing Area Reliability Requirements

This appendix provides a detailed explanation of the three primary standards for PNM's BA discussed in the Planning Considerations Section under Operating Reserves.

BAL-002-3

BAL-002-3 is the NERC Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency EventStandard governing restoration of supply and demand balance in the event of a system disturbance. Its objective is to assure BAs balance resources and demand and returns its Area Control Error (ACE) to defined values, subject to applicable limits, following a Reportable Balancing Contingency Event.

A Reportable Balancing Contingency Event is any single event that requires a BA to recover from events as follows below, or any series of such otherwise single events, with each separated from the next by one minute or less:

A. Sudden loss of generation:

a. Due to:

i. unit tripping,

ii. loss of generator Facility resulting in isolation of the generator from the Bulk Electric System or from the BA's System, or

iii. sudden unplanned outage of transmission Facility;

b. And, that causes an unexpected change to the BA's ACE;

B. Sudden loss of an import, due to unplanned outage of transmission equipment that causes an unexpected imbalance between generation and Demand on the Interconnection.

C. Sudden restoration of a Demand that was used as a resource that causes an unexpected change to ACE.

A Contingency Event Recovery Period is the period that begins at the time that the resource output begins to decline within the first one-minute interval of a Reportable Balancing Contingency Event, and extends for fifteen minutes thereafter.

Contingency Reserve Restoration Period is a period not exceeding 90 minutes following the end of the Contingency Event Recovery Period.

The standard requires that the BA experiencing a Reportable Balancing Contingency Event shall:

1.1. within the Contingency Event Recovery Period, demonstrate recovery by returning its ACE to at least the recovery value of Zero (if its Pre-Reporting Contingency Event ACE Value was positive or equal to zero); however, any Balancing Contingency Event that occurs during the Contingency Event Recovery Period shall reduce the required recovery: (i) beginning at the time of, and (ii) by the magnitude of, such individual Balancing Contingency Event, or, its Pre-Reporting Contingency Event ACE Value (if its Pre-Reporting Contingency Event ACE Value was negative); however, any Balancing Contingency Event that occurs during the Contingency Event Recovery Period shall reduce the required recovery: (i) beginning at the time of, and (ii) by the magnitude of, such individual Balancing Contingency Event.

1.2. Document all Reportable Balancing Contingency Events.

1.3. Deploy Contingency Reserve, within system constraints, to respond to all Reportable Balancing Contingency Events, however, it is not subject to compliance with Requirement R1 part 1.1 if the BA:

1.3.1 is (i) a Balancing Authority or (a Reserve Sharing Group) with at least one member that is experiencing an Energy Emergency Alert Level, and is utilizing its Contingency Reserve to mitigate an operating emergency in accordance with its emergency Operating Plan, and has depleted its Contingency Reserve to a level below its Most Severe Single Contingency, and has, during communications with its Reliability Coordinator in accordance with the Energy Emergency Alert procedures, (i) notified the Reliability Coordinator of the conditions described in the preceding two bullet points preventing the BA from complying with Requirement R1 part 1.1, and (ii) provided the Reliability Coordinator with an ACE recovery plan, including target recovery time or,

1.3.2 the BA experiences, multiple Contingencies where the combined MW loss exceeds its Most Severe Single Contingency and that are defined as a single Balancing Contingency Event, or multiple Balancing Contingency Events within the sum of the time periods defined by the Contingency Event Recovery Period and Contingency Reserve Restoration Period whose combined magnitude exceeds the BA's Most Severe Single Contingency.

BAL-002-WECC-3

As PNM adds more variable energy supplies to the system, PNM must consider the need to provide the requisite regulating reserves (i.e., ancillary services and flexibility) to maintain reliability as generation from the new resources ramps up and down. Increased intermittent generation on PNM’s system has increased the fluctuations of generation output on the system. This also increases the need for quick-response solutions.

The WECC BAL-002-WECC Standard requires each Balancing Authority and each Reserve Sharing Group shall maintain a minimum amount of Contingency Reserve, except within the first sixty minutes following an event requiring the activation of Contingency Reserve, that is:

1.1. The greater of either:

• The amount of Contingency Reserve equal to the loss of the most severe single contingency;

• The amount of Contingency Reserve equal to the sum of three percent of hourly integrated Load plus three percent of hourly integrated generation.

1.2. Composed of any combination of the reserve types specified below:

• Operating Reserve—Spinning

• Operating Reserve—Supplemental

• Interchange Transactions designated by the Source Balancing Authority as Operating Reserve—Supplemental

• Reserve held by other entities by agreement that is deliverable on Firm Transmission Service

• A resource, other than generation or load, that can provide energy or reduce energy consumption

• Load, including demand response resources, Demand-Side Management resources, Direct Control Load Management, Interruptible Load or Interruptible Demand, or any other Load made available for curtailment by the Balancing Authority or the Reserve Sharing Group via contract or agreement.

• All other load, not identified above, once the Reliability Coordinator has declared an energy emergency alert signifying that firm load interruption is imminent or in progress.

1.3. Based on real-time hourly load and generating energy values averaged over each Clock Hour (excluding Qualifying Facilities covered in 18 C.F.R.§ 292.101, as addressed in FERC Order 464).

1.4. An amount of capacity from a resource that is deployable within ten minutes.

This standard establishes the criteria and reporting requirements to ensure that an area BA, such as PNM, restores the electricity supply and demand balance within prescribed time limits following a reportable system disturbance.

Load and generation can vary quickly throughout the day, so PNM maintains a margin over the minimum standard to ensure continuous compliance. The minimum margin that PNM should carry is affected by the frequency and magnitude of sudden changes in the supply and demand balance. PNM has studied the relationship between the cost to carry regulating reserves and the probability of not having enough regulating reserves to respond to events that cause load or generation to suddenly change. Findings of this study follow:

- The need for flexible capacity is driven by short duration fluctuations in the supply demand balance (e.g., if a cloud floats over a PV solar generator, the change in generation is instant, but the associated change in demand from reduced household cooling needs will take longer to occur)

Because loss of generation events typically are of short notice and duration, spinning reserves are more valuable as a supply of regulating reserve

Under the BAL-002-WECC-3 standard, once reserves are activated to recover from a DCS event, those reserves must be restored within 60 minutes. Noncompliance with the standard can result in a directive by the RC West to shed load. Restoring reserves allows PNM to accomplish a timely recovery from another DCS event should one occur.

BAL-003-2

NERC Standard BAL-003-2 is the Frequency Response Requirement. PNM, in its role as a BA, is required to have sufficient frequency response capability to maintain interconnection frequency within predefined boundaries by arresting frequency deviations and supporting frequency until the system's frequency is restored to its scheduled value.

Appendix E. Transmission Facilities

This appendix provides a detailed list of PNM's owned transmission facilities. Table E-2 provides a list of PNM's existing, planned/under construction, and future transmission substations. Items included on this list are color-coded using the following convention:

- Black – Existing
- **Green – Existing, To Be Replaced**
- **Blue – Future Planned (24+ Months) or Under Consturction**

Table E-2 lists existing jointly-owned transmission lines.

Table E-1: Existing, Planned/Under Construction, and Future Transmission Subtations

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Afton	**345 kV**	**Yes**	**EPE - TOP Owned and Operated by EPE - PNM only owns generation into the substation. Substation will not be evaluated for PNM CIP.**			
Alamogordo	**115 kV**	**No**	**N/A**			
Alamogordo (elements)	-	No	N/A	AR 115 Alamogordo - Amrad	115 kV	Line
Alamogordo (elements)	-	No	N/A	Alamogordo South-Alamogordo 115 kV line	115 kV	Line
Alamogordo (elements)	-	Yes	PNM - TOP station, Tri-State - TO line	ADA: Dona Ana 115 kV-Alamogordo 115 kV	115 kV	Line
Alamogordo (elements)	-	Yes	PNM - TOP station, Tri-State - TO line	AC 115 Alamogordo - Carrizo	115 kV	Radial Line
Alamogordo (elements)	-	No	EPE owns, PNM Maintains	AH 115 Alamogordo - Holloman	115 kV	Line
Alamogordo (elements)	-	No	N/A	Alamogordo #1 Shunt Capacitors	115 kV	Reactive Resource
Alamogordo (elements)	-	No	N/A	Alamogordo #2 Shunt Capacitors	115 kV	Reactive Resource
Alamogordo (elements)	-	No	N/A	Alamogordo #3 Shunt Capacitors	115 kV	Reactive Resource
Alamogordo North, Mid, & South	**115 kV**	**No**	**N/A**			
Alamogordo South (elements)	-	No	N/A	Alamogordo South-Amard 115 kV line	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Alamogordo South (elements)	-	No	N/A	Alamogordo South-Alamogordo 115 kV line	115 kV	Line
Alamogordo South (2026)	**115 kV**	**No**	**N/A**			
Alamogordo South 1 & 2 (2026)	**115 kV**	**No**	N / A			
Alcazar	**115 kV**	**No**	**N/A**			
Algodones	**115 kV**	**No**	**N/A**			
Algodones (elements)	-	No	N/A	AL: Algodones 115 kV-Pachman 115 kV	115 kV	Line
Algodones (elements)	-	No	N/A	AW: Algodones 115 kV-Britton 115 kV	115 kV	Line
Algodones (elements)	-	No	N/A	ANZ: Algodones Tap 115 kV-Algodones 115 kV	115 kV	Line
Algodones (elements)	-	Yes	PNM - TOP station, Tri-State - TO line	Algodones 115 kV-La Jara 115 kV	-	Line
Algodones 1 & 2	**115 kV**	**No**	**N/A**			
Alire	**46 kV**	**No**	**N/A**			
Alire (elements)	-	No	N/A	AM: Alire Tap 46kV-Alire Substation	46 kV	Radial Line
Ambrosia 115	**115 kV**	**No**	**N/A**			
Ambrosia 115 (elements)	-	No	N/A	AY: Ambrosia 115 115 kV-Ya-Ta-Hey 115 kV	115 kV	Line
Ambrosia 115 (elements)	-	No	N/A	MA: Ambrosia 115 kV-Red Mesa 115 kV	115 kV	Line
Ambrosia 115 (elements)	-	Yes	TSGT owns, PNM maintains	MB: Ambrosia 115 kV-Bluewater 115 kV	115 kV	Line
Ambrosia 115 (elements)	-	No	N/A	Ambrosia #1 Shunt Capacitors	115 kV	Reactive Resource

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Ambrosia 230	**230 kV**	**Yes**	**PNM - TOP**			
Ambrosia 230 (elements)	–	Yes	PNM - TOP	WA: Ambrosia 230 kV-West Mesa 230 kV	230 kV	Line
Ambrosia 230 (elements)	–	Yes	TSGT owns, PNM maintains	PSA: Ambrosia - PEGS 230 kV Line	230 kV	Line
Ambrosia 230 (elements)	–	No	N/A	BI: Ambrosia 230 kV-Bisti 230 kV	230 kV	Line
Ambrosia 230 (elements)	–	No	N/A	Ambrosia 230/115 kV Transformer	230 kV	Transformer
Amrad	**115 kV**	**Yes**	**EPE - TOP**			
Amrad (elements)	–	No	N/A	AR 115 Alamogordo - Amrad	115 kV	Line
Amrad (elements)	–	No	N/A	Alamogordo South-Amard 115 kV line	115 kV	Line
Amrad 345	**345 kV**	**Yes**	**EPE - TOP**			
Amrad 345 (elements)	–	Yes	EPE - TOP	AA: Amrad-Eddy (Artesia) 345 kV Line	345 kV	Line
Amrad 345 (elements)	–	Yes	EPE - TOP	Amrad-Caliente (Picante) 345 kV Line	345 kV	Line
Amrad 345 (elements)	–	Yes	EPE - TOP	Amrad 345/115 kV Transformer	345 kV	Transformer
Anderson	**115 kV**	**No**	**N/A**			
Arno 1 & 2	**46 kV**	**No**	**N/A**			
Arriba	**115 kV**	**No**	**N/A**			
Arriba (elements)	–	No	N/A	AA: Arriba Tap 115 kV-Arriba Substation	115 kV	Radial Line
Artesia (elements)	–	Yes	EPE - TOP	Amrad-Eddy 345 kV Line	345 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Artesia and DC Converter Station	**345 kV**	**Yes**	**EPE - TOP**			
Aspen	**115 kV**	**No**	**N/A**			
Aspen (2025)	**115 kV**	**No**	**N/A**			
Aspen (elements)	–	No	N/A	ASPN-WSMS1: Aspen-West Mesa	115 kV	Line
Aspen (elements)	–	No	N/A	ASPN-PRGR1: Aspen-Prager	115 kV	Line
Aspen (elements)	–	No	N/A	Sectionalizing breaker	115 kV	Sectionalizing Breaker
Aspen (elements)	–	No	N/A	Sectionalizing breaker	115 kV	Sectionalizing Breaker
Avila	**115 kV**	**No**	**N/A**			
Avila (elements)	–	No	N/A	AV: Avila Tap 115 kV-Avila Substation	115 kV	Line
B-A 115	**115 kV**	**No**	**N/A**			
B-A 115 (elements)	–	No	N/A	AB 115 Reeves-BA (East Circuit)	115 kV	Line
B-A 115 (elements)	–	No	N/A	CB: BA 115 kV-Pachman 115 kV	115 kV	Line
B-A 115 (elements)	–	No	N/A	RB: Reeves 115 kV-BA 115 kV	115 kV	Line
B-A 115 (elements)	–	No	N/A	RL: BA 115 kV-STA 115 kV	115 kV	Line
B-A 115 (elements)	–	No	N/A	RS: BA 115 kV-Zia 115 kV	115 kV	Line
B-A 345	**345 kV**	**No**	**N/A**			
B-A 345 (elements)	–	No	N/A	WN: Rio Puerco 345 kV-BA 345 kV	345 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
B-A 345 (elements)	–	No	N/A	CJ: Rio Puerco 345 kV-BA 345 kV	345 kV	Line
B-A 345 (elements)	–	No	N/A	BA-DMND1: BA-Diamond Tail #1 345 kV	345 kV	Line
B-A 345 (elements)	–	No	N/A	BA-DMND2: BA-Diamond Tail #2 345 kV	345 kV	Line
B-A 345 (elements)	–	No	N/A	BA 345/115 kV Transformer	345 kV	Transformer
B-A 345 (elements)	–	No	N/A	BA (CJ -formerly WW)- Line Reactor	345 kV	Reactive Resource
Baca	**46 kV**	**No**	**N/A**			
Baca (elements)	–	No	N/A	BC: Baca Tap 46kV-Baca Substation	46 kV	Radial Line
Ball Park	**46 kV**	**No**	**N/A**			
Ball Park (elements)	–	No	N/A	PK: Ball Park Tap 46 kV-Ball Park Substation	46 kV	Radial Line
Beckner Road	**115 kV**	**No**	**N/A**			
Bel Air	**115 kV**	**No**	**N/A**			
Bel Air (elements)	–	No	N/A	BA: Bel Air Tap 115 kV-Bel Air Substation	115 kV	Radial Line
Belen	**115 kV**	**No**	**N/A**			
Belen (elements)	–	No	N/A	SOC: Belen 115 kV-Socorro 115 kV	115 kV	Line
Belen (elements)	–	No	N/A	Phase shifting transformer on Belen-Socorro 115 kV line	115 kV	PST
Belen (elements)	–	No	N/A	WL: Belen - Willard 115 kV	115 kV	Line
Belen (elements)	–	No	N/A	PJ: Belen - Tome 115 kV	115 kV	Line
Belen (elements)	–	No	N/A	WB: Belen - Los Morros 115 kV	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Belen (elements)	–	No	N/A	LZ: Belen-La Luz	115 kV	Gen Tie Line
Belen (elements)	–	No	N/A	Belen Series Reactor #1	115 kV	Reactive Resource
Belen (elements)	–	No	N/A	Belen Series Reactor #2	115 kV	Reactive Resource
Belen (elements)	–	No	N/A	BELN-SURA1: Sun Ranch-Belen 115 kV	115 kV	Line
Beverly Wood	**115 kV**	**No**	**N/A**			
Bisti	**230 kV**	**No**	**N/A**			
Bisti (elements)	–	No	N/A	BI: Bisti-Ambrosia 230 kV Line	230 kV	Line
Bisti (elements)	–	No	N/A	BP: Bisti-Pillar 230 kV Line	230 kV	Line
Bisti (elements)	–	No	N/A	BX 230 kV Line (radial)	230 kV	Radial Line
Black Ranch	**115 kV**	**No**	**N/A**			
Blackwater	**345 kV**	**No**	**N/A**			
Blackwater (elements)	–	No	N/A	TB: Blackwater-Taiban 345 kV Line	345 kV	Line
Blackwater (elements)	–	No	N/A	BWF - Generation interconnection	345 kV	Gen Tie Line
Blackwater (elements)	–	No	N/A	DC Converter	345 kV	DC Converter
Blackwater (elements)	–	No	N/A	Synchronous Condenser	345 kV	Reactive Resource
Blackwater (elements)	–	No	N/A	Blackwater Shunt Capacitor	230 kV	Reactive Resource

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Bluewater	**115 kV**	**No**	**TSGT - TOP. Removed Low IRC since PNM does not own or maintain any devices in this station-Bluewater is a TSGT station. PNM owns 2 lines in and out of Bluewater but does not own any devices including protection for these lines in the station.**			
Bluewater (elements)	-	No	N/A	BLEW-CIBL1: Bluewater-Cibola 115 kV	115 kV	Line
Bluewater (elements)	-	No	N/A	MB: Ambrosia 115 kV-Bluewater 115 kV	115 kV	Line
Bosque Farms	**46 kV**	**No**	**N/A**			
Bosque Farms (elements)	-	No	N/A	BF: Bosque Farm Tap 115kV	115 kV	Radial Line
Bosque Farms (elements)	-	No	N/A	BF: Bosque Farm Tap 46kV	46 kV	Radial Line
Britton	**115 kV**	**No**	**N/A**			
Britton (elements)	-	No	N/A	TW: Britton 115 kV-Willard 115 kV	115 kV	Line
Britton (elements)	-	No	N/A	AW: Algodones 115 kV-Britton 115 kV	115 kV	Line
Britton (elements)	-	No	N/A	Britton Shunt Capacitor #1	115 kV	Reactive Resource
Britton (elements)	-	No	N/A	Britton Shunt Capacitor #2	115 kV	Reactive Resource
Buckman	**115 kV**	**No**	**N/A**			
Burro Mountain	**69 kV**	**No**	**N/A**			
Cabezon	**345 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Cabezon (elements)	345 kV	No	N/A	WW: San Juan-Cabezon 345 kV Line	345 kV	Line
Cabezon (elements)	345 kV	No	N/A	CZ: Cabezon-Rio Puerco	345 kV	Line
Cabezon (elements)	345 kV	Yes	TSGT - TO/TOP	Transformer 345/115 kV	345 kV	Transformer
Caja Del Rio	**115 kV**	**No**	**N/A**			
Camel Tracks	**46 kV**	**No**	**N/A**			
Capitol	**46 kV**	**No**	**N/A**			
Capitol (elements)	**-**	No	N/A	HT: Capitol Tap 46kV-Capitol Substation	46 kV	Radial Line
Central	**115 kV**	**No**	**N/A**			
Church Rock	**115 kV**	**No**	**N/A**			
Church Rock (elements)	**-**	No	N/A	CM: Church Rock Tap 115 kV-Church Rock Substation	115 kV	Line
Cibola	**115 kV**	**No**	**N/A**			
Cibola (Elements)	**-**	No	N/A	CIBL-PTRO1 Cibola to Petroglyph	115kV	Line
Cibola (Elements)	**-**	No	N/A	BLEW-CIBL1 Cibola to Bluewater	115kV	Line
Cibola (Elements)	**-**	No	N/A	Route 66 Solar	115kV	Gen Tie Line
Claremont	**115 kV**	**No**	**N/A**			
Claremont (elements)	**-**	No	N/A	CL: ClaremontTap 115kV-Claremont Substation	115 kV	Radial Line
Clines Corners	**345 kV**	**No**	**N/A**			**Station**
Clines Corners (elements)	**-**	No	N/A	CLCR-DMND1: Clines Corners-Diamond Tail #1 345 kV line	345 kV	Line
Clines Corners (elements)	**-**	No	N/A	CLCR-DMND2: Clines Corners-Diamond Tail #2 345 kV line	345 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Clines Corners (elements)	–	No	N/A	CLCR-WESP1: Clines Corners-Western Spirit	345 kV	Line
Clines Corners (elements)	–	No	N/A	CP: Clines Corners to Guadalupe 345kV	345 kV	Line
Clines Corners (elements)	–	No	N/A	Clines Corners-Western Spirit Line Shunt Reactor	345 kV	Reactive Resource
Clines Corners (elements)	–	No	N/A	Wind Farm Generation interconnection	–	Gen Tie Line
Coal	**115 kV**	**No**	**N/A**			
Coal (elements)	–	No	N/A	CQ: Coal 115 kV-Coal Tap 115 kV	115 kV	Line
Cochiti	**46 kV**	**No**	**N/A**			
Cochiti (elements)	–	No	N/A	CR: Cochiti Tap 46kV-Cochiti Substation	46 kV	Radial Line
Colinas	**115 kV**	**No**	**N/A**			
College	**115 kV**	**No**	**N/A**			
College	**115 kV**	**No**	**N/A**			
College (elements)	–	No	N/A	CK: Tome-College 115 kV	115 kV	Line
College (elements)	–	No	N/A	College Sectionalizing Breaker		Sectionalizing Breaker
College (elements)	–	No	N/A	TC: College - El Cerro 115 kV	115 kV	Line
Cornell	**115 kV**	**No**	**N/A**			
Cornell (elements)	–	No	N/A	CN: Cornell Tap 115 kV-Cornell Substation	115 kV	Radial Line
Corrales Bluffs	**115 kV**	**No**	**N/A**			
Corrales Bluffs (Q2 2023)	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Corrales Bluffs (elements)	–	No	N/A	RR: Corrales Bluffs 115 kV-Veranda 115 kV	115 kV	Line
Corrales Bluffs (elements)	–	No	N/A	CY: Corrales Bluffs 115 kV-Pachman 115 kV	115 kV	Line
Corrales Bluffs (elements)	–	No	N/A	IC: Corrales Bluffs - Irving 115 kV	115 kV	Line
Corrales Bluffs (elements)	–	No	N/A	CS: Corrales Bluffs 115 kV-Sara 115 kV	115 kV	Radial Line
Corrales Bluffs (elements)	–	No	N/A	CT: Corrales Bluffs 115 kV-Sara 115 kV	115 kV	Radial Line
Cottonwood 1 & 2	**115 kV**	**No**	**N/A**			
Cottonwood 1 & 2 (elements)	–	No	N/A	CW: Cottonwood 115 kV Tap-Cottonwood Substation	115 kV	Radial Line
Cuchilla	**115 kV**	**No**	**N/A**			
Cuchilla (elements)	115 kV	No	N/A	RC: Cuchilla 115kV Tap-Cuchilla Substation	115 kV	Line
Deming East & West	**115 kV**	**No**	**N/A**			
Deming East & West (elements)	–	No	N/A	DM: Mimbres 115 kV-Deming 115 kV	115 kV	Radial Line
Diamond Tail	**345 kV**	**No**	**N/A**			
Diamond Tail (elements)	–	No	N/A	BA-DMND1: Diamond Tail-BA #1 345 kV	345 kV	Line
Diamond Tail (elements)	–	No	N/A	BA-DMND2: Diamond Tail-BA #2 345 kV	345 kV	Line
Diamond Tail (elements)	–	No	N/A	CLCR-DMND1: Diamond Tail-Clines Corners #1 345 kV	345 kV	Line
Diamond Tail (elements)	–	No	N/A	CLCR-DMND2: Diamond Tail-Clines Corners #2 345 kV	345 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Diamond Tail (elements)	–	No	N/A	DMND-NRTN1: Diamond Tail-Norton 345 kV	345 kV	Line
Eastridge	**115 kV**	**No**	**N/A**			
Eastridge (elements)	–	No	N/A	ET: Eastridge 115 kV Tap-Eastridge Substation	115 kV	Radial Line
El Cerro	**115 kV**	**No**	**N/A**			
El Cerro	**115 kV**	**No**	**N/A**			
El Cerro (elements)	–	No	N/A	El Cerro Sectionalizing Breaker		Sectionalizing Breaker
El Cerro (elements)	–	No	N/A	TC: El Cerro - College 115 kV	115 kV	Line
El Cerro (elements)	–	No	N/A	AT: El Cerro - Person 115 kV	115 kV	Line
El Dorado	**115 kV**	**No**	**N/A**			
El Dorado (elements)	–	No	N/A	ES: El Dorado Tap-El Dorado Substation	115 kV	Line
Embudo	**115 kV**	**No**	**N/A**			
Embudo	**115 kV**	**No**	**N/A**			
Embudo (elements)	–	No	N/A	EJ: Embudo 115 kV-Juan Tabo 115 kV	115 kV	Radial Line
Embudo (elements)	–	No	N/A	ER: Embudo 115 kV-Reeves 115 kV	115 kV	Line
Embudo (elements)	–	No	N/A	RE: Embudo 115 kV-Reeves 115 kV	115 kV	Line
Embudo (elements)	–	No	N/A	EMDU-PALO1 Palomas - Embudo 115 kV	115 kV	Line
Embudo (elements)		No	N/A	EMBU-MORR1: Morris-Embudo	115 kV	Line
Embudo (elements)	–	No	N/A	SE: Embudo 115 kV-Sandia 115 kV	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Embudo (elements)	–	No	N/A	EB-TL: Embudo 115 kV-North (TL Tap)	115 kV	Line
Enchanted Hills	**115 kV**	**No**	**N/A**			
ETA	**115 kV**	**Yes**	**NNSA- Los Alamos Laboratory (LA Cty) TO/TOP**			
ETA (element)	–	No	N/A	NL: Norton 115 kV-ETA (LAC) 115 kV	115 kV	Line
First Street	**115 kV**	**No**	**N/A**			
Fort Marcy	**46 kV**	**No**	**N/A**			
Four Corners	**500 / 345 / 230 kV**	**Yes**	**APS - TO/TOP**			
Four Corners (elements)	–	No	N/A	Four Corners - 500/345 kV Transformer 1AA	500 kV	Transformer
Four Corners (elements)	–	No	N/A	FC: Four Corners-San Juan 345 kV Line	345 kV	Line
Four Corners (elements)	–	No	N/A	Four Corners-Shiprock 345 kV Line	345 kV	Line
Four Corners (elements)	–	No	N/A	FRCR-PINT1: Four Corners-Pintado ISD Q1 2022	345 kV	Line
Four Corners (elements)	–	No	N/A	Four Corners - Cholla 345 kV 1	345 kV	Line
Four Corners (elements)	–	No	N/A	Four Corners - Cholla 345 kV 2	345 kV	Line
Four Corners (elements)	–	No	N/A	AF: Four Corners 230 kV-Pillar 230 kV	230 kV	Line
Four Corners (elements)	–	No	N/A	Four Corners 345/230 kV XFMR #4	345 kV	Transformer
Four Corners (elements)	–	No	N/A	Four Corners 345/230 kV XFMR #8	345 kV	Transformer
Four Corners (elements)	–	No	N/A	Four Corners - 230/69 kV XFMR #2	230 kV	Transformer

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Four Corners (elements)	–	No	N/A	Four Corners - Pintado Line Reactor	345 kV	Reactive Resource
Four Hills	**115 kV**	**No**	**N/A**			
Gallegos 115	**115 kV**	**No**	**N/A**			
Gallegos 115 (elements)	–	No	N/A	Gallegos-230/115 kV Transformer	230 kV	Transformer
Gallegos 115 (elements)	–	No	N/A	GU 115 kV line	115 kV	Line
Gallegos 115 (elements)	–	No	N/A	GK 115 kV line	116 kV	Line
Gallegos 230	**230 kV**	**No**	**N/A**			
Gallegos 230 (elements)	–	No	N/A	Gallegos-Pillar 230 kV Line (GC)	230 kV	Line
Gallinas	**115 kV**	**No**	**N/A**			
Gavilan 1 & 2	**115 kV**	**No**	**N/A**			
Girard	**115 kV**	**No**	**N/A**			
Gold St. 1 & 2	**115 kV**	**No**	**N/A**			
Greenlee	**345 kV**	**Yes**	**TEP - TOP**			
Greenlee (elements)	–	No	N/A	Greenlee-APE COOP 345 kV	345 kV	Line
Greenlee (elements)	–	No	N/A	GH: Greenlee-Hidalgo 345 kV	345 kV	Line
Greenlee (elements)	–	No	N/A	Greenlee-Copper Verde 345 kV	345 kV	Line
Greenlee (elements)	–	No	N/A	Greenlee-Winchester 345 kV	345 kV	Line
Greenlee (elements)	–	No	N/A	Greenlee-Springerville 345 kV	345 kV	Line
Guadalupe	**345 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Guadalupe (elements)	–	No	N/A	TG: Taiban Mesa-Guadalupe 345 kV	345 kV	Line
Guadalupe (elements)	–	No	N/A	CP: Clines Corners to Guadalupe 345kV	345 kV	Line
Guadalupe (elements)	–	No	N/A	Wind Farm Interconnection Tie	345 kV	Gen Tie Line
Guadalupe (elements)	–	No	N/A	GUAD #2 Reactor	345 kV	Reactive Resource
Guadalupe (elements)	–	No	N/A	GUAD #1 Reactor	345 kV	Reactive Resource
Guadalupe (elements)	–	No	N/A	Guadalupe SVC	345 kV	Reactive Resource
Halona	**46 kV**	**No**	**N/A**			
Halona (elements)	–	No	N/A	HT: Halona 46kV Tap-Halona Substation	46 kV	Radial Line
Hamilton 1 & 2	**115 kV**	**No**	**N/A**			
Hassayampa	**500 kV**	**Yes**	**SRP - TOP**			
Hawkins 1 & 2	**115 kV**	**No**	**N/A**			
Hazeldine	**46 kV**	**No**	**N/A**			
Hazeldine (elements)	–	No	N/A	HS: Hazeldine 46kV Tap-Hazeldine Substation	46 kV	Radial Line
Hermanas	**115 kV**	**No**	**N/A**			
Hernandez	**115 kV**	**No**	**TSGT - TOP Sub Operated by Tri-State - PNM owns line and 2 relays in station**			
Hernandez (elements)	–	No		HO: Hernandez 115 kV-Ojo 115 kV	115 kV	Line
Hernandez (elements)	–	No		NH: Norton 115 kV-Hernandez 115 kV	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Hickox	**46 kV**	**No**	**N/A**			
Hickox (elements)	–	No	N/A	HT: Hickox 46kV Tap-Hickox Substation	46 kV	Radial Line
Hidalgo 115	**115 kV**	**No**	**N/A**			
Hidalgo 115 (elements)	–	No	N/A	LB: Hidalgo 115 kV-Lordsburg 115 kV	115 kV	Line
Hidalgo 115 (elements)	–	Yes	TSGT owns, PNM maintains	PYR1: Hidalgo 115 kV-Pyramid 115 kV	115 kV	Line
Hidalgo 115 (elements)	–	Yes	TSGT owns, PNM maintains	PYR2: Hidalgo 115 kV-Pyramid 115 kV	115 kV	Line
Hidalgo 115 (elements)	–	No	N/A	HR: Hidalgo 115 kV-Turquoise 115 kV	115 kV	Line
Hidalgo 345	**345 kV**	**Yes**	**EPE - TOP**			
Hidalgo 345 (elements)	–	No	N/A	GH: Hidalgo-Greenlee 345 kV Line	345 kV	Line
Hidalgo 345 (elements)	–	No	N/A	HL: Hidalgo-Luna 345 kV Line	345 kV	Line
Hidalgo 345 (elements)	–	No	N/A	345/115 kV Transformer T1	345 kV	Transformer
Hidalgo 345 (elements)	–	No	N/A	345/115 kV Transformer T2	345 kV	Transformer
Hidden Mountain (elements)		No	N/A	HIMO-RTSN1: Rattlesnake-Hidden Mountain #1	115 kV	Line
Hidden Mountain (elements)		No	N/A	HIMO-RTSN1: Rattlesnake-Hidden Mountain #2	115 kV	Line
Hidden Mountain (elements)		No	N/A	HIMO-PAJA1: Hidden Mountain-Pajarito 345kV line	345 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Hidden Mountain (elements)		No	N/A	HIMO-WESP1: Hidden Mountain-Western Spirit 345 kV line	345 kV	Line
Hidden Mountain (elements)		No	N/A	HIMO 345 kv/115 kVTransformer	345 kV	Transformer
Hidden Mountain 115 (Q2 2025)	**115 kV**	**No**	**N/A**			
Hidden Mountain 345 (Q2 2025)	**345 kV**	**No**	**N/A**			
Hogback	**230 kV**	**Yes**	**CoF - TO/TOP**			
Holloman	**115 kv**	**Yes**	**EPE - TOP**			
Holloman (elements)	**-**	No	EPE owns, PNM Maintains	AH 115 Alamogordo - Holloman	115 kV	Line
Hollywood (elements)	**-**	No	N/A	HG: Hollywood 115 kV-Gavilan 115 kV	115 kV	Radial Line
Hollywood (elements)	**-**	No	N/A	Hollywood - Carrizo Canyon 115 kV	115 kV	Radial Line
Hollywood (Ruidoso) 1 & 2	**115 kV**	**No**	**N/A**			
Hondale	**115 kV**	**No**	**N/A**			
Huning Ranch	**115 kV**	**No**	**N/A**			
Huning Ranch (elements)	**-**	No	N/A	HM: Huning Ranch - Los Morros 115 kV Line	115 kV	Line
Huning Ranch (elements)	**-**	No	N/A	HU: Huning Ranch - West Mesa Bus #1 115 kV Line	115 kV	Line
Huning Ranch (elements)	**-**	No	N/A	WD: Huning Ranch - West Mesa Bus #3 115 kV Line	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Huning Ranch (elements)	–	No	N/A	Huning Ranch Shunt Capacitor #1	115 kV	Reactive Resource
Huning Ranch (elements)	–	No	N/A	Huning Ranch Shunt Capacitor #2	115 kV	Reactive Resource
Huning Ranch (elements)	–	No	N/A	HNRN-RTSN1: Huning Ranch - Rattlesnake #1 115 kV line	115kV	Radial Line
Huning Ranch (elements)	–	No	N/A	HNRN - RTSN2: Huning Ranch to Rattlesnake #2 115 kV line	115kV	Radial Line
Hurley Tap	**115 kV**	**No**	**N/A**			
Ideal	**46 kV**	**No**	**N/A**			
Indian Hospital	**115 kV**	**No**	**N/A**			
Inez	**115 kV**	**No**	**N/A**			
Inez (elements)	–	No	N/A	MT: Inez 115 kV Tap-Inez Substation	115 kV	Radial Line
Innovation	**115 kV**	**No**	**N/A**			
Iris	**115 kV**	**No**	**N/A**			
Iron Street 1 & 2	**46 kV**	**No**	**N/A**			
Iron Street 1 & 2 (elements)	–	No	N/A	PI: Iron Street-Prager	46 kV	Line
Iron Street 1 & 2 (elements)	–	No	N/A	HI: Iron Street-Person	46 kV	Line
Irving	**115 kV**	**No**	**N/A**			
Irving (elements)	–	No	N/A	IC: Irving 115 kV-Corrales 115 kV	115 kV	Line
Irving (elements)	–	No	N/A	IR: Irving 115 kV-Reeves 115 kV	115 kV	Line
Irving (elements)	–	No	N/A	WR: West Mesa 115 kV-Irving 115 kV	115 kV	Line
Isleta	**46 kV**	**No**	**N/A**			
Isleta (elements)	–	No	N/A	IS: Isleta 46kV Tap-Isleta Substation	46 kV	Radial Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Jarales	**115 kV**	**No**	**N/A**			
Jarales (elements)	–	No	N/A	JA: Jarales 115 kV Tap-Jarales Substation	115 kV	Radial Line
Jefferson	**115 kV**	**No**	**N/A**			
Jefferson (elements)	–	No	N/A	JT: Jefferson 115 kV Tap-Jefferson Substation	115 kV	Radial Line
Jicarilla	**345 kV**	**No**	**N/A**			
Jicarilla (elements)	–	No	N/A	OC: San Juan-Jicarilla 345 kV line	345 kV	Line
Jicarilla (elements)	–	No	N/A	OJ: Jicarilla 345 kV-Ojo 345 kV	345 kV	Line
Jicarilla (elements)	–	No	N/A	Jicarilla 345/115 kV Transformer	345 kV	Transformer
Jicarilla (elements)	–	No	N/A	Jicarilla Solar 1 and 2	345kV	Gen Tie Line
Jicarilla (elements)	–	No	N/A	Jicarilla-JANPA bus tie		Bus Tie
Jicarilla (elements)	–	No	N/A	Jicarilla Shunt Reactor	345 kV	Reactive Resource
Jojoba	**500 kV**	**Yes**	SRP - TOP Operated by APS/SRP-PNM does not operate any equipment at this site-Jointly Owned Lines Operated by Other Utilities. It is covered by the ANPP agreement and is therefore being evaluated by SRP.			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Jojoba (elements)	–	No	N/A	Hassayampa 500 kV-Jojoba	500 kV	Line
Jojoba (elements)	–	No	N/A	345 kV-Kyrene 345 kV	345 kV	Line
Juan Tabo	**115 kV**	**No**	**N/A**			
Juan Tabo (element)	–	No		EJ: Juan Tabo Tap 115 kV Tap-Juan Tabo Substation	115 kV	Radial Line
Kaiser	**46 kV**	**No**	**N/A**			
Kaiser (element)	–	No		RT: KaiserTap 46 kV Tap-Kaiser Substation	46 kV	Radial Line
Keleher	**46 kV**	**No**	**N/A**			
Keleher (element)	–	No		KL: Keleher 46 kV Tap-Keleher Substation	46 kV	Radial Line
Kermac	**115 kV**	**No**	**N/A**			
Kewa	**115 kV**	**No**	**N/A**			
Kirtland	**115 kV**	**No**	**N/A**			
Kirtland (elements)	–	No	N/A	KB: Kirtland 115 kV-Sandia Lab 115 kV	115 kV	Line
Kirtland (elements)	–	No	N/A	KS: Sandia 115 kV-Kirtland 115 kV	115 kV	Line
Kirtland (elements)	–	No	N/A	PS: Person 115 kV-Kirtland 115 kV	115 kV	Line
Kirtland (elements)	–	No	N/A	PROS-KIRT1 Kirtland-Prosperity 115 kV	115 kV	Line
Kirtland (elements)	–	No	N/A	Kirtland-SOL 115 kV	115 kV	Line
Kirtland (elements)	–	No	N/A	KD: Kirtland 115 kV-Sandia Lab 115 kV	115 kV	Line
Kirtland (elements)	–	No	N/A	KA: Kirtland 115 kV-USAF 115 kV	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Kyrene	**500 kV**	**No**	SRP - TOP			
La Bajada	**46 kV**	**No**	**N/A**			
La Morada	**115 kV**	**No**	**N/A**			
Lawrence	**115 kV**	**No**	**N/A**			
Lawrence (elements)	-	No	N/A	LW: Lawrence Tap 115 kV-Lawrence Substation	115 kV	Radial Line
Lenkurt	**115 kV**	**No**	**N/A**			
Lenkurt (elements)	-	No	N/A	LU: Lenkurt Tap 115 kV-Lenkurt Substation	115 kV	Radial Line
Leyendecker	**115 kV**	**No**	**N/A**			
Leyendecker (elements)	-	No	N/A	LT: Leyendecker Tap 115 kV-Leyendecker Substation	115 kV	Radial Line
Lomas	**115 kV**	**No**	**N/A**			
Lomas (elements)	-	No	N/A	PL: Prager Tap 115 kV-Lomas 115 kV	115 kV	Radial Line
Lordsburg	**115 kV**	**No**	**N/A**			
Lordsburg (elements)	-	No	N/A	LB: Hidalgo 115 kV-Lordsburg 115 kV	115 kV	Line
Lordsburg (elements)	-	No	N/A	Lordsburg Gen Tie	115 kV	Gen Tie Line
Lordsburg (elements)	-	No	N/A	Lordsburg Transformer 115/69 kV	115 kV	Transformer
Lordsburg 69 kV	**68 kV**	**No**	**N/A**			
Lordsburg 69 kV	**69 kV**	**No**	**N/A**			
Lordsburg 69 kV (elements)	-	No	N/A	Lordsburg-MD 69 kV Line	69 kV	Radial Line
Lordsburg 69 kV (elements)	-	No	N/A	Lordsburg 115/69 kV Transformer	69 kV	Radial Line
Lordsburg 69 kV (elements)	-	No	N/A	Lordsburg-Burro Mountain 69 kV Line	69 kV	Radial Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Los Angeles	**115 kV**	**No**	**N/A**			
Los Chavez	**46 kV**	**No**	**N/A**			
Los Chavez (elements)	–	No	N/A	Los Chavez Shunt Capacitor #1	46 kV	Reactive Resource
Los Chavez (elements)	–	No	N/A	Los Chavez Shunt Capacitor #1	46 kV	Reactive Resource
Los Lunas	**46 kV**	**No**	**N/A**			
Los Morros	**115 kV**	**No**	**N/A**			
Los Morros (elements)	–	No	N/A	Los Morros Sectionalizing Breaker	115 kV	Sectionalizing Breaker
Los Morros (elements)	–	No	N/A	WB: Belen - Los Morros 115 kV	115 kV	Line
Los Morros (elements)	–	No	N/A	Los Morros-Huning Ranch 115kV	115 kV	Line
Los Morros (elements)	–	No	N/A	LOMO-STCE1 Los Morros-St. Cecilia	115 kV	Line
Los Morros 1 & 2	**115 kV**	**No**	**N/A**			
Lost Horizon	**115 kV**	**No**	**N/A**			
Lost Horizon (elements)	–	No	N/A	LO: Lost Horizon Tap 115 kV-Lost Horizon Substation	115 kV	Line
Louden Hill (Q2 2024)	**46 kV**	**No**	**N/A**			
Louden Hill (element)	46 kV	No	N/A	LH: Louden Hill Tap 46kV	46 kV	Radial Line
Luna 115	**115 kV**	**No**	**PNM - TO/TOP**			
Luna 115 (elements)	–	No	N/A	LK: Luna 115 kV-MD-1 115 kV	115 kV	Line
Luna 115 (elements)	–	No	N/A	ML: Luna 115 kV-Mimbres 115 kV	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Luna 115 (elements)	-	No	N/A	Luna 115 kV - Perrin 115 kV	115 kV	Line
Luna 345	**345 kV**	**No**	**EPE - TO/TOP**			
Luna 345 (elements)	-	No	N/A	HL:Luna-Hidalgo 345 kV Line	345 kV	Line
Luna 345 (elements)	-	No	N/A	VL: Luna-Springerville 345 kV Line	345 kV	Line
Luna 345 (elements)	-	No	N/A	LN: Luna-Afton 345 kV Line	345 kV	Line
Luna 345 (elements)	-	No	N/A	LD: Luna-Diablo 345 kV Line	345 kV	Line
Luna 345 (elements)	-	No	PNM - TO/TOP	LL: Luna-LEF 345 kV Tie	345 kV	Gen Tie Line
Luna 345 (elements)	-	No	PNM - TO/TOP	Luna 345/115 kV Transformer	345 kV	Transformer
Manhattan	**46 kV**	**No**	**N/A**			
Manzanita (Q4 2023)	**46 kV**	**No**	N/A			
Manzano	**115 kV**	**No**	**N/A**			
Mariposa	**115 kV**	**No**	**N/A**			
Marquez	**115 kV**	**No**	**N/A**			
Marquez (elements)	-	No	N/A	KC: Marquez 115 kV-Marquez Tap 115 kV	115 kV	Line
McKinley	**345 kV**	**Yes**	**TEP - TOP**			
McKinley (elements)	-	No	N/A	McKinley - San Juan 345 kV Line 1 (TS1)	345 kV	Line
McKinley (elements)	-	No	N/A	McKinley - San Juan 345 kV Line 2 (TS2)	345 kV	Line
McKinley (elements)	-	No	N/A	McKinley-Springerville 345 kV Line	345 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
McKinley (elements)	–	Yes	PNM TOP	Yah-ta-hey Transformer 345/ 115 kV #1	345 kV	Transformer
McKinley (elements)	–	Yes	PNM TOP	Yah-ta-hey Transformer 345/ 115 kV #2	345 kV	Transformer
MD-1	**115 kV**	**No**	**N/A**			
MD-1 (elements)	–	No	N/A	MH: MD-1 115 kV-Ivanhoe (PD) 115 kV	115 kV	Radial Line
MD-1 (elements)	–	No	N/A	LK: Luna 115 kV-MD-1 115 kV	115 kV	Line
MD-1 (elements)	–	No	N/A	MR: MD-1 115 kV-Turquoise 115 kV	115 kV	Line
MD-1 (elements)	–	No	N/A	MD-1 Shunt Capacitors	115 kV	Reactive Resource
MD-1 (elements)	–	No	N/A	MD-1 115 kv - Perrin 115 kv	115 kV	Line
MD-1 69 kV	**69 kV**	**No**	**N/A**			
MD-1 69 kV	**69 kV**	**No**	**N/A**			
MD-1 69 kV (elements)	–	No	N/A	MD 115/69 kV Transformer	115 kV	Transformer
MD-1 69 kV (elements)	–	No	N/A	MD 69 kV shunt Capacitor	69 kV	Reactive Resource
MD-1 69 kV (elements)	–	No	N/A	MD-Lordsburg 69 kV Line	69 kV	Radial Line
MD-1 69 kV (elements)	–	No	N/A	MD-Silver City 69 kV Line	69 kV	Radial Line
MD-1 69 kV (elements)	–	No	N/A	MD-Cobre Mine 69 kV Line	69 kV	Radial Line
Mejia	**115 kV**	**No**	**N/A**			
Mejia (elements)	–	No	N/A	ZN: MejiaTap 115 kV-Mejia Substation	115 kV	Line
Menaul	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Menaul (elements)	–	No	N/A	MT: Menaul Tap 115 kV-Menaul Substation	115 kV	Radial Line
Miguel Lujan	**115 kV**	**No**	**N/A**			
Miguel Lujan (elements)	–	No	N/A	MI: Miguel Lujan 115 kV Tap-Miguel Lujan Substation	115 kV	Radial Line
Mimbres	**115 kV**	**No**	**N/A**			
Mimbres (elements)	–	Yes	PNM owns/operates Mimbres station, Tri-State owns the line	MEB: Mimbres 115 kV-Caballo (TSGT) 115 kV	115 kV	Line
Mimbres (elements)	–	No	N/A	ML: Luna 115 kV-Mimbres 115 kV	115 kV	Line
Mimbres (elements)	–	No	N/A	DM: Mimbres 115 kV-Deming 115 kV	115 kV	Radial Line
Mimbres (elements)	–	No	N/A	MW: Mimbres 115 kV-Hermanas-Hondale 115 kV	115 kV	Radial Line
Mimbres (elements)	–	No	N/A	DL: Mimbres 115 kV-Picacho 115 kV	115 kV	Line
Mimbres (elements)	–	No	N/A	Mimbres #1 Shunt Capacitors	115 kV	Reactive Resource
Mimbres (elements)	–	No	N/A	Mimbres #2 Shunt Capacitors	115 kV	Reactive Resource
Mimbres (elements)	–	No	N/A	Mimbres #3 Shunt Capacitors	115 kV	Reactive Resource
Mission	**115 kV**	**No**	**N/A**			
Mission (elements)	–	No	N/A	MN: Mission 115 kV-North 115 kV	115 kV	Line
Mission (elements)	–	No	N/A	NR: Reeves 115 kV-Mission 115 kV	115 kV	Line
Mission (elements)	–	No	N/A	Mission Sectionalizing Breaker	115 kV	Sectionalizing Breaker
Mission 1 & 2	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Montano	**115 kV**	**No**	**N/A**			
Montano (elements)	-	No	N/A	MP: Montano Tap 115 kV-Montano Substation	115 kV	Radial Line
Montgomery Plaza	**115 kV**	**No**	**N/A**			
Montgomery Plaza (elements)	-	No	N/A	MG: Montgomery Plaza Tap 115 kV-Montgomery Plaza Substation	115 kV	Radial Line
Morris (2025)	**115 kV**	**No**	**N/A**			
Morris (elements)	-	No	N/A	MORR-NRTH1: Morris-North	115 kV	Line
Morris (elements)	-	No	N/A	EMBU-MORR1: Morris-Embudo	115 kV	Line
Morris (elements)	-	No	N/A	Sectionalizing breaker	115 kV	Sectionalizing Breaker
Morris (elements)	-	No	N/A	Sectionalizing breaker	115 kV	Sectionalizing Breaker
Morris 1 & 2	**115 kV**	**No**	**N/A**			
Newell	**46 kV**	**No**	**N/A**			
Newell (elements)	-	No	N/A	WT: Newell Tap 46kV-Newell Substation	46 kV	Radial Line
North	**115 kV**	**No**	**N/A**			
North (elements)	-	No	N/A	EB-TL: Embudo 115 kV-North (TL Tap)	115 kV	Line
North (elements)	-	No	N/A	PN: Richmond-North	115 kV	Line
North (elements)	-	No	N/A	MN: Mission 115 kV-North 115 kV	115 kV	Line
North (elements)	-	No	N/A	RN: Reeves 115 kV-North 115 kV	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
North (elements)	–	No	N/A	MORR-NRTH1: Morris-North	115 kV	Line
North (elements)	–	No	N/A	North #1 Shunt Capacitors	115 kV	Reactive Resource
North (elements)	–	No	N/A	North #2 Shunt Capacitors	115 kV	Reactive Resource
North 1 and 2	**115 kV**	**No**	**N/A**			
North Bernalillo	**115 kV**	**No**	**N/A**			
North Bernalillo (elements)	–	No	N/A	BR: North BernalilloTap 115kV-North Bernalillo Substation	115 kV	Radial Line
North Silver	**69 kV**	**No**	**N/A**			
Norton 115	**115 kV**	**No**	**N/A**			
Norton 115 (elements)	–	No	N/A	NL: Norton 115 kV-ETA (LAC) 115 kV	115 kV	Line
Norton 115 (elements)	–	No	N/A	ANZ: Norton Tap 115 kV-Norton 115 kV	115 kV	Line
Norton 115 (elements)	–	No	N/A	NH: Norton 115 kV-Hernandez 115 kV	115 kV	Line
Norton 115 (elements)	–	No	N/A	NS: Norton 115 kV-Zia 115 kV	115 kV	Line
Norton 115 (elements)	–	No	N/A	Norton Series Reactors	115 kV	Reactive Resource
Norton 115 (elements)	–	No	N/A	Norton Shunt Capacitors	115 kV	Reactive Resource
Norton 345	**345 kV**	**No**	**N/A**			
Norton 345 (elements)	–	No	N/A	DMND-NRTN1: Diamond Tail-Norton 345 kV	345 kV	Line
Norton 345 (elements)	–	No	N/A	Norton 345/115 kV Transformer	345 kV	Transformer
Ojo 115	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Ojo 115 (elements)	–	No	N/A	HO: Hernandez 115 kV-Ojo 115 kV	115 kV	Line
Ojo 345	**345 kV**	**Yes**	**PNM - TOP**			
Ojo 345 (elements)	–	No	N/A	OJ: Jicarilla 345 kV-Ojo 345 kV	345 kV	Line
Ojo 345 (elements)	–	Yes	TSGT Owns and Operates	OT: Ojo-Taos 345 kV Line	345 kV	Line
Ojo 345 (elements)	–	No	N/A	Ojo 345/115 kV Transformer	345 kV	Transformer
Ojo 345 (elements)	–	No	N/A	OJO #1 OJ Line Reactor	345 kV	Reactive Resource
Ojo 345 (elements)	–	No	N/A	OJO #2 OJ Line Reactor	345 kV	Reactive Resource
Ortiz	**115 kV**	**No**	**N/A**			
Pachmann	**115 kV**	**No**	**N/A**			
Pachmann (Q3 2023)	**115 kV**	**No**	**N/A**			
Pachmann (elements)	–	No	N/A	PR: Pachmann 115 kV-Rio Puerco 115 kV	115 kV	Line
Pachmann (elements)	–	No	N/A	CE: Pachmann 115 kV-Scenic 115 kV	115 kV	Line
Pachmann (elements)	–	No	N/A	CY: Corrales Bluffs 115 kV-Pachmann 115 kV	115 kV	Line
Pachmann (elements)	–	No	N/A	CB: BA 115 kV-Pachmann 115 kV	115 kV	Line
Pachmann (elements)	–	No	N/A	AL: Algodones 115 kV-Pachmann 115 kV	115 kV	Line
Pajarito	**345 kV**	**No**	**N/A**			
Pajarito (elements)	–	No	N/A	Pajarito-Western Spirit Line Shunt Reactor	345 kV	Reactive Resource

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Pajarito (elements)	–	No	N/A	PAJA-WSMS1: West Mesa 345 kV to Pajarito 345 kV	345kV	Line
Pajarito (elements)	–	No	N/A	PAJA-SAND1: Pajarito 345 kV to Sandia 345 kV	345kV	Line
Pajarito (elements)	–	No	N/A	Pajarito - Prosperity 345 kV	345 kV	Line
Pajarito (elements)	–	No	N/A	PAJA-WESP1: Pajarito 345 kV to Western Spirits 345 kV	345kV	Line
Pajarito (elements)	–	No	N/A	HIMO-PAJA: Hidden Mnt 345 kV to Pajarito 345 kV	345kV	Line
Palace	**115 kV**	**No**	**N/A**			
Palm	**115 kV**	**No**	**N/A**			
Palo Verde	**500 kV**	**Yes**	**SRP - TOP Switchyard is operated by SRP. Covered by delegation in the ANPP High Voltage Switchyard Operating Agent agreement.**			
Palo Verde (elements)	–	No	N/A	PV-WW: Palo Verde 500 kV-Westwing 500 kV	500 kV	Line
Palo Verde (elements)	–	No	N/A	PV-WW: Palo Verde 500 kV-Westwing 500 kV	500 kV	Line
Palomas (2025)	**115 kV**	**No**	**N/A**			
Palomas (elements)	–	No	N/A	EMDU-PALO1 Palomas - Embudo 115 kV	115 kV	Line
Palomas (elements)	–	No	N/A	PALO-REEV1 Palomas - Reeves 1 115 kV	115 kV	Line
Palomas 1 & 2 (2025)	**115 kV**	**No**	N/A			
Panorama	**115 kV**	**No**	**N/A**			
Paradise Hills	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Pecos	**46 kV**	**No**	**N/A**			
Peralta	**46 kV**	**No**	**N/A**			
Perrin (2025)	**115 kV**	**No**	**N/A**			
Perrin (element)	–	No	N/A	Perrin - MD1 115 kV Line	115 kV	Line
Perrin (element)	–	No	N/A	Perrin - Luna 115 kV	115 kV	Line
Perrin (element)	–	No	N/A	Sectionalizing Breaker	115 kV	Sectionalizing Breaker
Perrin 1 & 2	**115 kV**	**No**	N/A			
Person	**115 kV**	**No**	**N/A**			
Person (elements)	–	No	N/A	PS: Person 115 kV-Kirtland 115 kV	115 kV	Line
Person (elements)	–	No	N/A	SP: Person 115 kV-Normally Open Switch SP-83 and HW-43	115 kV	Radial Line
Person (elements)	–	No	N/A	AT: Person 115 kV-El Cerro 115 kV	115 kV	Line
Person (elements)	–	No	N/A	Person Transformer 115/46 kV	115 kV	Transformer
Person (elements)	–	No	N/A	PM: Person 115 kV-West Mesa 115 kV	115 kV	Line
Person (elements)	–	No	N/A	PW: Person - Snow Vista	115 kV	Line
Person (elements)	–	No	N/A	Rio Bravo Gen Tie	115 kV	Gen Tie Line
Person (elements)	–	No	N/A	PERS-SAGE1: Person-Sagebrush	115 kV	Line
Person (elements)	–	No	N/A	PB: Person - Tome 115 kV	115 kV	Line
Person 46kV	**46 kV**	**No**	**N/A**			
Person 46kV (elements)	–	No	N/A	EL: Person radial (Arno)	46 kV	Radial Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Person 46kV (elements)	–	No	N/A	BN: Person-Tome	46 kV	Line
Person 46kV (elements)	–	No	N/A	PB: Person-Tome	46 kV	Line
Person 46kV (elements)	–	No	N/A	PC: Person radial (KAFB West)	46 kV	Radial Line
Person 46kV (elements)	–	No	N/A	PH: Person-Iron Street	46 kV	Radial Line
Person 46kV (elements)	–	No	N/A	115/46 kV Transformer	46 kV	Transformer
Petroglyph	**115 kV**	**No**	**N/A**			
Petroglyph	**115 kV**	**No**	**N/A**			
Petroglyph (elements)	–	No	N/A	PTRO-WSMS1 West Mesa to Petroglyph	115kV	Line
Petroglyph (elements)	–	No	N/A	CIBL-PTRO1: Petroglyph-Cibola	115kV	Line
Picacho	**115 kV**	**Yes**	**EPE - TOP PNM owns station, EPE operates Picacho station,**			
Picacho (elements)	–	Yes	TSGT owns, PNM maintains	PDA: Picacho 115 kV-Dona Ana (TSGT) 115 kV	115 kV	Line
Picacho (elements)	–	No	N/A	DL: Mimbres 115 kV-Picacho 115 kV	115 kV	Line
Picacho (elements)	–	Yes	EPE - TOP	FNT: Picacho 115 kV-Frontier 115 kV	115 kV	Line
Pillar	**230 kV**	**No**	**N/A**			
Pillar (Elements)	–	No	N/A	BP: Pillar 230 kV-Bisti 230 kV	230 kV	Line
Pillar (Elements)	–	No	N/A	AF: Pillar-Four Corners 230 kV Line	230 kV	Line
Pillar (Elements)	–	No	N/A	GC: Pillar 230 kV-Gallegos 230 kV	230 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Pintado	**345 kV**	**No**	**N/A**			
Pintado (Elements)	–	No	N/A	FRCR-PINT1: Pintado-Four Corners 345 kV	345 kV	Line
Pintado (Elements)	–	No	N/A	PINT-RIPU1: Pintado-Rio Puerco 345 kV	345 kV	Line
Pintado (Elements)	–	No	N/A	ARSO-PNT1: Arroyo Solar gen tie	345 kV	Gen Tie Line
Pittsburgh-Midway	**115 kV**	**No**	**N/A**			
Pittsburgh-Midway (elements)	–	No	N/A	YP: Pitt/Midway Tap 115 kV-Pitt/Midway Substation	115 kV	Radial Line
Power Plant	**46 kV**	**No**	**N/A**			
Power Plant (elements)	–	No	N/A	ZS: Power Plant-Zia	46 kV	Line
Power Plant (elements)	–	No	N/A	ZM: Power Plant-Zia	46 kV	Line
Power Plant (elements)	–	No	N/A	MS: Power Plant-Zia	46 kV	Line
Prager	**115 kV**	**No**	**N/A**			
Prager	**115 kV**	**No**	**N/A**			
Prager (elements)	–	No	N/A	PL: Prager 115 kV-Lomas 115 kV	115 kV	Radial Line
Prager (elements)	–	No	N/A	WP: West Mesa 115 kV-Prager 115 kV	115 kV	Line
Prager (elements)	–	No	N/A	Transformer 115/46 kV	115 kV	Transformer
Prager (elements)	–	No	N/A	RP: Prager 115 kV-Richmond 115 kV	115 kV	Line
Prager (elements)	–	No	N/A	Prager Shunt Capacitors	115 kV	Reactive Resource

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Prager (elements)	–	No	N/A	ASPN-PRGR1: Aspen-Prager	115 kV	Line
Prager 46kV	**46 kV**	**No**	**N/A**			
Prager 46kV (element)	–	No	N/A	PI: Prager-Iron Street	46 kV	Line
Prager 46kV (element)	–	No	N/A	PY: Person-Prager	46 kV	Line
Prager 46kV (element)	–	No	N/A	115/46 kV Transformer	46 kV	Transformer
Princess Jeanne	**115 kV**	**No**	**N/A**			
Progress	**115 kV**	**No**	**N/A**			
Prosperity 115 (Q2 2024)	**115 kV**	**No**	**N/A**			
Prosperity (Q2 2024)	**115 kV**	**No**	**N/A**			
Prosperity 345 (Q2 2026)	**345 kV**	**No**	**N/A**			
Prosperity (elements)	–	No	N/A	PERS-PROS1 Prosperity-Person 115 kV line	115 kV	Line
Prosperity (elements)	–	No	N/A	PRSO-KIRT1 Prosperity-Kirtland 115 kV line	115 kV	Line
Prosperity (elements)	–	No	N/A	PROS-STUD1 Prosperity-Studio 115 kV line	115 kV	Line
Prosperity (elements)	–	No	N/A	Prosperity-Pajarito 345 kV line	345 kV	Line
Prosperity (elements)	–	No	N/A	345/115 kV Transformer	345 kV	Transformer
Quail Ranch (Q1 2024)	**345 kV**	**No**	N/A			
Quail Ranch (elements)	–	No	N/A	QLRA-WSMS1 Quail Ranch-West Mesa 345 kV Line	345 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Quail Ranch (elements)	–	No	N/A	QLRA-RIPU1 Quail Ranch-Rio Puerco 345 kV line	345 kV	Line
Quail Ranch (elements)	–	No	N/A	Atrisco Solar - QR: Atrisco Solar Gen Tie	345 kV	Gen Tie Line
Randolph	**115 kV**	**No**	**N/A**			
Rattlesnake	**115 kV**	**No**	**N/A**			
Rattlesnake (elements)	–	No	N/A	HNRN-RTSN1: Rattlesnake to Huning Ranch #1 115 kV Line	115kV	Radial Line
Rattlesnake (elements)	–	No	N/A	HNRN-RTSN2: Rattlesnake to Huning Ranch #2 115 kV Line	115kV	Radial Line
Rattlesnake (elements)		No	N/A	HIMO-RTSN1: Rattlesnake-Hidden Mountain #1	115 kV	Line
Rattlesnake (elements)		No	N/A	HIMO-RTSN1: Rattlesnake-Hidden Mountain #2	115 kV	Line
Rattlesnake (elements)	–	No	N/A	RTSN-SURA1: Sun Ranch-Rattlesnake 115 kV	115kV	Line
Red Mesa	**115 kV**	**No**	**N/A**			
Red Mesa (elements)	–	No	N/A	KM: West Mesa - Red Mesa 115 kV	115 kV	Line
Red Mesa (elements)	–	No	N/A	MA: Ambrosia 115 kV-Red Mesa 115 kV	115 kV	Line
Red Mesa (elements)	–	N/A	PNM does not own or operate this line.	Red Mesa Wind Farm Tie 115 kV	115 kV	Gen Tie Line
Reeves	**115 kV**	**No**	**N/A**			
Reeves	**115 kV**	**No**	**N/A**			
Reeves (elements)	–	No	N/A	AB: Reeves 115 kV-BA 115 kV	115 kV	Line
Reeves (elements)	–	No	N/A	RB: Reeves 115 kV-BA 115 kV	115 kV	Line
Reeves (elements)	–	No	N/A	NR: Reeves 115 kV-Mission 115 kV	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Reeves (elements)	–	No	N/A	RN: Reeves 115 kV-North 115 kV	115 kV	Line
Reeves (elements)	–	No	N/A	IR: Irving 115 kV-Reeves 115 kV	115 kV	Line
Reeves (elements)	–	No	N/A	ER: Embudo 115 kV-Reeves 115 kV	115 kV	Line
Reeves (elements)	–	No	N/A	RE: Embudo 115 kV-Reeves 115 kV	115 kV	Line
Reeves (elements)	–	No	N/A	PALO-REEV1 Palomas - Reeves 1 115 kV	115 kV	Line
Reeves (elements)	–	No	N/A	NW: Reeves 115 kV-West Mesa 115 kV	115 kV	Line
Reeves (elements)	–	N/A	N/A	Reeves Unit 1 gen tie	116 kV	Gen Tie Line
Reeves (elements)	–	N/A	N/A	Reeves Unit 2 gen tie	117 kV	Gen Tie Line
Reeves (elements)	–	N/A	N/A	Reeves Unit 3 gen tie	118 kV	Gen Tie Line
Reeves (elements)	–	No	N/A	Reeves Shunt Capacitors	115 kV	Reactive Resource
Richmond (2025)	**115 kV**	**No**	**N/A**			
Richmond	**115 kV**	**No**	**N/A**			
Richmond (element)	–	No	N/A	RP: Richmond - Prager 115 kV	115 kV	Line
Richmond (element)	–	No	N/A	CG: Richmond - Sandia 115 kV	115 kV	Line
Richmond (element)	–	No	N/A	PN: Richmond - North 115 kV	115 kV	Line
Rio Hondo	**115 kV**	**No**	**N/A**			
Rio Puerco 115	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Rio Puerco 115 (elements)	-	No	N/A	PV: Rio Puerco 115 kV-Veranda 115 kV	115 kV	Line
Rio Puerco 115 (elements)	-	No	N/A	PR: Pachmann 115 kV-Rio Puerco 115 kV	115 kV	Line
Rio Puerco 115 (elements)	-	No	N/A	Encino/Encino N 115 kv Gen Tie	115 kV	Gen Tie Line
Rio Puerco 115 (elements)	-	No	N/A	Tag Solar 115 kv Gen Tie	115 kV	Gen Tie Line
Rio Puerco 345	**345 kV**	**No**	**N/A**			
Rio Puerco 345 (elements)	-	No	N/A	BJ: West Mesa-Rio Puerco 345 kV Line 1	345 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	AJ: West Mesa-Rio Puerco 345 kV Line 2	345 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	WN: BA - Rio Puerco 345 kV Line 1	345 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	CJ: BA - Rio Puerco 345 kV Line 2	345 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	CZ: Cabezon-Rio Puerco	345 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	PINT-RIPU1: Rio Puerco-Pintado 345 kV	346 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	Rio Puerco 345 kV/115 kV Transformer	345 kV	Transformer
Rio Puerco 345 (elements)	-	No	N/A	Rio Puerco - Pintado 345 kV (series capacitors)	345 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	Rio Puerco -Cabezon 345 CZ (series capacitors)	345 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	QLRA-RIPU1 Quail Ranch-Rio Puerco 345 kV line	345 kV	Line
Rio Puerco 345 (elements)	-	No	N/A	FW #1 Line Shunt Reactor	345 kV	Reactive Resource

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Rio Puerco 345 (elements)	–	No	N/A	WW #2 Line Shunt Reactor	345 kV	Reactive Resource
Rio Puerco 345 (elements)	–	No	N/A	Rio Puerco SVC	345 kV	Reactive Resource
Rita	**115 kV**	**No**	**N/A**			
Rodeo	**115 kV**	**No**	**N/A**			
Roy	**115 kV**	**No**	**N/A**			
Sagebrush (Q2 2024)	**115 kV**	**No**	**N/A**			
Sagebrush (elements)	–	No	N/A	PERS-SAGE1: Person-Sagebrush	115 kV	Line
Sagebrush (elements)	–	No	N/A	SAGE-SAND1: Sagebrush-Normally Open Switch SP-83 and HW-43	115 kV	Line
Sagebrush 1 & 2 (Q2 2024)	**115 kV**	**No**	**N/A**			
Saint Cecilia	**46 kV**	**No**	**N/A**			
Saint Cecilia (Q2 2024)	**115 kV**	**No**	**N/A**			
Saint Cecilia (elements)	–	No	N/A	LOMO-STCE1 St. Cecilia-Los Morros 115 kV Line	115kV	Line
Saint Cecilia (elements)	–	No	N/A	STCE-SURA1: Sun Ranch-St. Cecilia 115kV	115kV	Line
San Antonio (elements)	–	No	N/A	TA: San Antonio Tap 46 kV-San Antonio Substation	46 kV	Radial Line
San Antonito 1 & 2	**46 kV**	**No**	**N/A**			
San Juan 230	**345/230/69/12.47**	**Yes**	**TEP partial owner**			
San Juan 230 (elements)	–	No	N/A	230/12.47 kV Transformer	230/12.47	Transformer

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
San Juan 230 (elements)	-	No	N/A	230/69 kV Transformer (to radial CC line)	230/69kv	Transformer
San Juan 230 (elements)	-	No	N/A	345/69 kV Transformers (to radial CO line)	345/69kv	Transformer
San Juan 230 (elements)	-	No	N/A	SF: San Juan-Hogback 230 kV Line	230 kV	Line
San Juan 345	**345 kV**	**Yes**	**PNM & TEP - TOP, 5 Tos**			
San Juan 345 (elements)	-	No	N/A	345/230 kV Transformer	345/230kv	Transformer
San Juan 345 (elements)	-	No	N/A	WW: San Juan-Cabezon	345 kV	Line
San Juan 345 (elements)	-	No	N/A	FC: San Juan 345 kV-Four Corners 345 kV	345 kV	Line
San Juan 345 (elements)	-	No	N/A	SJ-MC-1: McKinley 345 kV-San Juan 345 kV	345 kV	Line
San Juan 345 (elements)	-	No	N/A	SJ-MC-2: McKinley 345 kV-San Juan 345 kV	345 kV	Line
San Juan 345 (elements)	-	No	N/A	SH: San Juan-Waterflow 345 kV Line	345 kV	Line
San Juan 345 (elements)	-	No	N/A	OC: San Juan 345 kV-Jicarilla 345 kV	345 kV	Line
San Juan 345 (elements)	-	No	N/A	SR: San Juan 345 kV-Shiprock 345 kV	345 kV	Line
San Juan 345 (elements)	-	No	N/A	San Juan 345 kV - San Juan North 345 kV	345 kV	Line
San Juan North (Q1 2024)	**345 kV**	**No**	N/A		**345 kV**	
San Juan North (elements)	-	No	N/A	San Juan North 345 kV - San Juan 345 kV -	345 kV	Line
San Juan North (elements)	-	No	N/A	San Juan Solar gen tie	345 kV	Gen Tie Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
San Lucas	**115 kV**	**No**	**N/A**			
San Lucas (elements)	–	No	N/A	LS: San Lucas Tap 115 kV-San Lucas Substation	115 kV	Line
San Pedro	**115 kV**	**No**	**N/A**			
San Pedro (elements)	–	No	N/A	ST: San Pedro Tap 115kv-San Pedro Substation	115 kV	Line
Sandia	**46 kV**	**No**	**N/A**			
Sandia (elements)	–	No	N/A	ID: radial line	46 kV	Radial Line
Sandia (elements)	–	No	N/A	Sandia-Kirtland AFB East 2	46 kV	Line
Sandia (elements)	–	No	N/A	Sandia-Kirtland AFB East 3	46 kV	Line
Sandia (elements)	–	No	N/A	Sandia-Kirtland AFB East 4	46 kV	Line
Sandia (elements)	–	No	N/A	115/46 kV Transformer	46 kV	Transformer
Sandia (elements)	–	No	N/A	115/46 kV Transformer	46 kV	Transformer
Sandia (elements)	–	No	N/A	Sandia 1-2 Bus tie	46 kV	Bus Tie
Sandia (elements)	–	No	N/A	Sandia 46 kV Shunt Capacitor #1	46 kV	Reactive Resource
Sandia (elements)	–	No	N/A	Sandia 46 kV Shunt Capacitor #2	46 kV	Reactive Resource
Sandia (elements)	–	No	N/A	Sandia 46 kV Shunt Capacitor #3	46 kV	Reactive Resource
Sandia (elements)	–	No	N/A	Sandia 46 kV Shunt Capacitor #4	46 kV	Reactive Resource
Sandia 115	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Sandia 115 (elements)	–	No	N/A	SE: Sandia 115 kV-Embudo 115 kV	115 kV	Line
Sandia 115 (elements)	–	No	N/A	KS: Sandia 115 kV-Kirtland 115 kV	115 kV	Line
Sandia 115 (elements)	–	No	N/A	Sandia 115/46 kV Transformer #1	115 kV	Transformer
Sandia 115 (elements)	–	No	N/A	Sandia 115/46 kV Transformer #2	115 kV	Transformer
Sandia 115 (elements)	–	No	N/A	CG: Sandia-Richmond 115 kV Line	115 kV	Line
Sandia 115 (elements)	–	No	N/A	SP: Sandia 115 kV-Normally Open Switch SP-83	115 kV	Radial Line
Sandia 115 (elements)	–	No	N/A	KS: Sandia 115 kV-SNL	115 kV	Line
Sandia 115 (elements)	–	No	N/A	SAGE-SAND1: Sagebrush-Normally Open Switch SP-83 and HW-43	115 kV	Line
Sandia 115 (elements)	–	No	N/A	Sandia #1 Shunt Capacitors	115 kV	Reactive Resource
Sandia 115 (elements)	–	No	N/A	Sandia #2 Shunt Capacitors	115 kV	Reactive Resource
Sandia 345	**345 kV**	**No**	**N/A**			
Sandia 345 (elements)	–	No	N/A	Sandia 345/115 kV Transformer T1	345 kV	Transformer
Sandia 345 (elements)	–	No	N/A	Sandia 345/115 kV Transformer Out of Service Spare	345 kV	Transformer
Sandia 345 (elements)	–	No	N/A	PAJA-SAND1: Sandia 345 kV to Pajarito 345 kV	345 kV	Line
Santa Fe Plant	**46 kV**	**No**	**N/A**			
Sara 1 & 2	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Sara 1 & 2 (elements)	–	No	N/A	CS: Sara 1&2 Tap 115 kV-Sara 1&2 Substation	115 kV	Line
Sara 3 & 4	**115 kV**	**No**	**N/A**			
Sara 3 & 4 (elements)	–	No	N/A	CT: Sara 3&4 Tap 115 kV-Sara 3&4 Substation	115 kV	Line
Sara 5	**115 kV**	**No**	**N/A**			
Sara 6 & 7	**115 kV**	**No**	**N/A**			
Sara 8	**115 kV**	**No**	**N/A**			
Scenic	**115 kV**	**No**	**N/A**			
Scenic	**115 kV**	**No**	**N/A**			
Scenic (elements)	–	No	N/A	SK: Scenic - West Mesa 115 kV	115 kV	Line
Scenic (elements)	–	No	N/A	CE: Scenic - Pachmann 115 kV	115 kV	Line
Scenic (elements)	–	No	N/A	Scenic Sectionalizing Breaker	115 kV	Sectionalizing Breaker
Sewer Plant	**115 kV**	**No**	**N/A**			
Shiprock	**345 kV**	**Yes**	**WAPA - TOP**			
Shiprock (elements)	–	No	N/A	SR: San Juan 345 kV-Shiprock 345 kV	345 kV	Line
Shiprock (elements)	–	No	N/A	Shiprock - Four Corners 345 kV Line	345 kV	Line
Shiprock (elements)	–	No	N/A	Shiprock - Lost Canyon 230 kV line	345 kV	Line
Shiprock (elements)	–	No	N/A	Shiprock - Kayenta	345 kV	Line
Shiprock (elements)	–	No	N/A	Shiprock 345/230 kV Transformers	345 kV	Transformer
Signetics (elements)	–	No	N/A	SG: Signetics Tap-Signetics Substation	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Signetics 1 & 2	**115 kV**	**No**	**N/A**			
Silver City	**69 kV**	**No**	**N/A**			
Silver City	**69 kV**	**No**	**N/A**			
Silver City (elements)	–	No	N/A	Silver City-Turquoise 69 kV Line	69 kV	Line
Silver City (elements)	–	No	N/A	Silver City-MD 69 kV Line	69 kV	Line
Silver City (elements)	–	No	N/A	Silver City Capacitor	69 kV	Reactive Resource
Silver City (elements)	–	No	N/A	Silver City-North Silver 69 kV	69 kV	Line
Snow Vista	**115 kV**	**No**	**N/A**			
Snow Vista	**115 kV**	**No**	**N/A**			
Snow Vista (elements)	–	No	N/A	Sectionalizing Breaker		Sectionalizing Breaker
Snow Vista (elements)	115 kV	No	N/A	WJ: West Mesa - Snow Vista	115 kV	Line
Snow Vista (elements)	115 kV	No	N/A	PW: Person - Snow Vista 115 kV	115 kV	Line
Sol (Q2 2025)	**115 kV**	**No**	**N/A**			
Sol (elements)	–	No	N/A	Sol-Studio 115 kV line	115 kV	Line
Sol (elements)	–	No	N/A	Kirtland-Sol 115 kV line	116 kV	Line
South Coors	**115 kV**	**No**	**N/A**			
South Pacheco (elements)	–	No	N/A	ZF: South PachecoTap 115 kV-South Pacheco Substation	115 kV	Line
South Pacheco 1 & 2	**115 kV**	**No**	**N/A**			
Springerville	**345 kV**	**Yes**	**TEP - TOP**			
Springerville (elements)	–	No	N/A	Springerville-McKinley 345 kV Line (MC-SP-1)	345 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Springerville (elements)	–	No	N/A	Springerville-McKinley 345 kV Line (MC-SP-2)	345 kV	Line
Springerville (elements)	–	No	N/A	Springerville-Coronado 345 kV Line (SP-CO-1)	345 kV	Line
Springerville (elements)	–	No	N/A	GH: Springerville-Greenlee 345 kV Line (SP-GL-1)	345 kV	Line
Springerville (elements)	–	No	N/A	Springerville-Winchester 345 kV Line (SP-VL-1)	345 kV	Line
Springerville (elements)	–	No	N/A	Macho Springs - 345 kV (El Paso)	345 kV	Line
St. Joseph	**115 kV**	**No**	**N/A**			
STA	**115 kV**	**No**	**LANL**			
STA (elements	–	No	N/A	RL: BA 115 kV-STA 115 kV	115 kV	Line
State Pen	**115 kV**	**No**	**N/A**			
Storrie Lake	**115 kV**	**No**	**TGST - TOP**			
Storrie Lake (elements)	–	No	N/A	VS: Valencia 115 kV-Storrie Lake 115 kV	115 kV	Line
Studio	**115 kV**	**No**	**N/A**			
Studio (Q2 2025)	**115 kV**	**No**	**N/A**			
Studio (elements)	–	No	N/A	PA: Studio Tap 115 kV-Studio Substation	115 kV	Line
Studio (elements)	–	No	N/A	PROS-STUD1 Prosperity-Studio 115	116 kV	Line
Studio (elements)	–	No	N/A	Sol-Studio 115 kV	115 kV	Line
Studio (elements)	–	No	N/A	Sectionalizing Breaker	115 kV	Sectionalizing Breaker
Sun Ranch (Q4 2023)	**115 kV**	**No**	N/A			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Sun Ranch (elements)	–	No	N/A	RTSN-SURA1: Sun Ranch-Rattlesnake 115 kV	115 kV	Line
Sun Ranch (elements)	–	No	N/A	BELN-SURA1 Sun Ranch-Belen 115 kV	115 kV	Line
Sun Ranch (elements)	–	No	N/A	STCE-SURA1: Sun Ranch-St. Cecilia 115 kV	115 kV	Line
Sun Ranch (elements)	–	No	N/A	STCE-SURA1: Sun Ranch to Los Morros 115 kV	115 kV	Line
Sun Ranch (elements)	–	No	N/A	SKRA-SURA1: Sun Ranch-Sky Ranch 115 kV (Gen Tie)	115 kV	Gen Tie Line
Taiban Mesa	**345 kV**	**No**	**N/A**			
Taiban Mesa (elements)	–	No	N/A	TG: Taiban Mesa-Guadalupe 345 kV	345 kV	Line
Taiban Mesa (elements)	–	No	N/A	TB: Blackwater-Taiban 345 kV Line	345 kV	Line
Taiban Mesa (elements)	–	No	N/A	Taiban Mesa 345 kV-Lone Mesa 345 kV	345 kV	Gen Tie Line
Tijeras	**46 kV**	**No**	**N/A**			
Tome	**115 kV**	**No**	**N/A**			
Tome	**115 kV**	**No**	**N/A**			
Tome (elements)	–	No	N/A	TJ: Tome 115 kV-Belen 115 kV	115 kV	Line
Tome (elements)	–	No	N/A	TV: Tome 115 kV-VEF 115 kV	115 kV	Gen Tie Line
Tome (elements)	–	No	N/A	CK: College - Tome 115 kV	115 kV	Line
Tome (elements)	–	No	N/A	Tome 115/46 kV Transformer	115 kV	Transformer
Tome (elements)	–	No	N/A	PB: Person - Tome 115 kV	115 kV	Line
Tome 46	**46 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Tome 46 (elements)	–	No	N/A	BN: Tome-Person	46 kV	Line
Tome 46 (elements)	–	No	N/A	PB: Tome-Person	46 kV	Line
Tome 46 (elements)	–	No	N/A	115/46 kV Transformer	46 kV	Transformer
Tramway	**115 kV**	**No**	**N/A**			
Truman	**115 kV**	**No**	**N/A**			
Truman (elements)	–	No	N/A	TR: Truman Tap 115 kV-Truman Substation	115 kV	Radial Line
Tularosa	**115 kV**	**No**	**N/A**			
Turquoise	**69 kV**	**No**	**N/A**			
Turquoise	**115 kV**	**No**	**N/A**			
Turquoise (elements)	–	No	N/A	Turquoise-Silver City 69 kV Line	69 kV	Line
Turquoise (elements)	–	No	N/A	Turquoise 115/69 kV Transformer	115 kV	Transformer
Turquoise (elements)	–	No	N/A	Turquoise-Burro Mountain 69 kV Line	69 kV	Line
Turquoise (elements)	–	No	N/A	TY: Turquoise 115 kV-Tyrone 115 kV	115 kV	Line
Turquoise (elements)	–	No	N/A	Tyrone 115/69 kV Transformer	115 kV	Transformer
Turquoise (elements)	–	No	N/A	MR: MD-1 115 kV-Turquoise 115 kV	115 kV	Line
Turquoise (elements)	–	No	N/A	HR: Hidalgo 115 kV-Turquoise 115 kV	115 kV	Line
Tyrone 69	**69 kV**	**No**	**N/A**			
United	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
UNM North Campus (elements)	–	No	N/A	UT: UNM North Campus Tap 115 kV-UNM North Campus Substation	115 kV	Radial Line
UNM North Campus Sub	**115 kV**	**No**	**N/A**			
UNM Unit Sub 1, 2 and 3	**115 kV**	**No**	**N/A**			
Unser	**115 kV**	**No**	**N/A**			
Valencia (2025)	**115kV**	**No**	N/A			
Valencia	**115 kV**	**No**	**N/A**			
Valencia (elements)	–	No	N/A	VS: Valencia 115 kV-Storrie Lake 115 kV	115 kV	Line
Valencia (elements)	–	No	N/A	SL: Zia 115 kV-Valencia 115 kV	115 kV	Line
Valencia (elements)	–	No	N/A	Valencia Transformer 115/69 kV	115 kV	Transformer
Valencia (elements)	–	No	N/A	Valencia Shunt Capacitors	115 kV	Reactive Resource
Van Buren (elements)	–	No	N/A	CV: Van Buren Tap 69 kV-Van Buren Tap Substation	69 kV	Radial Line
Van Buren T1 & T4	**69 kV**	**No**	**N/A**			
Veranda	**115 kV**	**No**	**N/A**			
Veranda (elements)	–	No	N/A	RR: Veranda 115 kV-Corrales Bluff 115 kV	115 kV	Line
Veranda (elements)	–	No	N/A	PV: Rio Puerco 115 kV-Veranda 115 kV	115 kV	Line
Veranda (elements)	–	No	N/A	Dist - Veranda (Sectionalizing Breaker system)		Sectionalizing Breaker
Veranda 1 & 2	**115 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Volcano 1 & 2	**115 kV**	**No**	**N/A**			
Warner	**46 kV**	**No**	**N/A**			
Wayne	**115 kV**	**No**	**N/A**			
Wesmeco	**115 kV**	**No**	**N/A**			
Wesmeco (elements)	–	No	N/A	WC: Wesmeco Tap 115 kV-Wesmeco Tap Substation	115 kV	Radial Line
West Mesa 115/ 230 (elements)	–	No	N/A	WD: West Mesa 115 kV - Huning Ranch 115 kV	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	SK: Scenic - West Mesa 115 kV	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	PTRO-WSMS1 West Mesa to Petroglyph	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	WJ: West Mesa - Snow Vista	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	WR: West Mesa 115 kV-Irving 115 kV	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	NW: Reeves 115 kV-West Mesa 115 kV	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	WP: West Mesa 115 kV-Prager 115 kV	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	KM: West Mesa 115 kV-Red Mesa 115 kV	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	WV-PM: West Mesa 115 kV-Person (Volcano) 115 kV	115 kV	Line
West Mesa 115/ 230 (elements)	–	No	N/A	230/115 kV Transformer #1	230 kV	Transformer
West Mesa 115/ 230 (elements)	–	No	N/A	230/115 kV Transformer #2	230 kV	Transformer
West Mesa 115/ 230 (elements)	–	No	N/A	HU: West Mesa 115 kV - Huning Ranch 115 kV	115 kV	Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
West Mesa 115/ 230 (elements)	-	No	N/A	WA: West Mesa-Ambrosia 230 kV Line	230 kV	Line
West Mesa 115/ 230 (elements)	-	No	N/A	West Mesa #1 Shunt Capacitors	115 kV	Reactive Resource
West Mesa 115/ 230 (elements)	-	No	N/A	West Mesa #2 Shunt Capacitors	115 kV	Reactive Resource
West Mesa 115/ 230 (elements)	-	No	N/A	ASPN-WSMS1: Aspen-West Mesa	115 kV	Line
West Mesa 115/230	**115/230**	**No**	**N/A**			
West Mesa 345	**345 kV**	**No**	**N/A**			
West Mesa 345 (elements)	-	No	N/A	EP: West Mesa 345 kV-Arroyo 345 kV	345 kV	Line
West Mesa 345 (elements)	-	No	N/A	BJ: West Mesa-Rio Puerco 345 kV Line 1	345 kV	Line
West Mesa 345 (elements)	-	No	N/A	AJ: West Mesa-Rio Puerco 345 kV Line 2	345 kV	Line
West Mesa 345 (elements)	-	No	N/A	PAJA-WSMS1: West Mesa 345 kV - Pajarito 345kV	345 kV	Line
West Mesa 345 (elements)	-	No	N/A	345/115 kV Transformer #1	345 kV	Transformer
West Mesa 345 (elements)	-	No	N/A	345/115 kV Transformer #2	345 kV	Transformer
West Mesa 345 (elements)	-	No	N/A	West Mesa - EP Line Reactor	345 kV	Reactive Resource
West Mesa 345 (elements)	-	No	N/A	West Mesa AJ Reactor	345 kV	Reactive Resource
West Mesa 345 (elements)	-	No	N/A	QLRA-WSMS1 Quail Ranch-West Mesa 345 kV Line	345 kV	Line
Western Spirit	**345 kV**	**No**	**N/A**			

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Western Spirit (elements)	–	No	N/A	CLCR-WESP1 Clines Corners to Western Spirit	345kV	Line
Western Spirit (elements)	–	No	N/A	PAJA-WESP1 Western Spirit to Pajarito	345kV	Line
Western Spirit (elements)	–	No	N/A	HIMO-WESP 345 kV line	345 kV	Line
Western Spirit (elements)	–	No	N/A	CCWF-WESP1 Tie to Third Party Wind Farm	345kV	Gen Tie Line
Western Spirit (elements)	–	No	N/A	DMWF-WESP1 Tie to Third Party Wind Farm	345kV	Gen Tie Line
Western Spirit (elements)	–	No	N/A	Western Spirit-Pajarito Line Shunt Reactor	345 kV	Reactive Resource
Western Spirit (elements)	–	No	N/A	Western Spirit-Hidden Mountain Line Shunt Reactor	345 kV	Reactive Resource
Western Spirit (elements)	–	No	N/A	Western Spirit - Pajarito, Series Capacitor	345 kV	Line
Western Spirit (elements)	–	No	N/A	Western Spirit - Hidden Mountain series Capacitor	345 kV	Line
Westwing	**500 kV**	**Yes**	**APS - TOP**			
Willard	**115 kV**	**No**	**TSGT - TO & TOP**			
Willard (elements)	–	No	N/A	WL: Willard 115 kV-Belen 115 kV	115 kV	Line
Willard (elements)	–	No	N/A	TW: Britton 115 kV-Willard 115 kV	115 kV	Line
Winrock	**115 kV**	**No**	**N/A**			
Wyoming	**115 kV**	**No**	**N/A**			
Yah-ta-hey	**115/345**	**No**	**N/A**			
Yah-ta-hey (elements)	–	No	N/A	YN: Ya-Ta-Hey 115 kV-Coalmine 115 kV	115 kV	Radial Line
Yah-ta-hey (elements)	–	No	N/A	YP: Ya-Ta-Hey 115 kV-Pitt Midway Substation	115 kV	Radial Line

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Yah-ta-hey (elements)	–	Yes	TSGT owns, PNM maintains	GYTH: Ya-Ta-Hey - PEGS 115 kV	115 kV	Line
Yah-ta-hey (elements)	–	No	N/A	AY: Ambrosia 115 115 kV-Ya-Ta-Hey 115 kV	115 kV	Line
Yah-ta-hey (elements)	–	No	N/A	Yah-ta-hey Transformer 345/ 115 kV	345 kV	Transformer
Yah-ta-hey (elements)	–	No	N/A	Yah-ta-hey Transformer 345/ 115 kV	345 kV	Transformer
Yah-ta-hey (elements)	–	No	N/A	Yah-Ta-Hey #1 Shunt Capacitors	115 kV	Reactive Resource
Yah-ta-hey (elements)	–	No	N/A	Yah-Ta-Hey #2 Shunt Capacitors	115 kV	Reactive Resource
Zafarano	**115 kV**	**No**	**N/A**			
Zamora	**46 kV**	**No**	**N/A**			
Zamora (elements)	–	No	N/A	TZ: Zamora Tap 46kV-Zamora Tap Substation	46 kV	Radial Line
Zia	**115 kV**	**No**	**N/A**			
Zia (elements)	–	No	N/A	ZIA: Zia 115 kV-Norton 115 kV/Algodones 115 kV	115 kV	Line
Zia (elements)	–	No	N/A	ZF: Zia 115 kV-South Pacheco Substation	115 kV	Radial Line
Zia (elements)	–	No	N/A	SL: Zia 115 kV-Valencia 115 kV	115 kV	Line
Zia (elements)	–	No	N/A	RS: BA 115 kV-Zia 115 kV	115 kV	Line
Zia (elements)	–	No	N/A	3- 115/46 kV Zia Transformers	115 kV	Transformer
Zia (elements)	–	No	N/A	NS: Norton 115 kV-Zia 115 kV	115 kV	Line
Zia (elements)	–	No	N/A	Zia #1 Shunt Capacitors	115 kV	Reactive Resource
Zia (elements)	–	No	N/A	Zia #2 Shunt Capacitors	115 kV	Reactive Resource

Station Name	Station Voltage Level(s)	Jointly Owned / Operated? Yes	Jointly Owned / Operated Details	Element Name (Lines, transformers, Reactive Resources)	Element Voltage (High side for transformers)	Element Type
Zia (elements)	–	No	N/A	Zia #3 Shunt Capacitors	115 kV	Reactive Resource
Zia (elements)	–	No	N/A	Zia #4 Shunt Capacitors	115 kV	Reactive Resource
Zia 46	**46 kV**	**No**	**N/A**			
Zia 46 (elements)	–	No	N/A	ZS: Zia-Power Plant	46 kV	Line
Zia 46 (elements)	–	No	N/A	ZM: Zia-Power Plant	46 kV	Line
Zia 46 (elements)	–	No	N/A	MS: Zia-Power Plant	46 kV	Line
Zia 46 (elements)	–	No	N/A	ZB: Zia radial (Santa Domingo)	46 kV	Radial Line
Zia 46 (elements)	–	No	N/A	Zia 1-2 bus tie	46 kV	Line
Zia 46 (elements)	–	No	N/A	115/46 kV Transformer	46 kV	Transformer
Zia 46 (elements)	–	No	N/A	115/46 kV Transformer	46 kV	Transformer
Zia 46 (elements)	–	No	N/A	115/46 kV Transformer	46 kV	Transformer
Zia 46 (elements)	–	No	N/A	Zia 46 kV Shunt Capacitor #1	46 kV	Reactive Resource
Zia 46 (elements)	–	No	N/A	Zia 46 kV Shunt Capacitor #2	46 kV	Reactive Resource

Table E-2: Existing Joint-Owned Transmission Lines

Line Code	Voltage	From-To Switching Station Name	Operator
	345	Amrad - Artesia	EPE
SJ-MC 1	345	San Juan - McKinley Line 1	TEP
SJ-MC 2	345	San Juan - McKinley Line 2	TEP
	345	McKinley - Springerville Line 1	TEP
	345	McKinley - Springerville Line 2	TEP
	345	Springerville - Greenlee	TEP
GH	345	Greenlee - Hidalgo	EPE
HL	345	Hidalgo - Luna	EPE
	500	Palo Verde - Westwing Line 1	SRP
	500	Palo Verde - Westwing Line 2	SRP
	500	Hassayampa - Jojoba - Kyrene	SRP

Transmission System

Over the last 18 years, U.S. electric transmission service has undergone major regulatory changes in the way transmission services are offered and provided and how transmission system planning is conducted.

FERC Order No. 888

The largest change stems from the 1996 implementation of the FERC Order No. 888. This order requires that a jurisdictional transmission provider, such as PNM, provide open access for transmission capacity to all eligible customers via an Open Access Transmission Tariff (OATT or Tariff). Eligible customers (e.g., Tri-State Generation and Transmission on behalf of its cooperative members, and Los Alamos County) under the Tariff can contract for Network Integration Transmission Service (NITS) to integrate their designated network resources and designated network loads on the PNM transmission system in a manner comparable to how PNM serves its own retail and wholesale customers.

The order obligates PNM to plan its transmission system to meet not only its own retail customer needs, but also its delivery obligations to NITS and long-term, firm point-to-point transmission service customers. Tariff customers can also choose to contract for firm point-to-point transmission service on a long-term basis with rollover rights that are essentially perpetual.

Energy Policy Act of 2005

The Energy Policy Act of 2005 (EPACT) legislated the implementation on a nationwide basis of mandatory transmission grid reliability rules for all owners, operators, and users of the systems. Under the EPACT, FERC was given authority to develop, monitor, and enforce all aspects of transmission grid reliability. FERC delegated to the North American Electric Reliability Corporation (NERC) the role of the national Electric Reliability Organization (ERO). The Western Electric Coordinating Council (WECC) has been delegated the role of the Regional Entity within North American Electric Reliability Corporation (NERC) that will monitor and enforce the mandatory reliability standards in the Western United States. Failing to comply with the ERO standards subjects a utility to sanctions and civil penalties of up to $1 million per day for each incident for the most substantive failures to follow FERC’s grid reliability rules.

FERC Order No. 890

Issued in February 2007, after broader powers were delegated to FERC and NERC under the EPACT, this order clarified and strengthened these obligations initially established by Order No. 888 and required regional coordination by transmission companies of transmission system planning.

FERC Order No. 1000

FERC Order 1000, issued July, 21, 2011, expands the responsibilities for regional coordination in transmission system planning. Public utility transmission providers participate in a regional transmission planning process that evaluates transmission alternatives at the regional level in order to resolve the region's needs more efficiently and cost-effectively than alternatives identified by individual public utility transmission providers in their local transmission planning processes. These processes must incorporate transmission needs driven by public policy requirements and result in a regional transmission plan. PNM participation in Order 1000 is through is participation in WestConnect, which started in 2015.

FERC Order No. 881

FERC Order 881 issued on December 16, 2021, requires transmission providers to move away from seasonal and static lines ratings, which are generally conservative. In their place, the rule requires ambient adjusted ratings (AAR) , which use near-term forecast ambient air temperatures. All requirements in this rule must be implemented by July 12, 2025. PNM is in the process of implementing AAR by the effective date.

FERC Order 897

FERC Order 897 was issued on June 15, 2023 and directed transmission providers to file one-time informational reports (due October 25, 2023) that describe their policies and processes for conducting extreme weather vulnerability assessments of transmission assets and operations. The order further directed NERC to develop a new or modified reliability standard to require transmission system planning for extreme heat and cold weather conditions over wide geographical areas. NERC's process is on-going.

FERC Order 2023

FERC Order reforms procedures and agreements that electric transmission providers use to integrate new generating facilities into the existing transmission system. FERC adopted these reforms to reduce backlogs for projects seeking to connect to the transmission system, improve certainty in the interconnection processes managed by the dozens of transmission providers around the country, and ensure access to the transmission system for new technologies. PNM is in the process of drafting and filing a revised Open Access Transmission Tariff pursuant to this rule issue in July 2023.

WECC and NERC Criteria

As a member of Western Electricity Coordinating Council (WECC) and North American Electric Reliability Council (NERC), PNM complies with reliability criteria to ensure that its electric systems are safely and reliably operated.

PNM must comply with NERC operating standards, which, in part, might dictate the use of certain resources to meet the requirements. These include Control Performance Standards[1] (CPS), which measure a control area operator's ability to control system frequency and balance its load and generation at all times. They also include Disturbance Control Standards[2], which measure the control area's ability to respond to generator or load loss.

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1 See https://www.nerc.com/pa/Stand/Pages/default.aspx (BAL-001-0_1a)

2 See https://www.nerc.com/pa/Stand/Pages/default.aspx (BAL-002-1 and BAL-002-WECC-1)

PNM must also comply with NERC standards that relate to transmission planning and operations. These include Transmission Planning Standards[3] (TPL), which measure the sufficiency of the transmission system to meet present and future needs. TPL standards state that, "The interconnected power system shall be operated at all times so that general system instability, uncontrolled separation, cascading outages or voltage collapse will not occur as a result of any single contingency or multiple contingencies of sufficiently high likelihood."

Power Supply Assessment (PSA)

NERC requires WECC to annually evaluate future resource adequacy of the western region based upon annual resource plans submitted by member utilities. The PSA is a regional and subregional determination of resource adequacy, rather than an individual utility evaluation of resource adequacy. The purpose, is to project whether enough physical resources exist, at any price, to meet load and possible reserves while considering the transmission transfer capabilities of major paths[4]. PNM, balancing area coordinator (BAC) in New Mexico, participates in the PSA study process and collects historical and future load and resource information from load-serving entities (LSEs) within New Mexico. This assessment is important because, if the PSA were to identify a resource adequacy issue in the region or subregion where PNM operates, PNM would be obligated to participate in finding a solution to the resource deficiency.

Reserve Sharing Agreements

In addition to meeting planning criteria, PNM also ensures that its resource portfolio meets operating conditions. From time to time, the operation of PNM's system may warrant additional generation or the use of certain types of reserves to maintain adequate stability.

PNM recognizes the economic and reliability benefits of participating in the Southwest Reserve Sharing Group (SRSG) for operating reserves. The operating reserve margin is measured in real time to maintain proper system frequency and balancing of loads to resources in the southwestern United States.

Southwestern U.S. utilities specify their load requirements and their resource availability on an hourly basis to SRSG. The SRSG administration examines the risk or the likelihood of a system disturbance to determine the collective reserves it needs to hold. SRSG then notifies each utility of the operational reserves they should hold, in addition to the resources each utility uses to serve its customers. Total SRSG operating reserves can be split between spinning reserves (coming from units that are operating at less than their full output) and non-spinning reserves (resources that are not operating, but can be brought online within 10 minutes). PNM's participation in SRSG is critical to minimizing the expense of PNM's reliability obligations. If PNM had to provide all of the necessary reserves itself, the requirement would equal its single largest operating unit, which is the utility's largest risk.

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3 See https://www.nerc.com/pa/Stand/Pages/default.aspx (TPL-001-0.1 through TPL-004-0)

4 See https://www.nerc.com/pa/RAPA/ra/Pages/default.aspx (Reliability Assessment Guidebook)

PNM’s SRSG allocation is partly determined by the size of the units that are included in PNM’s operating portfolio. Currently, PNM’s single largest potential risk is SJGS Unit 4 (392 megawatts), if it is operating, or Afton (230 megawatts), if Afton is operating and SJGS Unit 4 is not. Looking forward, and for purposes of this IRP, PNM must determine how new resource additions might change the level of reserves required for SRSG purposes or otherwise result in additional costs to meet reliability standards. Generally, PNM’s planning criterion is to limit the size of new generation to that of the current largest unit.

Other System Reliability Standards

Although states have played the primary role in setting reserve margin requirements, federal agencies (Federal Energy Regulatory Commission [FERC] and NERC) have taken on increased responsibility. Numerous states (including Maryland, New Jersey, Pennsylvania, Ohio, Indiana, Wyoming, Delaware, and the District of Columbia, in addition to portions of Michigan, Wisconsin, Illinois, Kentucky, Tennessee, and Virginia) have received approval from FERC to utilize one-day-in-10-years resource planning criteria. Implementation of this criterion would result in planning for sufficient resources so that no more than 48 load hours would be lossed in a 20-year planning period. This is a more stringent criterion than PNM’s existing reserve planning criteria, but could be a consideration for future planning.

New Mexico IRP Rule

This section shows the IRP Rule and where in the IRP to find content associated with its various requirements.

17.7.3.8 NMAC: Integrated Resource Plans for electric utilities. B. The IRP submitted to the commission by an electric utility shall contain the utility's New Mexico jurisdictional information as follows:

(1) description of existing resources;	**Section 4; Appendix H**
(2) current load forecast;	**Section 3; Appendix C**
(3) load and resources table;	**Appendix K**
(4) new load and facilities arising from special service agreements, economic development projects, and affiliate transactions;	**Appendix C**
(5) identification of resource options;	**Section 6; Appendix I**
(6) statement of need;	**Section 8.1**
(7) determination of the resource portfolio; and	**Section 7**
(8) action plan	**Section 8.2**

Description of existing resources.

A. The mandate of the energy transition act to incorporate 80% renewable energy onto the grid by 2040 requires utilities operating in New Mexico to develop flexible management of grid resources. Utilities may categorize resources into the following four functional groups to reflect their role in serving this need:	
(1) load modifying resources – includes but not limited to energy efficiency, distributed generation, and time of use tariffs;	**Section 3.2, 3.3**
(2) renewable load serving resources – includes both utility scale solar and wind technologies;	**Section 4.1**
(3) conventional load serving resources – includes coal, nuclear, and gas technologies; and	**Section 4.1**
(4) grid balancing resources – includes demand response, storage technologies, natural gas combustion engines, and reciprocating engines.	**Section 4.1; Appendix D; Appendix H**
B. The utility's description of its existing resources used to serve its jurisdiction load shall include:	
(1) name(s) and location(s) of utility-owned generation facilities;	**Section 4; Appendix H**
(2) rated capacity of utility-owned generation facilities;	**Section 4; Appendix H**
(3) fuel type, heat rates, annual capacity factors, and availability factors projected for utility-owned generation facilities over the planning period;	**Section 4; Appendix H**

(4) cost information, including capital costs, fixed and variable operating and maintenance costs, fuel costs, and purchased power costs;	**Appendix H**
(5) existing generation facilities' expected retirement dates;	**Section 4; Appendix H**
(6) amount of capacity obtained or to-be-obtained through existing purchased power contracts or agreements relied upon by the utility, including the fuel type, if known, and contract duration;	**Appendix H**
(7) estimated in-service dates for utility-owned generation facilities for which certificates of public convenience and necessity (CCN) have been granted but which are not in-service;	**Appendix H**
(8) amount of capacity and, if applicable, energy purchased via the utility's participation in regional energy markets;	**Section 2.4**
(9) description of existing demand-side resources, including:	
(a) demand-side resources deployed at the time the IRP is filed; and	**Section 3.2**
(b) demand-side resources approved by the commission, but not yet deployed at the time the IRP is filed;	**Section 3.2; Appendix L**
(i) information provided concerning existing demand-side resources shall include, at a minimum, the expected remaining useful life of each demand-side resource and the energy savings and reductions in peak demand, as appropriate, made by the demand-side resource;	**Appendix L**
(10) description of each existing energy storage resource, including energy storage resources approved but not yet deployed at the time the IRP is filed, and at a minimum, the expected remaining useful life of the resource, its maximum capacity, dispatch characteristics, and operating costs;	**Section 4.1.7; Appendix H**
(11) reserve margin and reserve reliability requirements with which the utility must comply, and the methodology used to calculate its reserve margin;	**Section 7.1; Appendix M**
(12) existing transmission capabilities:	**Section 4.2; Appendix E**
(a) the utility shall report its existing and under-construction transmission facilities of 115 kV and above, including associated switching stations and terminal facilities;	**Section 4.2; Appendix E**
(b) the utility shall specifically identify the location and extent of transfer capability limitations on its transmission network that may affect the future siting of supply-side resources; and	**Section 4.2**
(c) the utility shall describe all transmission planning or coordination groups to which it is a party, including state and regional transmission groups,	**Section 4.2**

transmission companies, and coordinating councils with which the utility may be associated;	
(13) existing distribution capabilities:	
(a) the utility shall report its existing distribution facilities, under-construction distribution facilities, or distribution facilities approved but not-yet-deployed at the time the IRP is filed, including all substations, switching stations, power lines and other equipment, below 115 kV, including associated transformers and feeder lines;	**Section 4.3**
(b) the utility shall specifically identify the location and extent of capability limitations on its distribution network that may affect the future siting of distributed energy resources; and	**Section 4.3**
(c) the utility shall describe all distribution planning or coordination groups to which it is a party;	**Section 4.3**
(14) details of any planned or anticipated transmission and distribution network upgrades;	**Section 4.3**
(15) environmental impacts of existing supply-side resources:	
(a) the utility shall provide the percentage of megawatt-hours generated by each fuel used by the utility on its existing system for the latest year for which such information is available;	**Section 4.1**
(b) to the extent feasible, for each existing supply-side resource on its system, the utility shall present emission rates (expressed in pounds emitted per megawatt-hour generated) of criteria pollutants as well as carbon dioxide and mercury; and	**Section 4.1; Appendix H**
(c) to the extent feasible, for each existing supply-side resource on its system, the utility shall present the water consumption rate;	**Section 4.1; Appendix H**
(16) a summary of back-up fuel capabilities and options; and	**Section 4.1; Section 6**
(17) an assessment of the critical facilities susceptible to supply-source disruptions, extreme weather events, or other failures.	**Section 4.4**

Current load forecast.

A. The IRP shall contain a load forecast for each year of the planning period.	**Section 3; Appendix C**
B. The load forecast shall incorporate the following information and projections:	

(1) annual sales of energy, net load, and reliability reserves on a system-wide basis, by customer class, and disaggregated among commission jurisdictional sales, FERC jurisdictional sales, and sales subject to the jurisdiction of other states;	**Appendix C**
(2) weather normalization adjustments;	**Appendix C**
(3) assumptions for economic and demographic factors relied on in load forecasting;	**Section 3.4.1**
(4) expected capacity and energy impacts of existing and proposed demand-side resources; and	**Appendix C; Appendix L**
(5) typical historic day and week load patterns on a system-wide basis for each major customer class.	**Appendix C**
C. The utility shall develop an expected growth forecast, a high-growth forecast, and a low-growth forecast, or an alternative forecast that provides an assessment of uncertainty (e.g., probabilistic techniques).	**Section 3.4.2**
D. Required detail.	
(1) The utility shall explain how the utility's load forecasts account for the demand-side savings attributable to actions other than the utility-sponsored demand-side resources for each major customer class, as well as the effect of those utility-sponsored demand-side resources for each major customer class on the load forecasts.	**Appendix C**
(2) The utility shall compare the annual forecast in its most recently filed resource plan to the annual forecast in the current resource plan.	**Section 3.4**
(a) In its initial IRP filing, the utility shall provide information demonstrating how well its forecasts predicted demand (during the preceding four years.)	**Section 3.4**
(3) The utility shall explain and document the assumptions, methodologies, and any other inputs upon which it relied to develop its load forecast.	**Appendix C**

Load and resources table.

A. The IRP shall contain a table of the utility's existing loads and resources at the time of filing.	**Appendix K**
B. The load and resources table, to the extent practical, shall contain the appropriate components from the load forecast.	**Appendix K**
C. Resources shall include:	
(1) utility-owned generation;	**Appendix K**
(2) energy storage resources;	**Appendix K**

(3) existing and future contracted-for purchased power, including qualifying facility purchases;	**Appendix K**
(4) purchases through net metering programs, as appropriate;	**Appendix C**
(5) demand-side resources, as appropriate; and	**Appendix K**
(6) other resources relied upon by the utility, such as pooling, wheeling, or coordination agreements effective at the time the IRP is filed.	**Appendix K**

Identification of resource options.

A. The utility shall identify additional resource options in its IRP that it evaluated for selection as part of the utility's portfolio.	**Section 6; Appendix I**
B. In identifying additional resource options, the utility should consider all supply-side, energy storage, and demand-side resources.	**Section 6: Appendix I**
C. The utility shall describe the assumptions and methodologies used in evaluating its resource options, including, as applicable:	
(1) life expectancy;	**Section 6; Appendix I**
(2) whether the resource is replacing or adding capacity or energy;	**Section 6; Appendix I**
(3) dispatchability;	**Section 6; Appendix I**
(4) lead-time requirements;	**Section 6**
(5) flexibility, including black start capability;	**Appendix I**
(6) load-modifying or grid-balancing capabilities;	**Section 6**
(7) efficiency; and	**Section 6; Appendix I**
(8) ability to most effectively provide reasonable and consistent progress toward satisfaction of the renewable portfolio standard.	**Section 6**
D. For supply-side resource options, the utility shall identify the assumptions actually used for capital costs, fixed and variable operating and maintenance costs, fuel costs forecast by year, and purchased power demand and energy charges forecast by year, fuel type, heat rates, annual capacity factors, availability factors and, emission rates (expressed in pounds emitted per kilowatt-hour generated) of criteria pollutants as well as carbon dioxide and mercury.	**Appendix I**
E. The utility shall describe its existing rates and tariffs that incorporate load management or load modifying concepts. The utility shall also describe how changes in rate design might assist in meeting, delaying or avoiding the need for new capacity.	**Appendix L**

F. In identifying resource options, the utility shall include a description of the projected emissions of carbon dioxide for any resources proposed to be owned by the utility and for any new generic resources included in the utility's modeling for its resource plan;	
Statement of need.	
A. The statement of need is a description and explanation of the amount and the types of new resources, including the technical characteristics of any proposed new resources, to be procured, expressed in terms of energy or capacity, necessary to reliably meet an identified level of electricity demand in the planning horizon and to effect state policies.	**Section 8.1**
B. The statement of need shall not solely be based on projections of peak load. The need may be attributed to, but not limited by, incremental load growth, renewable energy customer programs, or replacement of existing resources, and may be defined in terms of meeting net capacity, providing reliability reserves, securing flexible resources, securing demand-side resources, securing renewable energy, expanding or modifying transmission or distribution grids, or securing energy storage as required to comply with resource requirements established by statute or commission decisions.	**Section 8.1**
Determination of the resource portfolio.	
A. To identify the most cost-effective resource portfolio, utilities shall evaluate all supply-side resources, energy storage, and demand-side resource options on a consistent and comparable basis, taking into consideration risk and uncertainty, including but not limited to financial, competitive, operational, fuel supply, price volatility, downstream impacts on transmission and distribution investments, extreme-weather events, and anticipated environmental regulation costs.	**Section 7; Appendix J**
B. The utility shall evaluate the cost of each resource through its projected life with a life-cycle or similar analysis.	**Appendix I**
C. The utility shall consider and describe ways to mitigate ratepayer risk.	**Section 5.3; Section 7**
D. Each electric utility shall provide a summary of how the following factors were considered in, or affected, the development of resource portfolios:	
(1) load management or modification and energy efficiency requirements;	**Section 3.2; Section 7**
(2) renewable energy portfolio requirements;	**Section 1.3; Section 7**
(3) existing and anticipated environmental laws and regulations, and, if determined by the commission, the standardized cost of carbon emissions;	**Section 7.2.2**
(4) fuel diversity;	**Section 7.3.2**
(5) susceptibility to fuel interdependencies;	**Section 7**

(6) transmission or distribution constraints; and	**Section 7**
(7) system reliability and planning reserve margin requirements.	**Section 7.1.1**
E. Alternative portfolios. In addition to the detailed description of what the utility determines to be the most cost-effective resource portfolio, the utility shall develop alternative portfolios by altering risk assumptions and other parameters developed by the utility.	**Section 7**

17.7.3.11 NMAC: Action plan. The utility's action plan shall:

(1) detail the specific actions the utility shall take to implement the IRP spanning a three year period following the filing of the utility's IRP;	**Section 8.2**
(2) detail the specific actions the utility shall take to develop any resource solicitations or contracting activities to fulfill the statement of need as accepted by the commission; and	**Section 8.2**
(3) include a status report of the specific actions contained in the previous action plan.	**Section 1.4**

17.7.3.9 NMAC: Facilitated stakeholder process; IRP process. A. At least six months prior to the filing of its IRP, the utility shall notify the commission, members of the public, the New Mexico attorney general, and all parties to its most recent base rate case and most recent IRP case of its intent to file an IRP.

(1) The utility shall provide commission utility division staff and stakeholders who have signed a confidentiality agreement reasonable access to the same modeling software used by the utility on equal footing as the utility, and shall perform a reasonable number of modeling runs per staff or a stakeholder, if requested by staff or a stakeholder, in accordance with commission precedent, and the utility shall share all modeling information.	**Section 1.2**

Other IRP Requirements Established by the Commission

The 2023 IRP also fulfills a number of additional requirements established in the Recommended Decision in Case No. 17-00174-UT.

First:

> PNM shall include a separate section on the status of the prior IRP's Action Plan, and a separate section addressing whether PNM has critical facilities susceptible to supply-source or other failures in the filing of any future IRP.
>
> -Case No 17-00174-UT Recommended Decision

Section 1.4 reviews the Action Plan established in our 2017 IRP and provide status updates on each of the items that was included in that plan.

Appendix G. Details of Gas, CO_2 and Wholesale Electricity Price Forecasts

The commodity price forecasts for natural gas, carbon, and wholesale electricity markets used in the IRP were developed by PACE Global. Details on these forecasts were presented to stakeholders through PNM's public advisory process on November 2 and December 15, 2022. Forecasts for carbon, gas, and wholeale electricity prices are summarized in the tables below. The technical details of these forecasts are summarized in the attached report.

Table G-1. Forecast trajectories for natural gas, carbon, and wholesale market prices assumed in IRP

Natural Gas Price ($/MMBtu)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
San Juan - Low	$3.99	$3.55	$3.15	$3.33	$3.48	$3.34	$3.38	$3.60	$3.53	$3.78	$3.94	$3.90	$4.36	$4.33	$4.72	$4.82	$5.12	$5.31	$5.61	$5.88
San Juan - Mid	$5.89	$5.04	$4.84	$5.10	$5.10	$5.19	$5.34	$5.58	$5.76	$6.11	$6.48	$6.65	$6.81	$6.84	$7.20	$7.61	$8.03	$8.31	$8.78	$9.23
San Juan - High	$8.23	$6.68	$6.69	$7.47	$7.11	$7.55	$7.99	$8.12	$8.64	$9.84	$9.94	$11.36	$10.56	$10.38	$10.87	$11.65	$12.04	$12.20	$12.92	$13.59
Permian - Low	$4.00	$3.53	$2.89	$2.88	$2.96	$2.80	$2.80	$3.01	$2.91	$3.09	$3.22	$3.15	$3.59	$3.54	$3.92	$4.02	$4.33	$4.56	$4.95	$5.35
Permian - Mid	$5.90	$5.03	$4.58	$4.65	$4.59	$4.64	$4.76	$4.99	$5.14	$5.43	$5.76	$5.90	$6.03	$6.05	$6.41	$6.81	$7.25	$7.56	$8.12	$8.69
Permian - High	$8.24	$6.67	$6.44	$7.02	$6.59	$7.01	$7.41	$7.53	$8.02	$9.16	$9.21	$10.61	$9.78	$9.59	$10.07	$10.85	$11.25	$11.45	$12.25	$13.05

Hydrogen Price ($/MMBtu)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Low	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$8.51	$9.03	$9.52
Mid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$32.36	$32.81	$33.25
High	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$37.53	$38.10	$38.68

CO2 Price ($/short ton)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Reference (modeled)	$0.00	$0.00	$0.00	$0.00	$0.00	$11.36	$12.25	$13.18	$14.20	$15.30	$16.47	$17.74	$19.10	$20.58	$22.17	$23.87	$25.70	$27.69	$29.82	$32.12
Reference (adjusted)	$0.00	$0.00	$0.00	$0.00	$0.00	$12.42	$13.79	$15.28	$16.96	$18.82	$20.87	$23.14	$25.67	$28.48	$31.61	$35.05	$38.88	$43.14	$47.85	$53.09
High (modeled)	$0.00	$0.00	$0.00	$0.00	$0.00	$12.04	$21.07	$30.10	$39.13	$48.16	$57.19	$66.22	$75.25	$84.28	$93.31	$102.34	$111.37	$120.40	$126.01	$131.64
High (adjusted)	$0.00	$0.00	$0.00	$0.00	$0.00	$13.16	$23.71	$34.89	$46.72	$59.23	$72.44	$86.40	$101.13	$116.66	$133.03	$150.29	$168.45	$187.57	$202.20	$217.58
Low	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NMPRC $8/ton	$10.00	$10.25	$10.51	$10.77	$11.04	$11.32	$11.60	$11.89	$12.19	$12.49	$12.81	$13.13	$13.45	$13.79	$14.14	$14.49	$14.85	$15.22	$15.60	$15.99
NMPRC $20/ton	$25.01	$25.64	$26.28	$26.93	$27.61	$28.30	$29.01	$29.73	$30.47	$31.24	$32.02	$32.82	$33.64	$34.48	$35.34	$36.22	$37.13	$38.06	$39.01	$39.98
NMPRC $40/ton	$50.02	$51.27	$52.55	$53.87	$55.22	$56.60	$58.01	$59.46	$60.95	$62.47	$64.03	$65.63	$67.27	$68.96	$70.68	$72.45	$74.26	$76.12	$78.02	$79.97

Reference and High price trajectories for CO2 were not escalated to account for inflation in EnCompass modeling. "Modeled" prices reflect the price stream included in the analysis; "adjusted" prices reflect intended price trajectories accounting for inflation. Because impacts of CO2 pricing on portfolios and costs are generally found to be small due to high penetrations of carbon-free resources in sensitivity analyses, this inconsistency is not expected to have significantly impacted results.

Wholesale Market Price ($/MWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Palo Verde - Low	$45.72	$28.80	$19.85	$15.43	$11.37	$11.14	$10.02	$9.66	$9.07	$7.38	$9.43	$13.55	$15.98	$16.97	$17.68	$19.11	$20.45	$21.08	$21.93	$23.56
Palo Verde - Mid	$45.72	$28.80	$22.50	$19.15	$13.99	$14.96	$13.73	$12.05	$12.71	$11.16	$13.71	$18.59	$20.57	$22.04	$22.39	$24.89	$26.73	$28.29	$29.61	$31.58
Palo Verde - High	$45.72	$28.80	$26.63	$23.85	$16.40	$18.34	$18.64	$17.23	$18.39	$17.85	$21.36	$29.65	$29.52	$30.35	$30.96	$34.76	$37.21	$39.04	$40.99	$43.14

Wholesale market prices reported reflect annual average prices. Hourly price streams modeled in EnCompass.

Price Outlook: Natural Gas, CO_2, Capital Costs

Public Service New Mexico

November 2022

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Contents

Introduction

- Siemens PTI developed market assumptions for PNM in July 2022
- Market forecast of natural gas, carbon emission price, and capital costs were developed to assist PNM with its 2023 Integrated Resource Plan
- The forecast for each of these commodities was developed based on input from subject matter experts, research, internal analysis, and propriety data over the 2022-2043 planning period

Scenario	Description
Baseline	Reference view based on market forwards early and longer term by fundamentals accounting for expected policy
High	High prices reflect increasing social costs for CO_2 and higher price of natural gas based on statistical analysis
Low	Low prices reflect no costs for CO_2 and lower price of natural gas based on lower band of statistical analysis

- This presentation summarizes the methodology utilized as well as assumptions used to derive the price forecast

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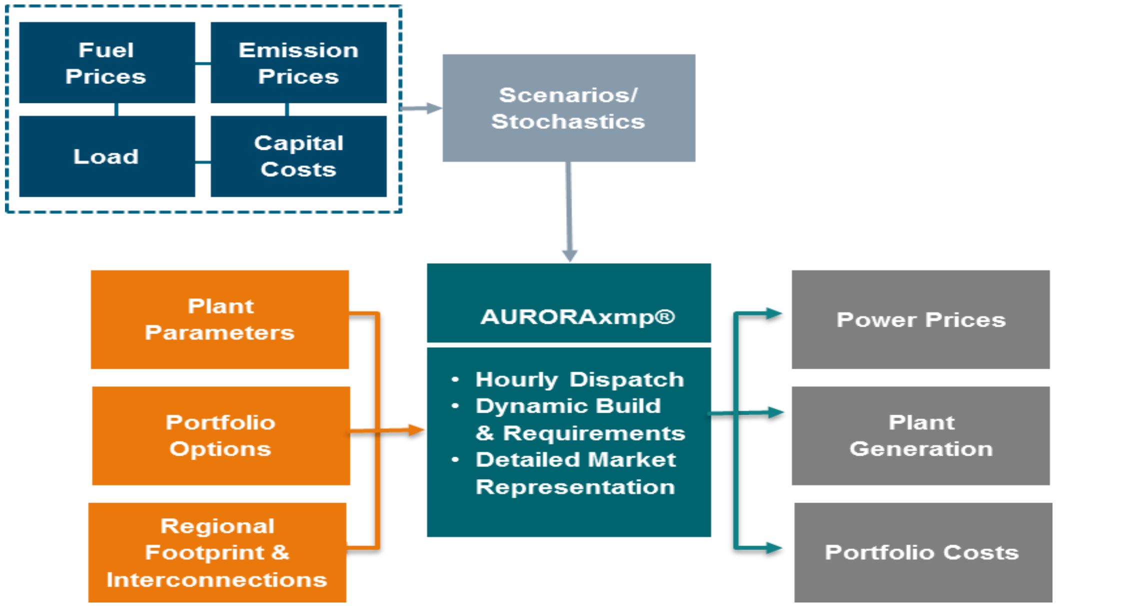
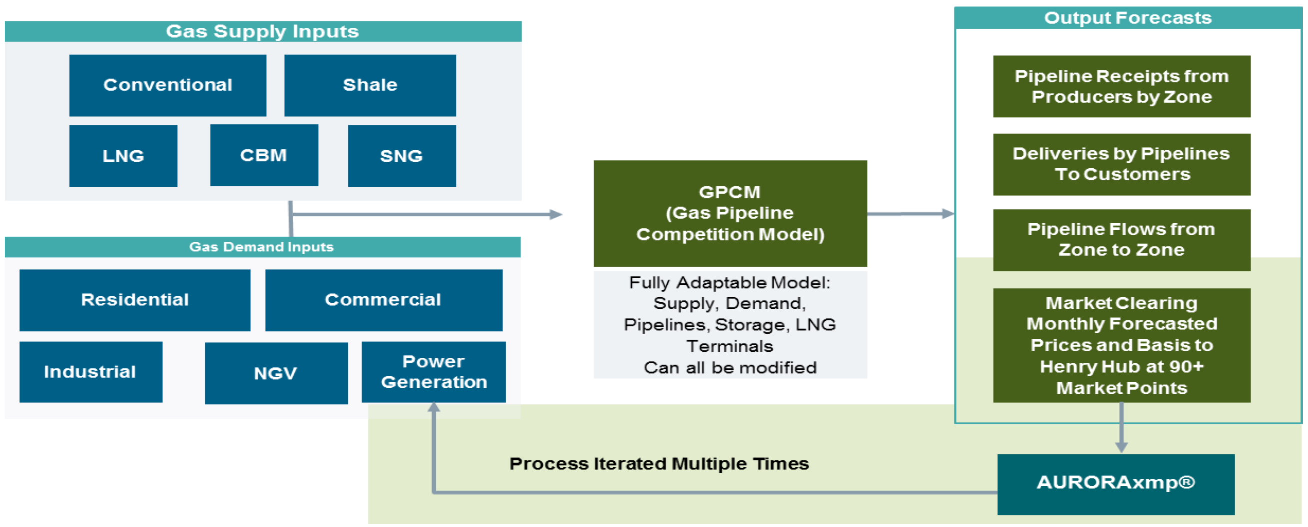
Tools and Methodology

Gas and Power Integrated Modeling Approach

AURORAxmp® as a Modeling Framework



GPCM Modeling Framework



- Power modeling used AURORAxmp®, an hourly dispatch model, to simulate the economic dispatch of power plants within WECC power markets for the forecast horizon. AURORAxmp® assesses the economics of existing and future generation technologies for future builds and retirements in order to maintain minimum reserve margins and meet RPS and carbon free generation targets.
- Natural gas price inputs are produced using GPCM, a dynamic model that incorporates natural gas supply, demand, and infrastructure inputs to solve for expected prices and flows throughout North America.
- Iterations are performed between the two models to ensure gas prices and power sector natural gas demand is in balance.

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Natural Gas Forecast

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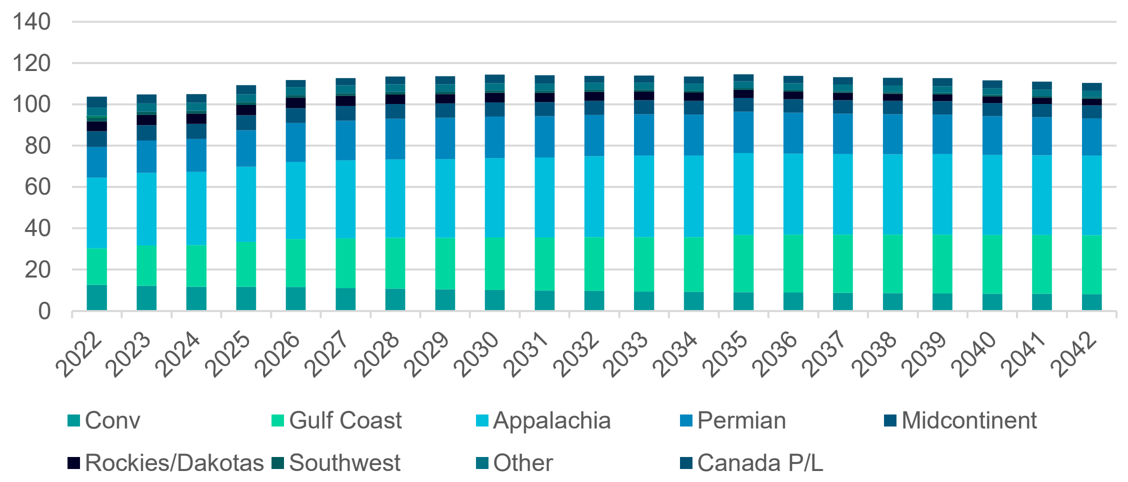
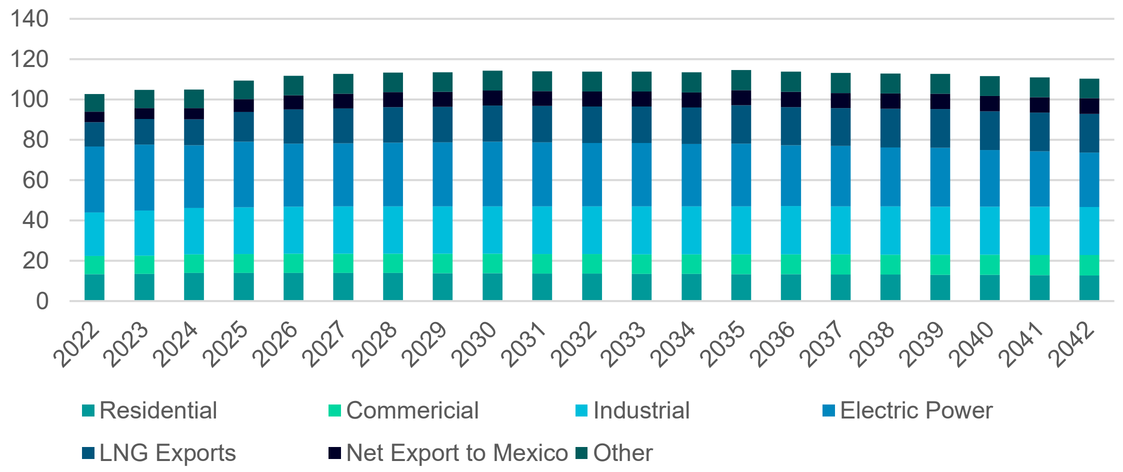
Key U.S. Gas Market Drivers

All units in BCF/D

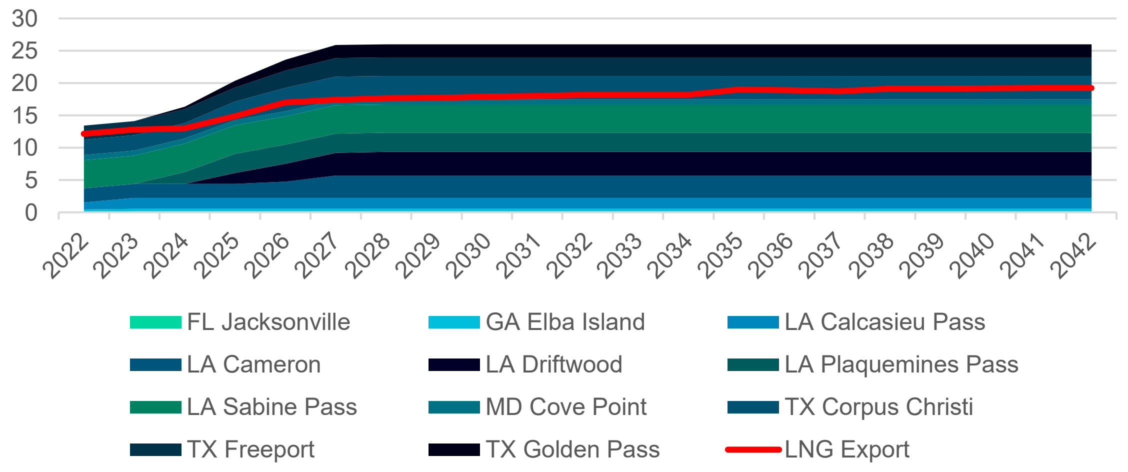
U.S. (L48) Gas Supply Outlook



U.S. Gas Demand Outlook



U.S. LNG Export Capacity and Export Outlook



Key Insights

- Gas supply increasing post-COVID era driven by higher prices and increasing demand
- Natural gas use in electric power generation, over the long term expected to decline due to increasing renewable portfolio standards
- LNG exports have increased dramatically to supply primarily European and Asian markets and are expected to grow with increasing investment in export capacity
- Mexico pipeline export also increasing due to greater demand and infrastructure buildout

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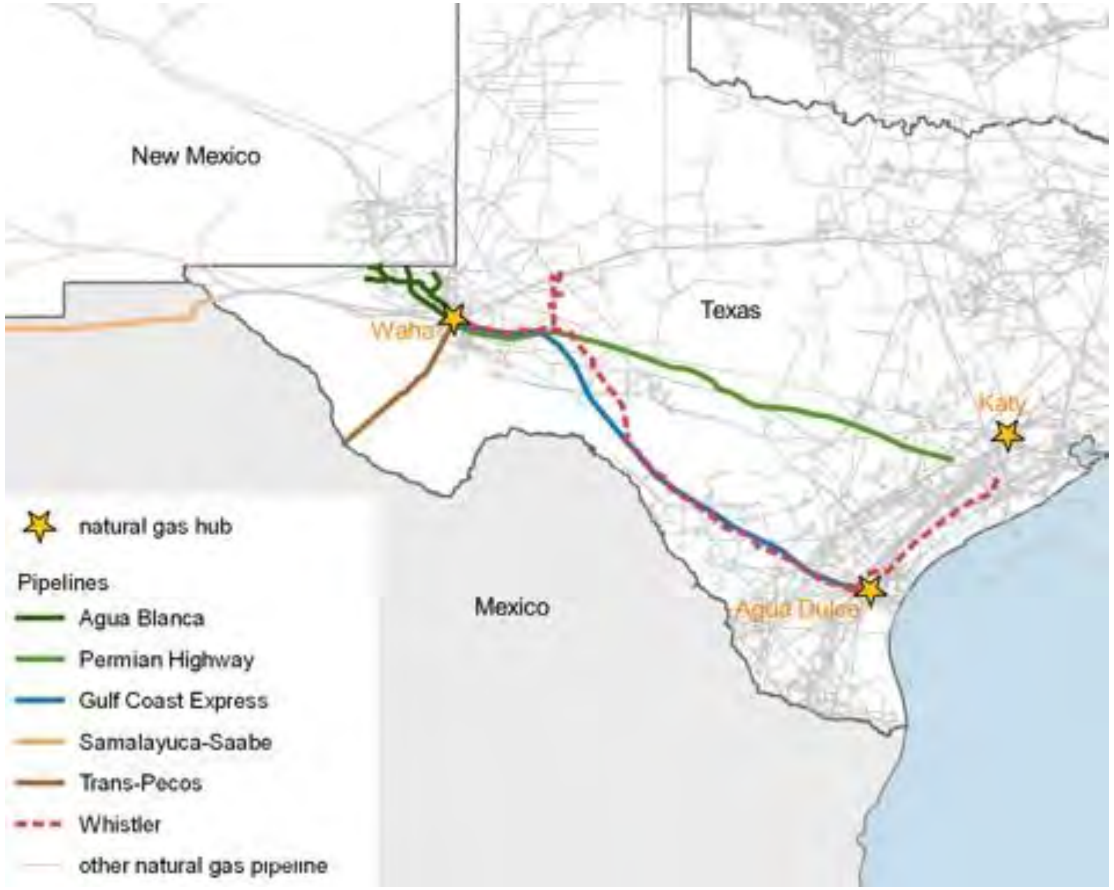
Several Pipelines have been built to delivery Permian Gas from Waha Hub to South Texas and Beyond



Source: EIA

- Permian gas production is expected to increase from ~15 Bcf/d in 2022 to ~20 Bcf/d by 2030
- Gas pipeline takeaway capacity is expected to reach ~17 Bcf/d by YE2023
- Expansion projects being developed to increase takeaway capacity

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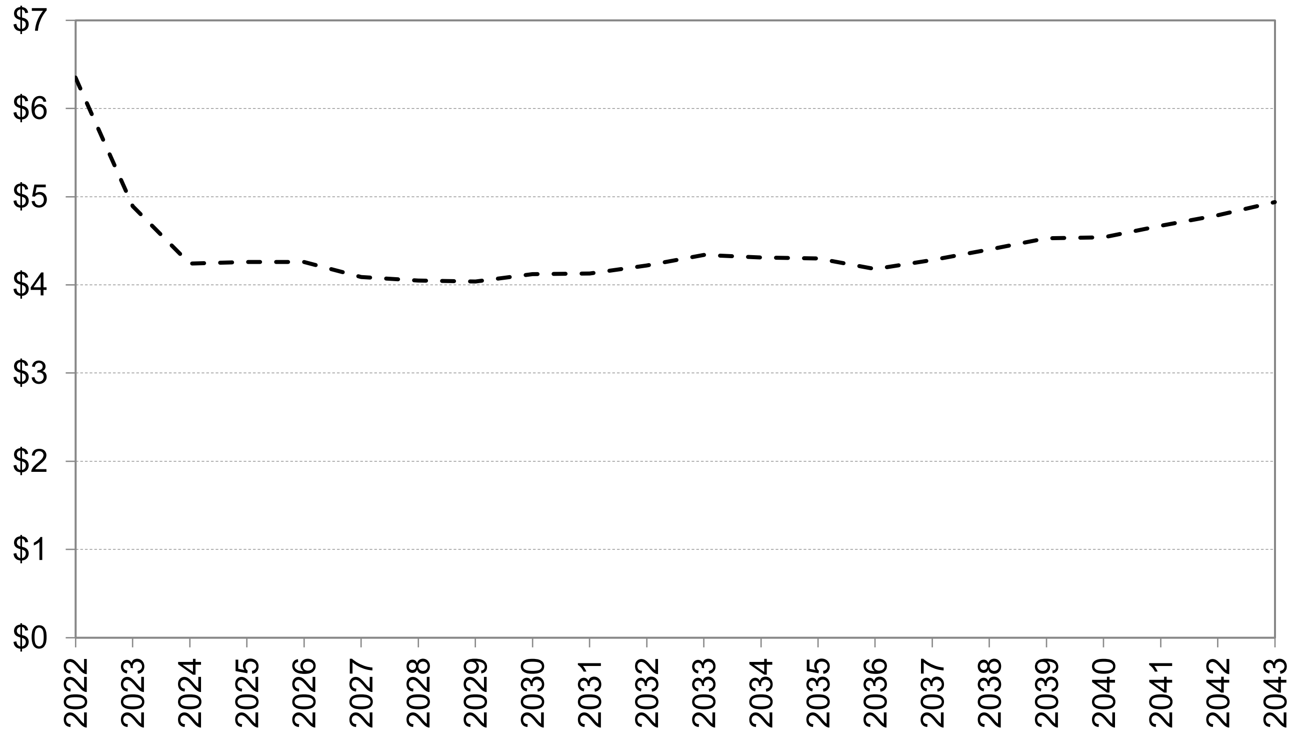
Baseline Natural Gas Prices – Henry Hub (HH)

Baseline HH Natural Gas Price Forecast (2021$/MMBtu)



*Base case prices were developed using NYMEX forwards for Henry Hub for the first 18 months starting July 2022, Mix of forward and fundamentals for next 18 months; fundamentals March 2025 onwards

Henry Hub

Near-Term – Reflects historical data and market forwards through September 2023. The next 18 months is a blend of forwards and fundamental through February 2025

- Oil and gas prices are high enough to boost economic production
- Rig deployment sluggish due to capital discipline and hedging programs that have kept producers from fully realizing high prices
- LNG export utilization all-time high due to European demand

Mid-Term – HH prices are expected to moderate as supply increases to meet increasing demand from LNG. Supply growth coming from Permian, Marcellus, Haynesville, Eagle Ford and Utica shales

Long-Term – Post 2035, natural gas prices projected to rise due to higher costs of production, despite lower levels of demand from power generation and relatively flat demand in CR&I sectors

- Power generation gas consumption will reduce due to rising renewable generation to meet RPS standards
- Decrease in residential demand is offset by an increase in commercial and industrial sectors

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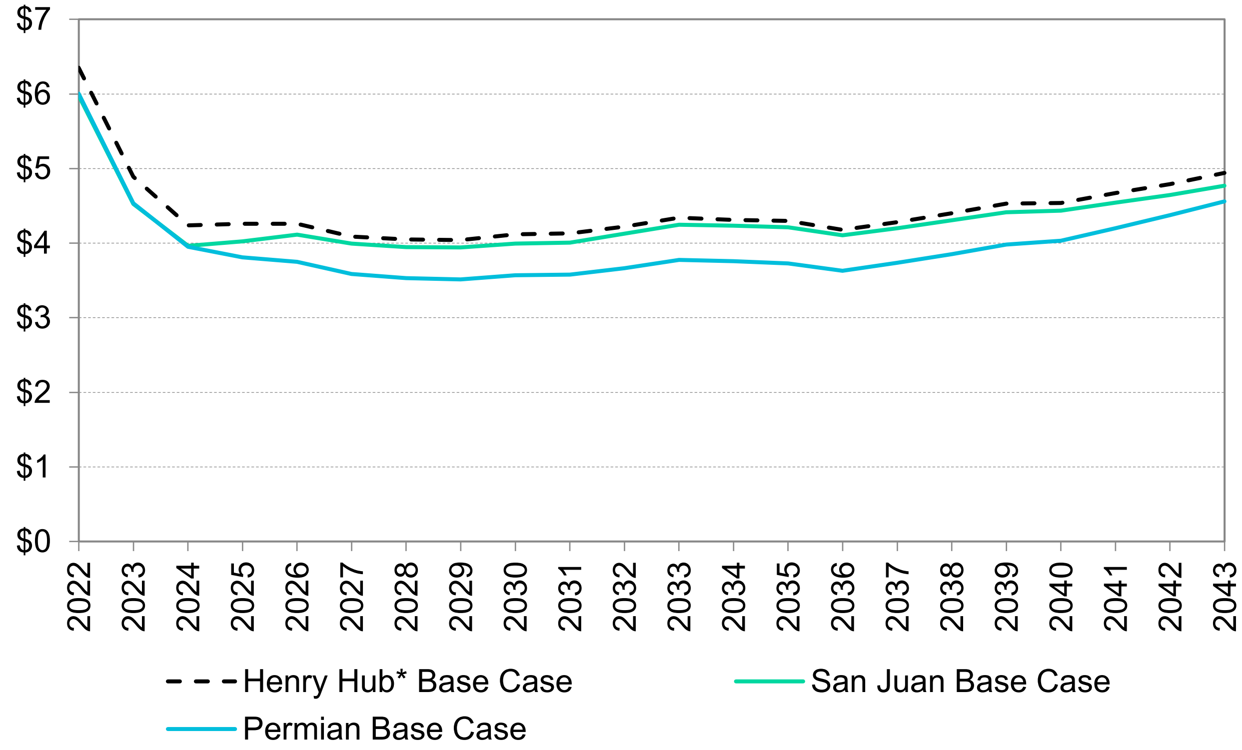
Baseline Natural Gas Prices – Permian and San Juan

Baseline Regional Natural Gas Price Forecasts, $2021/MMBtu



*Base case prices were developed using NYMEX forwards for Henry Hub for the first 18 months starting July 2022, mix of forward and fundamentals for next 18 months; fundamentals March 2025 onwards

Permian

- Permian production is robust and continues to grow even with very low HH prices
- Near term, Permian prices are expected to have a negative basis of ~0.35 $/MMBtu to HH
- Longer term, basis to HH is expected to widen to an average of ~-0.50$/MMBtu. To keep up with increasing demand, particularly from LNG, production is expected to increase
- Pipelines/expansion in the future may put some upward pressure on prices and could reduce the basis differential to HH over the planning horizon

San Juan

- Production region in northwest NM into southern CO
- CBM and Conventional production of gas continues to decline and is expected decline and remain a secondary source of gas for the Southwest

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High and Low Cases

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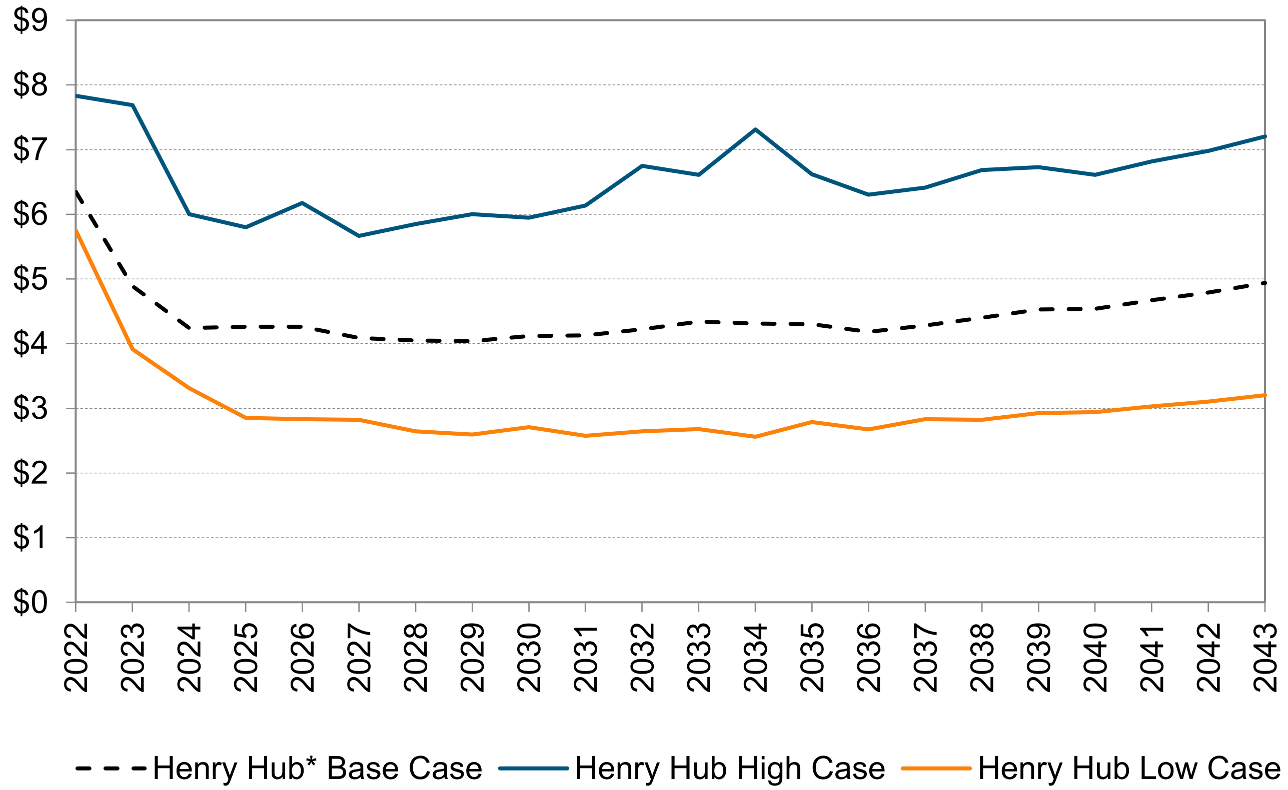
Natural Gas Price Scenarios – Henry Hub

HH Natural Gas Price Scenarios, $2021/MMBtu



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Henry Hub Low and High Cases

Low Case –Reflects an outlook based on a statistical analysis of historical at the 10% confidence internal. Prices settle around $3/MMBtu longer term

High Case – Reflects an outlook based on Statistical analysis of historical at 90% confidence interval. Prices increase above ~$6/MMBtu longer term

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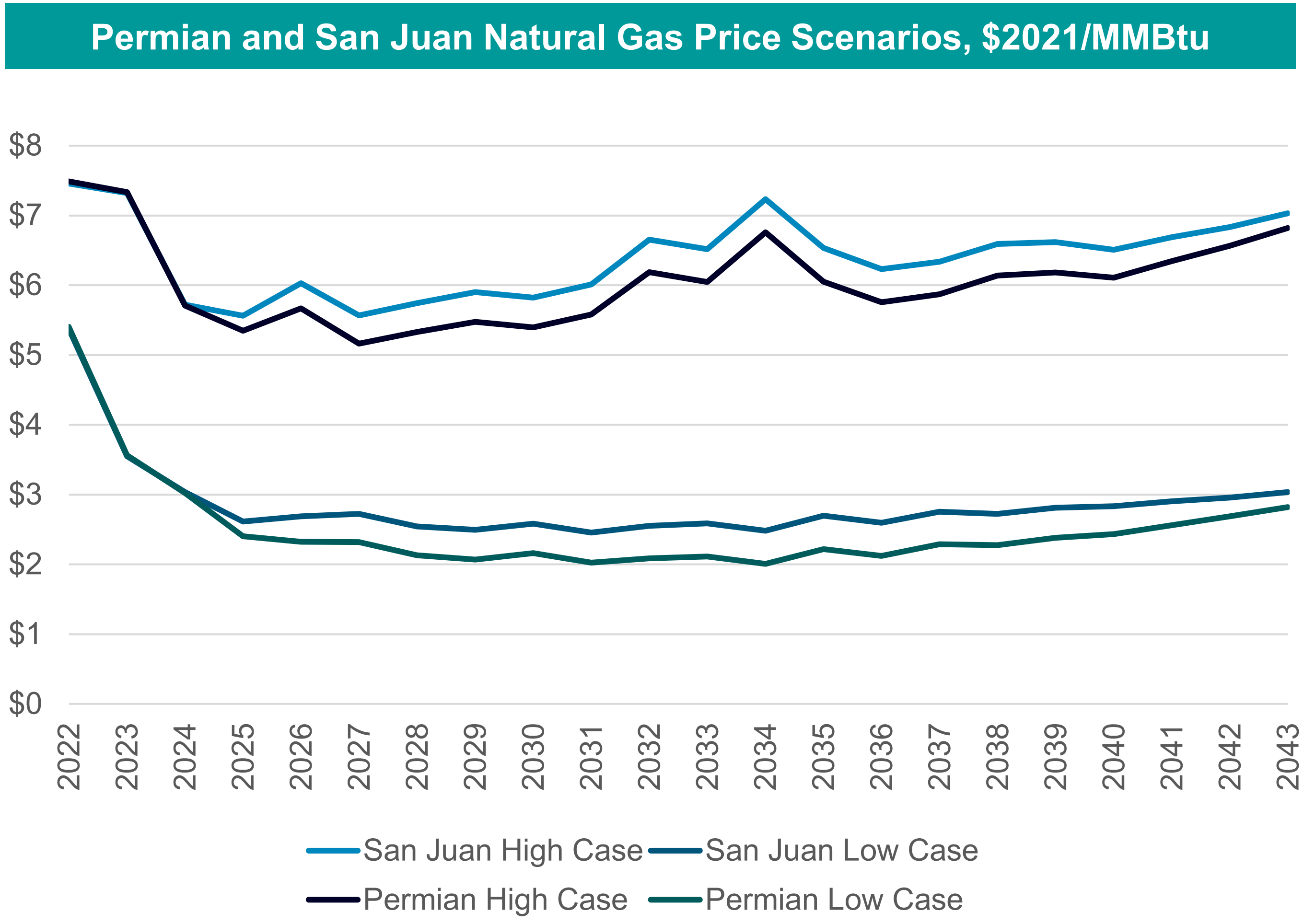
Natural Gas Price Scenarios – Permian and San Juan



- Permian and San Juan price outlook consistent with HH High and Low scenario and basis differential consistent with baseline scenario
- Low case prices above $2/MMBtu longer term
- High case prices ~$6-$7/MMBtu longer term

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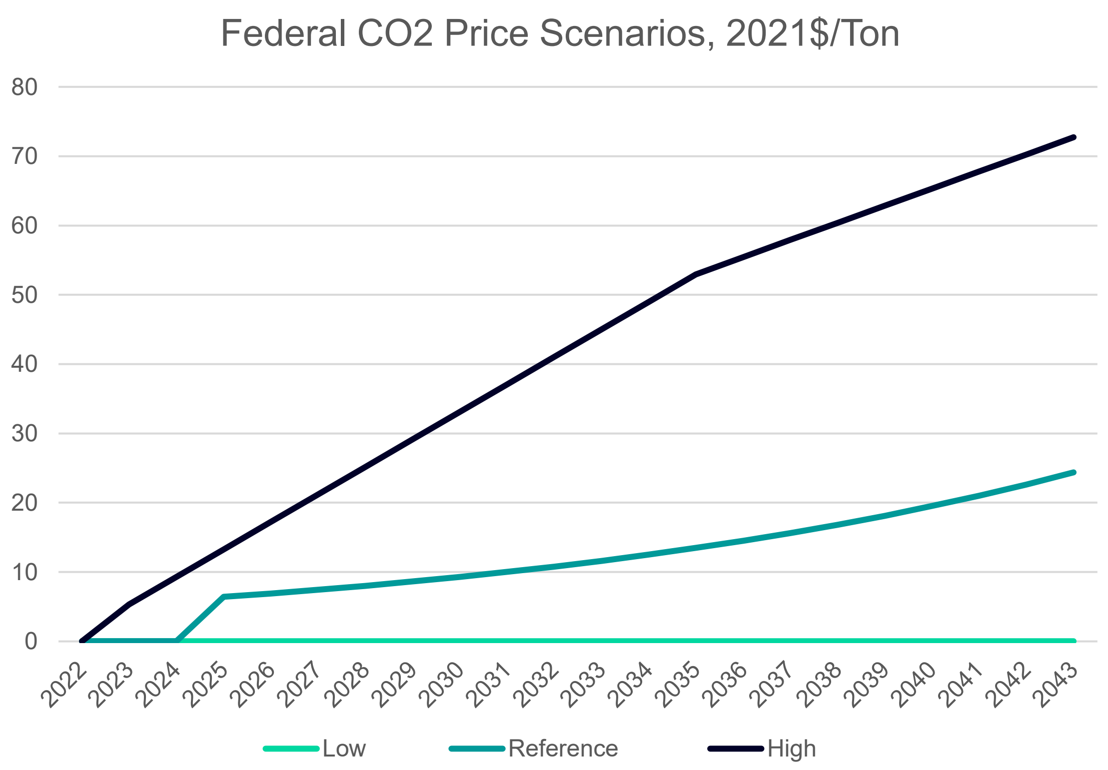
Carbon Price Scenarios – Federal

- Range of federal carbon prices reflects uncertain outlook for carbon policy and resulting pricing in western states
- Baseline scenario assumes a carbon policy starting in 2025 to achieve 80% reduction in carbon emission in the power sector relative to 2005 levels
- High scenario nears $70/ton by the end of the forecast horizon and incorporates social cost of carbon emission
- Low case represents no cost for carbon emission

U.S. Carbon Price Scenarios



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Capital Cost Forecast

Overnight capital cost forecast for various technologies developed based on numerous sources

Regional factors developed for each technology to account for difference in locality and ambient conditions. Regional factors are based on EIA Annual Energy Outlook

Near term capital cost reflect increasing cost of commodities, supply chain challenges and other economic factors

Incorporates tax credits from Inflation Reduction Act 2022

Longer term capital costs expected to decline in real terms due improvement in technology

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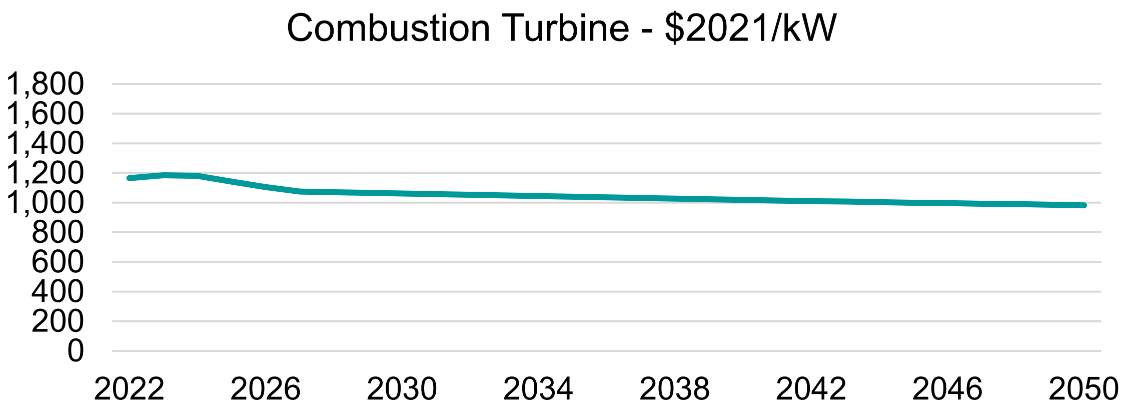
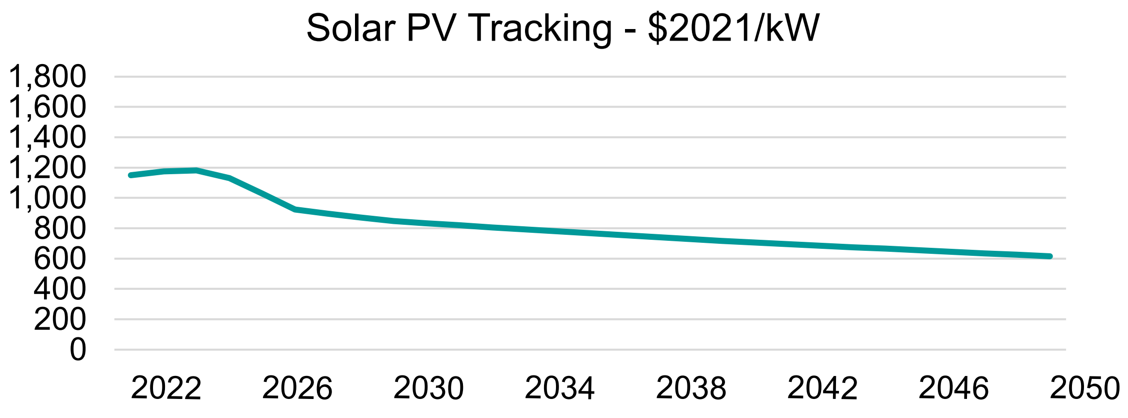
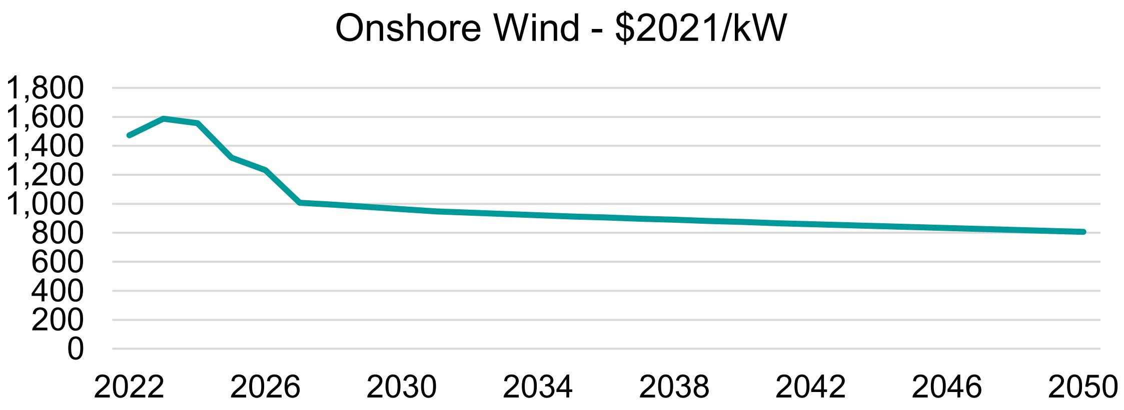
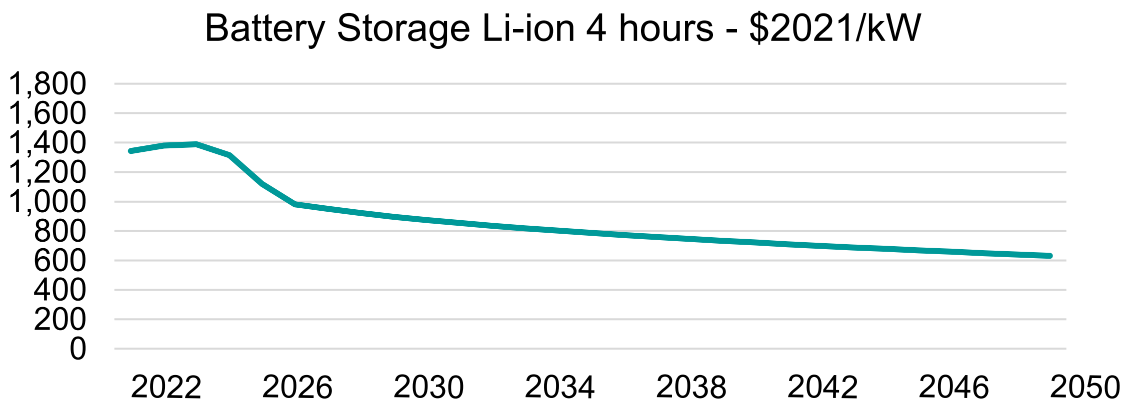
Capital cost forecast for select technologies incorporates regional factors to build in New Mexico

**Costs outlook does not reflect incentives provided by the Inflation Reduction Act 2022*









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Price Outlook

Public Service New Mexico

December 2022

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Introduction

- Siemens PTI developed market assumptions for PNM in July 2022
- Market forecast of natural gas, carbon emission price, and capital costs were developed to assist PNM with its 2023 Integrated Resource Plan (discussion at a prior stakeholder meeting)
- The forecast for each of these commodities was developed based on input from subject matter experts, research, internal analysis, and propriety data over the 2022-2043 planning period

Scenario	Description
Baseline	Reference view based on market forwards early and longer term by fundamentals accounting for expected policy
High	High prices reflect increasing social costs for CO_2 and higher price of natural gas based on statistical analysis
Low	Low prices reflect no costs for CO_2 and lower price of natural gas based on lower band of statistical analysis

Market Drivers

Gas and CO_2 price scenarios

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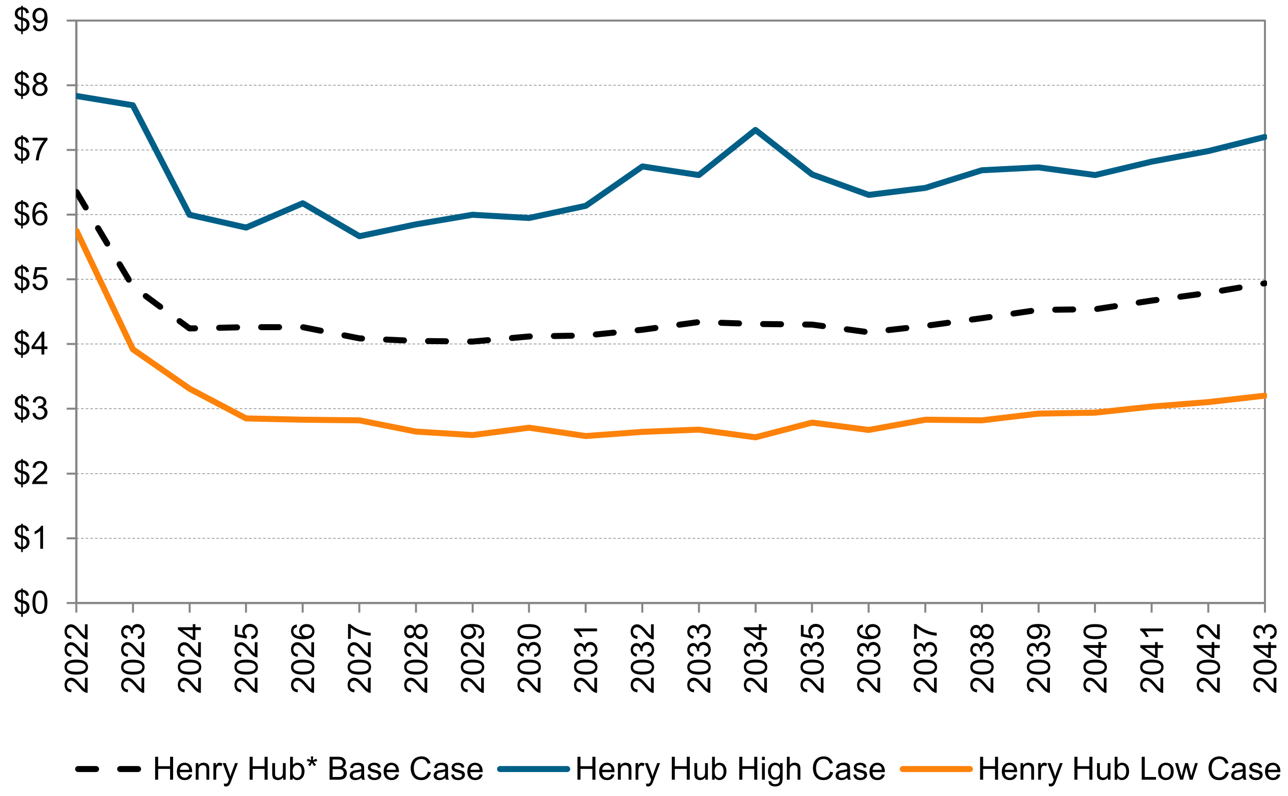
Natural Gas Price Scenarios – Henry Hub

HH Natural Gas Price Scenarios, $2021/MMBtu



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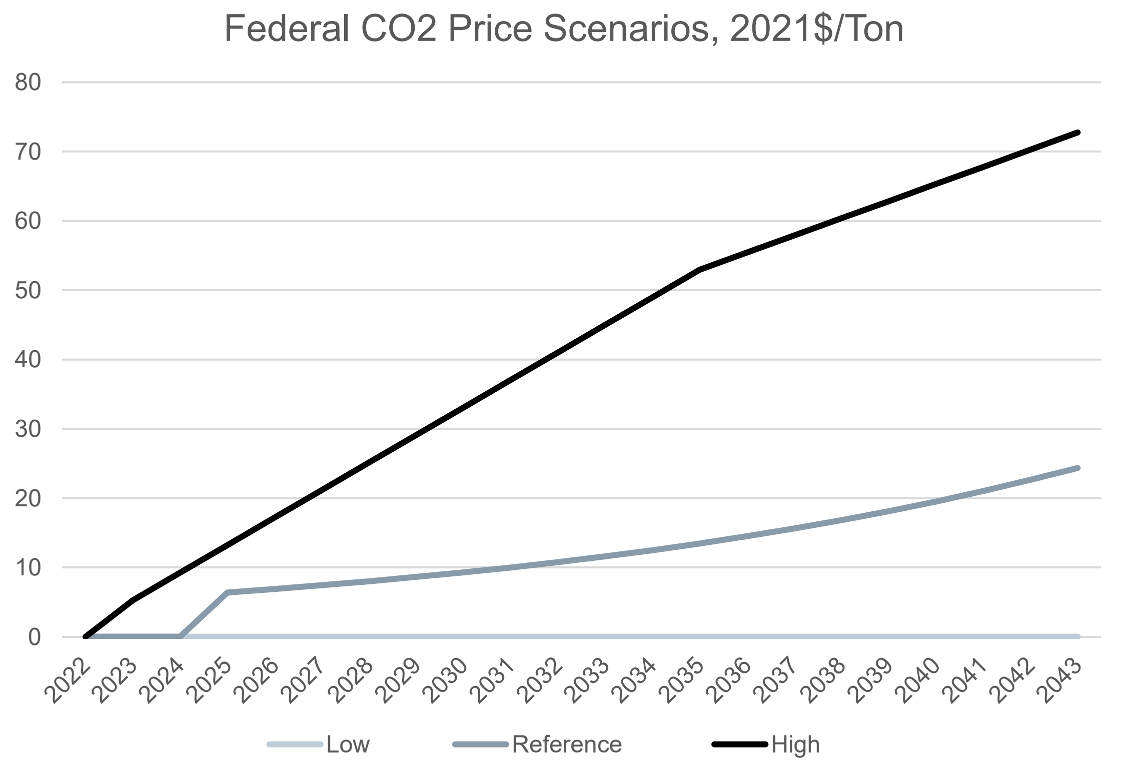
U.S. Carbon Price Scenarios



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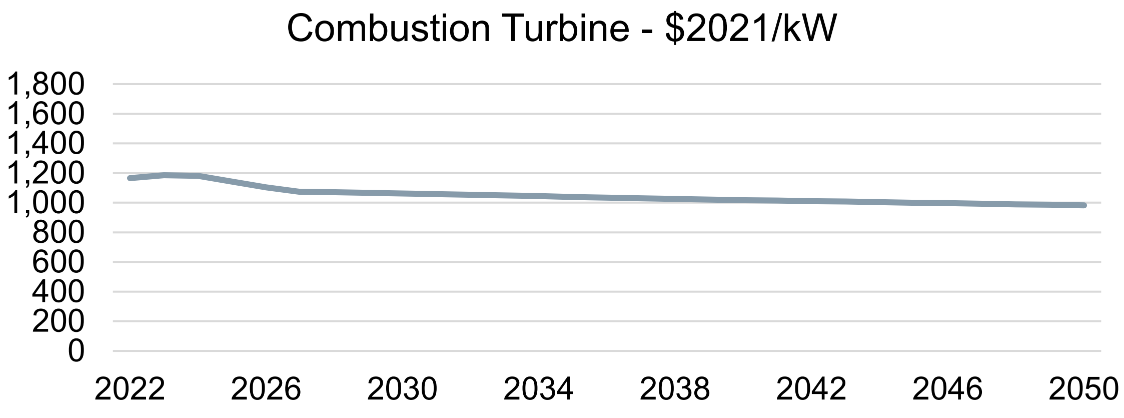
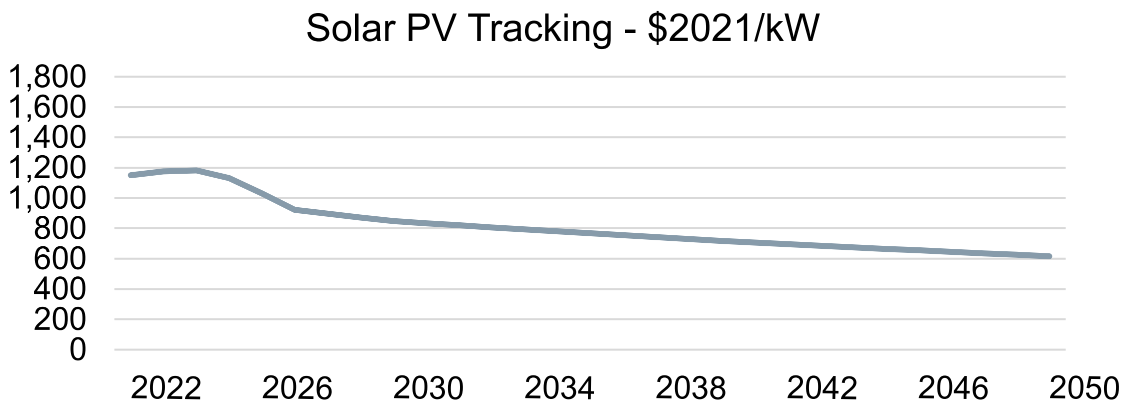
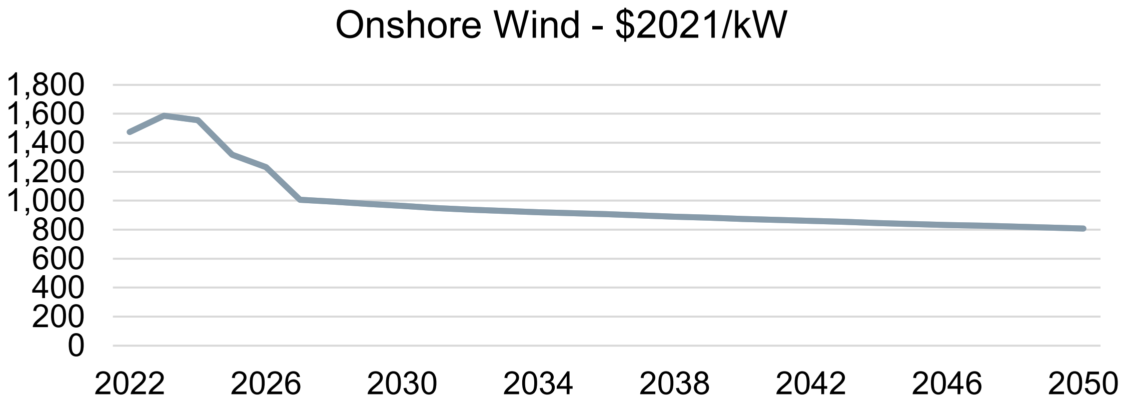
Siemens Energy Business Advisory

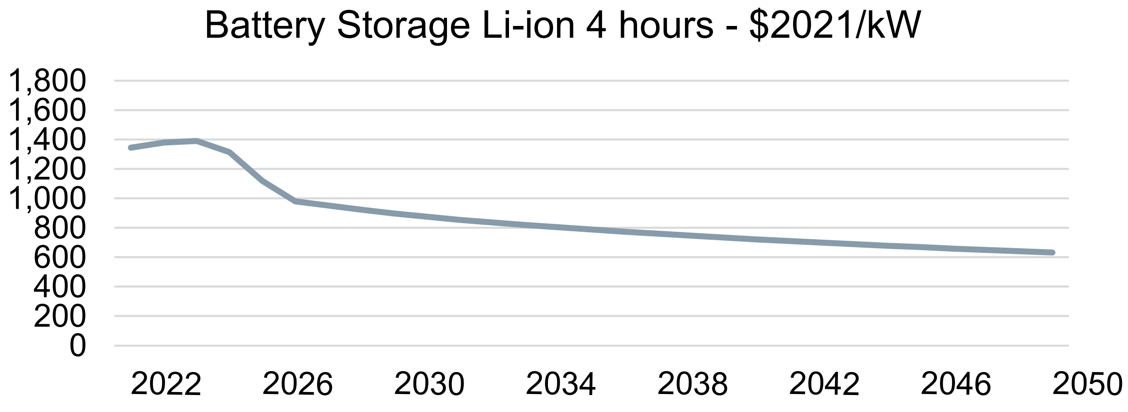
Capital cost forecast for select technologies incorporates regional factors to build in New Mexico

**Costs outlook does not reflect incentives provided by the Inflation Reduction Act 2022*









Power Price Outlook

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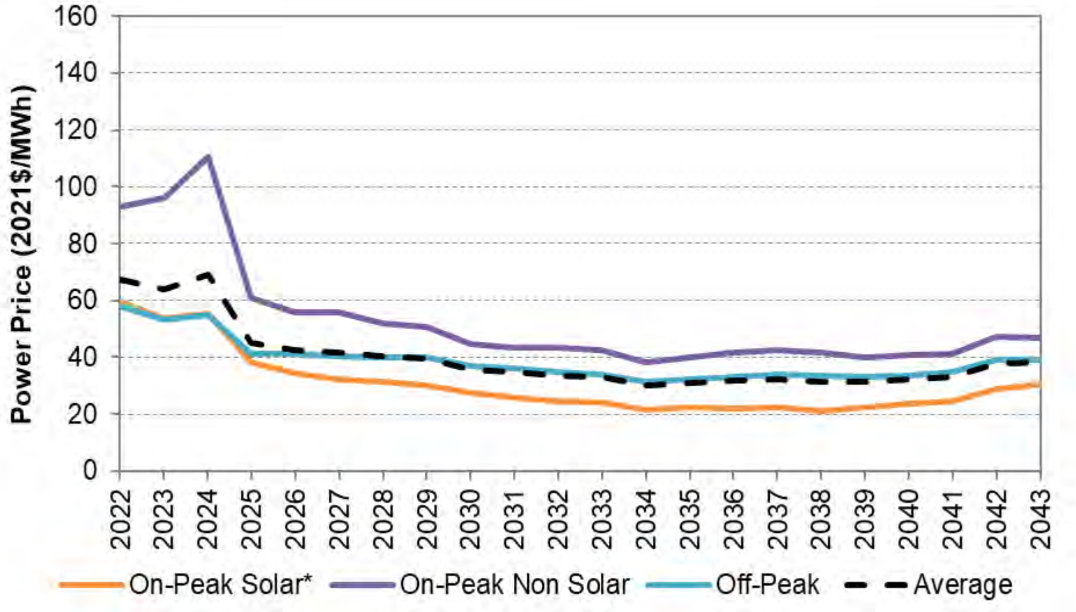
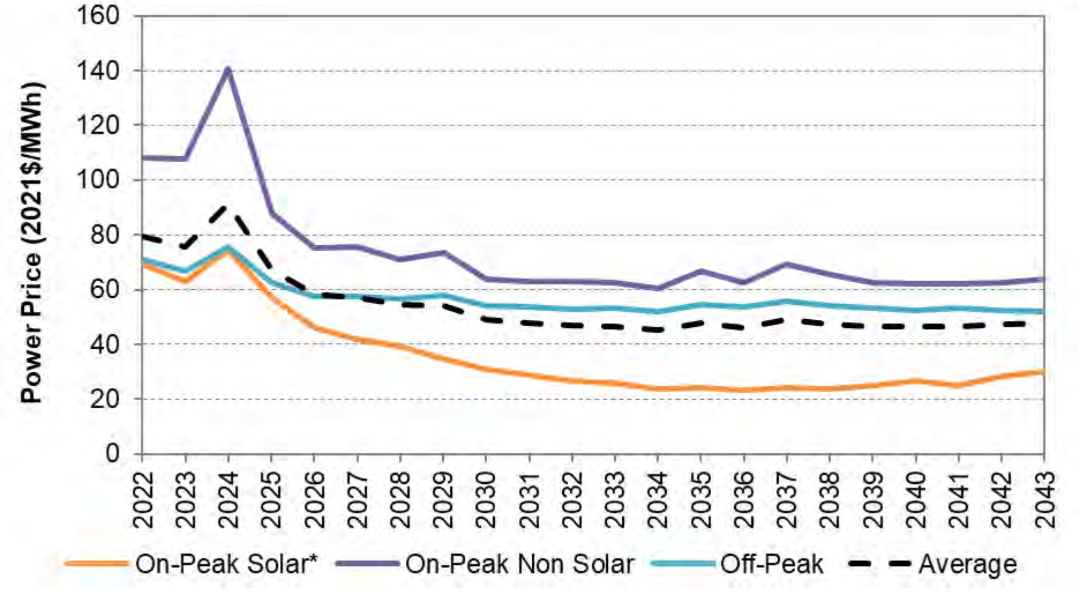
Baseline Zonal Energy Prices – Annual

- **Near Term** – High pricing reflected in recent and forward market pricing supported by higher natural gas prices and scarcity pricing due to supply chain issues
- **Mid-Term** – On-peak energy prices decline driven by an increase in solar capacity, reducing prices in many hours of the peak period. Off-peak prices remain stable to decreasing with natural gas prices through the mid-2020s.
- **Long-Term** – All-hours energy prices remain fairly flat on the expectation of no real additional increase in gas prices while the impact from solar to on-peak prices widens.

Four Corners Annual Pricing



Palo Verde Annual Pricing



*On-peak solar defined as the hours of 8 A.M. to 5 P.M.

Increased Solar Penetration Exacerbates Duck Curve Resulting in Lower On-Peak Energy Prices

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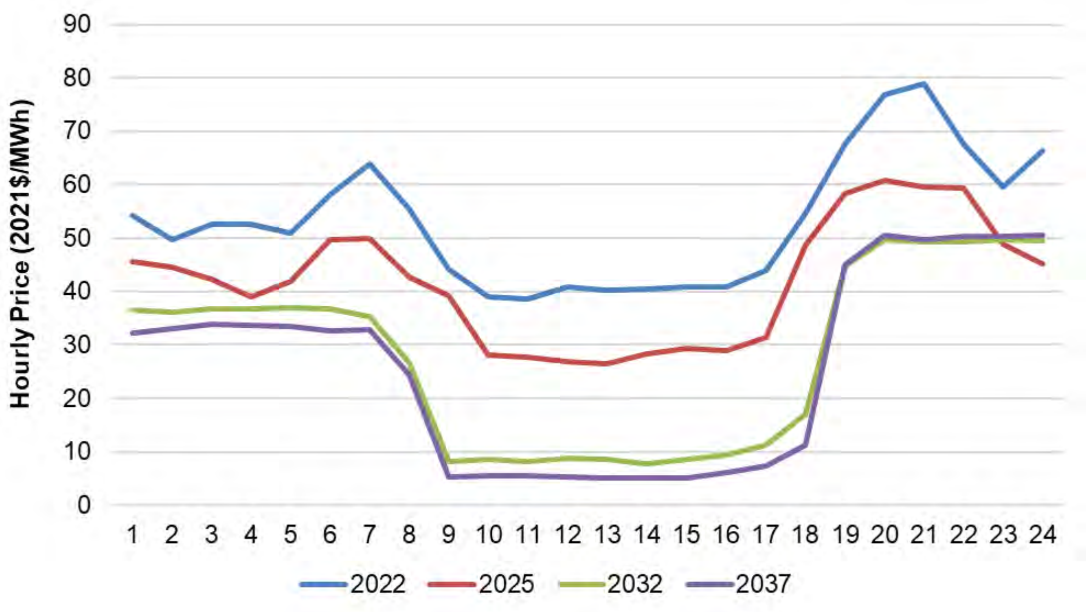
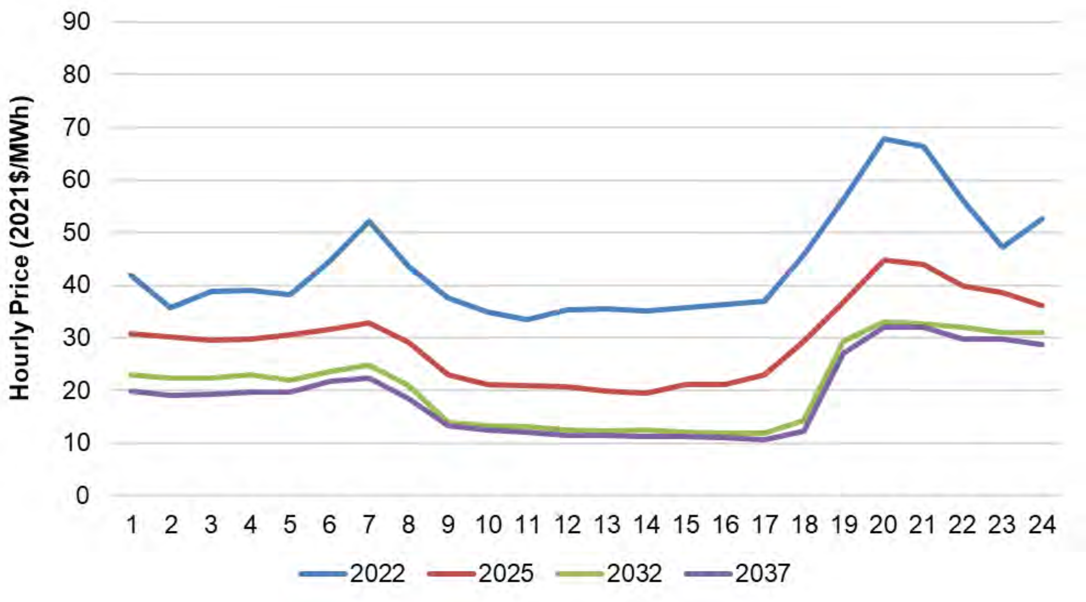
- With growth in solar generation expected to exceed electricity demand growth, the duck curve is expected to increase.
- Peak solar hours, from 8 A.M. to 5 P.M., will experience price drop while the balance of peak power hours are expected to see higher prices.

Palo Verde Average Hourly Pricing (April)



Four Corners Average Hourly Pricing (April)



Base Case Pricing and Market Fundamentals Summary

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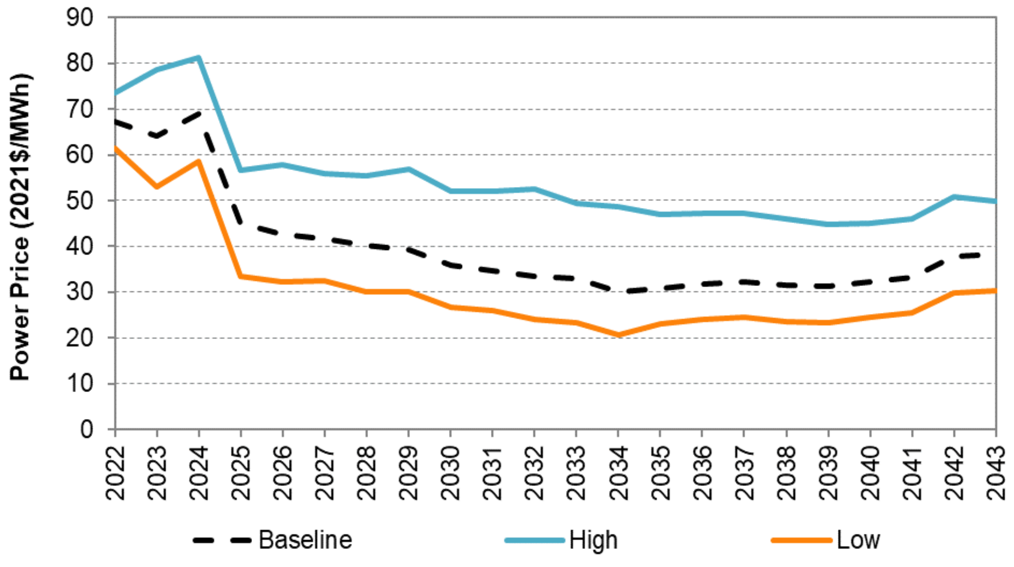
- Forward pricing for Four Corners and Palo Verde are currently higher than historical values due to scarcity pricing and high fuel costs
- RPS and carbon reduction requirements are expected to support high renewable adoption resulting in lower on-peak pricing
- Under the Baseline Case, new builds in the region are largely solar, storage, and fast-ramping gas units based on economics
- On-peak pricing outside of solar hours and off-peak pricing is expected to remain higher yet stable over time
- All-hours pricing is expected to decrease from current high levels through the 2020s and remains flat thereafter
- With the growth in solar generation expected to exceed electricity demand growth, the duck curve is expected to increase.
- Peak solar hours, from 8 A.M. to 5 P.M., will experience a price drop while the balance of peak power hours is expected to see higher prices.

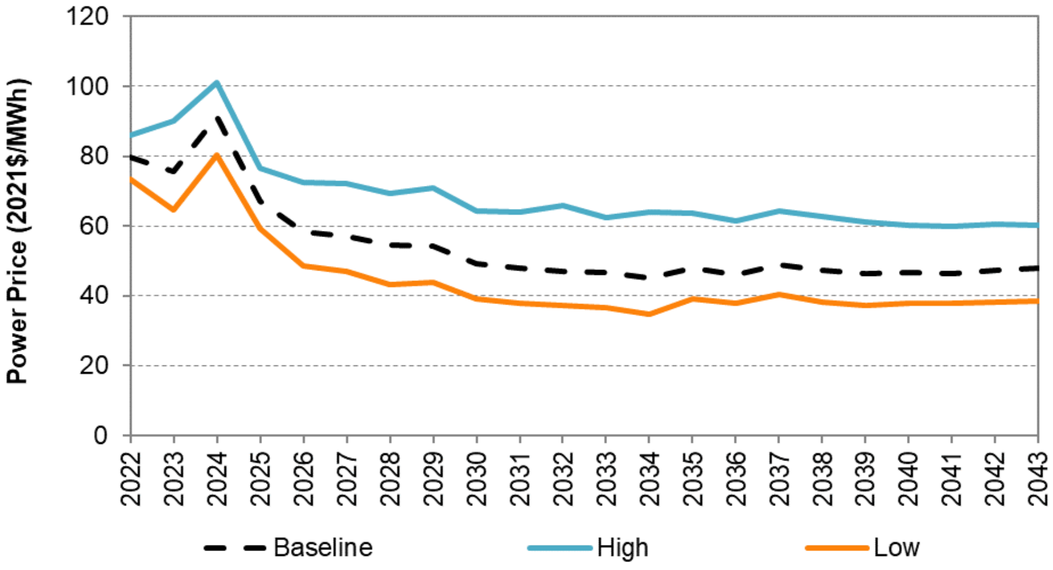
Zonal Energy Price Scenarios – Four Corners and Palo Verde

- Higher natural gas prices in the mid-and long-term as well as higher carbon prices in the long-term support higher energy pricing in the High Case
- The absence of a carbon price and sustained lower natural gas prices over the forecast period support energy pricing remaining at, near, or below current levels over the forecast period in the Low Case

Four Corners



Palo Verde



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Appendix H. Characteristics of **PNM's Existing Generating Resources**

In accordance with the IRP Rule, this appendix provides detailed characteristics of our existing generation resources.

- Table H-1 provides general characteristics for all supply-side resources in PNM's portfolio (including existing resources and resources in development), including:
  - Names and locations of utility-owned generation facilities and resources under PPA/ESA;
  - In-service year and current planned retirement/contract expiry/end of depreciable life (as applicable); and
  - Rated capacity of utility-owned generation facilities;
- Table H-2 provides additional detail on PNM's existing resources, including fuel type, heat rate, emissions rates, and water useage rate
- Table H-3 provides ongoing cost data associated with existing resources, including taxes and depreciation, fixed O&M, and fuel costs; and
- Table H-4 provides ongoing costs associated with existing PPAs and ESAs.

Table H-1. General characteristics of PNM's resource portfolio (existing, under development, and recently retired)

Nuclear Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Palo Verde Unit 1		Owned	Operational	Baseload	Maricopa	AZ	1986	2045	1,311	2.3%	30
Palo Verde Unit 2		Owned	Operational	Baseload	Maricopa	AZ	1986	2046	1,314	9.4%	124
Palo Verde Unit 3		Owned	Operational	Baseload	Maricopa	AZ	1988	2047	1,312	10.2%	134
Palo Verde Unit 1		Leased	Expired	Baseload	Maricopa	AZ	1986	2023	1,311	7.9%	104
Palo Verde Unit 2	(1)	Leased	Operational	Baseload	Maricopa	AZ	1986	2024	1,314	0.8%	10
Subtotal, Nuclear (Operational)											298

Coal Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Four Corners Unit 4		Owned	Operational	Baseload	San Juan	NM	1969	2031	770	13.0%	100
Four Corners Unit 5		Owned	Operational	Baseload	San Juan	NM	1970	2031	770	13.0%	100
San Juan Unit 1		Owned	Retired	Baseload	San Juan	NM	1976	2022	340	50.0%	170
San Juan Unit 4		Owned	Retired	Baseload	San Juan	NM	1982	2022	507	64.5%	327
Subtotal, Coal (Operational)											200

Natural Gas Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Afton Generating Station	(2)	Owned	Operational	Intermediate	Dona Ana	NM	2007	2039	235	100.0%	235
La Luz Gas Turbine	(3)	Owned	Operational	Peaking	Valencia	NM	2015	2055	41	100.0%	41
Lordsburg Generating Station Unit 1	(3)	Owned	Operational	Peaking	Hidalgo	NM	2002	2042	43	100.0%	43
Lordsburg Generating Station Unit 2	(3)	Owned	Operational	Peaking	Hidalgo	NM	2002	2042	43	100.0%	43
Luna Energy Facility	(2)	Owned	Operational	Intermediate	Luna	NM	2006	2039	570	33.3%	190
Reeves Generating Station Unit 1	(4)	Owned	Operational	Peaking	Bernalillo	NM	1960	2030	42	100.0%	42
Reeves Generating Station Unit 2	(4)	Owned	Operational	Peaking	Bernalillo	NM	1960	2030	41	100.0%	41
Reeves Generating Station Unit 3	(4)	Owned	Operational	Peaking	Bernalillo	NM	1962	2030	63	100.0%	63
Rio Bravo (Delta) GT	(2)	Owned	Operational	Peaking	Bernalillo	NM	2000	2039	149	100.0%	149
Valencia Energy Facility		PPA	Operational	Peaking	Valencia	NM	2008	2028	155	100.0%	155
Subtotal, Natural Gas (Operational)											1,002

(Table continues on next page)

Geothermal Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Dale Burgett		PPA	Operational		Hidalgo	NM	2018	2043	11	100.0%	11
Subtotal, Geothermal (Operational)											11

Wind Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Casa Mesa		PPA	Operational	Intermittent	Quay	NM	2018	2043	50	100.0%	50
La Joya 1		PPA	Operational	Intermittent	Torrance	NM	2021	2041	165	100.0%	165
La Joya 2		PPA	Operational	Intermittent	Torrance	NM	2021	2041	141	100.0%	141
Lone Mesa (NMWEC)		PPA	Operational	Intermittent	Quay	NM	2018	2043	200	100.0%	200
Red Mesa		PPA	Operational	Intermittent	Sandoval	NM	2015	2035	102	100.0%	102
Subtotal, Wind (Operational)											658

Solar Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Alamogordo Solar		Owned	Operational	Intermittent	Otero	NM	2011	2041	5	100.0%	5
Albuquerque Solar Energy Center (Reeves)		Owned	Operational	Intermittent	Bernalillo	NM	2011	2041	2	100.0%	2
Arroyo Solar		PPA	Operational	Intermittent	McKinley	NM	2023	2043	300	100.0%	300
Britton Solar C		PPA	Operational	Intermittent	Torrance	NM	2019	2044	50	100.0%	50
Cibola Solar		Owned	Operational	Intermittent	Cibola	NM	2015	2035	8	100.0%	8
Deming Solar		Owned	Operational	Intermittent	Luna	NM	2011	2041	9	100.0%	9
Encino North Solar		PPA	Operational	Intermittent	Sandoval	NM	2023	2043	50	100.0%	50
Encino Solar		PPA	Operational	Intermittent	Sandoval	NM	2020	2045	50	100.0%	50
Facebook 1 Solar		PPA	Operational	Intermittent	Valencia	NM	2017	2042	10	100.0%	10
Facebook 2 Solar		PPA	Operational	Intermittent	Bernalillo	NM	2018	2043	10	100.0%	10
Facebook 3 Solar		PPA	Operational	Intermittent	Bernalillo	NM	2018	2043	10	100.0%	10
Jicarilla Solar 1		PPA	Operational	Intermittent	Rio Arriba	NM	2023	2043	50	100.0%	50
Jicarilla Solar 2		PPA	Operational	Intermittent	Rio Arriba	NM	2022	2037	50	100.0%	50
Las Vegas Solar		Owned	Operational	Intermittent	San Miguel	NM	2011	2041	5	100.0%	5
Los Lunas Solar		Owned	Operational	Intermittent	Valencia	NM	2011	2041	7	100.0%	7
Manzano Solar		Owned	Operational	Intermittent	Valencia	NM	2013	2043	8	100.0%	8

(Table continues on next page)

Solar Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Meadow Lake Solar		Owned	Operational	Intermittent	Valencia	NM	2014	2045	9	100.0%	9
Otero Solar		Owned	Operational	Intermittent	Otero	NM	2013	2043	8	100.0%	8
Prosperity Solar		Owned	Operational	Intermittent	Bernalillo	NM	2011	2041	1	100.0%	1
Rio Communities Solar		Owned	Operational	Intermittent	Valencia	NM	2015	2045	10	100.0%	10
Rio Del Oro Solar		Owned	Operational	Intermittent	Valencia	NM	2019	2049	10	100.0%	10
Rio Rancho Solar		Owned	Operational	Intermittent	Bernalillo	NM	2019	2049	10	100.0%	10
Route 66 Solar C		PPA	Operational	Intermittent	Cibola	NM	2021	2047	50	100.0%	50
San Miguel 1 Solar		Owned	Operational	Intermittent	San Miguel	NM	2019	2049	10	100.0%	10
San Miguel 2 Solar		Owned	Operational	Intermittent	San Miguel	NM	2019	2049	10	100.0%	10
Sandoval Solar		Owned	Operational	Intermittent	Sandoval	NM	2014	2044	6	100.0%	6
Santa Fe Solar		Owned	Operational	Intermittent	Santa Fe	NM	2015	2045	9	100.0%	9
Santolina Solar		Owned	Operational	Intermittent	Bernalillo	NM	2015	2045	10	100.0%	11
South Valley Solar		Owned	Operational	Intermittent	Bernalillo	NM	2015	2045	10	100.0%	10
Vista Solar		Owned	Operational	Intermittent	Valencia	NM	2019	2049	10	100.0%	10
Atrisco Solar		PPA	In Development	Intermittent	Bernalillo	NM	2024	2044	300	100.0%	300
Community Solar	(5)	PPA	In Development	Intermittent	Various	NM	2026	2046	125	100.0%	125
Quail Ranch Solar	(6)	PPA	In Development	Intermittent	Bernalillo	NM	2026	2046	100	100.0%	100
San Juan Solar		PPA	In Development	Intermittent	San Juan	NM	2024	2044	200	100.0%	200
Sky Ranch Solar		PPA	In Development	Intermittent	Valencia	NM	2024	2044	190	100.0%	190
TAG Solar I	(7)	PPA	In Development	Intermittent	Sandoval	NM	2025	2045	140	100.0%	140
Subtotal, Solar (Operational)											788
Subtotal, Solar (In Development)											1,055
Total, Solar (Operational & In Development)											1,843

Energy Storage Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Arroyo Storage		ESA	Operational	Storage	McKinley	NM	2023	2043	150	100.0%	150
Jicarilla Storage		ESA	Operational	Storage	Rio Arriba	NM	2023	2043	20	100.0%	20
Atrisco Storage		ESA	In Development	Storage	Bernalillo	NM	2024	2044	300	100.0%	300
San Juan Storage		ESA	In Development	Storage	San Juan	NM	2024	2044	100	100.0%	100

(Table continues on next page)

Energy Storage Resources	Notes	Structure	Status	Duty Cycle	County	State	First Year	Last Year	Plant Max Capacity (MW)	PNM Share (%)	PNM Max Capacity (MW)
Sky Ranch Storage		ESA	In Development	Storage	Valencia	NM	2024	2044	50	100.0%	50
Distribution Storage	(8)	Owned	In Development	Storage	Various	NM	2025	2045	12	100.0%	12
Quail Ranch Storage	(6)	ESA	In Development	Storage	Bernalillo	NM	2026	2045	100	100.0%	100
Sky Ranch II Storage	(6)	ESA	In Development	Storage	Valencia	NM	2026	2046	100	100.0%	100
Route 66 Storage	(6)	ESA	In Development	Storage	Cibola	NM	2026	2046	50	100.0%	50
TAG I Storage	(7)	ESA	In Development	Storage	Sandoval	NM	2025	2045	50	100.0%	50
Sandia Storage	(6)	Owned	In Development	Storage	Bernalillo	NM	2026	2046	60	100.0%	60
Subtotal, Storage (Operational)											170
Subtotal, Storage (In Development)											822
Total, Storage (Operational & In Development)											992

Notes

(1) PNM's 10 MW lease with Palo Verde Unit 2 expires January 15, 2024. Therafter, PNM's share of the plant decreases from 298 MW to 288 MW.

(2) For purposes of the IRP, Afton, Luna, and Rio Bravo are assumed to retire by the end of 2039 and are fully depreciated over this timeframe

(3) For purposes of the IRP, Lordsburg and La Luz are eligible for conversion to hydrogen fuels in 2040. In scenarios that do not allow for this, these plants are also retired by the end of 2039.

(4) Reeves Generation Station reaches the end of its depreciable life in 2030.

(5) Community Solar projects and construction still to-be-determined. See NMPRC Case No. 23-00071-UT for more information.

(6) These resources were procured through PNM's 2026 RFP and are currently pending approval at the Commission

(7) These resources were procured through a special services contract to serve a large customer and are subject to commission approval

(8) PNM has applied to the Commission for approval of 12 MW of utility-owned distribution storage, which is pending approval

Table H-2. Thermal resource operational characteristics

Nuclear Resources	Notes	PNM Max Capacity (MW)	Heat Rate at Max Output (Btu/kWh)	Forced Outage Rate (%)	Accredited Capacity (%)	CO2 Rate (lbs/MWh)	SO2 Rate (lbs/MWh)	NOx Rate (lbs/MWh)	Hg Rate (lbs/GWh)	Coal Ash Rate (lbs/MWh)	Water Usage (gal/MWh)
Palo Verde Unit 1		30	10,300	2.0%	98.0%	-	-	-	-	-	19
Palo Verde Unit 2	(1)	124	10,300	2.0%	98.0%	-	-	-	-	-	19
Palo Verde Unit 3		134	10,300	2.0%	98.0%	-	-	-	-	-	19

Coal Resources	Notes	PNM Max Capacity (MW)	Heat Rate at Max Output (Btu/kWh)	Forced Outage Rate (%)	Accredited Capacity (%)	CO2 Rate (lbs/MWh)	SO2 Rate (lbs/MWh)	NOx Rate (lbs/MWh)	Hg Rate (lbs/GWh)	Coal Ash Rate (lbs/MWh)	Water Usage (gal/MWh)
Four Corners Unit 4		100	10,114	20.0%	80.0%	2,199	0.505	0.655	0.0033	253	584
Four Corners Unit 5		100	10,114	20.0%	80.0%	2,199	0.505	0.655	0.0033	253	584

Natural Gas Resources	Notes	PNM Max Capacity (MW)	Heat Rate at Max Output (Btu/kWh)	Forced Outage Rate (%)	Accredited Capacity (%)	CO2 Rate (lbs/MWh)	SO2 Rate (lbs/MWh)	NOx Rate (lbs/MWh)	Hg Rate (lbs/GWh)	Coal Ash Rate (lbs/MWh)	Water Usage (gal/MWh)
Afton Generating Station		235	7,680	2.0%	98.0%	994	0.005	0.179	-	-	92
La Luz Gas Turbine		41	9,747	8.7%	91.3%	1,314	0.007	0.249	-	-	44
Lordsburg Generating Station Unit 1		43	9,885	4.3%	95.7%	1,445	0.008	1.070	-	-	251
Lordsburg Generating Station Unit 2		43	9,890	4.8%	95.2%	1,056	0.005	0.799	-	-	251
Luna Energy Facility		190	7,600	3.0%	97.0%	835	0.002	0.036	-	-	184
Reeves Generating Station Unit 1		42	12,057	3.3%	96.7%	1,660	0.009	3.348	-	-	897
Reeves Generating Station Unit 2		41	11,851	3.3%	96.7%	1,702	0.009	3.394	-	-	897
Reeves Generating Station Unit 3		63	11,583	3.3%	96.7%	1,465	0.007	2.889	-	-	897
Rio Bravo (Delta) GT		149	10,619	5.4%	94.6%	1,391	0.008	0.442	-	-	8
Valencia Energy Facility		155	10,234	3.3%	96.7%	1,410	0.010	0.400	-	-	22

Notes

(1) Capacity for Palo Verde Unit 2 reflects owned capacity only (10 MW leased capacity expires January 15, 2024)

Table H-3. Ongoing costs associated with existing resources ($ millions)

Fuel Costs ($ millions)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Palo Verde	18.5	16.4	15.5	15.8	15.5	16.2	16.5	16.2	16.9	17.2	16.9	17.7	18.2	17.7	16.5	16.6	16.8	17.3	20.0	20.0
Four Corners	38.5	40.8	41.4	45.5	46.2	45.1	45.5	47.6	23.5	-	-	-	-	-	-	-	-	-	-	-

Fixed O&M Costs ($ millions)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Palo Verde	44.0	42.5	43.2	44.4	42.3	42.9	40.7	41.2	41.8	42.3	42.8	43.4	43.9	44.5	45.1	45.7	46.2	46.8	47.5	48.1
Four Corners	11.9	12.3	12.7	13.0	13.4	13.8	14.2	14.6	7.5	-	-	-	-	-	-	-	-	-	-	-
Afton	11.3	11.0	11.3	26.2	11.4	12.6	12.8	13.0	13.3	13.5	13.6	13.9	14.1	14.4	14.7	14.9	15.2	-	-	-
La Luz	1.7	1.7	1.8	1.8	1.8	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	25.4	2.1	2.1	2.2
Lordsburg	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	26.4	2.1	2.2	2.2
Luna	7.9	8.0	8.0	8.4	8.3	8.0	8.1	8.2	8.3	8.5	8.6	8.7	8.9	9.0	9.1	9.3	9.4	-	-	-
Reeves	5.0	6.7	5.4	4.8	5.4	5.5	5.6	5.7	-	-	-	-	-	-	-	-	-	-	-	-
Rio Bravo	2.3	2.6	2.4	2.5	3.3	2.7	2.7	2.8	2.8	2.8	2.9	2.9	3.0	3.0	3.1	3.1	3.1	-	-	-
Valencia	22.3	23.0	23.7	24.4	25.1	25.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PNM-Owned Solar	3.8	4.0	4.1	4.3	4.4	4.6	4.7	4.9	5.0	5.2	5.3	5.5	5.6	5.8	6.0	6.2	6.3	6.5	6.7	6.9

Taxes & Depreciation ($ millions)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Palo Verde	23.6	24.5	25.0	25.2	25.3	25.7	26.3	26.8	27.4	27.9	28.5	34.3	34.9	35.5	36.2	36.8	47.7	50.1	50.8	51.6
Four Corners	2.8	3.6	4.5	5.1	5.8	6.2	6.3	6.3	3.6	-	-	-	-	-	-	-	-	-	-	-
Investment Recovery	-	-	-	-	-	-	-	-	-	*15.1*	*15.6*	*15.8*	*16.1*	*16.4*	*16.7*	*16.9*	*17.2*	*17.5*	*17.8*	*18.1*
Afton	10.4	12.7	12.7	13.3	13.7	13.8	15.0	15.1	15.2	15.3	15.4	18.5	18.6	18.5	18.1	17.6	25.8	-	-	-
La Luz	2.2	3.6	3.5	3.5	3.5	3.4	3.7	3.7	3.7	3.7	3.7	4.1	4.1	4.1	4.1	4.1	6.2	-	-	-
Lordsburg	1.8	2.3	2.3	2.3	2.5	2.5	3.0	3.0	3.1	3.1	3.2	4.4	4.4	4.5	4.5	4.6	9.1	-	-	-
Luna	2.8	4.1	4.3	4.4	4.4	4.4	5.3	5.4	5.6	5.7	5.9	7.9	8.0	8.0	7.9	7.7	12.6	-	-	-
Reeves	4.2	6.4	6.4	6.3	6.1	5.9	6.3	6.1	-	-	-	-	-	-	-	-	-	-	-	-
Rio Bravo	2.5	3.1	3.1	3.1	3.1	3.3	3.7	3.8	3.9	3.9	4.0	5.7	5.7	5.7	5.6	5.5	8.8	-	-	-

Table H-4. Annual costs of PPA & ESA resources

PPA Cost – Wind ($ millions)	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Casa Mesa	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La Joya 1	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La Joya 2		10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	5.5	-
Lone Mesa (NMWEC)		16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9
Red Mesa		6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	-	-	-	-	-	-	-	-

PPA Cost – Solar ($ millions)	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Arroyo Solar		15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
Atrisco Solar		-	12.1	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2
Britton Solar	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Encino North Solar	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Encino Solar	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Facebook 1-3 Solar	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jicarilla Solar 1		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Jicarilla Solar 2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quail Ranch Solar	(2)	-	-	-	5.5	8.2	8.2	8.1	8.1	8.0	8.0	8.0	7.9	7.9	7.8	7.8	7.8	7.7	7.7	7.7	7.6
Route 66 Solar	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Juan Solar		-	11.8	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
Sky Ranch Solar	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TAG Solar I	(1)	-	-	5.9	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6

PPA Cost - Geothermal ($ millions)	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Dale Burgett		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.7

PPA Cost - Natural Gas ($ millions)	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Valencia Energy Facility		22.3	22.3	22.3	22.3	22.3	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table continues on next page

ESA Cost - Storage ($ millions)	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Arroyo Storage		14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3
Atrisco Storage		-	16.8	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
Jicarilla Storage		2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Quail Ranch Storage	(1) (2)	-	-	-	9.3	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
Route 66 Storage	(1) (2)	-	-	-	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
San Juan Storage		-	7.4	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
Sky Ranch Storage	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sky Ranch II Storage	(2)	-	-	-	9.1	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
TAG I Storage	(1)	-	-	-	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1

Notes

(1) Denotes special services contract (PPA pricing may not be provided)

(2) Pending approval at the NMPRC

Appendix I. Cost and Performance Data for New Resource Options

This appendix summarizes assumptions used to characterize new resource options considered in the IRP. Contents include:

- General operational characteristics for new resources (Table I-1);
- Capital costs for new resources by year (Table I-3);
- Fixed O&M costs for new resource options by year (Table I-2); and
- Characteristics of the energy efficiency bundles considered in the IRP (Table I-4).

This appendix also includes a presentation by AEG summarizing the development of assumptions fto characterize energy efficiency bundles.

Table I-1. General characteristics of new resource options

Technology	Notes	First Year Available	Unit Capacity (MW)	Lifetime (years)	Duration (hrs)	Heat Rate (Btu/kWh)	Round-Trip Efficiency (%)	Forced Outage Rate (%)	Accredited Capacity (%)	CO2 Rate (lbs/MWh)	Water Usage (gal/MWh)
Solar PV	(1)	2026	10	30	-	-	-	0.0%	-	-	0
Wind	(1) (2)	2033	200	30	-	-	-	0.0%	-	-	0
Lithium-Ion Battery	(1) (6)	2026	10	20	4	-	86%	8.0%	-	-	0
Flow Battery	(1) (6)	2028	10	20	10	-	65%	4.4%	-	-	0
Pumped Storage (8hr)	(1) (6)	2028	300	100	8	-	79%	1.0%	-	-	19
Pumped Storage (70hr)	(6)	2028	300	50	70	-	80%	1.0%	99.0%	-	148
CAES	(6)	2028	100	50	24	-	60%	5.0%	95.0%	-	92
LAES	(1) (6)	2028	100	30	8	-	55%	3.0%	-	-	92
Thermal Storage	(6)	2028	150	20	168	-	35%	2.0%	98.0%	-	600
Iron-Air Storage	(6)	2028	100	15	100	-	38%	3.0%	97.0%	-	37
Hydrogen Electrolysis	(4) (5)	2028			70		25%	0.0%	-	-	45
Hydrogen-Ready CT	(3) (6)	2026	41	40	-	9,747	-	3.3%	96.7%	1,314	44
Linear Generator	(3) (6)	2028	50	40	-	8,171	-	2.0%	98.0%	446	0
CCS Conversion (CC)	(6)	2028	196	40	-	9,216	-	4.0%	96.0%	-	0
NET Power Plant	(6)	2028	280	40	-	7,446	-	3.9%	92.0%	26	0

Notes
(1) Accredited capacity for renewables and storage with duration less than 24 hours calculated dynamically using ELCC
(2) In select scenarios, new wind resources are included as an option beginning in 2028
(3) Emissions rates shown for new thermal generators correspond to operations using natural gas; no emissions attributed to plant output when operated using hydrogen fuel
(4) Duration for H2 electrolysis based on assumed storage volume
(5) Round trip efficiency shown includes both conversion efficiency to create hydrogen (70%) and combustion efficiency of CT (35%)
(6) These resources have black start capabilities. PNM will consider allowing black start capability to resources case by case.

Table I-2. Capital cost assumptions for new resources by year (nominal $/kW)

Capital Cost - Mid ($/kW)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Solar PV	$1,414	$1,464	$1,444	$1,354	$1,250	$1,251	$1,253	$1,254	$1,270	$1,287	$1,304	$1,321	$1,338	$1,355	$1,373	$1,391	$1,409	$1,427
Wind	$1,908	$1,928	$1,682	$1,619	$1,364	$1,385	$1,405	$1,425	$1,445	$1,474	$1,503	$1,534	$1,567	$1,600	$1,634	$1,668	$1,703	$1,738
Lithium-Ion Battery	$1,661	$1,722	$1,678	$1,472	$1,327	$1,326	$1,326	$1,326	$1,333	$1,342	$1,352	$1,364	$1,377	$1,392	$1,407	$1,424	$1,441	$1,459
Flow Battery	$3,444	$3,474	$3,505	$3,536	$3,568	$3,600	$3,632	$3,664	$3,697	$3,729	$3,763	$3,796	$3,830	$3,864	$3,898	$3,933	$3,968	$4,003
Pumped Storage (8hr)	$2,735	$2,791	$2,873	$2,935	$3,024	$3,089	$3,155	$3,251	$3,317	$3,414	$3,483	$3,585	$3,657	$3,764	$3,875	$3,952	$4,068	$4,187
Pumped Storage (70hr)	$3,713	$3,825	$3,940	$4,058	$4,180	$4,305	$4,434	$4,567	$4,704	$4,845	$4,991	$5,140	$5,295	$5,453	$5,617	$5,786	$5,959	$6,138
CAES	$2,863	$2,949	$3,038	$3,129	$3,223	$3,319	$3,419	$3,521	$3,627	$3,736	$3,848	$3,963	$4,082	$4,205	$4,331	$4,461	$4,595	$4,732
LAES	$3,547	$3,629	$3,719	$3,816	$3,918	$4,023	$4,134	$4,250	$4,377	$4,508	$4,644	$4,783	$4,926	$5,074	$5,226	$5,383	$5,545	$5,711
Thermal Storage	$3,335	$3,336	$3,334	$3,333	$3,329	$3,321	$3,309	$3,293	$3,378	$3,466	$3,555	$3,647	$3,742	$3,838	$3,937	$4,039	$4,143	$4,249
Iron-Air Storage	$2,678	$2,719	$2,761	$2,804	$2,847	$2,891	$2,936	$2,982	$3,029	$3,077	$3,125	$3,175	$3,225	$3,277	$3,329	$3,382	$3,437	$3,492
H2 Electrolysis	$1,325	$1,316	$1,305	$1,315	$1,325	$1,334	$1,343	$1,351	$1,379	$1,406	$1,434	$1,463	$1,492	$1,521	$1,550	$1,580	$1,611	$1,642
Hydrogen-Ready CT	$1,425	$1,462	$1,457	$1,451	$1,454	$1,492	$1,531	$1,571	$1,611	$1,653	$1,695	$1,738	$1,783	$1,828	$1,875	$1,923	$1,972	$2,023
H2 Conversion (CT)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$585	-	-
Linear Generator	$2,596	$2,525	$2,445	$2,373	$2,336	$2,321	$2,320	$2,328	$2,344	$2,366	$2,393	$2,424	$2,459	$2,498	$2,539	$2,584	$2,631	$2,681
CCS Conversion CC)	$1,682	$1,732	$1,784	$1,838	$1,893	$1,950	$2,008	$2,068	$2,130	$2,194	$2,260	$2,328	$2,398	$2,470	$2,544	$2,620	$2,699	$2,780
NET Power Plant	$3,626	$3,577	$3,563	$3,571	$3,594	$3,629	$3,672	$3,723	$3,780	$3,843	$3,911	$3,984	$4,061	$4,143	$4,228	$4,318	$4,412	$4,509

Capital Cost - Low ($/kW)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Solar PV	$1,369	$1,398	$1,360	$1,255	$1,139	$1,118	$1,096	$1,094	$1,106	$1,118	$1,129	$1,141	$1,153	$1,165	$1,177	$1,189	$1,205	$1,220
Wind	$1,815	$1,798	$1,533	$1,441	$1,182	$1,165	$1,143	$1,159	$1,175	$1,197	$1,220	$1,244	$1,270	$1,295	$1,321	$1,347	$1,375	$1,404
Lithium-Ion Battery	$1,601	$1,635	$1,569	$1,352	$1,196	$1,170	$1,164	$1,158	$1,157	$1,158	$1,160	$1,163	$1,167	$1,171	$1,177	$1,182	$1,196	$1,211
Hydrogen-Ready CT	$1,380	$1,416	$1,411	$1,405	$1,408	$1,445	$1,483	$1,521	$1,561	$1,600	$1,641	$1,683	$1,726	$1,771	$1,816	$1,862	$1,910	$1,960

Capital Cost - High ($/kW)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Solar PV	$1,522	$1,623	$1,647	$1,593	$1,518	$1,573	$1,632	$1,623	$1,634	$1,645	$1,655	$1,665	$1,675	$1,685	$1,694	$1,704	$1,726	$1,748
Wind	$1,932	$1,962	$1,720	$1,667	$1,413	$1,445	$1,477	$1,502	$1,528	$1,563	$1,599	$1,637	$1,677	$1,719	$1,760	$1,803	$1,841	$1,879
Lithium-Ion Battery	$2,231	$2,329	$2,258	$2,012	$1,844	$1,876	$1,879	$1,881	$1,893	$1,907	$1,924	$1,944	$1,965	$1,988	$2,013	$2,039	$2,064	$2,090
Hydrogen-Ready CT	$1,534	$1,574	$1,568	$1,562	$1,565	$1,606	$1,648	$1,691	$1,734	$1,779	$1,824	$1,871	$1,919	$1,968	$2,018	$2,070	$2,123	$2,178

Table I-3. Fixed O&M cost assumptions for new resources by year (nominal $/kW-yr)

Fixed O&M ($/kW-yr)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Solar PV	$23	$23	$23	$23	$22	$22	$23	$23	$24	$24	$25	$25	$26	$27	$27	$28	$29	$29
Wind	$52	$53	$54	$55	$56	$57	$58	$59	$61	$62	$63	$65	$66	$68	$69	$71	$72	$74
Lithium-Ion Battery	$35	$34	$34	$33	$33	$33	$33	$34	$34	$35	$36	$36	$37	$37	$38	$38	$39	$40
Flow Battery	$22	$22	$23	$23	$23	$24	$24	$24	$25	$25	$26	$26	$26	$27	$27	$28	$28	$28
Pumped Storage (8hr)	$42	$44	$45	$46	$48	$49	$51	$52	$54	$55	$57	$59	$60	$62	$64	$66	$68	$70
Pumped Storage (70hr)	$42	$44	$45	$46	$48	$49	$51	$52	$54	$55	$57	$59	$60	$62	$64	$66	$68	$70
CAES	$22	$23	$24	$24	$25	$26	$27	$27	$28	$29	$30	$31	$32	$33	$34	$35	$36	$37
LAES	$36	$37	$38	$39	$41	$42	$43	$44	$46	$47	$49	$50	$51	$53	$55	$56	$58	$60
Thermal Storage	$93	$95	$98	$101	$104	$107	$111	$114	$117	$121	$125	$128	$132	$136	$140	$144	$149	$153
Iron-Air Storage	$70	$72	$75	$77	$79	$81	$84	$86	$89	$92	$94	$97	$100	$103	$106	$109	$113	$116
Hydrogen-Ready CT	$40	$41	$42	$43	$45	$46	$47	$49	$50	$52	$53	$55	$57	$58	$60	$62	$64	$66
Linear Generator	$31	$32	$33	$34	$35	$36	$37	$38	$40	$41	$42	$43	$45	$46	$47	$49	$50	$52
CCS Conversion CC)	$45	$47	$48	$50	$51	$53	$54	$56	$57	$59	$61	$63	$65	$67	$69	$71	$73	$75
NET Power Plant	$99	$102	$105	$108	$111	$115	$118	$122	$125	$129	$133	$137	$141	$145	$150	$154	$159	$163

Table I-4. Characteristics of energy efficiency bundles

Annual Energy Savings (GWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Program	76	71	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up to $50	4	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$50 and Up	33	35	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up to $50	-	-	-	68	70	72	73	75	74	74	71	68	63	62	58	50	47	46	47	47
$50 to $75	-	-	-	7	9	11	13	11	11	11	10	9	8	7	6	5	4	4	3	3
$75 to $100	-	-	-	2	2	3	3	6	5	5	4	3	2	2	2	1	1	1	1	1
$100 to $125	-	-	-	9	11	11	11	10	10	10	9	8	7	6	5	4	4	3	3	3
$125 to $150	-	-	-	8	8	10	10	11	10	9	8	6	4	3	2	1	1	1	0	0
$150 and Up	-	-	-	15	16	17	18	18	17	15	13	11	10	8	7	5	4	3	3	3
Total	114	111	118	110	117	124	128	130	127	124	115	106	95	88	80	67	60	58	58	57

Peak Reduction (MW)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Program	37	24	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up to $50	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$50 and Up	15	17	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up to $50	-	-	-	18	18	18	18	18	18	18	18	17	16	15	15	13	13	13	11	12
$50 to $75	-	-	-	4	5	7	8	5	5	5	5	5	4	3	3	3	2	2	2	2
$75 to $100	-	-	-	1	1	1	1	3	3	2	1	1	1	1	1	1	0	0	0	0
$100 to $125	-	-	-	4	5	6	6	6	6	6	5	5	5	4	4	3	3	3	3	3
$125 to $150	-	-	-	6	6	8	8	9	9	8	7	5	3	2	2	1	1	0	0	0
$150 and Up	-	-	-	7	8	9	10	10	10	9	8	7	6	5	4	4	3	2	2	2
Total	54	42	42	40	44	49	52	52	51	49	45	40	35	31	28	24	22	21	19	19

(Table continues on next page)

Levelized Cost ($/MWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Program	$21	$18	$13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up to $50	$40	$40	$39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$50 and Up	$727	$689	$641	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up to $50	-	-	-	$12	$12	$12	$12	$12	$12	$12	$12	$11	$11	$11	$11	$11	$12	$11	$10	$10
$50 to $75	-	-	-	$63	$63	$63	$63	$60	$61	$60	$60	$61	$60	$61	$60	$61	$61	$61	$61	$61
$75 to $100	-	-	-	$87	$87	$87	$87	$83	$84	$85	$87	$87	$87	$87	$87	$87	$87	$86	$86	$85
$100 to $125	-	-	-	$112	$113	$113	$114	$114	$115	$115	$115	$115	$115	$115	$115	$116	$116	$116	$116	$116
$125 to $150	-	-	-	$135	$136	$137	$137	$137	$137	$137	$137	$137	$138	$138	$138	$137	$138	$139	$139	$139
$150 and Up	-	-	-	$1,539	$1,446	$1,330	$1,163	$1,077	$1,026	$993	$999	$1,008	$1,011	$1,026	$1,068	$887	$950	$998	$1,062	$1,088

Average Lifetime (yrs)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Program	10	12	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up to $50	13	15	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$50 and Up	13	14	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up to $50	-	-	-	16	16	17	17	17	18	18	18	18	18	18	18	19	19	19	19	19
$50 to $75	-	-	-	18	20	21	22	27	28	28	29	28	28	27	26	25	24	23	22	22
$75 to $100	-	-	-	14	17	17	18	15	16	18	21	23	23	23	23	23	23	22	21	21
$100 to $125	-	-	-	19	20	23	25	25	25	26	26	26	25	24	23	23	21	19	17	16
$125 to $150	-	-	-	18	18	18	19	21	22	23	23	23	23	24	24	26	26	26	25	24
$150 and Up	-	-	-	16	17	17	18	18	19	19	19	19	19	18	18	18	18	17	16	16

Appendix J. Summary Results for Each Portfolio

This appendix provides detailed summaries of the results of each scenario modeled in a standardized and consistent format. For scenarios evaluated in Phase 3, the tables in this section also explicitly show the impacts of the final reliability adjustments made to portfolios based on SERVM round-trip modeling (results included in the body of the report correspond to portfolios *after* final reliability adjustments):

- Four of the six scenarios under the CTP future were simulated in SERVM in 2032 and 2040 to evaluate how closely they aligned with the LOLE standard of 0.1 days per year. The other two scenarios were not tested because of their relatively similar resource mix to at least one of the four portfolios studied.
- Two portfolios (Base Technologies and Base Technologies + LDES) yielded results that differed from the LOLE standard of 0.1 days per year. Through iterative analysis using SERVM, these portfolios were adjusted by adding/removing energy storage as necessary to achieve the standard. This resulted in the removal of 3,000 MW of four-hour storage from the Base Technologies scenario and the addition of 400 MW of four-hour storage to the Base Technologies + LDES scenario. Both scenarios were rerun through production cost modeling with this adjustment to the portfolio
- Two portfolios (Base Technologies + CT and All Technologies) yielded results that were consistent with the reliability standard, and no adjustments to the portfolios were necessary.
- This type of detailed analysis (and adjustment, if necessary) was not possible to complete for the scenarios studied under all the alternative futures and sensitivities. For the scenarios that required adjustments under the CTP future described above, two post-processing adjustments are applied to all corresponding futures and sensitivities to produce final results: (1) the resource mix is adjusted in each case using the same adjustments identified in the CTP future; and (2) the PVRR is adjusted based on the change in PVRR under the CTP future prior to and after the reliability calibration step. The size of these adjustments is shown in Table J-1.

Table J-1. Reliability adjustments applied to Phase 3 scenarios based on SERVM analysis

Phase 3 Scenario	Adjustment to 2040 Four-Hour Storage Capacity (MW)	Adjustment to PVRR ($ millions)
Base Technologies	-3,004 MW	-$1,279
Base Technologies + LDES	+400 MW	+$86
Base Technologies + CT	*(no adjustment necessary to meet 0.1 days per year)*	
Base Technologies + LDES + CT	*(no adjustment necessary to meet 0.1 days per year)*	
All Technologies	*(no adjustment necessary to meet 0.1 days per year)*	
Base Technologies + Electrolysis	*(no adjustment necessary to meet 0.1 days per year)*	

Table J-2. Index of detailed scenario results

Page	Phase	Scenario	Future	Sensitivity
J-5	Phase 1	Base Technologies (Phase 1)	Current Trends & Policy	None
J-6	Phase 1	LD Storage - CAES	Current Trends & Policy	None
J-7	Phase 1	LD Storage - Flow	Current Trends & Policy	None
J-8	Phase 1	LD Storage - IAS	Current Trends & Policy	None
J-9	Phase 1	LD Storage - LAES	Current Trends & Policy	None
J-10	Phase 1	LD Storage - PHS 8-hr	Current Trends & Policy	None
J-11	Phase 1	LD Storage - PHS 70-hr	Current Trends & Policy	None
J-12	Phase 1	LD Storage - Thermal	Current Trends & Policy	None
J-13	Phase 1	Thermal - CT	Current Trends & Policy	None
J-14	Phase 1	Thermal - Linear	Current Trends & Policy	None
J-15	Phase 1	Wind Expansion	Current Trends & Policy	None
J-16	Phase 1	CCS - CCGT retrofit	Current Trends & Policy	None
J-17	Phase 1	CCS - Net Power	Current Trends & Policy	None
J-18	Phase 1	Green Hydrogen	Current Trends & Policy	None
J-19	Phase 2	PHS 70-hr + CT	Current Trends & Policy	None
J-20	Phase 2	PHS 70-hr + CT + wind	Current Trends & Policy	None
J-21	Phase 2	PHS 70-hr + Linear gen.	Current Trends & Policy	None
J-22	Phase 2	PHS 70-hr + Afton CCS	Current Trends & Policy	None
J-23	Phase 2	PHS 8-hr + CT	Current Trends & Policy	None
J-24	Phase 2	PHS 8-hr + CT + wind	Current Trends & Policy	None
J-25	Phase 2	PHS 8-hr + Linear gen.	Current Trends & Policy	None
J-26	Phase 2	PHS 8-hr + Afton CCS	Current Trends & Policy	None
J-27	Phase 2	IAS + CT	Current Trends & Policy	None
J-28	Phase 2	IAS + CT + wind	Current Trends & Policy	None
J-29	Phase 2	IAS + Linear gen.	Current Trends & Policy	None
J-30	Phase 2	IAS + Afton CCS	Current Trends & Policy	None
J-31	Phase 2	Wind expansion + CAES	Current Trends & Policy	None
J-32	Phase 2	Wind expansion + BESS	Current Trends & Policy	None
J-33	Phase 2	IAS + LAES	Current Trends & Policy	None
J-34	Phase 2	Green hydrogen + wind	Current Trends & Policy	None
J-35	Phase 2	Flow + CT	Current Trends & Policy	None
J-36	Phase 2	Flow + Afton CCS	Current Trends & Policy	None
J-37	Phase 2	Base tech + CT + LDES	Current Trends & Policy	None
J-38	Stakeholder Scenario	2035 CO2-free	Custom	Custom
J-39	Stakeholder Scenario	High EV + Building Electrification	Custom	Custom
J-40	Stakeholder Scenario	FCPP Retires 2031 + Valencia Ext	Current Trends & Policy	None
J-41	Stakeholder Scenario	FCPP Retires 2031 + Valencia Ext + Reeves Ext	Current Trends & Policy	None
J-42	Stakeholder Scenario	FCPP Retires 2027 + Valencia Ext	Current Trends & Policy	None
J-43	Stakeholder Scenario	FCPP Retires 2027 + Valencia Ext + Reeves Ext	Current Trends & Policy	None
J-44	Stakeholder Scenario	Increased Demand Response	Current Trends & Policy	None
J-45	Stakeholder Scenario	Base Technologies + LDES	Custom	Custom
J-46	Phase 3	Base Technologies	Current Trends & Policy	None
J-47	Phase 3	Base Technologies	High Economic Growth	None
J-48	Phase 3	Base Technologies	Low Economic Growth	None
J-49	Phase 3	Base Technologies	National Carbon Policy	None
J-50	Phase 3	Base Technologies + LDES	Current Trends & Policy	None
J-51	Phase 3	Base Technologies + LDES	High Economic Growth	None
J-52	Phase 3	Base Technologies + LDES	Low Economic Growth	None
J-53	Phase 3	Base Technologies + LDES	National Carbon Policy	None
J-54	Phase 3	Base Technologies + CT	Current Trends & Policy	None
J-55	Phase 3	Base Technologies + CT	High Economic Growth	None
J-56	Phase 3	Base Technologies + CT	Low Economic Growth	None

Page	Phase	Scenario	Future	Sensitivity
J-57	Phase 3	Base Technologies + CT	National Carbon Policy	None
J-58	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	None
J-59	Phase 3	Base Technologies + LDES + CT	High Economic Growth	None
J-60	Phase 3	Base Technologies + LDES + CT	Low Economic Growth	None
J-61	Phase 3	Base Technologies + LDES + CT	National Carbon Policy	None
J-62	Phase 3	All Technologies	Current Trends & Policy	None
J-63	Phase 3	All Technologies	High Economic Growth	None
J-64	Phase 3	All Technologies	Low Economic Growth	None
J-65	Phase 3	All Technologies	National Carbon Policy	None
J-66	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	None
J-67	Phase 3	Base Technologies + Electrolysis	High Economic Growth	None
J-68	Phase 3	Base Technologies + Electrolysis	Low Economic Growth	None
J-69	Phase 3	Base Technologies + Electrolysis	National Carbon Policy	None
J-70	Phase 3	Base Technologies	Current Trends & Policy	DERMS
J-71	Phase 3	Base Technologies	Current Trends & Policy	FCPP 2027 exit
J-72	Phase 3	Base Technologies	Current Trends & Policy	High EV
J-73	Phase 3	Base Technologies	Current Trends & Policy	High NG + high CO2
J-74	Phase 3	Base Technologies	Current Trends & Policy	High Tech Costs
J-75	Phase 3	Base Technologies	Current Trends & Policy	Low NG + low CO2
J-76	Phase 3	Base Technologies	Current Trends & Policy	Low Tech Costs
J-77	Phase 3	Base Technologies	Current Trends & Policy	NMPRC CO2 0
J-78	Phase 3	Base Technologies	Current Trends & Policy	NMPRC CO2 20
J-79	Phase 3	Base Technologies	Current Trends & Policy	NMPRC CO2 40
J-80	Phase 3	Base Technologies	Current Trends & Policy	NMPRC CO2 8
J-81	Phase 3	Base Technologies	Current Trends & Policy	Stable ED
J-82	Phase 3	Base Technologies	Current Trends & Policy	Tax credit 10-yr exp.
J-83	Phase 3	Base Technologies	Current Trends & Policy	TOU
J-84	Phase 3	Base Technologies + LDES	Current Trends & Policy	DERMS
J-85	Phase 3	Base Technologies + LDES	Current Trends & Policy	FCPP 2027 exit
J-86	Phase 3	Base Technologies + LDES	Current Trends & Policy	High EV
J-87	Phase 3	Base Technologies + LDES	Current Trends & Policy	High NG + high CO2
J-88	Phase 3	Base Technologies + LDES	Current Trends & Policy	High Tech Costs
J-89	Phase 3	Base Technologies + LDES	Current Trends & Policy	Low NG + low CO2
J-90	Phase 3	Base Technologies + LDES	Current Trends & Policy	Low Tech Costs
J-91	Phase 3	Base Technologies + LDES	Current Trends & Policy	NMPRC CO2 0
J-92	Phase 3	Base Technologies + LDES	Current Trends & Policy	NMPRC CO2 20
J-93	Phase 3	Base Technologies + LDES	Current Trends & Policy	NMPRC CO2 40
J-94	Phase 3	Base Technologies + LDES	Current Trends & Policy	NMPRC CO2 8
J-95	Phase 3	Base Technologies + LDES	Current Trends & Policy	Stable ED
J-96	Phase 3	Base Technologies + LDES	Current Trends & Policy	Tax credit 10-yr exp.
J-97	Phase 3	Base Technologies + LDES	Current Trends & Policy	TOU
J-98	Phase 3	Base Technologies + CT	Current Trends & Policy	DERMS
J-99	Phase 3	Base Technologies + CT	Current Trends & Policy	FCPP 2027 exit
J-100	Phase 3	Base Technologies + CT	Current Trends & Policy	High EV
J-101	Phase 3	Base Technologies + CT	Current Trends & Policy	High NG + high CO2
J-102	Phase 3	Base Technologies + CT	Current Trends & Policy	High Tech Costs
J-103	Phase 3	Base Technologies + CT	Current Trends & Policy	Low NG + low CO2
J-104	Phase 3	Base Technologies + CT	Current Trends & Policy	Low Tech Costs
J-105	Phase 3	Base Technologies + CT	Current Trends & Policy	NMPRC CO2 0
J-106	Phase 3	Base Technologies + CT	Current Trends & Policy	NMPRC CO2 20
J-107	Phase 3	Base Technologies + CT	Current Trends & Policy	NMPRC CO2 40
J-108	Phase 3	Base Technologies + CT	Current Trends & Policy	NMPRC CO2 8
J-109	Phase 3	Base Technologies + CT	Current Trends & Policy	Stable ED

Page	Phase	Scenario	Future	Sensitivity
J-110	Phase 3	Base Technologies + CT	Current Trends & Policy	Tax credit 10-yr exp.
J-111	Phase 3	Base Technologies + CT	Current Trends & Policy	TOU
J-112	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	DERMS
J-113	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	FCPP 2027 exit
J-114	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	High EV
J-115	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	High NG + high CO2
J-116	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	High Tech Costs
J-117	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	Low NG + low CO2
J-118	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	Low Tech Costs
J-119	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	NMPRC CO2 0
J-120	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	NMPRC CO2 20
J-121	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	NMPRC CO2 40
J-122	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	NMPRC CO2 8
J-123	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	Stable ED
J-124	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	Tax credit 10-yr exp.
J-125	Phase 3	Base Technologies + LDES + CT	Current Trends & Policy	TOU
J-126	Phase 3	All Technologies	Current Trends & Policy	DERMS
J-127	Phase 3	All Technologies	Current Trends & Policy	FCPP 2027 exit
J-128	Phase 3	All Technologies	Current Trends & Policy	High EV
J-129	Phase 3	All Technologies	Current Trends & Policy	High NG + high CO2
J-130	Phase 3	All Technologies	Current Trends & Policy	High Tech Costs
J-131	Phase 3	All Technologies	Current Trends & Policy	Low NG + low CO2
J-132	Phase 3	All Technologies	Current Trends & Policy	Low Tech Costs
J-133	Phase 3	All Technologies	Current Trends & Policy	NMPRC CO2 0
J-134	Phase 3	All Technologies	Current Trends & Policy	NMPRC CO2 20
J-135	Phase 3	All Technologies	Current Trends & Policy	NMPRC CO2 40
J-136	Phase 3	All Technologies	Current Trends & Policy	NMPRC CO2 8
J-137	Phase 3	All Technologies	Current Trends & Policy	Stable ED
J-138	Phase 3	All Technologies	Current Trends & Policy	Tax credit 10-yr exp.
J-139	Phase 3	All Technologies	Current Trends & Policy	TOU
J-140	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	DERMS
J-141	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	FCPP 2027 exit
J-142	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	High EV
J-143	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	High NG + high CO2
J-144	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	High Tech Costs
J-145	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	Low NG + low CO2
J-146	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	Low Tech Costs
J-147	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	NMPRC CO2 0
J-148	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	NMPRC CO2 20
J-149	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	NMPRC CO2 40
J-150	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	NMPRC CO2 8
J-151	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	Stable ED
J-152	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	Tax credit 10-yr exp.
J-153	Phase 3	Base Technologies + Electrolysis	Current Trends & Policy	TOU

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,746 million
20-Year NPV Carbon Emissions:	15.10 million tons
20-Year NPV Water Consumption:	6.99 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	19%	21%	20%	19%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	349	337	345	187	100	24	12	8	2	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,173	2,165	2,337	2,329	2,320	2,572	2,854	3,395	3,410	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,356	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,255	1,295	1,309	1,997	1,997	1,997	1,997	1,997	2,087	2,512	3,718	5,471	6,811	7,128	7,458
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	235	263	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,239**	**5,290**	**5,325**	**6,320**	**6,132**	**6,691**	**6,888**	**6,999**	**7,542**	**8,246**	**9,989**	**11,772**	**12,522**	**12,898**	**12,881**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,180	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	699	635	620	609	452	553	193	118	76	17	4	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	1,864	1,749	1,818	1,829	2,350	2,366
Geothermal	GWh	66	54	52	53	49	48	47	50	44	46	39	40	37	25	23	13	20	56	53	13
Solar	GWh	1,671	3,183	3,458	3,973	3,951	3,958	3,930	3,858	4,923	5,184	4,929	4,717	4,567	4,889	5,627	6,906	7,363	7,749	7,624	7,743
Wind	GWh	2,205	2,058	1,965	1,952	1,972	1,939	1,974	1,938	1,849	1,963	3,193	3,933	4,524	5,159	5,048	4,875	4,937	4,986	4,467	4,345
4-hr Storage	GWh	-40	-113	-131	-247	-280	-327	-347	-360	-563	-571	-607	-609	-618	-669	-906	-1,387	-2,082	-2,556	-2,550	-2,525
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	669	788	903	1,001	1,018	1,107	1,198	1,218	1,265	1,248	1,308	1,376	1,437	1,427
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,355**	**10,417**	**10,360**	**10,535**	**10,551**	**11,063**	**11,667**	**12,210**	**12,941**	**12,925**	**13,405**	**13,363**	**13,439**	**13,382**	**13,370**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,364	1,377	1,516	1,429	1,521	1,003	500	53	-644	-546	-1,019	-893	-882	-760	-743
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	LD Storage - CAES
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,317 million
20-Year NPV Carbon Emissions:	15.20 million tons
20-Year NPV Water Consumption:	7.15 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	27%	41%	39%	36%	33%	26%	19%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	350	338	345	173	87	26	28	38	7	9	10	1	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,328	2,320	2,982	2,974	2,965	2,957	2,906	2,897	3,002	3,304	3,613	3,835
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	658	556	956	956	956	1,156	1,156	1,356	1,050
4-hr Storage	MW	170	620	632	1,102	1,102	1,258	1,297	1,312	1,997	1,997	1,997	1,997	1,997	1,997	1,997	1,997	2,161	2,512	2,715	3,021
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	200	500	500	500	500	500	500	500	500	500	500
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	164	212	233	261	288	306	291	295	314	309	312	308	322	342	354	354
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,199**	**5,239**	**5,291**	**5,325**	**6,471**	**6,481**	**7,428**	**7,424**	**7,333**	**7,718**	**7,671**	**7,658**	**8,140**	**8,114**	**8,837**	**9,059**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,180	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	704	638	623	612	403	497	219	261	292	131	104	133	29	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,204	2,276	2,099	1,957	2,213	2,091
Geothermal	GWh	66	54	51	53	49	48	51	46	46	50	44	47	49	43	45	46	40	41	32	8
Solar	GWh	1,671	3,181	3,461	3,977	3,954	3,963	3,937	3,862	5,148	5,393	6,859	6,932	7,004	6,671	6,665	6,641	6,694	7,304	7,077	7,603
Wind	GWh	2,205	2,060	1,964	1,948	1,972	1,940	1,971	1,944	1,771	1,905	1,743	1,786	1,692	3,044	3,148	3,178	3,794	3,697	3,762	3,550
4-hr Storage	GWh	-40	-113	-131	-247	-280	-328	-348	-360	-571	-582	-592	-603	-619	-632	-647	-660	-742	-928	-1,022	-1,184
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-414	-432	-424	-413	-344	-333	-279	-234	-170	-126
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	443	554	659	778	884	974	978	1,060	1,142	1,144	1,203	1,185	1,244	1,312	1,365	1,350
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,363**	**10,354**	**10,416**	**10,358**	**10,609**	**10,612**	**11,133**	**11,412**	**11,561**	**12,291**	**12,376**	**12,466**	**12,879**	**13,149**	**13,257**	**13,293**
Net Purchases	GWh	1,072	862	1,028	1,052	1,237	1,366	1,379	1,518	1,355	1,460	933	754	701	6	3	-80	-409	-592	-635	-666
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	LD Storage - Flow
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,490	million
20-Year NPV Carbon Emissions:	15.12	million tons
20-Year NPV Water Consumption:	6.96	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	18%	17%	16%	22%	16%	25%	25%	24%	18%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	338	331	341	225	78	30	15	10	4	1	0	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,531	2,721	2,712	2,703	2,695	2,644	2,751	2,793	3,030	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,058	1,156	1,356	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,105	1,105	1,105	1,105	1,105	1,133	1,133	1,133	1,133	1,133	1,133	1,334	1,583	1,918	2,512	2,526	2,878
8-12hr Storage	MW	-	-	-	-	-	200	200	200	500	600	900	900	900	900	900	900	900	900	900	900
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	262	285	270	274	292	286	292	288	303	320	332	332
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,181**	**5,192**	**5,272**	**5,281**	**5,295**	**5,754**	**6,207**	**6,881**	**7,077**	**7,184**	**7,369**	**7,726**	**8,077**	**8,469**	**8,617**	**9,157**	**9,159**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,161	1,153	1,173	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	810	717	580	587	583	630	431	215	152	101	69	15	4	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	1,911	1,941	1,926	1,822	1,878	2,312
Geothermal	GWh	66	54	52	52	52	54	51	55	55	52	46	43	42	40	34	32	31	28	31	8
Solar	GWh	1,671	3,182	3,460	3,989	3,963	4,130	4,097	4,010	4,633	5,821	6,130	5,957	5,754	5,567	5,283	5,512	5,691	6,254	7,026	6,574
Wind	GWh	2,205	2,059	1,964	1,946	1,973	1,982	2,012	1,983	1,989	1,914	2,528	3,213	3,794	4,535	5,236	5,198	5,161	5,069	4,375	4,365
4-hr Storage	GWh	-40	-113	-131	-248	-280	-280	-288	-295	-297	-321	-311	-310	-313	-314	-442	-547	-686	-952	-956	-1,090
8-12hr Storage	GWh	-	-	-	-	-	-162	-166	-167	-343	-529	-717	-807	-855	-883	-444	-359	-229	-164	-318	-116
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	797	899	902	982	1,060	1,060	1,126	1,109	1,168	1,231	1,285	1,269
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,481**	**10,358**	**10,342**	**10,413**	**10,337**	**10,394**	**10,641**	**11,089**	**11,592**	**12,008**	**12,377**	**12,720**	**12,890**	**13,065**	**13,288**	**13,321**	**13,323**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,378	1,382	1,539	1,569	1,431	977	575	254	-81	-341	-503	-595	-730	-699	-696
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	LD Storage - IAS
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,979 million**
20-Year NPV Carbon Emissions:	**15.80 million tons**
20-Year NPV Water Consumption:	**7.25 million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	26%	25%	23%	18%	16%	16%	16%	16%	17%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	343	345	246	133	69	41	28	19	12	5	1	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,941	2,310	2,587	2,579	2,570	2,562	2,908	3,052	3,171	3,162	3,931	3,881
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,058	1,156	1,356	1,356	1,356	1,356	1,356	1,356	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,145	1,184	1,204	1,204	1,204	1,204	1,204	1,204	1,204	1,348	1,603	1,956	2,397	2,548	2,548
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	100	99	98	397	393	589	583	577	572	566	560	555	549	544	538
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	260	282	266	271	289	283	288	283	298	315	327	327
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,212**	**5,259**	**5,292**	**5,660**	**5,846**	**6,505**	**6,695**	**6,796**	**6,976**	**7,466**	**7,855**	**8,335**	**8,078**	**9,005**	**8,843**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,174	1,161	1,189	571	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	658	625	621	755	701	316	189	106	68	24	14	4	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,231	2,289	2,291	2,367	2,199	2,334
Geothermal	GWh	66	55	52	51	52	52	54	53	56	51	52	50	51	50	45	44	43	48	43	11
Solar	GWh	1,671	3,182	3,465	3,991	3,966	4,109	4,085	4,027	4,855	5,589	6,171	5,977	5,816	5,692	6,335	6,764	7,219	7,467	8,693	8,137
Wind	GWh	2,205	2,058	1,959	1,953	1,975	1,978	2,013	1,985	2,080	1,976	2,720	3,446	4,016	4,787	4,681	4,667	4,619	4,661	3,793	4,390
4-hr Storage	GWh	-40	-113	-131	-249	-282	-295	-313	-326	-319	-342	-348	-357	-361	-370	-432	-534	-667	-825	-953	-956
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-209	-194	-201	-803	-770	-1,362	-1,404	-1,442	-1,508	-1,570	-1,583	-1,646	-1,751	-1,780	-1,829
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	791	888	892	973	1,050	1,051	1,110	1,092	1,149	1,213	1,266	1,250
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,343**	**10,397**	**10,342**	**10,347**	**10,468**	**10,737**	**11,235**	**11,662**	**12,071**	**12,422**	**12,754**	**13,013**	**13,179**	**13,262**	**13,338**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,376	1,397	1,534	1,616	1,604	1,329	931	601	226	-43	-368	-543	-622	-640	-712
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	LD Storage - LAES
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,753 **million**
20-Year NPV Carbon Emissions:	15.45 **million tons**
20-Year NPV Water Consumption:	7.62 **million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	18%	16%	16%	22%	16%	22%	22%	21%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	343	335	345	234	90	63	36	23	13	1	0	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,978	2,521	2,878	2,869	2,861	2,879	2,952	3,010	3,002	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,356	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,107	1,107	1,107	1,107	1,115	1,135	1,135	1,135	1,135	1,135	1,135	1,370	1,631	1,997	2,691	3,008	3,360
8-12hr Storage	MW	-	-	-	-	-	200	200	200	500	600	800	800	800	800	800	800	800	800	800	800
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	262	286	270	275	295	293	297	293	308	325	340	340
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,184**	**5,194**	**5,254**	**5,263**	**5,285**	**5,733**	**6,199**	**6,741**	**6,937**	**7,046**	**7,263**	**7,774**	**8,090**	**8,662**	**9,171**	**9,547**	**9,549**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,169	1,156	1,181	571	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	809	715	605	615	610	698	489	366	258	179	134	21	10	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,272	2,361	2,230	1,919	2,279	2,472
Geothermal	GWh	66	55	51	51	52	53	54	53	54	50	48	47	51	43	41	37	31	26	36	13
Solar	GWh	1,671	3,181	3,459	3,987	3,963	4,208	4,158	4,097	4,880	6,113	6,901	6,761	6,603	6,546	6,650	6,885	6,766	7,877	7,971	7,847
Wind	GWh	2,205	2,059	1,966	1,952	1,975	1,995	2,036	2,002	2,026	1,951	1,903	2,572	3,158	3,881	4,591	4,587	5,271	5,133	4,540	4,431
4-hr Storage	GWh	-40	-113	-131	-249	-281	-280	-287	-297	-294	-318	-324	-332	-335	-342	-428	-517	-659	-980	-1,085	-1,114
8-12hr Storage	GWh	-	-	-	-	-	-282	-291	-296	-725	-986	-1,340	-1,352	-1,377	-1,444	-1,582	-1,638	-1,703	-1,867	-1,728	-1,645
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	797	902	905	987	1,073	1,087	1,146	1,131	1,190	1,253	1,313	1,299
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,481**	**10,358**	**10,341**	**10,405**	**10,341**	**10,368**	**10,576**	**10,756**	**11,302**	**11,779**	**12,209**	**12,709**	**12,855**	**13,128**	**13,361**	**13,327**	**13,302**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,378	1,390	1,535	1,596	1,496	1,310	865	484	88	-330	-469	-658	-803	-706	-676
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	LD Storage - PHS 8-hr
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,505 million
20-Year NPV Carbon Emissions:	15.98 million tons
20-Year NPV Water Consumption:	7.22 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	26%	24%	23%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	339	345	254	133	61	36	45	52	33	17	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,892	2,520	2,512	2,503	2,495	2,486	2,578	2,759	3,002	3,500	3,510	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,273	1,316	1,338	1,386	1,439	1,439	1,439	1,439	1,439	1,690	2,012	2,441	3,963	4,099	4,427
8-12hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	199	218	240	264	288	274	278	298	296	300	296	311	328	343	343
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,198**	**5,241**	**5,294**	**5,330**	**5,700**	**6,205**	**6,882**	**7,078**	**6,987**	**6,977**	**7,323**	**7,822**	**8,508**	**9,847**	**10,407**	**10,419**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	711	646	636	628	661	429	185	118	156	187	110	83	56	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,294	2,361	2,426	2,297	2,230	2,271	2,161	1,927	1,972	2,410
Geothermal	GWh	66	54	52	51	52	51	51	50	55	50	38	39	40	41	42	42	39	44	40	13
Solar	GWh	1,671	3,183	3,462	3,990	3,968	3,984	3,961	3,902	4,401	5,586	5,068	4,968	5,016	5,130	5,539	6,003	6,635	7,786	7,265	6,782
Wind	GWh	2,205	2,058	1,961	1,953	1,973	1,944	1,983	1,951	1,992	1,868	3,168	3,912	3,814	3,868	3,902	3,857	3,767	3,644	4,352	4,368
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-367	-371	-422	-411	-420	-427	-440	-547	-674	-848	-1,408	-1,492	-1,507
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-111	-153	-158	-255	-222	-169	-117	-96	-71	-22	-102	-36
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	415	515	609	708	806	911	918	999	1,086	1,100	1,159	1,144	1,203	1,267	1,326	1,311
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,346**	**10,412**	**10,349**	**10,361**	**10,643**	**11,103**	**11,721**	**11,890**	**12,015**	**12,319**	**12,629**	**12,943**	**13,239**	**13,362**	**13,341**
Net Purchases	GWh	1,072	862	1,028	1,055	1,241	1,373	1,383	1,527	1,603	1,429	963	446	373	282	60	-243	-473	-681	-740	-714
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	LD Storage - PHS 70-hr
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,388	million
20-Year NPV Carbon Emissions:	15.32	million tons
20-Year NPV Water Consumption:	7.64	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	32%	29%	28%	21%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	232	96	11	12	15	17	12	7	1	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,782	1,887	2,343	2,681	2,692	2,746	2,738	3,025	3,018	3,010	3,000	3,014	3,332
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	956	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,616	1,918	2,296	2,392	2,413
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	255	272	253	256	273	267	273	268	282	298	309	309
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,361**	**5,641**	**5,914**	**6,932**	**6,945**	**6,916**	**6,901**	**7,194**	**7,457**	**7,965**	**7,849**	**8,170**	**8,203**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,180	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	647	638	618	654	488	93	111	134	166	109	84	7	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,054	2,127	2,039	2,037	2,164	2,256
Geothermal	GWh	66	54	51	53	51	52	48	46	51	51	41	42	44	46	44	46	43	37	35	7
Solar	GWh	1,671	3,183	3,461	3,987	3,969	3,990	3,971	3,958	4,446	5,408	5,628	5,764	5,929	6,092	6,658	6,746	6,650	6,390	6,239	6,461
Wind	GWh	2,205	2,058	1,964	1,954	1,973	1,941	1,983	1,937	2,017	1,936	3,201	3,247	3,114	3,170	3,153	3,236	3,881	4,493	4,503	4,386
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-369	-354	-387	-372	-383	-389	-407	-420	-527	-632	-836	-861	-887
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-110	-148	-321	-351	-318	-309	-322	-251	-190	-103	-115	-125
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	780	865	856	927	1,005	1,006	1,065	1,046	1,102	1,161	1,212	1,196
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,359**	**10,410**	**10,588**	**11,421**	**11,719**	**11,945**	**12,067**	**12,341**	**12,506**	**12,898**	**13,179**	**13,177**	**13,293**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,517	1,553	1,484	645	448	318	230	38	-120	-428	-622	-555	-667
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	LD Storage - Thermal
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,862 million
20-Year NPV Carbon Emissions:	15.60 million tons
20-Year NPV Water Consumption:	7.47 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	17%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	349	337	345	220	115	73	43	29	17	6	0	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,283	2,393	2,385	2,414	2,812	2,948	3,144	3,475	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,058	1,156	1,156	1,156	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,274	1,313	1,328	1,548	1,548	1,548	1,548	1,548	1,717	2,100	2,512	4,025	5,414	5,685	6,015
8-12hr Storage	MW	-	-	-	-	-	-	-	-	150	150	150	150	150	150	150	150	150	150	150	150
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	164	192	213	241	288	308	296	301	323	324	321	317	332	353	368	370
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,199**	**5,235**	**5,287**	**5,322**	**5,845**	**5,946**	**6,244**	**6,441**	**6,590**	**7,158**	**7,675**	**8,479**	**10,338**	**11,072**	**11,601**	**11,585**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,178	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	704	631	618	607	635	618	378	238	154	99	28	3	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,301	2,108	1,953	1,841	1,860	2,139	2,383
Geothermal	GWh	66	55	51	53	49	48	47	46	53	49	43	46	42	37	37	29	16	59	57	13
Solar	GWh	1,671	3,180	3,463	3,981	3,953	3,976	3,947	3,876	4,642	5,308	5,154	5,019	4,872	5,710	6,292	6,544	7,486	7,768	7,486	7,308
Wind	GWh	2,205	2,060	1,962	1,944	1,973	1,941	1,979	1,945	1,960	1,934	2,606	3,243	3,838	3,802	3,774	4,364	4,226	4,266	4,367	4,328
4-hr Storage	GWh	-40	-113	-131	-247	-280	-331	-352	-365	-428	-452	-465	-477	-472	-545	-700	-920	-1,499	-1,907	-2,023	-2,006
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-254	-277	-286	-311	-349	-383	-321	-226	-115	-71	-66	-52
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	443	550	655	774	884	983	999	1,090	1,181	1,201	1,247	1,232	1,290	1,358	1,418	1,409
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,363**	**10,352**	**10,418**	**10,359**	**10,423**	**10,536**	**10,726**	**11,209**	**11,692**	**12,223**	**12,464**	**12,978**	**13,247**	**13,333**	**13,379**	**13,383**
Net Purchases	GWh	1,072	862	1,028	1,052	1,237	1,367	1,376	1,517	1,541	1,536	1,340	957	570	74	-85	-592	-777	-776	-757	-757
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Thermal - CT
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,611 million
20-Year NPV Carbon Emissions:	16.43 million tons
20-Year NPV Water Consumption:	7.35 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	226	132	106	103	81	54	45	26	24	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	823	823	823	823	823	905	987	1,151	1,233	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	659	659	659
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,143	2,740	2,775	2,767	2,758	2,707	2,699	2,691	2,681	2,807	2,870
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	658	756	956	956	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,182	1,220	1,239	1,660	1,660	1,660	1,660	1,662	1,702	1,859	1,859	1,952	2,271	2,320	2,375
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	266	271	289	283	288	283	297	314	326	326
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,211**	**5,258**	**5,291**	**5,903**	**5,866**	**6,448**	**6,487**	**6,597**	**6,903**	**7,096**	**7,447**	**7,629**	**7,581**	**7,968**	**7,779**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,178	1,163	1,187	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	705	693	695	688	770	638	686	477	352	292	210	214	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	14	11
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,358	2,414	2,301	2,273	2,252	2,267	2,233	2,370	2,417
Geothermal	GWh	66	55	52	51	51	52	52	50	51	51	40	41	42	40	42	38	39	33	35	9
Solar	GWh	1,671	3,181	3,467	3,992	3,968	3,911	3,889	3,821	4,484	4,942	5,522	5,687	5,591	5,544	5,710	5,511	5,613	5,612	5,501	5,618
Wind	GWh	2,205	2,059	1,957	1,952	1,975	1,931	1,960	1,937	1,911	1,943	1,716	1,712	2,333	3,100	3,112	3,828	3,827	4,519	4,546	4,397
4-hr Storage	GWh	-40	-113	-131	-249	-282	-307	-327	-340	-467	-485	-495	-508	-517	-542	-617	-631	-677	-816	-848	-880
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	892	973	1,050	1,051	1,110	1,091	1,147	1,208	1,261	1,245
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,342**	**10,393**	**10,342**	**10,388**	**10,483**	**10,609**	**10,948**	**11,390**	**11,846**	**11,921**	**12,298**	**12,429**	**12,800**	**12,880**	**12,816**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,377	1,402	1,534	1,576	1,589	1,457	1,218	873	451	458	88	41	-243	-258	-190
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Thermal - Linear**
Future: **Current Trends & Policy**
Sensitivity: **None**
Phase: **Phase 1**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,594 million**
20-Year NPV Carbon Emissions: **15.87 million tons**
20-Year NPV Water Consumption: **7.15 million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	16%	16%	16%	16%	17%	18%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	205	107	70	69	51	40	39	23	12	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	850	850	850	850	850	850	1,000	1,150	1,250	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	690	690	690
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,001	2,216	2,434	2,556	2,583	2,713	2,662	2,654	2,646	2,636	2,729	2,859
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	858	956	956	956	1,156	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,341	1,598	1,598	1,598	1,598	1,598	1,820	1,840	1,862	1,992	2,180	2,257	2,284
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	260	282	265	270	288	281	287	282	296	312	323	323
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,867**	**5,903**	**6,305**	**6,431**	**6,574**	**6,920**	**7,045**	**7,403**	**7,839**	**7,673**	**7,854**	**7,705**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	570	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	647	638	630	718	779	499	527	389	356	364	269	168	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	21	20
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,421	2,294	2,307	2,298	2,203	2,089	2,419	2,461
Geothermal	GWh	66	55	51	51	52	52	48	47	48	51	42	43	40	41	43	40	39	30	33	8
Solar	GWh	1,671	3,178	3,468	3,991	3,967	3,987	3,973	3,912	4,430	4,978	4,962	5,168	5,111	5,618	5,655	5,468	5,371	5,265	5,367	5,481
Wind	GWh	2,205	2,062	1,957	1,953	1,975	1,944	1,981	1,952	1,926	1,908	2,509	2,460	3,073	3,108	3,121	3,837	4,504	5,174	4,567	4,408
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-367	-450	-471	-484	-487	-495	-584	-610	-630	-692	-804	-820	-841
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	791	888	888	969	1,047	1,047	1,106	1,087	1,143	1,202	1,253	1,237
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,347**	**10,392**	**10,507**	**10,712**	**11,040**	**11,585**	**11,880**	**11,985**	**12,368**	**12,735**	**12,962**	**12,841**	**12,775**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,529	1,572	1,565	1,354	1,127	677	417	394	18	-265	-405	-219	-148
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Wind Expansion
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$11,632 million**
20-Year NPV Carbon Emissions:	**14.31 million tons**
20-Year NPV Water Consumption:	**6.74 million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	17%	22%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	349	293	263	146	31	24	19	13	6	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,991	2,150	2,487	2,480	2,743	2,848	3,502	3,502	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	858	1,058	1,258	1,258	1,258	1,258	1,356	1,356	1,356	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,271	1,278	1,278	1,710	1,710	1,710	1,710	1,747	2,012	2,512	3,628	5,233	6,642	7,128	7,458
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	194	215	243	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,234**	**5,454**	**5,674**	**6,200**	**6,271**	**6,417**	**6,759**	**6,909**	**7,438**	**8,040**	**9,806**	**11,626**	**12,353**	**12,898**	**12,881**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,149	1,158	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	699	628	392	235	209	175	180	153	89	61	13	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,357	2,415	2,300	2,038	1,835	1,875	2,057	2,383	2,472
Geothermal	GWh	66	55	52	50	51	52	43	39	40	42	36	37	33	29	32	20	34	66	66	13
Solar	GWh	1,671	3,182	3,465	3,979	3,947	3,970	3,672	3,310	3,374	3,982	4,197	4,746	4,647	5,346	5,905	7,359	7,684	7,868	8,301	8,190
Wind	GWh	2,205	2,057	1,959	1,949	1,973	1,938	2,665	3,276	3,964	3,974	3,900	3,869	4,475	4,453	4,410	4,183	4,399	4,136	3,430	3,456
4-hr Storage	GWh	-40	-113	-131	-247	-280	-331	-344	-354	-477	-509	-520	-519	-537	-644	-888	-1,343	-1,994	-2,159	-2,238	-2,195
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	560	665	784	903	1,001	1,018	1,108	1,198	1,218	1,265	1,249	1,309	1,378	1,438	1,429
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,354**	**10,610**	**10,745**	**10,940**	**11,040**	**11,107**	**11,750**	**12,321**	**12,762**	**12,776**	**13,303**	**13,307**	**13,346**	**13,380**	**13,366**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,365	1,184	1,131	1,024	1,032	959	416	-58	-465	-397	-917	-837	-789	-758	-740
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	CCS - CCGT retrofit
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,203 million
20-Year NPV Carbon Emissions:	15.07 million tons
20-Year NPV Water Consumption:	7.28 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	20%	23%	21%	20%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	476	391	388	384	304	298	306	175	83	31	15	20	16	9	6	3	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	807	807	807	661	661	661	661	661	661	661	661	661	196	196	196
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,413	2,405	2,461	2,456	2,448	2,439	2,547	3,221	3,425	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	1,156	1,356	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,319	1,358	1,372	2,151	2,151	2,151	2,151	2,151	2,151	2,491	2,890	4,033	4,923	5,240	5,592
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	236	265	293	312	300	306	327	326	325	321	337	357	372	372
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,264**	**5,316**	**5,350**	**6,675**	**6,486**	**6,931**	**6,931**	**7,042**	**7,232**	**7,880**	**8,949**	**10,311**	**10,831**	**11,207**	**11,209**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,183	1,168	1,184	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	699	481	478	489	246	301	126	152	94	68	5	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,089	1,787	1,714	1,720	2,372	2,388
Geothermal	GWh	66	56	52	51	52	51	48	46	46	43	37	43	40	34	24	23	27	43	47	13
Solar	GWh	1,671	3,177	3,456	3,979	3,947	4,008	3,979	3,910	5,349	5,602	5,164	5,268	5,089	4,968	5,129	6,411	7,106	7,420	6,980	7,138
Wind	GWh	2,205	2,062	1,968	1,948	1,972	1,944	1,983	1,947	1,741	1,880	3,151	3,214	3,806	4,538	5,155	4,921	4,879	4,921	4,458	4,346
4-hr Storage	GWh	-40	-113	-131	-247	-280	-343	-361	-375	-613	-626	-650	-663	-666	-684	-867	-1,083	-1,543	-1,903	-1,926	-1,951
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	676	795	910	1,005	1,022	1,113	1,203	1,217	1,266	1,250	1,311	1,380	1,441	1,425
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,256**	**10,337**	**10,292**	**10,607**	**10,580**	**11,146**	**11,487**	**11,991**	**12,444**	**12,802**	**13,310**	**13,495**	**13,580**	**13,373**	**13,361**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,463	1,458	1,584	1,357	1,492	920	680	272	-147	-423	-923	-1,025	-1,023	-751	-734
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	CCS - Net Power
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 1

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,574	million
20-Year NPV Carbon Emissions:	15.43	million tons
20-Year NPV Water Consumption:	7.06	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	345	345	190	83	50	31	37	28	15	7	2	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	980	980	980	980	980	980	980	980	980	280	280	280
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,249	2,241	2,232	2,413	2,581	2,674	3,002	3,403	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,258	1,156	1,156	1,156	1,156	1,356	1,356	1,356	1,250
4-hr Storage	MW	170	620	632	1,106	1,106	1,277	1,316	1,335	1,384	1,384	1,384	1,384	1,384	1,596	1,919	2,276	3,027	4,388	4,874	5,011
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	139	161	189	210	236	280	304	290	293	313	311	315	311	326	343	357	358
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,186**	**5,200**	**5,235**	**5,288**	**5,323**	**5,542**	**5,875**	**6,052**	**6,447**	**6,545**	**6,924**	**7,343**	**8,024**	**9,391**	**10,166**	**10,710**	**10,698**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,170	1,156	1,178	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	804	705	633	622	612	990	986	752	405	456	371	247	149	11	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,415	2,301	2,219	2,122	1,813	1,823	2,025	2,245
Geothermal	GWh	66	55	51	53	49	52	52	51	52	48	42	39	38	38	36	33	39	50	54	13
Solar	GWh	1,671	3,178	3,463	3,983	3,957	3,977	3,952	3,884	3,930	4,759	4,514	4,112	4,455	5,000	5,496	6,250	7,050	7,511	7,805	7,005
Wind	GWh	2,205	2,062	1,962	1,950	1,976	1,943	1,977	1,946	1,974	1,859	2,580	3,918	3,801	3,821	3,789	3,728	4,260	4,290	3,670	4,343
4-hr Storage	GWh	-40	-113	-131	-248	-281	-332	-352	-366	-377	-408	-414	-411	-417	-504	-635	-794	-1,126	-1,568	-1,643	-1,664
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	336	433	540	645	755	857	962	969	1,052	1,138	1,153	1,212	1,197	1,255	1,317	1,377	1,361
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,483**	**10,362**	**10,350**	**10,419**	**10,356**	**10,355**	**10,580**	**10,740**	**11,476**	**11,886**	**12,180**	**12,365**	**12,684**	**13,302**	**13,423**	**13,288**	**13,304**
Net Purchases	GWh	1,072	862	1,028	1,053	1,239	1,369	1,376	1,520	1,609	1,492	1,326	691	376	117	14	-297	-832	-865	-666	-677
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Green Hydrogen**
Future:	**Current Trends & Policy**
Sensitivity:	**None**
Phase:	**Phase 1**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,594**	**million**
20-Year NPV Carbon Emissions:	**15.62**	**million tons**
20-Year NPV Water Consumption:	**7.09**	**million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	228	119	62	23	27	19	9	7	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	256	256	256	256	256
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,780	2,402	2,881	2,873	2,864	2,940	3,065	3,048	3,496	3,869	3,981	4,017	4,231
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,162	1,200	1,217	1,292	1,292	1,292	1,292	1,292	1,511	1,834	2,111	2,512	3,801	4,128	4,304
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	179	198	220	244	288	274	278	298	296	300	296	311	328	343	343
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,198**	**5,111**	**5,159**	**5,221**	**6,051**	**6,375**	**6,752**	**7,148**	**7,141**	**7,484**	**7,793**	**8,515**	**9,304**	**10,222**	**10,599**	**10,683**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,179	1,164	1,189	574	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	711	715	702	690	866	807	350	139	170	124	60	18	6	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	488	478	482	489	486	491	492	488	491	496	1	4
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,355	2,419	2,302	2,255	2,033	1,808	1,714	1,990	2,156
Geothermal	GWh	66	54	52	51	49	48	48	51	50	47	36	34	35	33	35	30	28	29	39	13
Solar	GWh	1,671	3,182	3,464	3,989	3,968	3,897	3,868	3,838	5,564	6,320	5,852	5,520	5,697	6,168	6,490	7,364	8,287	8,548	7,249	7,110
Wind	GWh	2,205	2,058	1,960	1,954	1,976	1,927	1,960	1,917	1,944	1,835	3,133	4,583	4,493	4,504	4,518	4,395	4,292	4,961	4,359	4,321
4-hr Storage	GWh	-40	-113	-131	-249	-282	-302	-322	-334	-360	-379	-385	-374	-378	-468	-604	-755	-957	-1,473	-1,526	-1,560
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,938	-1,898	-1,915	-1,940	-1,930	-1,949	-1,954	-1,937	-1,949	-1,969	-5	-17
DSM	GWh	87	165	244	326	415	511	605	704	802	911	919	999	1,086	1,100	1,158	1,144	1,202	1,265	1,326	1,311
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,342**	**10,392**	**10,352**	**10,351**	**10,496**	**10,767**	**11,804**	**12,077**	**12,305**	**12,451**	**12,780**	**13,209**	**13,571**	**13,434**	**13,337**
Net Purchases	GWh	1,072	862	1,028	1,055	1,241	1,378	1,402	1,524	1,613	1,576	1,298	363	185	-9	-72	-394	-739	-1,014	-812	-711
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	PHS 70-hr + CT
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,816	million
20-Year NPV Carbon Emissions:	15.61	million tons
20-Year NPV Water Consumption:	7.59	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	240	98	31	32	33	24	16	19	19	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	741	905	1,028	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	454	454	495
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,834	2,294	2,377	2,422	2,697	2,977	3,002	2,993	3,010	3,000	2,993	2,944
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	956	956	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,344	1,344	1,344	1,344	1,344	1,344	1,497	1,672	1,672	1,718	1,960	2,001	2,001
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	257	279	259	262	279	273	278	273	287	304	315	312
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,592**	**5,875**	**6,337**	**6,384**	**6,576**	**7,003**	**7,249**	**7,400**	**7,598**	**7,474**	**7,919**	**7,601**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	647	638	631	704	503	165	184	182	163	89	127	139	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	7
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,421	2,301	2,077	2,131	2,068	2,073	2,105	2,458
Geothermal	GWh	66	54	51	51	52	52	48	47	56	51	43	43	42	39	41	44	46	39	35	9
Solar	GWh	1,671	3,183	3,464	3,992	3,968	3,989	3,968	3,916	4,357	5,349	4,929	5,071	5,537	6,173	6,453	6,427	6,519	6,486	6,055	5,689
Wind	GWh	2,205	2,058	1,961	1,951	1,974	1,941	1,986	1,953	2,026	1,951	3,269	3,274	3,092	3,087	3,149	3,210	3,196	3,860	4,526	4,426
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-368	-352	-387	-392	-396	-401	-465	-545	-553	-585	-690	-746	-719
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-104	-147	-137	-150	-201	-199	-161	-156	-148	-119	-146	-105
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	784	881	873	944	1,021	1,022	1,081	1,062	1,118	1,178	1,229	1,206
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,347**	**10,397**	**10,576**	**11,046**	**11,329**	**11,692**	**12,120**	**12,185**	**12,292**	**12,353**	**12,830**	**13,059**	**12,972**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,530	1,567	1,496	1,020	838	571	177	194	94	117	-273	-437	-345
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	PHS 70-hr + CT + wind
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,826 million
20-Year NPV Carbon Emissions:	15.46 million tons
20-Year NPV Water Consumption:	7.54 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	23%	16%	18%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	209	78	32	32	32	24	23	20	20	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	823	905	1,028	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	454	454	495
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,075	2,384	2,445	2,743	2,984	2,947	2,999	3,010	3,000	2,999	2,949
Wind	MW	658	658	658	658	658	658	658	658	858	858	1,058	1,058	956	956	956	956	956	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,344	1,344	1,344	1,344	1,344	1,344	1,506	1,565	1,664	1,731	1,972	2,012	2,012
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	253	270	250	254	271	265	270	265	279	296	307	304
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,694**	**5,846**	**6,335**	**6,400**	**6,614**	**7,010**	**7,161**	**7,389**	**7,603**	**7,478**	**7,927**	**7,609**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	647	638	631	514	380	168	184	178	163	115	130	140	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	8
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,423	2,301	2,085	2,130	2,069	2,077	2,157	2,427
Geothermal	GWh	66	54	51	51	52	51	52	47	54	54	43	43	41	39	42	45	45	39	34	9
Solar	GWh	1,671	3,180	3,463	3,991	3,969	3,988	3,968	3,915	3,961	4,798	4,942	5,114	5,606	6,198	6,280	6,443	6,537	6,495	6,275	6,012
Wind	GWh	2,205	2,061	1,962	1,953	1,973	1,943	1,982	1,954	2,748	2,734	3,270	3,259	3,087	3,087	3,171	3,203	3,198	3,866	4,229	4,158
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-368	-349	-379	-392	-397	-401	-469	-507	-551	-588	-695	-724	-726
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-92	-131	-137	-154	-204	-199	-164	-158	-148	-118	-126	-104
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	773	858	850	922	999	999	1,058	1,039	1,096	1,155	1,206	1,184
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,347**	**10,536**	**10,689**	**11,042**	**11,331**	**11,730**	**12,120**	**12,081**	**12,282**	**12,348**	**12,823**	**13,055**	**12,970**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,530	1,428	1,383	1,024	835	533	177	298	104	122	-266	-433	-344
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**PHS 70-hr + Linear gen.**
Future:	**Current Trends & Policy**
Sensitivity:	**None**
Phase:	**Phase 2**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,845**	**million**
20-Year NPV Carbon Emissions:	**15.54**	**million tons**
20-Year NPV Water Consumption:	**7.52**	**million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	17%	16%	22%	16%	18%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	333	343	234	97	34	36	35	24	12	12	11	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	896	896	750	750	750	750	750	750	750	900	1,000	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	426	447	475
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,807	2,277	2,335	2,346	2,678	2,968	3,002	3,018	3,010	3,000	2,993	3,000
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	956	956	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,463	1,755	1,803	1,987	2,008	2,012	2,012
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	232	254	276	256	259	276	270	276	271	285	301	312	312
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,301**	**5,309**	**5,543**	**5,835**	**6,273**	**6,287**	**6,534**	**7,006**	**7,338**	**7,547**	**7,837**	**7,491**	**7,919**	**7,648**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,157	1,178	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	647	656	680	737	543	190	222	206	165	88	114	108	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	7
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,420	2,301	2,086	2,138	2,178	2,099	2,096	2,408
Geothermal	GWh	66	55	51	51	51	52	52	47	51	50	45	46	41	38	43	44	43	39	35	9
Solar	GWh	1,671	3,183	3,466	3,992	3,969	3,989	3,934	3,866	4,293	5,291	4,834	4,915	5,456	6,143	6,541	6,592	6,760	6,524	6,104	5,778
Wind	GWh	2,205	2,057	1,959	1,952	1,973	1,941	1,975	1,943	2,031	1,946	3,285	3,298	3,091	3,090	3,150	3,203	3,186	3,850	4,518	4,424
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-341	-350	-334	-366	-374	-373	-378	-454	-574	-603	-679	-706	-755	-725
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-108	-152	-138	-143	-197	-200	-151	-141	-136	-115	-156	-106
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	682	774	871	863	935	1,012	1,012	1,071	1,052	1,108	1,168	1,219	1,202
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,400**	**10,342**	**10,373**	**10,556**	**11,001**	**11,259**	**11,651**	**12,097**	**12,254**	**12,399**	**12,568**	**12,862**	**13,065**	**12,996**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,395	1,534	1,591	1,516	1,065	907	612	200	125	-13	-98	-305	-443	-369
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	PHS 70-hr + Afton CCS
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,009 million
20-Year NPV Carbon Emissions:	14.86 million tons
20-Year NPV Water Consumption:	7.20 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	323	315	314	194	74	20	20	21	15	10	5	2	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	807	807	807	661	661	661	661	661	661	661	661	661	196	196	196
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,846	2,034	2,301	2,398	2,478	2,670	2,973	2,975	3,089	3,135	3,339	3,539	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	956	956	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,338	1,381	1,394	1,394	1,394	1,394	1,394	1,394	1,502	1,723	1,976	2,351	2,512	2,514	2,863
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	199	218	240	264	288	273	277	297	296	299	295	309	327	342	342
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,198**	**5,267**	**5,320**	**5,445**	**5,811**	**5,902**	**6,383**	**6,468**	**6,577**	**6,987**	**7,214**	**7,577**	**8,012**	**8,129**	**8,747**	**8,750**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,183	1,168	1,184	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	711	491	489	479	410	365	145	156	133	132	84	83	68	1	1	1
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,301	2,084	2,130	2,189	1,987	1,990	2,145
Geothermal	GWh	66	55	52	50	49	48	48	45	55	52	43	43	41	37	44	43	42	40	29	9
Solar	GWh	1,671	3,183	3,459	3,994	3,965	4,033	4,013	4,077	4,688	5,380	4,978	5,169	5,515	6,146	6,442	6,789	7,145	7,157	6,850	6,728
Wind	GWh	2,205	2,057	1,965	1,950	1,978	1,955	1,993	1,919	1,971	1,950	3,255	3,238	3,097	3,085	3,153	3,166	3,114	3,747	4,380	4,313
4-hr Storage	GWh	-40	-113	-131	-249	-282	-347	-365	-385	-376	-401	-407	-411	-417	-466	-562	-664	-809	-932	-973	-1,099
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-117	-142	-136	-156	-200	-200	-152	-129	-112	-87	-209	-63
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	415	515	609	708	806	911	915	996	1,082	1,096	1,156	1,139	1,198	1,261	1,320	1,305
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,245**	**10,323**	**10,324**	**10,365**	**10,490**	**11,089**	**11,395**	**11,675**	**12,133**	**12,249**	**12,557**	**12,835**	**13,174**	**13,387**	**13,338**
Net Purchases	GWh	1,072	862	1,028	1,055	1,241	1,474	1,472	1,552	1,599	1,582	977	772	588	164	130	-171	-365	-617	-766	-712
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	PHS 8-hr + CT
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,708 million
20-Year NPV Carbon Emissions:	16.00 million tons
20-Year NPV Water Consumption:	7.24 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	17%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	350	339	345	261	138	96	35	27	19	18	20	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	823	987	1,110	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	536	536	536
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,824	2,254	2,364	2,355	2,356	2,511	2,501	2,493	2,506	2,500	2,646	2,852
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,258	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,291	1,335	1,360	1,416	1,513	1,513	1,513	1,513	1,705	1,770	1,770	1,816	2,230	2,285	2,285
8-12hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	262	280	274	279	274	288	304	315	314
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,238**	**5,291**	**5,328**	**5,635**	**6,004**	**6,294**	**6,688**	**6,804**	**7,145**	**7,329**	**7,480**	**7,675**	**7,726**	**7,938**	**7,836**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,170	1,155	1,177	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	641	633	626	738	517	345	137	93	76	48	63	75	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	6
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,207	2,295	2,275	2,213	2,361	2,472
Geothermal	GWh	66	56	52	51	48	48	50	47	55	53	49	42	40	37	38	40	42	32	36	9
Solar	GWh	1,671	3,181	3,457	3,992	3,970	3,998	3,986	3,934	4,304	5,339	5,205	4,777	4,623	5,108	5,217	5,219	5,308	5,187	5,564	5,728
Wind	GWh	2,205	2,058	1,967	1,951	1,974	1,951	1,980	1,950	2,006	1,963	2,631	3,949	4,544	4,557	4,580	4,601	4,607	5,241	4,577	4,426
4-hr Storage	GWh	-40	-113	-131	-249	-282	-336	-356	-372	-374	-435	-449	-445	-449	-528	-572	-580	-610	-797	-808	-822
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-97	-139	-130	-162	-172	-171	-93	-94	-98	-51	-68	-85
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	945	1,023	1,022	1,082	1,063	1,119	1,178	1,230	1,211
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,412**	**10,346**	**10,341**	**10,554**	**10,822**	**11,603**	**12,127**	**12,404**	**12,507**	**12,608**	**12,719**	**13,007**	**12,894**	**12,946**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,383	1,530	1,623	1,518	1,244	563	135	-107	-128	-222	-249	-450	-272	-319
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	PHS 8-hr + CT + wind
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,735 million
20-Year NPV Carbon Emissions:	15.29 million tons
20-Year NPV Water Consumption:	7.06 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	23%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	185	71	28	22	26	19	21	21	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	864	987	1,110	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	536	536	536
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,026	2,029	2,375	2,421	2,511	2,460	2,488	2,507	2,567	2,787	2,992
Wind	MW	658	658	658	658	658	658	658	658	1,058	1,058	1,458	1,458	1,356	1,356	1,356	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,344	1,344	1,451	1,451	1,451	1,497	1,705	1,705	1,755	1,817	2,218	2,231	2,231
8-12hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	260	262	280	274	278	273	287	303	314	313
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,899**	**6,114**	**6,497**	**6,845**	**6,854**	**7,145**	**7,262**	**7,458**	**7,677**	**7,580**	**8,023**	**7,921**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	647	638	631	353	266	86	65	81	72	63	65	75	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	6
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,225	2,294	2,275	2,326	2,457	2,472
Geothermal	GWh	66	54	51	53	49	52	48	47	45	45	40	39	37	39	41	40	41	36	35	9
Solar	GWh	1,671	3,182	3,460	3,993	3,973	3,989	3,971	3,915	3,667	4,416	3,819	4,544	4,728	5,106	5,120	5,202	5,312	5,560	6,090	6,323
Wind	GWh	2,205	2,058	1,965	1,948	1,972	1,941	1,983	1,954	3,363	3,404	4,666	4,628	4,531	4,560	4,588	4,610	4,609	4,584	4,025	3,881
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-368	-362	-414	-410	-423	-444	-529	-550	-575	-611	-772	-795	-816
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-86	-108	-89	-182	-180	-171	-97	-95	-98	-67	-73	-88
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	874	945	1,023	1,022	1,078	1,059	1,116	1,175	1,227	1,207
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,347**	**10,694**	**10,864**	**11,284**	**11,976**	**12,202**	**12,402**	**12,468**	**12,600**	**12,719**	**12,845**	**12,971**	**12,994**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,530	1,270	1,208	782	190	61	-105	-89	-214	-249	-288	-349	-368
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	PHS 8-hr + Linear gen.
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,688 **million**
20-Year NPV Carbon Emissions:	16.04 **million tons**
20-Year NPV Water Consumption:	7.19 **million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	344	335	342	263	134	100	40	45	34	19	19	18	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	896	896	896	750	750	750	750	750	750	800	950	1,100	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	526	526	526
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,261	2,282	2,274	2,453	2,622	2,680	2,711	2,732	2,723	2,716	2,862
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,222	1,260	1,285	1,349	1,433	1,433	1,433	1,433	1,653	1,892	1,943	2,010	2,158	2,262	2,283
8-12hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	265	283	277	282	277	291	308	318	318
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,219**	**5,266**	**5,302**	**5,534**	**5,981**	**6,183**	**6,580**	**6,674**	**7,057**	**7,409**	**7,637**	**7,889**	**7,669**	**7,978**	**7,838**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,170	1,158	1,178	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	684	669	673	831	543	389	153	172	147	83	103	115	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	5
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,234	2,296	2,277	2,189	2,238	2,472
Geothermal	GWh	66	54	52	53	48	48	52	51	51	52	51	43	41	40	42	43	43	35	35	9
Solar	GWh	1,671	3,182	3,458	3,990	3,970	3,947	3,920	3,865	4,143	5,303	5,050	4,587	4,962	5,486	5,826	5,923	6,041	5,824	5,771	5,726
Wind	GWh	2,205	2,058	1,966	1,951	1,974	1,940	1,974	1,944	2,027	1,956	2,666	3,970	3,819	3,843	3,858	3,879	3,876	4,544	4,540	4,430
4-hr Storage	GWh	-40	-113	-131	-249	-282	-318	-338	-353	-354	-412	-422	-418	-425	-512	-615	-646	-687	-765	-812	-822
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-95	-147	-135	-132	-180	-173	-101	-102	-103	-77	-71	-85
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	955	1,033	1,033	1,092	1,073	1,130	1,189	1,240	1,224
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,344**	**10,398**	**10,343**	**10,312**	**10,551**	**10,770**	**11,520**	**11,846**	**12,167**	**12,419**	**12,568**	**12,692**	**12,943**	**12,944**	**12,960**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,375	1,397	1,533	1,652	1,521	1,296	646	416	130	-40	-182	-222	-386	-322	-334
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **PHS 8-hr + Afton CCS**
Future: **Current Trends & Policy**
Sensitivity: **None**
Phase: **Phase 2**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,986 million**
20-Year NPV Carbon Emissions: **15.31 million tons**
20-Year NPV Water Consumption: **7.38 million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	323	315	322	214	110	54	32	34	30	17	10	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	807	807	807	661	661	661	661	661	661	661	661	661	196	196	196
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,933	2,320	2,311	2,303	2,491	2,586	2,648	2,958	3,002	3,405	3,408	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,338	1,381	1,403	1,442	1,442	1,442	1,442	1,442	1,598	1,826	2,023	2,397	2,789	2,929	3,186
8-12hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	199	218	240	264	288	274	278	298	296	300	295	310	328	343	343
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,198**	**5,267**	**5,320**	**5,356**	**5,757**	**5,968**	**6,345**	**6,540**	**6,647**	**6,897**	**7,190**	**7,693**	**8,126**	**8,472**	**9,031**	**9,074**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,183	1,168	1,185	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	711	491	489	502	498	377	171	129	111	119	69	57	46	1	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,358	2,277	2,261	2,109	2,156	2,323
Geothermal	GWh	66	55	51	51	52	48	48	47	49	50	44	42	42	41	42	37	37	28	29	10
Solar	GWh	1,671	3,183	3,459	3,991	3,966	4,035	4,017	3,959	4,630	5,480	4,990	4,781	5,148	5,511	5,829	6,397	6,713	7,551	7,019	6,927
Wind	GWh	2,205	2,058	1,966	1,952	1,975	1,954	1,990	1,959	1,981	1,949	3,284	3,986	3,839	3,865	3,874	3,820	3,817	3,693	4,384	4,340
4-hr Storage	GWh	-40	-113	-131	-249	-282	-347	-365	-382	-383	-414	-427	-428	-429	-496	-588	-680	-828	-1,023	-1,110	-1,199
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-203	-227	-244	-249	-252	-250	-255	-277	-271	-411	-471	-372
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	415	515	609	708	806	911	919	999	1,085	1,100	1,159	1,141	1,200	1,263	1,324	1,308
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,245**	**10,323**	**10,275**	**10,308**	**10,500**	**11,033**	**11,622**	**11,969**	**12,193**	**12,489**	**12,772**	**12,974**	**13,212**	**13,331**	**13,335**
Net Purchases	GWh	1,072	862	1,028	1,055	1,241	1,474	1,472	1,602	1,656	1,571	1,033	545	294	104	-110	-386	-504	-655	-709	-709
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	IAS + CT
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,604 million
20-Year NPV Carbon Emissions:	16.58 million tons
20-Year NPV Water Consumption:	7.39 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	16%	16%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	255	132	118	112	88	49	46	26	16	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	823	823	823	823	823	823	946	1,110	1,192	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	618	618	618
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,797	2,242	2,722	2,802	2,794	2,785	2,734	2,726	2,718	2,708	2,726	2,930
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	658	756	956	956	1,156	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,182	1,220	1,241	1,475	1,484	1,484	1,484	1,508	1,671	1,750	1,750	1,798	2,119	2,228	2,228
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	100	99	98	97	96	95	94	93	92	91	90	90
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	264	269	287	281	286	281	295	311	322	322
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,211**	**5,258**	**5,291**	**5,610**	**5,886**	**6,349**	**6,434**	**6,563**	**6,911**	**7,066**	**7,416**	**7,751**	**7,703**	**7,840**	**7,737**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,178	1,163	1,187	570	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	705	693	697	828	756	689	724	488	298	266	184	96	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	4
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,358	2,414	2,303	2,298	2,278	2,180	2,120	2,355	2,472
Geothermal	GWh	66	54	51	53	52	48	52	51	54	51	42	44	43	42	43	42	35	30	38	9
Solar	GWh	1,671	3,183	3,462	3,990	3,969	3,912	3,886	3,823	4,287	5,140	5,553	5,759	5,698	5,774	5,856	5,675	5,522	5,533	5,756	5,790
Wind	GWh	2,205	2,058	1,963	1,951	1,973	1,934	1,964	1,939	2,017	1,931	1,778	1,758	2,371	3,137	3,150	3,872	4,546	5,208	4,568	4,415
4-hr Storage	GWh	-40	-113	-131	-249	-282	-307	-327	-341	-400	-435	-443	-451	-467	-534	-578	-592	-617	-771	-806	-820
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-209	-216	-241	-241	-247	-270	-269	-285	-295	-330	-307	-290
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	886	967	1,044	1,045	1,104	1,085	1,141	1,199	1,251	1,236
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,342**	**10,393**	**10,341**	**10,293**	**10,484**	**10,561**	**10,919**	**11,343**	**11,795**	**11,869**	**12,257**	**12,607**	**12,993**	**12,859**	**12,816**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,377	1,402	1,535	1,671	1,588	1,505	1,248	919	502	510	129	-137	-436	-237	-189
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	IAS + CT + wind
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,579	million
20-Year NPV Carbon Emissions:	15.52	million tons
20-Year NPV Water Consumption:	7.13	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	344	345	214	63	34	29	34	28	31	30	30	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	782	782	782	782	782	823	987	1,110	1,233	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	659	659	659
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,028	2,158	2,460	2,648	2,719	2,667	2,699	2,722	2,712	2,706	2,917
Wind	MW	658	658	658	658	658	658	658	658	858	1,058	1,258	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,299	1,483	1,483	1,483	1,483	1,508	1,650	1,650	1,698	1,762	2,037	2,143	2,143
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	100	99	98	97	96	95	94	93	92	91	90	90
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	278	274	288	304	315	313
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,308**	**5,720**	**6,029**	**6,338**	**6,641**	**6,769**	**7,016**	**7,133**	**7,329**	**7,552**	**7,459**	**7,769**	**7,672**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,174	1,159	1,184	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	675	661	658	603	343	218	200	219	202	192	210	220	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	11	12
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,419	2,302	2,218	2,276	2,255	2,275	2,464	2,472
Geothermal	GWh	66	56	52	51	49	52	51	51	52	48	42	39	37	39	41	44	43	36	37	9
Solar	GWh	1,671	3,180	3,455	3,992	3,971	3,951	3,935	3,878	3,996	4,412	4,313	4,766	5,149	5,495	5,492	5,584	5,694	5,709	5,825	6,152
Wind	GWh	2,205	2,059	1,969	1,952	1,974	1,942	1,972	1,943	2,733	3,409	4,011	3,927	3,794	3,844	3,855	3,886	3,876	4,554	4,311	3,973
4-hr Storage	GWh	-40	-113	-131	-249	-282	-321	-341	-356	-403	-434	-446	-444	-461	-526	-542	-572	-607	-720	-768	-796
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-225	-265	-289	-293	-292	-290	-284	-283	-272	-295	-301	-287
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	945	1,023	1,023	1,081	1,062	1,118	1,177	1,228	1,210
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,344**	**10,400**	**10,342**	**10,469**	**10,770**	**11,019**	**11,500**	**11,888**	**12,088**	**12,052**	**12,207**	**12,327**	**12,745**	**12,808**	**12,744**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,375	1,395	1,534	1,495	1,302	1,047	667	374	209	327	179	143	-187	-186	-118
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	IAS + Linear gen.
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,583	million
20-Year NPV Carbon Emissions:	15.54	million tons
20-Year NPV Water Consumption:	7.11	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	215	113	43	24	29	17	16	16	12	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	750	750	750	750	750	750	900	1,050	1,150	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	576	576	576
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,220	2,272	2,263	2,411	2,806	2,773	2,804	2,871	2,861	2,974	3,129
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,356	1,050
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,341	1,600	1,600	1,600	1,600	1,600	1,797	1,863	1,917	2,109	2,205	2,279	2,326
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	100	99	98	97	96	95	94	93	92	91	90	90
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	260	282	266	271	289	283	288	283	297	313	324	324
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,869**	**5,908**	**6,344**	**6,539**	**6,602**	**7,186**	**7,374**	**7,603**	**7,975**	**7,503**	**7,899**	**7,794**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	647	638	630	665	691	295	193	214	151	126	156	142	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	9	9
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,301	2,225	2,288	2,281	2,340	2,470	2,472
Geothermal	GWh	66	55	51	51	51	48	48	47	50	51	41	43	42	38	37	39	40	38	37	9
Solar	GWh	1,671	3,182	3,461	3,992	3,970	3,989	3,974	3,912	4,656	5,226	4,790	4,661	4,877	5,743	5,842	5,938	6,218	6,270	6,206	6,366
Wind	GWh	2,205	2,058	1,964	1,952	1,973	1,946	1,980	1,952	1,976	1,963	3,342	3,984	3,840	3,814	3,821	3,845	3,819	3,819	3,855	3,664
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-367	-444	-467	-482	-496	-492	-575	-616	-650	-733	-781	-824	-860
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-226	-219	-274	-283	-285	-290	-292	-289	-287	-285	-291	-279
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	791	888	892	973	1,050	1,051	1,110	1,091	1,146	1,206	1,257	1,241
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,347**	**10,397**	**10,507**	**10,901**	**11,436**	**11,673**	**12,232**	**12,253**	**12,418**	**12,625**	**12,616**	**12,718**	**12,623**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,529	1,567	1,565	1,165	730	589	65	126	-32	-155	-58	-96	3
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	IAS + Afton CCS
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,940 million
20-Year NPV Carbon Emissions:	15.03 million tons
20-Year NPV Water Consumption:	7.31 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	22%	21%	19%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	323	316	323	207	88	31	15	21	20	12	8	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	807	807	807	661	661	661	661	661	661	661	661	661	196	196	196
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,925	2,344	2,471	2,462	2,492	2,757	2,943	3,064	3,147	3,138	3,131	3,439
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,340	1,384	1,406	1,406	1,406	1,406	1,406	1,406	1,406	1,575	1,789	2,107	2,415	2,473	2,512
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	297	394	390	386	382	379	375	371	367	364	360
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	260	282	266	271	289	283	288	283	297	314	326	326
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,267**	**5,321**	**5,357**	**5,710**	**5,947**	**6,556**	**6,748**	**6,689**	**6,944**	**7,301**	**7,627**	**8,039**	**7,885**	**8,344**	**8,382**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,183	1,168	1,185	572	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	492	491	503	614	554	185	96	122	137	52	43	22	1	1	2
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,298	2,225	2,282	2,292	2,366	2,422	2,472
Geothermal	GWh	66	54	51	51	52	48	48	47	54	51	50	46	47	45	43	43	43	45	41	11
Solar	GWh	1,671	3,181	3,460	3,991	3,969	4,034	4,022	3,966	4,781	5,635	5,543	5,368	5,475	5,904	6,402	6,780	7,184	7,388	6,964	7,172
Wind	GWh	2,205	2,060	1,964	1,953	1,974	1,957	1,991	1,959	2,068	1,968	3,433	4,107	3,988	3,953	3,909	3,900	3,871	3,882	4,607	4,417
4-hr Storage	GWh	-40	-113	-131	-249	-282	-348	-366	-383	-378	-406	-416	-429	-432	-440	-515	-603	-734	-855	-899	-925
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-608	-621	-1,026	-1,052	-1,011	-1,027	-1,041	-1,061	-1,081	-1,065	-1,264	-1,217
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	791	888	892	973	1,050	1,051	1,110	1,091	1,147	1,209	1,261	1,247
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,244**	**10,321**	**10,272**	**10,256**	**10,442**	**10,958**	**11,470**	**11,667**	**11,921**	**12,185**	**12,476**	**12,745**	**12,971**	**13,133**	**13,180**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,475	1,474	1,604	1,708	1,630	1,108	697	596	375	194	-90	-275	-414	-511	-553
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Wind expansion + CAES
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,916	million
20-Year NPV Carbon Emissions:	15.31	million tons
20-Year NPV Water Consumption:	7.29	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	23%	16%	27%	25%	23%	17%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	339	345	210	65	23	23	30	33	18	9	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,894	2,533	2,568	2,593	2,668	3,107	3,211	3,203	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	858	1,058	1,058	1,058	956	956	956	956	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,273	1,316	1,338	1,338	1,338	1,338	1,338	1,338	1,338	1,487	1,773	2,149	2,512	2,624	2,976
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	500	500	500	500	500	500	500	500	500	500
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	199	218	240	264	288	273	277	295	294	297	293	308	325	340	340
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,198**	**5,241**	**5,294**	**5,330**	**5,700**	**5,878**	**6,701**	**6,741**	**6,682**	**6,755**	**7,347**	**7,733**	**8,316**	**8,293**	**8,863**	**8,865**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	711	646	636	628	576	346	145	152	200	233	101	112	17	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,025	2,069	1,980	1,893	1,900	2,156
Geothermal	GWh	66	55	52	51	49	52	50	53	54	51	42	44	46	47	43	41	38	41	33	10
Solar	GWh	1,671	3,176	3,463	3,991	3,971	3,981	3,965	3,903	3,940	4,244	5,373	5,533	5,654	5,886	6,771	7,123	7,073	7,703	7,563	7,523
Wind	GWh	2,205	2,064	1,961	1,953	1,972	1,945	1,980	1,949	2,739	3,470	3,212	3,212	3,130	3,200	3,082	3,088	3,727	3,555	3,798	3,590
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-367	-353	-374	-383	-391	-399	-410	-475	-589	-748	-939	-1,013	-1,131
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-185	-233	-480	-508	-521	-537	-557	-493	-337	-317	-269	-131
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	415	515	609	708	806	911	915	996	1,076	1,090	1,150	1,132	1,191	1,255	1,315	1,299
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,346**	**10,412**	**10,349**	**10,504**	**10,790**	**11,122**	**11,398**	**11,612**	**11,812**	**12,139**	**12,484**	**12,941**	**13,191**	**13,325**	**13,316**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,373	1,383	1,527	1,460	1,282	944	769	650	485	240	-98	-471	-634	-703	-690
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Wind expansion + BESS
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,633 million
20-Year NPV Carbon Emissions:	14.32 million tons
20-Year NPV Water Consumption:	6.74 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	17%	22%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	350	294	265	146	31	24	19	13	6	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,754	1,991	2,151	2,487	2,483	2,755	2,859	3,502	3,502	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	858	1,058	1,258	1,258	1,258	1,258	1,356	1,356	1,356	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,258	1,264	1,264	1,714	1,714	1,714	1,714	1,750	2,012	2,512	3,644	5,249	6,658	7,144	7,474
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	164	212	233	261	289	310	297	303	324	325	323	319	334	354	369	372
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,199**	**5,239**	**5,458**	**5,678**	**6,214**	**6,272**	**6,419**	**6,760**	**6,912**	**7,448**	**8,050**	**9,820**	**11,640**	**12,367**	**12,912**	**12,895**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,149	1,158	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	704	638	398	239	206	176	181	154	90	60	13	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,357	2,415	2,300	2,030	1,835	1,880	2,060	2,393	2,472
Geothermal	GWh	66	56	52	51	52	51	43	44	43	39	40	37	34	32	32	20	34	66	66	13
Solar	GWh	1,671	3,180	3,455	3,979	3,951	3,960	3,661	3,291	3,401	3,995	4,203	4,755	4,654	5,365	5,923	7,363	7,624	7,811	8,210	8,065
Wind	GWh	2,205	2,059	1,969	1,948	1,971	1,940	2,668	3,282	3,954	3,974	3,900	3,867	4,477	4,450	4,411	4,189	4,470	4,205	3,525	3,595
4-hr Storage	GWh	-40	-113	-131	-247	-280	-328	-340	-350	-479	-510	-521	-520	-538	-644	-888	-1,346	-2,002	-2,165	-2,242	-2,198
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	443	554	659	778	892	991	1,008	1,098	1,188	1,208	1,255	1,240	1,299	1,368	1,428	1,419
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,363**	**10,354**	**10,606**	**10,740**	**10,944**	**11,039**	**11,106**	**11,748**	**12,320**	**12,771**	**12,776**	**13,300**	**13,305**	**13,346**	**13,379**	**13,366**
Net Purchases	GWh	1,072	862	1,028	1,052	1,237	1,366	1,189	1,136	1,019	1,033	960	418	-58	-474	-397	-914	-835	-789	-757	-739
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **IAS + LAES**
Future: **Current Trends & Policy**
Sensitivity: **None**
Phase: **Phase 2**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$10,012 million**
20-Year NPV Carbon Emissions: **15.60 million tons**
20-Year NPV Water Consumption: **7.28 million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	26%	25%	23%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	350	338	345	247	118	37	20	26	29	16	9	2	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,892	2,431	2,538	2,529	2,531	2,567	3,041	3,195	3,331	3,323	3,490	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,158	1,196	1,215	1,216	1,216	1,216	1,216	1,216	1,216	1,379	1,642	2,009	2,486	2,512	2,871
8-12hr Storage	MW	-	-	-	-	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	297	494	489	484	479	475	470	465	460	456	451
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	262	285	270	274	292	286	292	288	302	320	332	332
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,225**	**5,272**	**5,305**	**5,627**	**5,986**	**6,675**	**6,866**	**6,779**	**6,803**	**7,442**	**7,850**	**8,363**	**8,144**	**8,745**	**8,803**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,157	1,182	571	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	638	632	619	765	617	165	76	106	144	32	28	4	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,235	2,288	2,288	2,367	2,281	2,472
Geothermal	GWh	66	56	52	51	52	54	53	48	56	53	49	50	51	51	44	45	42	49	44	13
Solar	GWh	1,671	3,179	3,460	3,991	3,971	4,075	4,060	4,001	4,745	5,754	5,891	5,677	5,773	5,949	6,735	7,203	7,694	8,012	7,880	7,883
Wind	GWh	2,205	2,060	1,964	1,953	1,971	1,969	2,003	1,977	2,092	1,939	3,460	4,164	4,021	4,052	3,929	3,919	3,875	3,895	4,563	4,474
4-hr Storage	GWh	-40	-113	-131	-249	-282	-298	-315	-329	-320	-349	-353	-363	-364	-372	-442	-548	-695	-865	-925	-1,044
8-12hr Storage	GWh	-	-	-	-	-	-145	-147	-149	-153	-157	-176	-176	-172	-164	-174	-181	-183	-185	-211	-205
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-577	-625	-1,258	-1,283	-1,216	-1,195	-1,269	-1,305	-1,322	-1,379	-1,606	-1,543
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	797	899	902	983	1,061	1,061	1,125	1,107	1,166	1,230	1,283	1,268
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,342**	**10,410**	**10,345**	**10,337**	**10,504**	**10,978**	**11,489**	**11,685**	**11,830**	**12,215**	**12,557**	**12,871**	**13,125**	**13,310**	**13,319**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,378	1,385	1,531	1,627	1,568	1,088	677	578	467	164	-170	-401	-568	-688	-692
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Green hydrogen + wind**
Future: **Current Trends & Policy**
Sensitivity: **None**
Phase: **Phase 2**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,574 million**
20-Year NPV Carbon Emissions: **15.60 million tons**
20-Year NPV Water Consumption: **7.11 million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	231	120	58	21	25	17	7	1	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	256	256	256	256	256
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,801	2,429	2,892	2,884	2,875	2,943	3,063	3,048	3,498	3,660	3,731	3,774	3,724
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,556	1,956	2,156	2,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,163	1,201	1,216	1,290	1,290	1,290	1,290	1,292	1,512	1,835	2,113	2,512	3,556	3,664	3,664
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	178	197	219	243	287	273	277	297	296	299	295	310	327	342	339
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,198**	**5,111**	**5,159**	**5,240**	**6,076**	**6,383**	**6,761**	**7,156**	**7,144**	**7,482**	**7,794**	**8,517**	**9,294**	**10,125**	**10,491**	**10,533**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,179	1,164	1,190	574	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	711	716	703	682	854	806	349	139	168	126	61	18	4	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	488	478	482	489	486	491	492	488	493	496	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,354	2,419	2,302	2,256	2,031	1,789	1,512	1,672	1,923
Geothermal	GWh	66	56	51	53	52	48	51	46	51	46	36	35	35	34	37	30	23	18	23	5
Solar	GWh	1,671	3,184	3,464	3,987	3,970	3,900	3,869	3,866	5,597	6,322	5,856	5,534	5,701	6,171	6,493	7,366	7,698	7,539	6,033	5,079
Wind	GWh	2,205	2,056	1,961	1,954	1,971	1,926	1,959	1,911	1,931	1,836	3,130	4,581	4,494	4,498	4,516	4,399	4,989	6,314	6,215	6,654
4-hr Storage	GWh	-40	-113	-131	-249	-282	-303	-322	-334	-360	-378	-383	-373	-378	-468	-605	-755	-955	-1,404	-1,457	-1,446
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,937	-1,897	-1,914	-1,940	-1,930	-1,948	-1,954	-1,937	-1,958	-1,969	0	-
DSM	GWh	87	165	244	326	415	507	602	701	799	908	916	996	1,083	1,097	1,155	1,139	1,197	1,259	1,319	1,298
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,341**	**10,392**	**10,358**	**10,358**	**10,495**	**10,767**	**11,814**	**12,078**	**12,302**	**12,451**	**12,780**	**13,281**	**13,765**	**13,805**	**13,513**
Net Purchases	GWh	1,072	862	1,028	1,055	1,241	1,378	1,403	1,518	1,606	1,577	1,299	352	184	-5	-72	-394	-811	-1,208	-1,183	-887
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Flow + CT**
Future:	**Current Trends & Policy**
Sensitivity:	**None**
Phase:	**Phase 2**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,669 million**
20-Year NPV Carbon Emissions:	**16.22 million tons**
20-Year NPV Water Consumption:	**7.30 million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	17%	22%	16%	17%	17%	16%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	344	345	249	118	107	70	50	39	43	24	15	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	928	823	823	823	823	823	823	987	1,151	1,233	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	659	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,818	2,304	2,706	2,697	2,689	2,793	2,742	2,733	2,725	2,716	2,709	2,858
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	956	956	1,156	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,274	1,495	1,520	1,520	1,520	1,520	1,730	1,730	1,730	1,774	2,112	2,119	2,139
8-12hr Storage	MW	-	-	-	-	-	-	-	-	100	100	100	100	100	100	100	100	100	100	100	100
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	265	283	277	281	276	290	306	317	317
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,324**	**5,651**	**5,983**	**6,366**	**6,563**	**6,670**	**6,978**	**7,095**	**7,445**	**7,778**	**7,748**	**7,801**	**7,663**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,174	1,159	1,186	570	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	675	661	672	800	680	638	429	316	279	273	192	114	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	17	15
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,359	2,415	2,299	2,210	2,171	2,058	2,018	2,276	2,472
Geothermal	GWh	66	54	52	51	53	48	52	51	48	46	41	40	40	39	41	38	33	28	35	8
Solar	GWh	1,671	3,182	3,456	3,994	3,968	3,958	3,932	3,855	4,227	5,164	5,537	5,461	5,361	5,804	5,813	5,621	5,463	5,446	5,528	5,478
Wind	GWh	2,205	2,059	1,968	1,950	1,972	1,939	1,974	1,941	1,989	1,897	1,752	2,436	3,059	3,089	3,134	3,853	4,520	5,157	4,544	4,410
4-hr Storage	GWh	-40	-113	-131	-249	-282	-321	-341	-350	-405	-447	-451	-458	-466	-551	-569	-581	-610	-790	-766	-786
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-65	-89	-103	-124	-125	-115	-86	-82	-74	-47	-53	-64
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	956	1,033	1,034	1,087	1,068	1,125	1,184	1,235	1,219
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,344**	**10,400**	**10,341**	**10,309**	**10,507**	**10,584**	**11,099**	**11,633**	**11,877**	**11,904**	**12,280**	**12,630**	**13,000**	**12,817**	**12,753**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,375	1,395	1,535	1,655	1,565	1,482	1,068	630	420	475	106	-160	-443	-195	-126
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Flow + Afton CCS
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 2

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,363	million
20-Year NPV Carbon Emissions:	14.67	million tons
20-Year NPV Water Consumption:	7.11	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	21%	20%	18%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	320	313	319	198	62	14	9	6	3	1	0	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	807	807	807	661	661	661	661	661	661	661	661	661	196	196	196
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,032	2,494	2,581	2,573	2,564	2,832	2,781	2,851	2,916	2,995	3,241	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,356	1,356	1,356	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,214	1,252	1,273	1,309	1,309	1,309	1,309	1,309	1,330	1,543	1,748	2,012	2,457	2,512	2,653
8-12hr Storage	MW	-	-	-	-	-	100	100	100	400	500	600	600	600	600	600	600	600	600	600	600
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	262	284	268	273	291	284	291	286	301	318	330	330
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,289**	**5,323**	**5,822**	**6,205**	**6,778**	**6,974**	**7,081**	**7,363**	**7,532**	**7,802**	**8,345**	**8,422**	**8,734**	**8,828**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,183	1,170	1,185	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	473	471	485	477	335	131	102	55	49	19	12	3	1	1	2
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,300	1,999	2,051	1,854	1,840	2,099	2,255
Geothermal	GWh	66	56	51	51	53	50	50	49	54	50	41	40	39	35	38	36	29	27	31	9
Solar	GWh	1,671	3,179	3,461	3,991	3,968	4,083	4,059	4,006	4,688	5,757	5,460	5,340	5,124	5,748	5,816	5,977	5,934	6,178	6,474	6,568
Wind	GWh	2,205	2,061	1,964	1,953	1,972	1,968	2,008	1,971	1,972	1,924	3,189	3,909	4,506	4,493	4,531	4,511	5,116	5,074	4,451	4,354
4-hr Storage	GWh	-40	-113	-131	-249	-282	-312	-329	-344	-351	-376	-365	-374	-372	-390	-507	-577	-756	-934	-963	-1,007
8-12hr Storage	GWh	-	-	-	-	-	-81	-80	-80	-264	-411	-486	-622	-600	-666	-392	-320	-219	-144	-141	-147
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	797	894	896	978	1,055	1,055	1,120	1,102	1,160	1,222	1,276	1,261
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,240**	**10,315**	**10,267**	**10,301**	**10,546**	**11,163**	**11,735**	**12,232**	**12,624**	**12,623**	**12,793**	**13,120**	**13,262**	**13,228**	**13,294**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,479	1,480	1,609	1,663	1,526	903	432	31	-327	-244	-407	-650	-705	-606	-668
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Base tech + CT + LDES**
Future:	**Current Trends & Policy**
Sensitivity:	**None**
Phase:	**Phase 2**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,808 million**
20-Year NPV Carbon Emissions:	**15.55 million tons**
20-Year NPV Water Consumption:	**7.24 million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	30%	28%	26%	20%	16%	16%	16%	19%	17%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	228	123	22	22	30	31	24	4	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	823	823	823	823	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	249	249	249
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,873	2,328	2,505	2,512	2,570	2,713	2,910	3,046	3,099	3,089	3,082	3,041
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	1,156	1,156	1,156	1,156	1,356	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,296	1,461	1,461	1,461	1,461	1,461	1,461	1,533	1,866	2,430	2,430	2,430	2,430
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	100	99	398	397	396	395	394	393	392	391	390	390
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	266	271	289	283	288	283	297	312	322	319
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,307**	**5,675**	**5,950**	**6,811**	**6,821**	**6,795**	**6,931**	**7,404**	**7,866**	**8,497**	**7,927**	**8,129**	**7,977**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,174	1,159	1,184	570	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	675	661	656	788	733	151	167	208	230	57	44	14	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	5
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,056	2,102	2,202	2,207	2,335	2,472
Geothermal	GWh	66	55	52	51	52	49	51	51	49	49	43	46	47	47	40	40	40	39	39	9
Solar	GWh	1,671	3,179	3,457	3,991	3,970	3,957	3,936	3,870	4,383	5,201	5,367	5,448	5,625	5,961	6,204	6,613	6,995	7,011	6,793	6,233
Wind	GWh	2,205	2,060	1,966	1,952	1,972	1,940	1,971	1,946	2,001	1,897	3,267	3,278	3,173	3,207	3,855	3,844	3,784	3,799	3,836	4,428
4-hr Storage	GWh	-40	-113	-131	-249	-282	-321	-341	-356	-401	-431	-430	-435	-444	-458	-498	-624	-839	-860	-878	-892
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-218	-222	-524	-510	-538	-578	-575	-503	-427	-430	-416	-413
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	892	973	1,050	1,051	1,110	1,091	1,146	1,201	1,249	1,228
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,344**	**10,400**	**10,343**	**10,324**	**10,491**	**11,062**	**11,327**	**11,546**	**11,763**	**12,248**	**12,608**	**12,914**	**12,969**	**12,962**	**13,070**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,375	1,395	1,533	1,640	1,581	1,004	840	716	534	131	-221	-444	-412	-340	-444
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	2035 CO2-free
Future:	Custom
Sensitivity:	Custom
Phase:	Stakeholder

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$15,127	**million**
20-Year NPV Carbon Emissions:	14.66	**million tons**
20-Year NPV Water Consumption:	7.07	**million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,108	2,193	2,288	2,330	2,425	2,551	2,668	2,787	2,916	3,013	3,142	3,264	3,365	3,486	3,594	3,721	3,840	3,960	4,057
PRM	%	12%	11%	10%	20%	18%	17%	17%	17%	21%	16%	25%	17%	21%	23%	22%	22%	21%	17%	16%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	356	354	298	247	117	19	11	10	-	-	-	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	-	-	-	-	-	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,816	1,807	1,798	2,084	2,081	2,763	3,411	3,887	3,878	6,288	6,881	7,260	7,722	8,086	8,565	9,911	10,544
Wind	MW	658	658	658	658	658	658	858	1,258	1,458	1,458	1,458	1,658	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,184	1,184	1,222	1,222	1,262	1,272	1,272	1,811	1,811	2,397	2,715	2,994	3,323	3,542	3,846	4,758	5,506
8-12hr Storage	MW	-	-	-	-	-	200	200	200	500	800	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
24+hr Storage	MW	-	-	-	-	-	-	100	100	300	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	136	155	180	198	221	245	288	274	280	300	297	299	296	310	327	339	342
Total Capacity	**MW**	**3,678**	**4,418**	**4,653**	**5,294**	**5,305**	**5,404**	**6,008**	**6,467**	**7,738**	**8,529**	**9,730**	**9,927**	**12,140**	**13,049**	**13,709**	**14,495**	**15,094**	**15,894**	**18,163**	**19,241**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,263	1,255	1,243	1,223	1,211	573	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,341	871	1,104	741	733	694	495	335	236	217	237	239	-	-	-	-	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,290	2,361	2,426	2,303	1,278	1,206	1,223	1,290	1,384	1,413
Geothermal	GWh	66	54	51	51	50	53	54	49	41	40	39	39	14	13	13	14	19	21	19	2
Solar	GWh	1,671	3,182	3,457	4,120	4,124	4,367	4,837	4,462	6,023	7,770	9,058	9,080	13,580	14,643	16,293	17,226	17,995	19,193	20,665	21,353
Wind	GWh	2,205	2,054	1,960	1,962	1,992	2,018	2,743	4,145	4,607	4,577	4,534	5,307	4,151	4,122	4,061	4,045	3,845	3,239	2,155	2,167
4-hr Storage	GWh	-40	-114	-131	-268	-301	-308	-322	-343	-326	-340	-522	-529	-729	-857	-1,104	-1,261	-1,357	-1,505	-1,898	-2,245
8-12hr Storage	GWh	-	-	-	-	-	-151	-168	-141	-565	-972	-1,113	-1,098	-1,366	-1,379	-1,327	-1,304	-1,253	-1,265	-1,149	-1,001
24+hr Storage	GWh	-	-	-	-	-	-	-78	-71	-204	-202	-116	-115	-462	-466	-463	-466	-443	-396	-321	-311
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	329	418	513	607	707	804	909	918	1,008	1,096	1,105	1,161	1,146	1,206	1,268	1,323	1,313
Total Generation	**GWh**	**8,875**	**9,679**	**10,219**	**10,561**	**10,560**	**10,797**	**11,758**	**12,649**	**13,549**	**14,374**	**15,324**	**16,292**	**18,710**	**19,484**	**19,912**	**20,605**	**21,236**	**21,845**	**22,178**	**22,690**
Net Purchases	GWh	1,456	965	1,095	1,274	1,451	1,679	1,460	1,305	1,087	972	605	326	-1,392	-1,511	-1,291	-1,382	-1,332	-1,238	-915	-838
Total Supply	**GWh**	**10,332**	**10,644**	**11,314**	**11,835**	**12,011**	**12,477**	**13,217**	**13,954**	**14,637**	**15,346**	**15,929**	**16,618**	**17,318**	**17,973**	**18,621**	**19,223**	**19,904**	**20,608**	**21,263**	**21,852**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	High EV + Building Electrification
Future:	Custom
Sensitivity:	Custom
Phase:	Stakeholder

Cost & Environmental Metrics		
20-Year NPV Revenue Requirement:	$11,275	**million**
20-Year NPV Carbon Emissions:	15.78	**million tons**
20-Year NPV Water Consumption:	7.75	**million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,073	2,123	2,215	2,284	2,325	2,388	2,441	2,491	2,554	2,628	2,671	2,745	2,812	2,858	2,927	2,990	3,073	3,137	3,194	3,248
PRM	%	11%	10%	9%	19%	17%	16%	18%	17%	21%	16%	29%	26%	23%	17%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	502	478	362	359	356	352	345	346	225	103	22	24	31	33	10	7	6	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,775	2,100	2,585	2,836	2,891	2,954	3,145	3,309	3,452	3,518	3,859	4,497	4,815
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	1,156	1,156	1,156	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,157	1,157	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,451	1,759	2,147	2,512	2,867	3,396
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	10	10	10	10	10	10	10	10	10	10
24+hr Storage	MW	-	-	-	-	-	100	199	197	495	493	791	789	787	785	784	782	780	778	776	775
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	199	217	239	263	287	272	276	296	295	298	295	309	327	342	342
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,234**	**5,245**	**5,321**	**5,429**	**5,467**	**5,969**	**6,276**	**7,220**	**7,277**	**7,256**	**7,443**	**8,008**	**8,453**	**8,920**	**9,341**	**10,347**	**10,887**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,241	1,233	1,172	1,161	1,188	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,747	1,013	1,234	852	782	719	692	704	654	549	121	143	192	221	66	64	59	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,026	2,055	2,027	1,800	1,959	1,998
Geothermal	GWh	66	56	52	51	50	56	57	56	56	51	45	47	47	48	45	47	50	32	33	9
Solar	GWh	1,671	3,186	3,481	4,061	4,052	4,233	4,369	4,361	5,177	6,169	6,400	6,560	6,809	7,249	7,557	7,918	8,289	8,378	9,298	9,470
Wind	GWh	2,205	2,062	1,963	1,969	1,995	2,010	2,101	2,064	2,044	1,946	3,285	3,288	3,171	3,208	3,887	3,893	3,904	5,102	4,368	4,273
4-hr Storage	GWh	-40	-113	-131	-260	-293	-321	-323	-332	-331	-360	-353	-354	-368	-380	-459	-579	-734	-968	-1,111	-1,348
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-11	-11	-11	-11	-10	-8	-7	-8	-10	-7
24+hr Storage	GWh	-	-	-	-	-	-199	-354	-364	-453	-507	-804	-806	-827	-898	-844	-778	-688	-860	-962	-716
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	415	515	605	705	802	908	912	993	1,080	1,094	1,153	1,138	1,198	1,260	1,320	1,304
Total Generation	**GWh**	**9,281**	**9,831**	**10,359**	**10,604**	**10,525**	**10,552**	**10,674**	**10,679**	**10,877**	**11,130**	**11,891**	**12,221**	**12,519**	**12,833**	**13,422**	**13,751**	**14,097**	**14,736**	**14,896**	**14,983**
Net Purchases	GWh	1,087	872	1,041	1,080	1,281	1,435	1,454	1,605	1,576	1,518	839	705	602	427	26	-184	-332	-764	-749	-719
Total Supply	**GWh**	**10,367**	**10,703**	**11,400**	**11,684**	**11,806**	**11,987**	**12,128**	**12,285**	**12,453**	**12,648**	**12,731**	**12,926**	**13,121**	**13,260**	**13,448**	**13,567**	**13,766**	**13,971**	**14,147**	**14,264**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	FCPP Retires 2031 + Valencia Ext
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Stakeholder

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,374	million
20-Year NPV Carbon Emissions:	16.34	million tons
20-Year NPV Water Consumption:	7.41	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,473	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	14%	13%	12%	21%	20%	19%	18%	19%	16%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	341	155	77	47	53	33	13	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	856	856	856	856	856	856	856	856	856	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,754	1,746	2,393	2,384	2,376	2,529	2,687	2,992	3,457	3,449	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,112	1,112	1,165	1,289	1,517	1,517	1,517	1,518	1,810	2,254	3,306	5,217	6,899	7,170	7,500
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	164	192	213	241	265	308	295	301	321	322	321	317	332	351	366	368
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,199**	**5,228**	**5,241**	**5,319**	**5,313**	**6,030**	**6,409**	**6,607**	**6,679**	**7,130**	**7,877**	**9,391**	**11,509**	**12,405**	**12,935**	**12,918**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,182	1,169	1,192	1,175	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	704	731	742	710	623	734	322	222	254	185	60	8	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,359	2,419	2,302	2,031	1,964	1,912	1,972	2,019	2,472
Geothermal	GWh	66	54	52	53	49	51	50	50	50	47	37	36	37	36	35	19	18	60	58	13
Solar	GWh	1,671	3,181	3,458	3,975	3,954	3,840	3,771	3,738	3,751	5,003	4,500	4,420	4,724	5,315	6,213	7,481	7,688	8,031	8,062	7,576
Wind	GWh	2,205	2,059	1,965	1,950	1,971	1,915	1,934	1,913	1,939	1,821	3,130	3,885	3,771	3,783	3,720	3,571	4,267	4,332	4,385	4,353
4-hr Storage	GWh	-40	-114	-131	-247	-280	-290	-298	-320	-361	-452	-447	-455	-461	-578	-785	-1,192	-1,914	-2,417	-2,532	-2,451
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	443	550	655	774	872	978	995	1,086	1,173	1,193	1,244	1,228	1,287	1,352	1,412	1,404
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,363**	**10,345**	**10,391**	**10,353**	**10,408**	**10,506**	**10,835**	**11,553**	**11,916**	**12,238**	**12,519**	**13,079**	**13,258**	**13,330**	**13,404**	**13,368**
Net Purchases	GWh	1,072	862	1,028	1,052	1,237	1,374	1,404	1,523	1,555	1,566	1,231	614	347	59	-140	-692	-788	-773	-782	-741
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,626**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	FCPP Retires 2031 + Valencia Ext + Reeves Ext
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Stakeholder

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,161 million
20-Year NPV Carbon Emissions:	16.04 million tons
20-Year NPV Water Consumption:	7.32 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,473	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	14%	13%	12%	21%	20%	19%	18%	19%	18%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	339	126	53	30	37	20	6	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,754	1,745	2,283	2,275	2,266	2,422	2,592	2,954	3,421	3,423	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,112	1,112	1,164	1,164	1,320	1,320	1,320	1,320	1,620	2,015	2,769	4,955	6,899	7,170	7,500
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	164	192	213	241	265	308	295	301	321	322	321	317	332	351	366	368
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,199**	**5,228**	**5,241**	**5,318**	**5,334**	**5,869**	**6,248**	**6,445**	**6,519**	**6,990**	**7,746**	**8,964**	**11,366**	**12,405**	**12,935**	**12,918**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,182	1,169	1,192	1,182	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	704	731	742	711	703	947	424	307	343	249	93	17	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,420	2,301	2,026	1,952	1,908	1,961	2,012	2,420
Geothermal	GWh	66	54	51	51	52	51	50	46	45	47	38	38	37	38	34	27	22	62	60	13
Solar	GWh	1,671	3,182	3,464	3,980	3,954	3,841	3,766	3,740	3,640	4,673	4,194	4,074	4,386	5,014	5,957	7,199	7,594	8,016	8,054	7,608
Wind	GWh	2,205	2,059	1,961	1,947	1,969	1,914	1,939	1,914	1,924	1,830	3,171	3,901	3,796	3,813	3,726	3,593	4,265	4,329	4,377	4,353
4-hr Storage	GWh	-40	-114	-131	-247	-280	-290	-298	-319	-326	-389	-389	-388	-394	-513	-686	-1,018	-1,821	-2,390	-2,503	-2,428
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	443	550	655	774	872	978	995	1,086	1,173	1,193	1,244	1,229	1,287	1,352	1,412	1,403
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,363**	**10,346**	**10,391**	**10,353**	**10,401**	**10,460**	**10,729**	**11,377**	**11,761**	**12,095**	**12,395**	**12,999**	**13,256**	**13,330**	**13,412**	**13,368**
Net Purchases	GWh	1,072	862	1,028	1,052	1,237	1,374	1,404	1,523	1,563	1,612	1,337	789	502	202	-16	-613	-786	-773	-790	-742
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	FCPP Retires 2027 + Valencia Ext
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Stakeholder

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,325	million
20-Year NPV Carbon Emissions:	13.99	million tons
20-Year NPV Water Consumption:	5.97	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,473	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	14%	13%	12%	21%	20%	16%	16%	16%	16%	16%	19%	17%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	204	193	200	144	139	79	78	56	38	11	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	856	856	856	856	856	856	856	856	856	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,762	2,002	2,061	2,442	2,477	2,469	2,814	3,002	3,464	3,456	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	858	956	956	956	1,156	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,273	1,313	1,326	1,596	1,596	1,596	1,596	1,596	1,825	2,330	3,297	5,208	6,882	7,154	7,484
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	164	212	233	261	288	308	296	301	323	324	322	318	333	353	368	371
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,199**	**5,209**	**5,262**	**5,308**	**5,698**	**5,778**	**6,346**	**6,387**	**6,498**	**7,074**	**7,764**	**9,389**	**11,507**	**12,390**	**12,920**	**12,903**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	704	1,202	1,176	1,184	817	806	457	494	353	275	119	8	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,424	2,301	2,193	1,959	1,909	1,972	2,206	2,280
Geothermal	GWh	66	54	51	53	52	53	55	54	51	51	38	42	42	39	36	19	18	61	59	13
Solar	GWh	1,671	3,182	3,462	3,973	3,954	4,250	4,232	4,207	4,658	4,762	4,921	5,045	4,888	5,694	6,480	7,488	7,701	8,010	7,782	7,794
Wind	GWh	2,205	2,059	1,963	1,952	1,969	2,023	2,056	2,018	1,985	1,951	2,477	2,462	3,085	3,072	3,022	3,567	4,260	4,330	4,430	4,333
4-hr Storage	GWh	-40	-114	-131	-247	-280	-326	-345	-359	-449	-464	-484	-492	-493	-585	-777	-1,189	-1,915	-2,403	-2,515	-2,463
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	443	554	659	778	884	983	999	1,090	1,181	1,201	1,248	1,232	1,291	1,360	1,420	1,411
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,363**	**10,123**	**10,200**	**10,179**	**10,307**	**10,463**	**10,705**	**11,002**	**11,479**	**11,997**	**12,322**	**13,085**	**13,264**	**13,330**	**13,381**	**13,368**
Net Purchases	GWh	1,072	862	1,028	1,052	1,237	1,596	1,594	1,697	1,657	1,609	1,361	1,164	783	300	57	-699	-794	-773	-759	-741
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	FCPP Retires 2027 + Valencia Ext + Reeves Ext
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Stakeholder

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,096	million
20-Year NPV Carbon Emissions:	14.19	million tons
20-Year NPV Water Consumption:	6.05	million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,473	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	14%	13%	12%	21%	20%	16%	16%	16%	16%	16%	17%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	204	193	200	184	158	114	45	53	33	13	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	1,002	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,762	1,811	2,119	2,229	2,220	2,258	2,591	2,954	3,413	3,414	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,258	1,156	1,156	1,156	1,156	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,273	1,313	1,326	1,357	1,357	1,357	1,357	1,357	1,620	2,015	2,775	4,961	6,899	7,170	7,500
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	164	212	233	261	285	308	295	301	321	322	321	317	332	351	366	368
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,199**	**5,209**	**5,262**	**5,308**	**5,412**	**5,743**	**6,040**	**6,437**	**6,393**	**6,990**	**7,746**	**8,962**	**11,364**	**12,405**	**12,935**	**12,918**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	704	1,202	1,176	1,184	1,095	970	662	299	344	249	93	17	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,423	2,301	2,026	1,957	1,913	1,978	2,050	2,321
Geothermal	GWh	66	54	51	53	52	53	55	54	55	49	41	38	40	37	34	30	22	60	59	13
Solar	GWh	1,671	3,185	3,467	3,977	3,953	4,250	4,232	4,207	4,229	4,587	4,441	4,047	4,182	5,015	5,957	7,187	7,584	8,006	7,982	7,747
Wind	GWh	2,205	2,056	1,958	1,948	1,970	2,022	2,056	2,018	2,015	1,889	2,580	3,915	3,822	3,811	3,727	3,591	4,265	4,339	4,390	4,342
4-hr Storage	GWh	-40	-114	-131	-247	-280	-326	-345	-359	-377	-399	-406	-402	-410	-513	-686	-1,018	-1,823	-2,405	-2,511	-2,458
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	443	554	659	778	876	978	995	1,086	1,173	1,193	1,244	1,229	1,287	1,352	1,412	1,403
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,363**	**10,123**	**10,200**	**10,179**	**10,254**	**10,448**	**10,609**	**11,343**	**11,574**	**12,093**	**12,395**	**12,992**	**13,248**	**13,331**	**13,381**	**13,368**
Net Purchases	GWh	1,072	862	1,028	1,052	1,237	1,596	1,594	1,697	1,710	1,624	1,457	823	689	203	-16	-606	-778	-773	-760	-742
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Increased Demand Response
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Stakeholder

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,279 **million**
20-Year NPV Carbon Emissions:	15.72 **million tons**
20-Year NPV Water Consumption:	7.13 **million gallons**

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,473	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	21%	20%	16%	16%	19%	22%	16%	18%	17%	16%	16%	16%	16%	16%	17%	17%	17%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	238	134	59	19	25	17	13	13	7	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	782	905	946	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	372	372	372
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,754	1,947	2,279	2,270	2,262	2,342	2,513	2,488	2,544	2,723	2,729	2,952	3,206
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,106	1,106	1,165	1,203	1,203	1,524	1,524	1,524	1,524	1,524	1,714	1,864	1,916	2,161	2,773	2,830	2,830
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	185	204	277	295	415	458	480	464	469	487	481	486	481	495	512	524	521
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,232**	**5,242**	**5,212**	**5,259**	**5,376**	**5,786**	**5,940**	**6,316**	**6,713**	**6,709**	**7,064**	**7,276**	**7,502**	**7,981**	**8,042**	**8,534**	**8,478**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,178	1,164	1,189	571	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	713	711	698	709	768	793	366	145	180	136	91	96	55	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,419	2,302	2,233	2,291	2,182	2,271	2,277	2,315
Geothermal	GWh	66	55	51	51	53	51	51	52	52	48	38	36	37	35	35	33	35	30	24	8
Solar	GWh	1,671	3,182	3,466	3,986	3,965	3,899	3,872	3,800	4,314	4,956	4,476	4,112	4,308	4,839	5,003	5,133	5,610	5,954	6,070	6,256
Wind	GWh	2,205	2,059	1,959	1,953	1,971	1,927	1,961	1,927	1,922	1,873	3,206	4,619	4,516	4,519	4,531	4,529	4,484	4,512	4,502	4,359
4-hr Storage	GWh	-40	-114	-131	-248	-280	-303	-323	-330	-429	-452	-459	-456	-462	-543	-615	-649	-758	-1,001	-1,055	-1,076
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	330	416	512	602	703	799	896	900	981	1,058	1,059	1,117	1,098	1,154	1,216	1,270	1,247
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,483**	**10,360**	**10,344**	**10,394**	**10,346**	**10,357**	**10,488**	**10,822**	**11,797**	**12,056**	**12,347**	**12,394**	**12,532**	**12,763**	**12,984**	**13,088**	**13,108**
Net Purchases	GWh	1,072	862	1,028	1,054	1,241	1,375	1,401	1,530	1,606	1,583	1,243	369	206	-50	-15	-146	-293	-427	-466	-482
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,626**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + LDES
Future: Custom
Sensitivity: Custom
Phase: Stakeholder

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $10,140 million
20-Year NPV Carbon Emissions: 15.40 million tons
20-Year NPV Water Consumption: 7.60 million gallons

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	4,132	4,220	4,382	4,498	4,552	4,646	4,719	4,773	4,847	4,945	4,976	5,069	5,149	5,184	5,259	5,316	5,407	5,474	5,529	5,581
PRM	%	23%	21%	21%	38%	37%	32%	32%	32%	43%	32%	62%	57%	54%	42%	32%	32%	32%	32%	32%	32%
Carbon Intensity	lbs/MWh	252	238	181	179	178	176	170	172	117	49	8	8	9	10	7	4	2	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,772	1,881	2,313	2,591	2,643	2,722	2,716	3,041	3,033	3,025	3,015	3,009	3,329
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	956	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,352	1,628	1,937	2,317	2,418	2,438
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	255	277	258	260	278	271	277	272	286	302	313	313
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,353**	**5,635**	**5,890**	**6,848**	**6,902**	**6,896**	**6,885**	**7,226**	**7,489**	**8,003**	**7,889**	**8,195**	**8,229**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,240	1,231	1,170	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	983	1,174	807	712	649	637	621	662	498	102	115	130	162	96	91	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,051	2,125	2,035	2,028	2,176	2,247
Geothermal	GWh	66	54	52	51	53	52	52	50	56	51	42	44	43	46	47	46	43	40	35	7
Solar	GWh	1,671	3,183	3,461	3,991	3,966	3,993	3,970	3,943	4,437	5,373	5,516	5,699	5,906	6,064	6,712	6,761	6,694	6,439	6,255	6,496
Wind	GWh	2,205	2,058	1,963	1,952	1,975	1,938	1,979	1,940	2,012	1,943	3,214	3,230	3,106	3,183	3,110	3,220	3,875	4,487	4,498	4,381
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-368	-354	-387	-375	-385	-392	-407	-426	-532	-655	-850	-888	-911
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-110	-148	-346	-385	-397	-399	-434	-330	-227	-121	-121	-138
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	779	876	867	939	1,017	1,017	1,076	1,057	1,113	1,172	1,223	1,207
Total Generation	**GWh**	**9,262**	**9,792**	**10,276**	**10,482**	**10,359**	**10,347**	**10,410**	**10,355**	**10,410**	**10,581**	**11,316**	**11,618**	**11,839**	**11,969**	**12,233**	**12,439**	**12,883**	**13,195**	**13,180**	**13,290**
Net Purchases	GWh	2,144	1,721	2,055	2,109	2,483	2,745	2,769	3,041	3,108	2,982	1,500	1,096	847	655	292	-105	-827	-1,275	-1,116	-1,326
Total Supply	**GWh**	**11,405**	**11,513**	**12,331**	**12,591**	**12,842**	**13,091**	**13,179**	**13,397**	**13,518**	**13,563**	**12,816**	**12,715**	**12,686**	**12,625**	**12,525**	**12,334**	**12,057**	**11,920**	**12,064**	**11,963**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,467 million
20-Year NPV Carbon Emissions:	15.10 million tons
20-Year NPV Water Consumption:	6.99 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004 MW
20-Year NPV Rev Req:	-$1,279 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,473	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	19%	21%	20%	19%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	349	337	345	187	100	24	12	8	2	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,173	2,165	2,337	2,329	2,320	2,572	2,854	3,395	3,410	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,356	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,255	1,295	1,309	1,997	1,997	1,997	1,997	1,997	2,087	2,096	2,985	3,685	3,807	4,124	4,454
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	235	263	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,239**	**5,290**	**5,325**	**6,320**	**6,132**	**6,691**	**6,888**	**6,999**	**7,542**	**7,831**	**9,256**	**9,986**	**9,518**	**9,894**	**9,877**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,180	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	699	635	620	609	452	553	193	118	76	17	6	0	0	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	1,856	1,742	1,747	1,668	2,096	2,149
Geothermal	GWh	66	56	52	51	52	53	51	49	48	46	40	41	37	28	24	20	24	10	31	8
Solar	GWh	1,671	3,180	3,459	3,977	3,948	3,954	3,927	3,857	4,920	5,189	4,927	4,718	4,565	4,888	5,413	6,749	6,995	7,217	6,971	7,150
Wind	GWh	2,205	2,059	1,965	1,951	1,971	1,938	1,973	1,939	1,848	1,959	3,195	3,931	4,525	5,157	5,066	4,881	4,887	4,906	4,403	4,325
4-hr Storage	GWh	-40	-113	-131	-247	-280	-327	-347	-360	-563	-571	-607	-609	-618	-669	-760	-1,132	-1,401	-1,497	-1,574	-1,704
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	669	788	903	1,001	1,018	1,107	1,198	1,218	1,266	1,248	1,307	1,376	1,437	1,427
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,355**	**10,417**	**10,360**	**10,535**	**10,551**	**11,063**	**11,666**	**12,210**	**12,941**	**12,871**	**13,508**	**13,559**	**13,679**	**13,364**	**13,355**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,364	1,377	1,516	1,429	1,521	1,003	500	53	-644	-492	-1,121	-1,089	-1,122	-743	-728
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	High Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$17,448	million
20-Year NPV Carbon Emissions:	16.12	million tons
20-Year NPV Water Consumption:	7.26	million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004	MW
20-Year NPV Rev Req:	-$1,279	million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,069	2,116	2,204	2,306	2,355	2,456	2,589	2,705	2,823	2,950	3,046	3,176	3,300	3,402	3,523	3,630	3,755	3,871	3,988	4,078
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	21%	25%	24%	22%	20%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	478	362	360	356	354	352	329	137	65	35	32	34	13	9	13	16	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	513	112	187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,911	2,354	3,610	3,790	3,781	3,773	3,764	4,440	4,854	4,954	5,049	7,626	9,046	9,709
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,356	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,199	1,199	1,488	1,693	1,838	3,514	3,514	3,514	3,514	3,514	3,527	5,133	6,965	8,135	8,621	9,853	10,560
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	215	238	266	294	315	303	308	330	331	327	324	340	360	375	378
Total Capacity	**MW**	**3,682**	**4,425**	**4,665**	**5,282**	**5,298**	**5,473**	**5,846**	**6,462**	**9,276**	**9,277**	**9,657**	**9,853**	**9,964**	**10,853**	**12,870**	**14,799**	**16,079**	**18,462**	**21,129**	**22,196**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,244	1,237	1,173	1,160	1,192	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,734	1,001	1,213	927	879	903	1,015	940	413	539	408	415	400	278	174	268	321	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,293	2,361	2,423	2,303	1,982	2,224	2,296	1,836	2,065	2,027
Geothermal	GWh	66	56	51	55	52	53	53	52	45	45	43	47	46	39	39	46	55	20	21	8
Solar	GWh	1,671	3,183	3,478	4,144	4,160	4,319	4,821	5,726	8,757	9,477	9,216	9,293	9,354	10,635	12,317	12,896	13,448	17,958	19,414	20,735
Wind	GWh	2,205	2,062	1,962	1,990	2,022	2,040	2,095	1,969	1,701	1,753	3,220	4,037	4,676	5,308	5,315	5,386	5,448	5,040	4,383	4,237
4-hr Storage	GWh	-40	-113	-131	-269	-301	-375	-436	-509	-975	-1,022	-1,038	-1,069	-1,085	-1,155	-1,788	-2,187	-2,393	-4,299	-4,947	-5,312
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	571	682	802	915	1,019	1,038	1,128	1,220	1,241	1,283	1,270	1,333	1,400	1,461	1,450
Total Generation	**GWh**	**9,268**	**9,816**	**10,331**	**10,800**	**10,793**	**11,051**	**11,759**	**12,469**	**13,783**	**14,186**	**15,180**	**16,211**	**17,034**	**18,648**	**19,322**	**19,904**	**20,509**	**21,955**	**22,397**	**23,146**
Net Purchases	GWh	1,079	868	1,037	1,117	1,327	1,564	1,626	1,681	1,073	1,403	1,013	692	589	-352	-361	-327	-236	-965	-738	-883
Total Supply	**GWh**	**10,347**	**10,684**	**11,368**	**11,917**	**12,120**	**12,615**	**13,385**	**14,149**	**14,856**	**15,589**	**16,194**	**16,903**	**17,623**	**18,296**	**18,961**	**19,577**	**20,273**	**20,990**	**21,659**	**22,263**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Low Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,495 million**
20-Year NPV Carbon Emissions:	**14.93 million tons**
20-Year NPV Water Consumption:	**6.93 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**-3,004 MW**
20-Year NPV Rev Req:	**-$1,279 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,062	2,102	2,176	2,225	2,243	2,280	2,307	2,326	2,355	2,395	2,401	2,439	2,470	2,479	2,507	2,526	2,562	2,587	2,611	2,628
PRM	%	12%	11%	11%	20%	19%	17%	17%	17%	23%	19%	21%	20%	20%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	504	472	362	359	355	337	326	331	194	105	49	23	14	6	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,004	1,996	2,198	2,190	2,181	2,430	2,527	3,180	3,179	3,290	3,307	3,257
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,058	1,156	1,356	1,356	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,080	1,080	1,233	1,259	1,262	1,884	1,884	1,884	1,884	1,884	1,890	1,941	2,266	2,847	2,826	3,067	3,396
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	194	215	243	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,179**	**5,197**	**5,234**	**5,258**	**6,038**	**5,849**	**6,239**	**6,436**	**6,547**	**7,003**	**7,148**	**8,123**	**8,918**	**8,328**	**8,601**	**8,576**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,148	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,554	1,583	1,134	937	675	653	611	516	578	323	194	124	43	9	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,302	2,224	1,912	1,815	1,812	2,216	2,221
Geothermal	GWh	66	56	51	52	52	52	52	46	47	48	48	43	43	31	33	19	19	38	49	13
Solar	GWh	1,671	3,168	3,470	3,967	3,914	3,942	3,894	3,810	4,583	4,834	4,873	4,748	4,575	4,716	5,203	6,476	6,610	7,025	6,961	7,060
Wind	GWh	2,205	2,055	1,958	1,947	1,961	1,937	1,962	1,930	1,912	2,002	2,632	3,322	3,865	4,517	4,482	4,229	4,907	4,964	4,417	4,329
4-hr Storage	GWh	-40	-114	-131	-242	-274	-321	-337	-345	-520	-532	-562	-581	-590	-603	-797	-1,108	-1,768	-2,271	-2,231	-2,236
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	560	665	784	903	1,001	1,018	1,108	1,199	1,218	1,265	1,250	1,308	1,376	1,437	1,427
Total Generation	**GWh**	**10,317**	**10,291**	**10,640**	**10,716**	**10,481**	**10,359**	**10,394**	**10,281**	**10,368**	**10,306**	**10,628**	**11,194**	**11,641**	**12,224**	**12,419**	**12,777**	**12,891**	**12,944**	**12,849**	**12,813**
Net Purchases	GWh	-7	318	588	704	962	1,162	1,162	1,316	1,277	1,407	1,040	535	144	-445	-597	-989	-1,060	-1,065	-945	-945
Total Supply	**GWh**	**10,310**	**10,610**	**11,228**	**11,420**	**11,443**	**11,521**	**11,556**	**11,597**	**11,645**	**11,713**	**11,668**	**11,729**	**11,785**	**11,779**	**11,821**	**11,788**	**11,832**	**11,879**	**11,904**	**11,868**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies**
Future: **National Carbon Policy**
Sensitivity: **None**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$19,531 million**
20-Year NPV Carbon Emissions: **15.38 million tons**
20-Year NPV Water Consumption: **7.03 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **-3,004 MW**
20-Year NPV Rev Req: **-$1,279 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,108	2,193	2,288	2,330	2,425	2,551	2,668	2,787	2,916	3,013	3,142	3,264	3,365	3,486	3,594	3,721	3,840	3,960	4,057
PRM	%	12%	11%	10%	20%	18%	17%	16%	16%	21%	20%	20%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	356	354	330	326	128	53	27	8	-	-	-	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	-	-	-	-	-	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,807	1,798	1,790	2,216	2,443	3,718	3,919	3,912	4,452	5,741	6,311	6,655	7,124	7,525	8,010	9,352	10,033
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,180	1,180	1,438	1,578	1,762	4,521	4,521	5,890	5,890	7,695	8,279	8,750	9,226	9,040	8,293	9,559	10,338
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	215	238	266	294	315	303	308	330	332	328	324	340	360	375	378
Total Capacity	**MW**	**3,678**	**4,418**	**4,653**	**5,287**	**5,303**	**5,447**	**6,036**	**6,475**	**10,391**	**10,412**	**12,163**	**13,108**	**15,622**	**16,777**	**17,588**	**18,530**	**18,760**	**18,518**	**21,142**	**22,299**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,263	1,255	1,248	1,240	1,252	582	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,341	871	1,104	740	722	715	758	887	430	534	440	215	-	-	-	-	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,360	2,374	2,296	2,361	2,426	2,303	1,551	1,466	1,675	1,674	2,090	1,991
Geothermal	GWh	66	54	52	51	50	51	50	46	43	42	42	30	14	14	16	16	19	23	19	7
Solar	GWh	1,671	3,181	3,459	4,099	4,097	4,240	5,060	5,617	9,046	9,787	9,739	10,728	12,821	14,098	15,534	16,717	17,250	18,220	19,113	20,460
Wind	GWh	2,205	2,055	1,959	1,964	1,995	1,998	1,942	1,904	1,638	1,688	3,193	4,509	4,526	4,342	4,421	4,393	4,517	4,503	3,948	3,827
4-hr Storage	GWh	-40	-114	-131	-267	-300	-370	-430	-495	-1,188	-1,253	-1,538	-1,772	-2,467	-2,726	-3,190	-3,549	-3,892	-4,211	-4,849	-5,244
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	571	682	802	915	1,019	1,038	1,128	1,218	1,239	1,282	1,268	1,333	1,402	1,462	1,452
Total Generation	**GWh**	**8,875**	**9,679**	**10,219**	**10,560**	**10,562**	**10,820**	**11,670**	**12,310**	**13,825**	**14,191**	**15,211**	**17,198**	**18,537**	**19,271**	**19,614**	**20,313**	**20,902**	**21,612**	**21,783**	**22,492**
Net Purchases	GWh	1,456	965	1,095	1,275	1,449	1,657	1,547	1,644	812	1,154	718	-580	-1,218	-1,298	-993	-1,090	-998	-1,004	-520	-641
Total Supply	**GWh**	**10,332**	**10,644**	**11,314**	**11,835**	**12,011**	**12,477**	**13,217**	**13,954**	**14,637**	**15,346**	**15,929**	**16,618**	**17,319**	**17,973**	**18,621**	**19,223**	**19,904**	**20,608**	**21,264**	**21,852**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Base Technologies + LDES**
Future:	**Current Trends & Policy**
Sensitivity:	**None**
Phase:	**Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$10,226 million**
20-Year NPV Carbon Emissions:	**15.40 million tons**
20-Year NPV Water Consumption:	**7.60 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**400 MW**
20-Year NPV Rev Req:	**$86 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,473	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	31%	29%	27%	21%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	344	234	97	17	16	19	21	15	7	4	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,772	1,881	2,313	2,591	2,643	2,722	2,716	3,041	3,033	3,025	3,015	3,009	3,329
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	956	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,352	1,628	1,937	2,717	2,818	2,838
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	121	145	163	183	203	225	205	207	225	219	224	219	233	250	261	261
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,165**	**5,189**	**5,243**	**5,300**	**5,582**	**5,837**	**6,795**	**6,849**	**6,844**	**6,832**	**7,173**	**7,436**	**7,951**	**8,237**	**8,542**	**8,576**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,180	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	716	654	646	628	663	501	103	113	130	163	96	92	4	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,052	2,127	2,037	2,089	2,226	2,300
Geothermal	GWh	66	54	51	51	49	54	54	51	56	52	42	44	44	47	44	46	44	35	32	7
Solar	GWh	1,671	3,181	3,458	3,994	3,968	3,980	3,968	3,943	4,436	5,367	5,515	5,700	5,909	6,065	6,686	6,765	6,697	6,536	6,342	6,592
Wind	GWh	2,205	2,060	1,967	1,950	1,977	1,948	1,980	1,940	2,014	1,948	3,217	3,232	3,107	3,185	3,141	3,219	3,876	4,450	4,490	4,363
4-hr Storage	GWh	-40	-114	-131	-249	-282	-331	-352	-368	-354	-387	-375	-385	-392	-407	-425	-532	-655	-987	-1,026	-1,066
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-110	-148	-348	-386	-399	-400	-435	-332	-229	-73	-82	-77
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	409	501	592	685	771	868	860	932	1,009	1,009	1,068	1,049	1,105	1,165	1,216	1,200
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,358**	**10,343**	**10,410**	**10,354**	**10,404**	**10,576**	**11,311**	**11,610**	**11,833**	**11,964**	**12,227**	**12,434**	**12,879**	**13,214**	**13,198**	**13,319**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,376	1,385	1,522	1,559	1,496	755	557	429	333	152	-48	-409	-657	-576	-692
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + LDES
Future:	High Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$15,173	**million**
20-Year NPV Carbon Emissions:	16.39	**million tons**
20-Year NPV Water Consumption:	8.74	**million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400	**MW**
20-Year NPV Rev Req:	$86	**million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,069	2,116	2,204	2,306	2,355	2,456	2,589	2,705	2,823	2,950	3,046	3,176	3,300	3,402	3,523	3,630	3,755	3,871	3,988	4,078
PRM	%	12%	11%	10%	18%	17%	19%	16%	16%	25%	24%	32%	29%	26%	18%	16%	16%	16%	18%	17%	16%
Carbon Intensity	lbs/MWh	503	478	362	360	356	353	346	320	162	87	39	19	21	33	28	26	24	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	513	112	187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,827	1,818	1,809	1,970	2,412	3,553	3,901	3,893	3,884	3,876	3,867	4,257	4,523	4,913	7,897	9,333	10,005
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,171	1,171	1,171	1,253	1,371	1,619	1,758	1,758	1,758	1,758	1,758	2,007	2,391	2,878	4,285	5,198	5,599
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	300	300	300	600	600	900	900	900	900	900	900	900	900	900	900
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	136	155	200	218	241	265	288	273	277	295	288	294	290	304	320	331	330
Total Capacity	**MW**	**3,682**	**4,425**	**4,665**	**5,292**	**5,303**	**5,484**	**5,745**	**6,327**	**7,895**	**8,205**	**8,881**	**9,277**	**9,384**	**9,369**	**10,014**	**10,659**	**11,550**	**15,256**	**17,617**	**18,382**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,244	1,238	1,159	1,154	1,173	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,734	1,002	1,213	927	898	754	905	822	497	659	373	239	229	372	292	363	408	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,360	2,372	2,296	2,358	2,416	2,303	2,088	2,101	2,029	1,692	1,869	1,850
Geothermal	GWh	66	54	51	54	53	57	58	52	45	45	45	45	45	49	47	55	59	11	9	2
Solar	GWh	1,671	3,187	3,480	4,194	4,209	4,570	5,048	5,956	8,286	9,203	9,430	9,318	9,303	9,516	10,622	11,468	12,348	16,596	17,969	19,064
Wind	GWh	2,205	2,059	1,960	1,969	2,002	2,068	2,103	1,992	1,756	1,793	3,221	4,695	5,350	5,495	5,470	5,510	5,498	4,920	4,232	4,106
4-hr Storage	GWh	-40	-113	-131	-264	-296	-287	-319	-376	-449	-511	-509	-520	-529	-545	-653	-804	-917	-1,492	-1,898	-2,099
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-126	-139	-158	-404	-414	-656	-653	-625	-589	-581	-552	-575	-993	-877	-931
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	329	417	517	611	710	807	910	913	994	1,071	1,072	1,133	1,116	1,173	1,231	1,283	1,264
Total Generation	**GWh**	**9,268**	**9,818**	**10,331**	**10,817**	**10,811**	**11,078**	**11,790**	**12,469**	**13,465**	**14,055**	**15,114**	**16,476**	**17,262**	**17,673**	**18,419**	**19,257**	**20,023**	**21,964**	**22,587**	**23,258**
Net Purchases	GWh	1,078	867	1,036	1,100	1,309	1,538	1,595	1,681	1,391	1,534	1,080	428	361	624	542	320	250	-974	-928	-995
Total Supply	**GWh**	**10,347**	**10,684**	**11,368**	**11,917**	**12,120**	**12,615**	**13,385**	**14,149**	**14,856**	**15,589**	**16,194**	**16,903**	**17,623**	**18,296**	**18,961**	**19,577**	**20,273**	**20,990**	**21,659**	**22,263**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies + LDES**
Future: **Low Economic Growth**
Sensitivity: **None**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,614 million**
20-Year NPV Carbon Emissions: **15.57 million tons**
20-Year NPV Water Consumption: **7.23 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **400 MW**
20-Year NPV Rev Req: **$86 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,062	2,102	2,176	2,225	2,243	2,280	2,307	2,326	2,355	2,395	2,401	2,439	2,470	2,479	2,507	2,526	2,562	2,587	2,611	2,628
PRM	%	12%	11%	11%	20%	19%	17%	17%	17%	23%	17%	30%	28%	27%	21%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	504	472	362	359	355	338	328	334	257	130	51	53	33	40	33	19	2	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,469	2,460	2,452	2,443	2,435	2,693	2,838	2,830	2,820	2,813	3,069
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	858	956	956	956	956	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,088	1,088	1,253	1,283	1,297	1,347	1,366	1,366	1,366	1,366	1,366	1,366	1,607	1,939	2,831	2,884	2,912
8-12hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	262	280	274	279	274	288	304	315	315
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,165**	**5,175**	**5,200**	**5,239**	**5,265**	**5,482**	**6,072**	**6,544**	**6,538**	**6,645**	**6,630**	**6,894**	**7,274**	**7,812**	**8,010**	**8,468**	**8,445**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,110	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,784	1,555	1,581	1,138	953	689	667	635	751	391	185	213	131	138	66	72	13	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,148	2,173	2,119	2,236	2,100	2,424
Geothermal	GWh	66	54	51	53	52	53	52	50	51	47	49	51	47	52	50	48	40	35	25	6
Solar	GWh	1,671	3,172	3,470	3,977	3,934	3,978	3,935	3,866	4,127	5,446	5,570	5,598	5,447	5,526	6,050	6,362	6,197	6,247	5,867	5,723
Wind	GWh	2,205	2,053	1,958	1,952	1,964	1,938	1,972	1,939	2,019	1,875	2,627	2,643	3,194	3,287	3,247	3,222	3,847	3,805	4,441	4,388
4-hr Storage	GWh	-40	-114	-131	-244	-276	-325	-342	-355	-354	-398	-395	-396	-400	-409	-427	-526	-652	-852	-934	-926
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-104	-160	-150	-156	-161	-149	-155	-140	-106	-59	-41	-57
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-219	-210	-203	-212	-245	-203	-115	-51	-48	-53
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	946	1,023	1,023	1,082	1,063	1,120	1,179	1,230	1,213
Total Generation	**GWh**	**10,317**	**10,292**	**10,638**	**10,714**	**10,478**	**10,350**	**10,385**	**10,268**	**10,199**	**10,457**	**10,838**	**11,051**	**11,504**	**11,559**	**11,816**	**12,073**	**12,462**	**12,542**	**12,639**	**12,718**
Net Purchases	GWh	-8	318	590	706	965	1,170	1,171	1,329	1,446	1,256	830	678	281	220	5	-285	-630	-663	-736	-850
Total Supply	**GWh**	**10,310**	**10,610**	**11,228**	**11,420**	**11,443**	**11,521**	**11,556**	**11,597**	**11,645**	**11,713**	**11,668**	**11,729**	**11,785**	**11,779**	**11,821**	**11,788**	**11,832**	**11,879**	**11,904**	**11,868**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Base Technologies + LDES**
Future:	**National Carbon Policy**
Sensitivity:	**None**
Phase:	**Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$16,015 million**
20-Year NPV Carbon Emissions:	**15.72 million tons**
20-Year NPV Water Consumption:	**7.32 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**400 MW**
20-Year NPV Rev Req:	**$86 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,108	2,193	2,288	2,330	2,425	2,551	2,668	2,787	2,916	3,013	3,142	3,264	3,365	3,486	3,594	3,721	3,840	3,960	4,057
PRM	%	12%	11%	10%	20%	18%	17%	17%	16%	23%	25%	34%	28%	26%	25%	23%	21%	19%	18%	17%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	356	354	340	346	160	79	19	10	-	-	-	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	-	-	-	-	-	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,811	1,803	1,815	2,192	2,363	3,972	4,414	4,405	4,397	6,064	6,519	6,861	7,329	7,763	8,191	9,582	10,265
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,182	1,182	1,305	1,453	1,612	2,316	2,427	2,851	2,851	3,545	3,979	4,254	4,583	4,742	5,508	6,430	6,845
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	100	99	98	397	493	788	783	778	774	769	764	760	755	750	746
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	138	158	203	221	244	269	294	280	285	305	299	304	300	315	331	343	343
Total Capacity	**MW**	**3,678**	**4,418**	**4,653**	**5,290**	**5,301**	**5,427**	**5,969**	**6,320**	**8,812**	**9,286**	**10,382**	**10,774**	**12,547**	**13,426**	**14,043**	**14,831**	**15,435**	**16,640**	**18,961**	**19,749**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,263	1,255	1,248	1,241	1,259	578	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,341	871	1,105	742	731	748	789	987	485	569	300	175	-	-	-	-	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,349	2,370	2,280	2,338	2,426	2,303	1,469	1,415	1,442	1,514	2,038	2,054
Geothermal	GWh	66	55	51	54	50	53	52	50	41	46	44	41	27	23	25	23	30	27	23	5
Solar	GWh	1,671	3,178	3,457	4,110	4,112	4,395	5,180	5,644	9,196	10,407	10,834	10,632	13,651	14,782	16,067	17,139	17,615	18,429	19,011	19,935
Wind	GWh	2,205	2,056	1,961	1,958	1,992	2,024	1,978	1,959	1,676	1,772	3,115	4,575	4,724	4,662	4,604	4,517	4,638	4,617	3,993	3,869
4-hr Storage	GWh	-40	-114	-131	-268	-300	-334	-394	-450	-671	-725	-863	-888	-1,141	-1,325	-1,558	-1,718	-1,826	-2,021	-2,405	-2,623
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-194	-193	-189	-1,013	-1,214	-1,470	-1,492	-2,197	-2,215	-2,194	-2,166	-2,144	-2,148	-2,163	-2,132
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	339	430	530	623	723	829	938	944	1,033	1,121	1,124	1,186	1,172	1,231	1,290	1,344	1,328
Total Generation	**GWh**	**8,875**	**9,679**	**10,220**	**10,561**	**10,561**	**10,836**	**11,644**	**12,278**	**13,470**	**14,163**	**15,184**	**16,413**	**18,610**	**19,354**	**19,600**	**20,380**	**20,986**	**21,709**	**21,841**	**22,436**
Net Purchases	GWh	1,456	965	1,094	1,274	1,450	1,641	1,573	1,676	1,166	1,183	745	205	-1,292	-1,381	-978	-1,158	-1,083	-1,101	-577	-584
Total Supply	**GWh**	**10,332**	**10,644**	**11,314**	**11,835**	**12,011**	**12,477**	**13,217**	**13,954**	**14,637**	**15,346**	**15,929**	**16,618**	**17,319**	**17,973**	**18,621**	**19,223**	**19,904**	**20,608**	**21,264**	**21,852**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,611 million
20-Year NPV Carbon Emissions:	16.43 million tons
20-Year NPV Water Consumption:	7.35 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	226	132	106	103	81	54	45	26	24	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	823	823	823	823	823	905	987	1,151	1,233	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	659	659	659
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,143	2,740	2,775	2,767	2,758	2,707	2,699	2,691	2,681	2,807	2,870
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	658	756	956	956	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,182	1,220	1,239	1,660	1,660	1,660	1,660	1,662	1,702	1,859	1,859	1,952	2,271	2,320	2,375
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	266	271	289	283	288	283	297	314	326	326
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,211**	**5,258**	**5,291**	**5,903**	**5,866**	**6,448**	**6,487**	**6,597**	**6,903**	**7,096**	**7,447**	**7,629**	**7,581**	**7,968**	**7,779**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,178	1,163	1,187	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	705	693	695	688	770	638	686	477	352	292	210	214	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	14	11
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,358	2,414	2,301	2,273	2,252	2,267	2,233	2,370	2,417
Geothermal	GWh	66	55	52	51	51	52	52	50	51	51	40	41	42	40	42	38	39	33	35	9
Solar	GWh	1,671	3,181	3,467	3,992	3,968	3,911	3,889	3,821	4,484	4,942	5,522	5,687	5,591	5,544	5,710	5,511	5,613	5,612	5,501	5,618
Wind	GWh	2,205	2,059	1,957	1,952	1,975	1,931	1,960	1,937	1,911	1,943	1,716	1,712	2,333	3,100	3,112	3,828	3,827	4,519	4,546	4,397
4-hr Storage	GWh	-40	-113	-131	-249	-282	-307	-327	-340	-467	-485	-495	-508	-517	-542	-617	-631	-677	-816	-848	-880
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	892	973	1,050	1,051	1,110	1,091	1,147	1,208	1,261	1,245
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,342**	**10,393**	**10,342**	**10,388**	**10,483**	**10,609**	**10,948**	**11,390**	**11,846**	**11,921**	**12,298**	**12,429**	**12,800**	**12,880**	**12,816**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,377	1,402	1,534	1,576	1,589	1,457	1,218	873	451	458	88	41	-243	-258	-190
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	High Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$13,497 million
20-Year NPV Carbon Emissions:	18.52 million tons
20-Year NPV Water Consumption:	7.82 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,069	2,116	2,204	2,306	2,355	2,456	2,589	2,705	2,823	2,950	3,046	3,176	3,300	3,402	3,523	3,630	3,755	3,871	3,988	4,078
PRM	%	12%	11%	10%	19%	17%	16%	16%	16%	21%	18%	22%	19%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	478	362	360	356	354	352	350	283	173	103	62	61	61	69	68	60	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	513	112	187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	1,051	1,051	1,028	1,028	1,028	1,028	1,028	1,069	1,233	1,356	1,397	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	823	946	946
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,822	1,814	1,817	1,987	2,293	2,457	3,294	3,488	3,479	3,471	3,748	3,829	4,063	4,517	5,331	5,661	6,375
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,175	1,175	1,377	1,379	1,515	2,013	2,013	2,267	2,267	2,267	2,549	2,696	2,879	3,283	4,064	4,178	4,765
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	139	158	203	221	244	268	291	276	280	298	291	297	292	307	323	335	335
Total Capacity	**MW**	**3,682**	**4,425**	**4,665**	**5,295**	**5,306**	**5,483**	**5,796**	**6,260**	**6,923**	**7,584**	**8,417**	**8,812**	**8,919**	**9,513**	**9,910**	**10,446**	**11,359**	**12,397**	**12,976**	**13,971**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,245	1,238	1,181	1,189	1,213	574	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,734	1,001	1,213	920	891	954	1,198	1,289	1,514	1,729	967	669	664	710	784	877	799	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	189	470	342
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,373	2,279	2,332	2,413	2,291	2,162	2,212	2,235	2,224	2,434	2,472
Geothermal	GWh	66	56	51	54	51	51	53	60	51	46	44	42	43	49	50	53	53	45	50	11
Solar	GWh	1,671	3,186	3,473	4,187	4,203	4,353	4,743	5,345	6,180	7,566	7,947	7,905	7,948	8,846	9,313	9,937	10,973	12,806	13,479	14,794
Wind	GWh	2,205	2,059	1,967	1,973	2,007	2,002	2,008	1,975	2,020	1,825	3,291	4,758	5,422	5,490	5,503	5,511	5,489	5,426	4,691	4,476
4-hr Storage	GWh	-40	-113	-131	-265	-297	-354	-368	-423	-557	-607	-692	-709	-722	-839	-913	-997	-1,169	-1,496	-1,565	-1,837
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	337	426	526	620	719	817	919	922	1,003	1,081	1,081	1,141	1,124	1,181	1,242	1,297	1,281
Total Generation	**GWh**	**9,268**	**9,816**	**10,331**	**10,815**	**10,808**	**11,080**	**11,810**	**12,474**	**12,959**	**13,851**	**14,759**	**15,999**	**16,848**	**17,628**	**18,041**	**18,716**	**19,561**	**20,437**	**20,855**	**21,539**
Net Purchases	GWh	1,079	868	1,037	1,101	1,312	1,535	1,575	1,676	1,897	1,738	1,435	904	775	668	920	861	712	553	804	724
Total Supply	**GWh**	**10,347**	**10,684**	**11,368**	**11,917**	**12,120**	**12,615**	**13,385**	**14,149**	**14,856**	**15,589**	**16,194**	**16,903**	**17,623**	**18,296**	**18,961**	**19,577**	**20,273**	**20,990**	**21,659**	**22,263**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Low Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,122 million**
20-Year NPV Carbon Emissions:	**16.05 million tons**
20-Year NPV Water Consumption:	**7.25 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,062	2,102	2,176	2,225	2,243	2,280	2,307	2,326	2,355	2,395	2,401	2,439	2,470	2,479	2,507	2,526	2,562	2,587	2,611	2,628
PRM	%	12%	11%	11%	20%	19%	17%	17%	18%	23%	17%	17%	17%	17%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	504	472	362	359	355	352	345	344	245	131	127	82	58	29	29	19	18	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	969	969	969	864	864	864	864	864	864	1,028	1,192	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,079	2,256	2,248	2,278	2,446	2,395	2,387	2,379	2,370	2,363	2,493
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,156	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,088	1,088	1,094	1,119	1,146	1,518	1,518	1,518	1,518	1,518	1,606	1,606	1,606	1,662	1,956	2,055	2,066
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	277	270	284	300	311	311
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,165**	**5,175**	**5,164**	**5,199**	**5,237**	**5,537**	**5,698**	**5,856**	**6,049**	**6,195**	**6,646**	**6,762**	**7,111**	**7,255**	**7,181**	**7,284**	**7,119**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,554	1,583	1,139	951	789	773	732	829	768	765	514	348	190	165	103	103	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	19	18
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,298	2,332	2,296	2,260	2,182	2,375	2,472
Geothermal	GWh	66	54	52	52	52	51	51	51	52	50	45	46	44	39	37	36	33	28	32	8
Solar	GWh	1,671	3,175	3,461	3,981	3,932	3,839	3,786	3,731	3,997	4,703	4,896	4,735	4,623	4,793	4,769	4,528	4,585	4,557	4,762	4,790
Wind	GWh	2,205	2,050	1,966	1,949	1,965	1,915	1,940	1,915	1,982	1,928	1,890	2,593	3,146	3,844	3,837	4,538	4,547	5,197	4,563	4,408
4-hr Storage	GWh	-40	-114	-131	-244	-276	-285	-300	-312	-413	-442	-455	-466	-477	-510	-526	-536	-567	-706	-738	-751
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,076	1,052	1,108	1,167	1,218	1,203
Total Generation	**GWh**	**10,317**	**10,291**	**10,640**	**10,715**	**10,476**	**10,327**	**10,350**	**10,250**	**10,159**	**10,263**	**10,312**	**10,729**	**11,133**	**11,677**	**11,690**	**12,017**	**12,069**	**12,431**	**12,231**	**12,149**
Net Purchases	GWh	-7	318	588	705	967	1,193	1,205	1,347	1,485	1,450	1,356	1,000	652	102	131	-229	-237	-552	-327	-280
Total Supply	**GWh**	**10,310**	**10,610**	**11,228**	**11,420**	**11,443**	**11,521**	**11,556**	**11,597**	**11,645**	**11,713**	**11,668**	**11,729**	**11,785**	**11,779**	**11,821**	**11,788**	**11,832**	**11,879**	**11,904**	**11,868**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + CT
Future: National Carbon Policy
Sensitivity: None
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $13,710 **million**
20-Year NPV Carbon Emissions: 16.56 **million tons**
20-Year NPV Water Consumption: 7.41 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: 0 **MW**
20-Year NPV Rev Req: $0 **million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,108	2,193	2,288	2,330	2,425	2,551	2,668	2,787	2,916	3,013	3,142	3,264	3,365	3,486	3,594	3,721	3,840	3,960	4,057
PRM	%	12%	11%	10%	20%	18%	17%	17%	17%	21%	16%	22%	16%	16%	16%	16%	16%	17%	17%	16%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	356	354	352	350	221	154	54	26	-	-	-	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	1,010	1,028	1,028	1,028	1,028	577	577	618	700	823	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	823	864	905
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,803	1,794	1,842	2,018	2,290	2,922	3,398	3,675	3,666	3,942	4,318	4,733	4,808	4,911	5,496	5,964	6,765
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,182	1,182	1,317	1,480	1,505	2,211	2,211	2,951	2,951	3,082	3,265	3,447	3,478	3,667	4,120	4,509	4,789
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	164	212	233	258	282	306	292	295	314	310	316	312	326	342	354	354
Total Capacity	**MW**	**3,678**	**4,418**	**4,653**	**5,285**	**5,299**	**5,456**	**5,817**	**6,221**	**7,601**	**7,900**	**9,303**	**9,698**	**9,771**	**10,326**	**10,970**	**11,154**	**11,583**	**12,637**	**13,547**	**14,363**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,263	1,255	1,249	1,247	1,263	598	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,341	871	1,104	740	727	795	936	1,195	1,058	1,421	612	465	477	93	92	177	236	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	154	304	299
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,368	2,281	2,333	2,414	2,303	1,909	2,005	2,032	2,065	2,453	2,461
Geothermal	GWh	66	54	51	53	50	49	50	48	47	45	43	42	39	39	39	42	46	41	48	10
Solar	GWh	1,671	3,181	3,455	4,099	4,098	4,240	4,744	5,209	6,801	7,688	8,553	8,481	9,086	10,005	11,004	11,281	11,565	12,743	13,504	14,549
Wind	GWh	2,205	2,055	1,964	1,960	1,995	1,960	1,992	1,914	1,825	1,793	3,171	4,675	5,283	5,303	5,296	5,351	5,396	5,370	4,659	4,404
4-hr Storage	GWh	-40	-114	-131	-268	-300	-344	-398	-421	-641	-662	-892	-920	-970	-1,069	-1,206	-1,225	-1,318	-1,536	-1,692	-1,857
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	443	554	659	769	866	968	975	1,057	1,144	1,153	1,218	1,201	1,257	1,316	1,370	1,354
Total Generation	**GWh**	**8,875**	**9,679**	**10,219**	**10,557**	**10,558**	**10,870**	**11,597**	**12,272**	**12,916**	**13,620**	**14,742**	**16,133**	**17,472**	**17,827**	**18,351**	**18,832**	**19,215**	**20,153**	**20,646**	**21,220**
Net Purchases	GWh	1,456	965	1,095	1,278	1,453	1,606	1,620	1,682	1,721	1,726	1,187	485	-154	146	270	390	689	455	618	632
Total Supply	**GWh**	**10,332**	**10,644**	**11,314**	**11,835**	**12,011**	**12,477**	**13,217**	**13,954**	**14,637**	**15,346**	**15,929**	**16,618**	**17,319**	**17,973**	**18,621**	**19,223**	**19,904**	**20,608**	**21,264**	**21,852**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + LDES + CT
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,534 million
20-Year NPV Carbon Emissions:	15.91 million tons
20-Year NPV Water Consumption:	7.23 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	344	345	227	132	50	28	35	33	35	38	43	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	905	1,069	1,233	1,397	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	823	823	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,990	2,137	2,227	2,219	2,347	2,636	2,585	2,577	2,569	2,559	2,580	2,607
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,296	1,662	1,662	1,662	1,662	1,662	1,693	1,693	1,693	1,693	1,943	2,007	2,074
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	264	282	276	279	272	285	301	312	312
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,307**	**5,893**	**5,861**	**6,332**	**6,525**	**6,570**	**6,965**	**7,082**	**7,231**	**7,399**	**7,282**	**7,577**	**7,365**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,174	1,159	1,184	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	675	661	656	693	773	339	234	264	256	239	285	331	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	60	56
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,302	2,211	2,283	2,261	2,280	2,472	2,472
Geothermal	GWh	66	55	51	53	51	50	53	52	45	51	43	39	41	38	40	38	40	36	39	9
Solar	GWh	1,671	3,180	3,460	3,991	3,966	3,957	3,934	3,870	4,466	4,936	4,552	4,374	4,636	5,193	5,209	5,199	5,206	5,208	5,021	5,185
Wind	GWh	2,205	2,060	1,964	1,950	1,976	1,938	1,971	1,945	1,925	1,944	3,260	3,957	3,823	3,814	3,824	3,865	3,867	4,545	4,585	4,420
4-hr Storage	GWh	-40	-113	-131	-249	-282	-321	-341	-356	-466	-485	-502	-505	-512	-538	-558	-568	-579	-688	-720	-766
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	952	1,029	1,029	1,083	1,059	1,110	1,169	1,221	1,205
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,344**	**10,400**	**10,343**	**10,383**	**10,481**	**10,868**	**11,411**	**11,706**	**12,094**	**12,048**	**12,161**	**12,235**	**12,597**	**12,679**	**12,582**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,375	1,395	1,533	1,581	1,591	1,198	755	557	203	331	225	235	-39	-57	45
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + LDES + CT
Future:	High Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$13,515 million**
20-Year NPV Carbon Emissions:	**17.79 million tons**
20-Year NPV Water Consumption:	**8.60 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,069	2,116	2,204	2,306	2,355	2,456	2,589	2,705	2,823	2,950	3,046	3,176	3,300	3,402	3,523	3,630	3,755	3,871	3,988	4,078
PRM	%	12%	11%	10%	18%	17%	22%	17%	16%	21%	16%	23%	20%	16%	16%	16%	16%	16%	16%	18%	17%
Carbon Intensity	lbs/MWh	503	478	362	360	356	354	352	350	252	150	77	44	43	43	44	49	49	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	513	112	187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	1,010	864	864	864	864	864	864	905	1,069	1,110	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	536	577	577
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,826	1,818	1,809	1,898	2,208	2,637	3,401	3,705	3,697	3,688	3,960	4,109	4,259	4,553	5,416	6,069	6,869
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,172	1,172	1,172	1,172	1,179	1,701	1,701	1,701	1,701	1,701	1,981	2,272	2,365	2,706	3,143	3,599	3,926
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	300	300	300	300	300	500	500	500	500	500	500	500	500	500	500
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	136	154	198	216	238	260	283	267	272	289	283	289	284	298	313	324	323
Total Capacity	**MW**	**3,682**	**4,425**	**4,665**	**5,293**	**5,303**	**5,565**	**5,672**	**6,094**	**6,921**	**7,506**	**8,395**	**8,791**	**8,898**	**9,443**	**9,930**	**10,333**	**11,022**	**11,764**	**12,925**	**13,745**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,245	1,238	1,159	1,155	1,212	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,734	1,001	1,213	925	897	754	1,012	1,055	1,193	1,288	668	390	411	467	438	589	607	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107	204	162
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,283	2,337	2,409	2,291	2,116	2,166	2,122	2,093	2,281	2,400
Geothermal	GWh	66	55	51	53	53	57	58	54	56	48	44	44	44	45	49	52	55	44	55	11
Solar	GWh	1,671	3,184	3,473	4,191	4,211	4,567	4,882	5,546	6,620	8,070	8,624	8,566	8,620	9,494	10,138	10,604	11,421	13,010	14,202	15,216
Wind	GWh	2,205	2,061	1,966	1,972	2,000	2,070	2,119	2,029	2,022	1,877	3,249	4,737	5,377	5,467	5,512	5,555	5,562	5,437	4,725	4,455
4-hr Storage	GWh	-40	-113	-131	-264	-296	-287	-295	-316	-474	-508	-504	-512	-525	-642	-760	-805	-945	-1,153	-1,348	-1,517
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-126	-145	-173	-137	-199	-443	-453	-446	-437	-363	-370	-349	-387	-393	-408
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	329	415	512	602	702	794	891	894	975	1,053	1,053	1,112	1,093	1,149	1,206	1,259	1,240
Total Generation	**GWh**	**9,268**	**9,816**	**10,331**	**10,816**	**10,808**	**11,074**	**11,755**	**12,405**	**13,001**	**13,842**	**14,817**	**16,084**	**16,943**	**17,737**	**18,242**	**18,884**	**19,624**	**20,358**	**20,985**	**21,561**
Net Purchases	GWh	1,079	868	1,037	1,101	1,312	1,541	1,630	1,744	1,856	1,747	1,376	819	680	560	719	693	649	632	675	702
Total Supply	**GWh**	**10,347**	**10,684**	**11,368**	**11,917**	**12,120**	**12,615**	**13,385**	**14,149**	**14,856**	**15,589**	**16,194**	**16,903**	**17,623**	**18,296**	**18,961**	**19,577**	**20,273**	**20,990**	**21,659**	**22,263**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + LDES + CT
Future:	Low Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,084 **million**
20-Year NPV Carbon Emissions:	15.64 **million tons**
20-Year NPV Water Consumption:	7.13 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 **MW**
20-Year NPV Rev Req:	$0 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,062	2,102	2,176	2,225	2,243	2,280	2,307	2,326	2,355	2,395	2,401	2,439	2,470	2,479	2,507	2,526	2,562	2,587	2,611	2,628
PRM	%	12%	11%	11%	20%	19%	17%	17%	17%	23%	17%	19%	17%	17%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	504	472	362	359	355	351	339	344	245	131	53	55	37	17	18	19	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	864	864	864	864	864	864	1,028	1,192	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	741	741	741
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,079	2,071	2,062	2,120	2,389	2,338	2,330	2,324	2,315	2,310	2,442
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	1,156	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,088	1,088	1,146	1,172	1,182	1,518	1,518	1,518	1,518	1,518	1,598	1,598	1,598	1,598	1,882	1,980	1,980
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	277	270	284	300	311	310
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,165**	**5,175**	**5,175**	**5,210**	**5,232**	**5,537**	**5,698**	**6,070**	**6,064**	**6,238**	**6,780**	**6,897**	**7,046**	**7,177**	**7,094**	**7,198**	**7,022**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,554	1,583	1,139	951	755	737	706	829	768	351	375	238	98	92	106	126	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	27	27
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,294	2,268	2,341	2,281	2,214	2,407	2,472
Geothermal	GWh	66	55	51	52	51	52	48	51	49	46	45	44	42	35	34	33	35	28	33	8
Solar	GWh	1,671	3,173	3,466	3,976	3,929	3,884	3,838	3,766	3,997	4,703	4,222	4,319	4,237	4,511	4,463	4,445	4,456	4,423	4,630	4,687
Wind	GWh	2,205	2,051	1,963	1,954	1,968	1,925	1,951	1,921	1,986	1,932	3,327	3,353	3,878	4,533	4,532	4,557	4,554	5,219	4,578	4,415
4-hr Storage	GWh	-40	-114	-131	-244	-276	-299	-314	-322	-413	-442	-455	-464	-476	-504	-520	-532	-543	-672	-708	-723
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,076	1,052	1,108	1,167	1,218	1,200
Total Generation	**GWh**	**10,317**	**10,291**	**10,640**	**10,715**	**10,476**	**10,335**	**10,361**	**10,253**	**10,159**	**10,263**	**10,660**	**10,933**	**11,369**	**11,989**	**11,945**	**12,000**	**12,017**	**12,387**	**12,185**	**12,086**
Net Purchases	GWh	-7	318	588	705	967	1,186	1,194	1,344	1,485	1,450	1,008	796	416	-210	-124	-212	-186	-508	-282	-218
Total Supply	**GWh**	**10,310**	**10,610**	**11,228**	**11,420**	**11,443**	**11,521**	**11,556**	**11,597**	**11,645**	**11,713**	**11,668**	**11,729**	**11,785**	**11,779**	**11,821**	**11,788**	**11,832**	**11,879**	**11,904**	**11,868**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + LDES + CT
Future:	National Carbon Policy
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$12,959 **million**
20-Year NPV Carbon Emissions:	16.14 **million tons**
20-Year NPV Water Consumption:	7.48 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 **MW**
20-Year NPV Rev Req:	$0 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,108	2,193	2,288	2,330	2,425	2,551	2,668	2,787	2,916	3,013	3,142	3,264	3,365	3,486	3,594	3,721	3,840	3,960	4,057
PRM	%	12%	11%	10%	20%	18%	19%	17%	17%	21%	16%	23%	17%	16%	16%	16%	16%	17%	16%	16%	18%
Carbon Intensity	lbs/MWh	503	476	362	359	356	354	347	350	208	100	34	15	-	-	-	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	887	823	823	823	823	413	413	454	536	618	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	618	618	618
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,815	1,806	1,798	2,039	2,250	3,128	3,796	4,193	4,185	4,176	4,797	5,009	5,136	5,335	5,835	6,568	7,357
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,183	1,183	1,183	1,256	1,341	1,402	1,404	1,404	1,404	1,457	1,563	1,680	1,730	1,836	2,152	2,464	2,771
8-12hr Storage	MW	-	-	-	-	-	300	300	300	700	1,000	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	136	155	179	197	219	241	283	268	272	290	284	289	284	298	314	325	323
Total Capacity	**MW**	**3,678**	**4,418**	**4,653**	**5,293**	**5,304**	**5,464**	**5,796**	**6,155**	**7,452**	**8,264**	**9,446**	**9,842**	**9,592**	**10,312**	**10,688**	**10,942**	**11,342**	**12,175**	**13,231**	**14,018**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,263	1,255	1,239	1,242	1,254	589	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,341	871	1,104	743	734	653	791	977	889	787	449	329	284	51	58	99	119	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108	194	197
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,293	2,351	2,416	2,293	1,836	1,954	1,937	1,925	2,208	2,249
Geothermal	GWh	66	54	52	51	50	55	56	53	46	45	41	39	39	36	40	40	41	46	50	12
Solar	GWh	1,671	3,182	3,457	4,118	4,122	4,430	5,037	5,555	7,452	9,244	10,182	9,964	9,977	11,514	12,182	12,595	12,949	13,936	14,694	15,750
Wind	GWh	2,205	2,054	1,960	1,963	1,992	2,038	2,049	2,007	1,837	1,793	3,098	4,586	5,247	5,229	5,263	5,292	5,333	5,318	4,626	4,427
4-hr Storage	GWh	-40	-114	-131	-268	-301	-294	-328	-367	-387	-399	-390	-395	-422	-474	-589	-595	-644	-797	-909	-1,051
8-12hr Storage	GWh	-	-	-	-	-	-210	-247	-272	-655	-1,044	-1,452	-1,462	-1,392	-1,501	-1,417	-1,414	-1,403	-1,412	-1,223	-1,180
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-143	-126	-113	-179	-165	-172	-176	-185	-212	-222
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	329	418	510	601	700	792	893	895	977	1,054	1,055	1,115	1,096	1,152	1,209	1,260	1,241
Total Generation	**GWh**	**8,875**	**9,679**	**10,219**	**10,561**	**10,560**	**10,789**	**11,567**	**12,204**	**12,924**	**13,692**	**14,972**	**16,262**	**17,091**	**18,024**	**18,322**	**18,895**	**19,308**	**20,149**	**20,687**	**21,425**
Net Purchases	GWh	1,456	965	1,095	1,274	1,451	1,688	1,650	1,750	1,712	1,653	957	356	227	-51	299	328	596	459	616	515
Total Supply	**GWh**	**10,332**	**10,644**	**11,314**	**11,835**	**12,011**	**12,477**	**13,217**	**13,954**	**14,637**	**15,346**	**15,929**	**16,618**	**17,319**	**17,973**	**18,621**	**19,223**	**19,904**	**20,608**	**21,303**	**21,939**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,550 million
20-Year NPV Carbon Emissions:	15.14 million tons
20-Year NPV Water Consumption:	7.12 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	174	53	25	21	24	16	16	18	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	832	996	1,160	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	586	586	591
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,082	2,256	2,511	2,731	2,827	2,789	2,781	2,772	2,763	2,833	3,000
Wind	MW	658	658	658	658	658	658	658	658	1,058	1,058	1,258	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,344	1,403	1,444	1,444	1,444	1,461	1,660	1,714	1,714	1,714	1,960	2,010	2,012
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	260	262	280	274	279	272	284	300	311	310
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,858**	**6,063**	**6,418**	**6,675**	**6,827**	**7,116**	**7,269**	**7,418**	**7,586**	**7,465**	**7,797**	**7,662**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	647	638	631	372	293	162	150	155	130	106	153	190	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	7
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,418	2,302	2,081	2,131	2,134	2,121	2,352	2,464
Geothermal	GWh	66	56	52	51	49	59	48	47	51	48	40	39	36	36	39	42	42	35	35	8
Solar	GWh	1,671	3,181	3,467	3,993	3,972	3,940	3,974	3,916	3,686	4,466	4,410	4,941	5,368	5,787	5,858	5,853	5,877	5,802	6,069	6,075
Wind	GWh	2,205	2,058	1,957	1,950	1,973	1,983	1,980	1,952	3,383	3,380	3,938	3,873	3,743	3,760	3,831	3,875	3,865	4,527	4,045	3,939
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-368	-379	-419	-415	-427	-439	-523	-566	-576	-585	-693	-725	-738
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-134	-179	-185	-265	-275	-267	-192	-193	-200	-152	-140	-165
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	874	945	1,023	1,023	1,082	1,058	1,110	1,169	1,221	1,201
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,347**	**10,690**	**10,846**	**11,120**	**11,616**	**12,028**	**12,248**	**12,239**	**12,343**	**12,433**	**12,814**	**12,863**	**12,791**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,530	1,274	1,226	946	550	234	49	140	43	37	-257	-241	-165
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	High Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$12,844 million
20-Year NPV Carbon Emissions:	16.48 million tons
20-Year NPV Water Consumption:	7.46 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,069	2,116	2,204	2,306	2,355	2,456	2,589	2,705	2,823	2,950	3,046	3,176	3,300	3,402	3,523	3,630	3,755	3,871	3,988	4,078
PRM	%	12%	11%	10%	20%	18%	16%	16%	16%	21%	17%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	478	362	360	356	354	328	273	188	55	34	35	43	46	48	49	45	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	513	112	187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	978	978	978	832	832	832	832	832	932	1,132	1,282	1,282	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	708	708	759
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,817	2,710	3,132	3,522	3,673	3,776	3,885	4,048	4,366	4,941	5,710	6,131
Wind	MW	658	658	658	658	658	658	858	1,258	1,458	1,458	1,658	1,658	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,209	1,209	1,316	1,341	1,387	1,623	1,710	1,753	1,885	2,066	2,244	2,295	2,416	2,836	3,291	3,753	3,930
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	100	100	300	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	136	154	198	216	238	260	283	267	272	289	283	289	284	298	313	324	325
Total Capacity	**MW**	**3,682**	**4,425**	**4,665**	**5,287**	**5,297**	**5,415**	**5,750**	**6,210**	**6,790**	**7,592**	**8,242**	**8,769**	**9,016**	**9,391**	**9,756**	**10,185**	**10,936**	**11,408**	**12,651**	**12,994**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,244	1,237	1,179	1,155	1,157	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,734	1,001	1,213	929	891	1,037	911	598	836	471	358	398	503	660	855	1,035	1,045	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	325	424	578
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,292	2,330	2,407	2,299	2,148	2,188	2,135	2,148	2,235	2,466
Geothermal	GWh	66	55	51	55	52	55	57	53	54	50	42	43	44	47	50	55	57	50	49	11
Solar	GWh	1,671	3,187	3,471	4,158	4,173	4,235	4,329	4,061	4,278	6,290	6,975	8,007	8,604	9,162	9,596	10,103	11,141	12,776	14,511	14,694
Wind	GWh	2,205	2,059	1,968	1,989	2,030	2,009	2,841	4,262	5,025	4,902	5,428	5,451	5,369	5,490	5,516	5,520	5,396	5,068	4,118	4,090
4-hr Storage	GWh	-40	-113	-131	-272	-303	-337	-345	-368	-420	-502	-519	-579	-654	-731	-770	-827	-999	-1,206	-1,407	-1,505
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-82	-69	-99	-256	-379	-403	-392	-377	-336	-332	-284	-310	-363	-344
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	329	415	512	602	702	794	891	894	975	1,053	1,053	1,112	1,093	1,149	1,206	1,259	1,243
Total Generation	**GWh**	**9,268**	**9,816**	**10,331**	**10,797**	**10,785**	**11,058**	**11,836**	**12,692**	**13,395**	**14,218**	**15,092**	**16,222**	**16,935**	**17,603**	**18,171**	**18,836**	**19,641**	**20,058**	**20,824**	**21,232**
Net Purchases	GWh	1,079	868	1,037	1,120	1,335	1,558	1,549	1,458	1,462	1,371	1,102	682	688	694	790	741	632	932	835	1,030
Total Supply	**GWh**	**10,347**	**10,684**	**11,368**	**11,917**	**12,120**	**12,615**	**13,385**	**14,149**	**14,856**	**15,589**	**16,194**	**16,903**	**17,623**	**18,296**	**18,961**	**19,577**	**20,273**	**20,990**	**21,659**	**22,263**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: All Technologies
Future: Low Economic Growth
Sensitivity: None
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $9,065 **million**
20-Year NPV Carbon Emissions: 15.65 **million tons**
20-Year NPV Water Consumption: 7.27 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: 0 **MW**
20-Year NPV Rev Req: $0 **million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,062	2,102	2,176	2,225	2,243	2,280	2,307	2,326	2,355	2,395	2,401	2,439	2,470	2,479	2,507	2,526	2,562	2,587	2,611	2,628
PRM	%	12%	11%	11%	20%	19%	17%	17%	17%	23%	17%	19%	17%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	504	472	362	359	355	351	339	344	245	92	47	47	48	41	34	33	34	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	782	782	782	782	782	782	864	987	1,110	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	536	545	555
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,936	2,120	2,143	2,400	2,758	2,751	2,752	2,744	2,735	2,728	2,820
Wind	MW	658	658	658	658	658	658	658	658	658	858	1,058	1,058	956	956	956	956	956	1,156	1,356	1,050
4-hr Storage	MW	170	620	632	1,088	1,088	1,150	1,175	1,190	1,325	1,325	1,325	1,325	1,325	1,402	1,504	1,536	1,578	1,813	1,868	1,872
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	150	174	192	208	251	271	252	255	269	263	266	262	276	292	303	301
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,165**	**5,172**	**5,175**	**5,210**	**5,232**	**5,456**	**5,673**	**6,037**	**6,062**	**6,232**	**6,661**	**6,841**	**6,992**	**7,163**	**7,031**	**7,299**	**7,097**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,554	1,583	1,139	956	757	739	711	820	488	289	295	272	239	148	177	182	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	6
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,289	2,124	2,209	2,167	2,179	2,215	2,381
Geothermal	GWh	66	54	51	51	52	49	51	50	54	52	48	46	45	41	43	44	45	37	36	9
Solar	GWh	1,671	3,174	3,469	3,976	3,931	3,894	3,844	3,780	4,093	4,438	4,421	4,557	4,943	5,618	5,724	5,742	5,779	5,755	5,718	5,853
Wind	GWh	2,205	2,051	1,959	1,955	1,970	1,925	1,949	1,923	2,017	2,732	3,369	3,352	3,161	3,113	3,140	3,148	3,143	3,822	3,826	3,445
4-hr Storage	GWh	-40	-114	-131	-244	-276	-300	-315	-324	-353	-376	-390	-399	-402	-438	-490	-510	-534	-634	-668	-680
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-152	-186	-195	-199	-237	-280	-217	-219	-219	-186	-177	-201
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	403	495	586	668	764	858	851	922	991	991	1,044	1,025	1,081	1,141	1,192	1,173
Total Generation	**GWh**	**10,317**	**10,291**	**10,640**	**10,715**	**10,474**	**10,334**	**10,360**	**10,251**	**10,170**	**10,380**	**10,689**	**10,935**	**11,198**	**11,573**	**11,517**	**11,616**	**11,643**	**12,118**	**12,147**	**11,988**
Net Purchases	GWh	-7	318	588	705	969	1,187	1,196	1,346	1,474	1,334	979	794	587	206	304	172	189	-239	-243	-119
Total Supply	**GWh**	**10,310**	**10,610**	**11,228**	**11,420**	**11,443**	**11,521**	**11,556**	**11,597**	**11,645**	**11,713**	**11,668**	**11,729**	**11,785**	**11,779**	**11,821**	**11,788**	**11,832**	**11,879**	**11,904**	**11,868**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	National Carbon Policy
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$12,734 million**
20-Year NPV Carbon Emissions:	**15.04 million tons**
20-Year NPV Water Consumption:	**7.18 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,108	2,193	2,288	2,330	2,425	2,551	2,668	2,787	2,916	3,013	3,142	3,264	3,365	3,486	3,594	3,721	3,840	3,960	4,057
PRM	%	12%	11%	10%	19%	18%	23%	18%	17%	21%	16%	16%	16%	16%	16%	16%	16%	16%	16%	17%	17%
Carbon Intensity	lbs/MWh	503	476	362	359	356	354	329	273	145	28	8	8	-	-	-	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	800	440	440	440	481	563	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	563	622	701
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,831	1,822	1,814	1,809	1,800	2,338	3,174	3,766	3,929	4,061	4,633	4,960	5,246	5,293	5,727	6,474	7,014
Wind	MW	658	658	658	658	658	658	858	1,258	1,458	1,458	1,658	1,658	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,174	1,174	1,174	1,174	1,174	1,252	1,255	1,350	1,556	1,590	1,693	1,865	1,977	2,059	2,405	2,643	2,664
8-12hr Storage	MW	-	-	-	-	-	300	300	300	600	800	900	900	900	900	900	900	900	900	900	900
24+hr Storage	MW	-	-	-	-	-	100	100	100	200	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	136	154	178	196	218	260	283	267	272	289	283	289	284	298	313	324	323
Total Capacity	**MW**	**3,678**	**4,418**	**4,653**	**5,299**	**5,309**	**5,569**	**5,782**	**6,196**	**7,308**	**8,270**	**9,240**	**9,715**	**9,436**	**10,105**	**10,608**	**11,043**	**11,269**	**12,064**	**13,118**	**13,451**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,262	1,255	1,239	1,229	1,218	578	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,341	871	1,104	746	737	645	664	488	458	264	165	246	385	59	60	87	135	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	125	202	312
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,290	2,355	2,413	2,297	1,878	1,947	1,955	1,984	2,149	2,266
Geothermal	GWh	66	54	51	50	50	55	56	55	46	45	35	38	40	37	38	39	44	43	45	12
Solar	GWh	1,671	3,182	3,454	4,131	4,136	4,457	4,475	4,102	5,058	7,287	8,540	9,171	9,687	11,093	11,976	12,654	13,066	14,400	15,450	15,793
Wind	GWh	2,205	2,054	1,964	1,956	1,985	2,031	2,834	4,251	4,810	4,740	5,233	5,295	5,249	5,245	5,249	5,244	5,118	4,649	3,906	3,827
4-hr Storage	GWh	-40	-114	-131	-266	-299	-292	-294	-305	-318	-332	-367	-446	-470	-524	-649	-680	-715	-863	-977	-1,006
8-12hr Storage	GWh	-	-	-	-	-	-215	-206	-180	-354	-902	-1,132	-1,110	-1,084	-1,142	-1,090	-1,095	-1,089	-1,085	-1,046	-913
24+hr Storage	GWh	-	-	-	-	-	-	-47	-46	-45	-121	-214	-197	-221	-304	-290	-312	-307	-299	-273	-359
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	329	415	508	598	697	793	890	892	974	1,052	1,053	1,112	1,093	1,149	1,206	1,258	1,239
Total Generation	**GWh**	**8,875**	**9,679**	**10,219**	**10,572**	**10,569**	**10,794**	**11,676**	**12,578**	**13,387**	**14,246**	**15,443**	**16,326**	**17,050**	**17,814**	**18,284**	**18,977**	**19,357**	**20,160**	**20,714**	**21,171**
Net Purchases	GWh	1,456	965	1,095	1,263	1,442	1,682	1,541	1,376	1,250	1,100	486	292	268	159	337	246	547	448	621	786
Total Supply	**GWh**	**10,332**	**10,644**	**11,314**	**11,835**	**12,011**	**12,477**	**13,217**	**13,954**	**14,637**	**15,346**	**15,929**	**16,618**	**17,319**	**17,973**	**18,621**	**19,223**	**19,904**	**20,608**	**21,335**	**21,957**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics	
20-Year NPV Revenue Requirement:	**$8,985 million**
20-Year NPV Carbon Emissions:	**15.62 million tons**
20-Year NPV Water Consumption:	**7.09 million gallons**

Final Reliability Adjustments to Portfolio	
2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	22%	22%	15%	15%	15%	21%	15%	16%	16%	15%	15%	15%	15%	14%	14%	14%	14%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	228	119	62	23	27	19	9	7	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,380	2,827	2,818	2,810	2,876	3,083	3,059	3,135	3,308	3,308	3,397	3,581
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,148	1,181	1,200	1,269	1,278	1,278	1,278	1,278	1,483	1,794	1,869	2,012	2,432	2,632	2,649
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	265	283	277	282	277	291	308	320	320
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,094**	**5,137**	**5,167**	**6,001**	**6,298**	**6,670**	**7,067**	**7,049**	**7,454**	**7,747**	**8,022**	**8,447**	**8,383**	**8,684**	**8,579**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,242	1,233	1,179	1,166	1,190	575	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	824	730	729	719	726	894	839	371	147	181	131	61	54	42	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	490	490	491	495	493	497	496	495	492	497	10	25
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,422	2,302	2,258	2,313	2,174	2,045	2,311	2,472
Geothermal	GWh	66	55	51	50	49	52	48	50	50	46	41	35	36	33	35	36	35	34	31	10
Solar	GWh	1,671	3,180	3,468	3,968	3,948	3,877	3,854	3,788	5,540	6,330	5,832	5,461	5,634	6,225	6,522	6,693	7,105	7,135	5,976	6,049
Wind	GWh	2,205	2,060	1,956	1,948	1,970	1,930	1,957	1,931	1,947	1,855	3,195	4,606	4,513	4,504	4,523	4,514	4,463	5,143	4,551	4,408
4-hr Storage	GWh	-40	-113	-131	-243	-276	-299	-317	-329	-353	-374	-380	-370	-376	-458	-589	-626	-698	-910	-970	-980
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,947	-1,944	-1,948	-1,964	-1,959	-1,973	-1,971	-1,966	-1,953	-1,975	-39	-98
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	955	1,033	1,033	1,091	1,072	1,129	1,190	1,244	1,229
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,480**	**10,358**	**10,341**	**10,389**	**10,340**	**10,340**	**10,499**	**10,771**	**11,724**	**11,977**	**12,294**	**12,427**	**12,585**	**12,788**	**13,159**	**13,115**	**13,114**
Net Purchases	GWh	1,072	862	1,028	1,056	1,243	1,379	1,405	1,536	1,624	1,573	1,295	442	285	3	-48	-199	-318	-602	-445	-440
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,670**	**12,674**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	Base Technologies + Electrolysis
Future:	High Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics	
20-Year NPV Revenue Requirement:	$13,482 million
20-Year NPV Carbon Emissions:	17.55 million tons
20-Year NPV Water Consumption:	7.67 million gallons

Final Reliability Adjustments to Portfolio	
2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,069	2,116	2,204	2,306	2,355	2,456	2,589	2,705	2,823	2,950	3,046	3,176	3,300	3,402	3,523	3,630	3,755	3,871	3,988	4,078
PRM	%	12%	11%	10%	23%	21%	16%	16%	16%	24%	24%	24%	21%	17%	16%	16%	16%	16%	17%	16%	16%
Carbon Intensity	lbs/MWh	503	478	362	360	356	354	352	350	193	108	61	37	52	61	72	69	53	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	513	112	187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	352	576	704	704	704	704	736
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,827	1,818	1,844	1,936	2,257	3,558	4,046	4,230	4,221	4,248	4,609	4,665	4,919	5,332	7,438	8,884	9,575
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,177	1,177	1,357	1,547	1,690	2,194	2,379	2,379	2,379	2,379	2,495	2,569	2,791	3,384	4,555	5,474	5,888
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	136	155	200	218	241	265	288	273	277	295	290	295	291	305	321	332	332
Total Capacity	**MW**	**3,682**	**4,425**	**4,665**	**5,298**	**5,309**	**5,404**	**5,705**	**6,192**	**8,131**	**8,627**	**9,196**	**9,591**	**9,535**	**10,101**	**10,460**	**11,060**	**12,081**	**14,873**	**17,249**	**18,080**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,245	1,238	1,182	1,173	1,203	573	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,734	1,001	1,213	921	891	956	1,108	1,151	952	1,031	672	453	610	740	880	906	757	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	493	495	498	501	496	498	494	488	492	496	26	32
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,291	2,347	2,412	2,294	2,144	2,186	2,228	1,871	1,934	1,920
Geothermal	GWh	66	54	51	52	51	54	55	61	45	45	41	41	45	48	49	47	54	11	10	2
Solar	GWh	1,671	3,188	3,469	4,197	4,214	4,386	4,794	5,460	8,675	9,878	9,954	9,912	10,161	11,040	11,389	12,085	13,310	16,399	17,133	18,148
Wind	GWh	2,205	2,058	1,970	1,975	2,004	1,985	2,064	2,021	1,848	1,849	3,200	4,711	4,646	4,700	4,717	4,721	4,697	5,218	4,415	4,260
4-hr Storage	GWh	-40	-113	-131	-266	-298	-352	-407	-468	-631	-712	-716	-736	-753	-816	-866	-963	-1,194	-1,760	-2,181	-2,400
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,959	-1,965	-1,979	-1,988	-1,970	-1,977	-1,961	-1,937	-1,954	-1,969	-102	-128
DSM	GWh	87	165	244	329	418	517	611	711	809	911	914	995	1,075	1,078	1,138	1,121	1,180	1,238	1,291	1,275
Total Generation	**GWh**	**9,268**	**9,816**	**10,331**	**10,816**	**10,809**	**11,096**	**11,766**	**12,435**	**13,166**	**13,907**	**14,876**	**16,237**	**16,721**	**17,604**	**17,983**	**18,654**	**19,569**	**21,504**	**22,526**	**23,110**
Net Purchases	GWh	1,079	868	1,037	1,101	1,311	1,519	1,619	1,715	1,691	1,682	1,318	667	902	693	978	923	704	-426	-739	-772
Total Supply	**GWh**	**10,347**	**10,684**	**11,368**	**11,917**	**12,120**	**12,615**	**13,385**	**14,149**	**14,856**	**15,589**	**16,194**	**16,903**	**17,623**	**18,296**	**18,961**	**19,577**	**20,273**	**21,079**	**21,787**	**22,338**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Low Economic Growth
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$8,615 million**
20-Year NPV Carbon Emissions:	**15.51 million tons**
20-Year NPV Water Consumption:	**7.08 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,062	2,102	2,176	2,225	2,243	2,280	2,307	2,326	2,355	2,395	2,401	2,439	2,470	2,479	2,507	2,526	2,562	2,587	2,611	2,628
PRM	%	12%	11%	11%	24%	23%	17%	17%	17%	23%	17%	19%	18%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	504	472	362	359	355	352	341	344	251	135	63	20	24	18	8	7	3	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	448	448	448	448
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,276	2,692	2,701	2,693	2,684	2,931	2,908	2,972	3,081	3,072	3,065	3,166
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,088	1,088	1,129	1,156	1,171	1,232	1,251	1,251	1,251	1,251	1,385	1,675	1,742	1,974	2,380	2,483	2,502
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	152	176	194	210	232	274	255	257	275	269	274	269	283	300	311	311
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,165**	**5,174**	**5,075**	**5,110**	**5,133**	**5,854**	**6,131**	**6,521**	**6,915**	**6,822**	**7,197**	**7,468**	**7,723**	**8,142**	**8,054**	**8,162**	**7,976**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,554	1,583	1,139	953	767	749	722	911	841	365	113	145	103	46	49	29	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	460	487	492	492	492	493	492	492	492	493	0	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,425	2,292	2,314	2,366	2,273	2,131	2,318	2,472
Geothermal	GWh	66	54	51	52	49	53	51	47	51	48	40	35	36	32	33	34	33	22	31	8
Solar	GWh	1,671	3,169	3,467	3,975	3,935	3,872	3,819	3,766	5,259	6,063	5,600	5,222	5,273	5,856	6,085	6,210	6,562	6,526	5,336	5,293
Wind	GWh	2,205	2,056	1,962	1,955	1,966	1,921	1,950	1,918	1,961	1,878	3,262	4,647	4,540	4,521	4,524	4,510	4,496	5,171	4,550	4,424
4-hr Storage	GWh	-40	-114	-131	-244	-276	-294	-309	-319	-341	-365	-371	-363	-371	-428	-546	-580	-681	-881	-912	-917
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,825	-1,936	-1,953	-1,953	-1,953	-1,959	-1,953	-1,953	-1,953	-1,959	-0	0
DSM	GWh	87	165	244	326	408	501	591	673	766	867	859	930	1,008	1,008	1,066	1,048	1,103	1,162	1,216	1,201
Total Generation	**GWh**	**10,317**	**10,291**	**10,640**	**10,715**	**10,475**	**10,332**	**10,356**	**10,250**	**10,169**	**10,258**	**10,590**	**11,483**	**11,595**	**11,919**	**12,061**	**12,176**	**12,354**	**12,667**	**12,538**	**12,482**
Net Purchases	GWh	-7	318	588	705	968	1,189	1,200	1,347	1,476	1,455	1,078	246	190	-140	-240	-388	-522	-788	-614	-594
Total Supply	**GWh**	**10,310**	**10,610**	**11,228**	**11,420**	**11,443**	**11,521**	**11,556**	**11,597**	**11,645**	**11,713**	**11,668**	**11,729**	**11,785**	**11,779**	**11,821**	**11,788**	**11,832**	**11,879**	**11,924**	**11,888**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	National Carbon Policy
Sensitivity:	None
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$14,897	million
20-Year NPV Carbon Emissions:	15.85	million tons
20-Year NPV Water Consumption:	7.18	million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0	MW
20-Year NPV Rev Req:	$0	million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,108	2,193	2,288	2,330	2,425	2,551	2,668	2,787	2,916	3,013	3,142	3,264	3,365	3,486	3,594	3,721	3,840	3,960	4,057
PRM	%	12%	11%	10%	24%	22%	17%	17%	17%	21%	16%	22%	16%	16%	16%	16%	16%	16%	16%	17%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	356	354	342	348	180	91	15	8	-	-	-	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	-	-	-	-	-	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	352	384	448	512	576	608	672	704
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,811	1,802	1,865	2,190	2,352	3,614	4,351	4,612	4,628	6,104	6,702	7,092	7,567	7,971	7,961	9,186	9,862
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,182	1,182	1,315	1,465	1,618	2,251	2,278	3,168	3,168	3,693	4,012	4,218	4,465	4,702	4,702	5,493	5,915
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	138	160	188	209	235	260	285	292	296	316	312	318	315	330	344	355	354
Total Capacity	**MW**	**3,678**	**4,418**	**4,653**	**5,290**	**5,303**	**5,371**	**5,867**	**6,208**	**8,239**	**8,828**	**10,387**	**10,806**	**12,120**	**13,065**	**13,731**	**14,513**	**15,233**	**15,470**	**17,561**	**18,385**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,263	1,255	1,249	1,244	1,259	592	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,341	871	1,104	741	727	794	873	1,069	763	794	382	235	-	-	-	-	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	424	429	446	451	462	468	465	460	462	460	31	33
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,359	2,279	2,338	2,426	2,303	1,345	1,356	1,366	1,432	1,803	1,951
Geothermal	GWh	66	54	52	54	50	49	47	47	45	39	39	37	26	24	25	25	26	27	29	6
Solar	GWh	1,671	3,179	3,457	4,111	4,108	4,271	4,937	5,392	8,607	10,056	10,982	10,962	13,463	14,656	16,084	16,976	17,584	17,470	17,347	17,911
Wind	GWh	2,205	2,057	1,960	1,957	1,994	1,952	1,934	1,915	1,751	1,677	3,112	4,602	4,169	4,050	4,018	4,012	4,046	4,632	3,904	3,783
4-hr Storage	GWh	-40	-114	-131	-268	-300	-344	-400	-454	-657	-678	-963	-995	-1,185	-1,333	-1,553	-1,675	-1,803	-1,854	-2,208	-2,411
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,682	-1,704	-1,772	-1,790	-1,836	-1,857	-1,846	-1,828	-1,833	-1,826	-124	-130
DSM	GWh	87	165	244	339	438	544	649	759	865	974	991	1,079	1,167	1,176	1,244	1,229	1,288	1,342	1,394	1,376
Total Generation	**GWh**	**8,875**	**9,679**	**10,219**	**10,561**	**10,562**	**10,881**	**11,651**	**12,283**	**13,066**	**13,944**	**15,496**	**16,918**	**18,692**	**19,488**	**19,782**	**20,555**	**21,136**	**21,684**	**22,177**	**22,518**
Net Purchases	GWh	1,456	965	1,095	1,275	1,449	1,596	1,566	1,671	1,574	1,452	474	-259	-1,241	-1,380	-1,017	-1,162	-1,061	-916	-778	-602
Total Supply	**GWh**	**10,332**	**10,644**	**11,314**	**11,835**	**12,011**	**12,477**	**13,217**	**13,954**	**14,640**	**15,396**	**15,970**	**16,660**	**17,451**	**18,108**	**18,765**	**19,393**	**20,075**	**20,768**	**21,399**	**21,916**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	DERMS
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,187 **million**
20-Year NPV Carbon Emissions:	15.26 **million tons**
20-Year NPV Water Consumption:	7.04 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004 **MW**
20-Year NPV Rev Req:	-$1,279 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,097	2,143	2,222	2,280	2,311	2,361	2,400	2,408	2,438	2,477	2,480	2,522	2,558	2,573	2,611	2,640	2,687	2,721	2,750	2,772
PRM	%	12%	11%	12%	17%	17%	17%	17%	17%	22%	22%	24%	22%	22%	18%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	499	473	358	354	351	337	326	331	172	83	51	54	35	18	3	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	815	1,499	1,639	1,860	1,859	1,857	1,856	1,855	2,354	2,353	2,815	2,814	2,814	2,813	2,943	3,425	3,425	3,430	3,472	3,431
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	658	756	956	1,156	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,024	1,024	1,246	1,281	1,281	2,085	2,085	2,085	2,085	2,085	2,085	1,939	2,811	3,472	3,652	3,975	4,257
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	236	265	293	312	301	306	327	328	325	321	337	357	372	374
Total Capacity	**MW**	**3,731**	**4,479**	**4,719**	**5,184**	**5,208**	**5,321**	**5,378**	**5,405**	**6,590**	**6,408**	**6,859**	**6,863**	**6,982**	**7,182**	**7,362**	**8,913**	**9,790**	**9,295**	**9,675**	**9,612**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,154	1,241	1,230	1,167	1,152	1,172	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,690	914	1,120	802	693	584	575	554	379	464	356	418	281	220	51	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,244	1,957	1,892	1,913	2,472	2,472
Geothermal	GWh	66	56	52	51	51	48	53	51	49	47	45	48	46	44	38	16	20	66	66	13
Solar	GWh	1,768	3,327	3,653	4,123	4,113	4,195	4,184	4,116	5,323	5,625	6,227	6,342	6,250	6,160	6,343	7,259	7,395	7,604	7,446	7,530
Wind	GWh	2,205	2,079	1,973	1,948	1,975	1,952	1,983	1,952	1,845	1,953	1,775	1,800	2,360	3,106	3,788	4,277	4,994	5,006	4,493	4,360
4-hr Storage	GWh	-40	-112	-128	-226	-258	-322	-338	-348	-581	-586	-630	-645	-658	-671	-784	-1,274	-1,966	-2,215	-2,134	-2,024
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	676	795	910	1,005	1,024	1,114	1,205	1,223	1,269	1,253	1,316	1,384	1,445	1,434
Total Generation	**GWh**	**9,320**	**9,891**	**10,425**	**10,648**	**10,548**	**10,556**	**10,651**	**10,588**	**10,853**	**10,882**	**11,093**	**11,439**	**11,911**	**12,386**	**12,949**	**13,488**	**13,651**	**13,757**	**13,788**	**13,785**
Net Purchases	GWh	1,121	890	1,025	1,053	1,236	1,364	1,361	1,501	1,341	1,439	1,241	1,015	658	238	-223	-733	-791	-789	-739	-712
Total Supply	**GWh**	**10,442**	**10,781**	**11,449**	**11,701**	**11,784**	**11,920**	**12,012**	**12,090**	**12,194**	**12,321**	**12,334**	**12,454**	**12,569**	**12,623**	**12,726**	**12,754**	**12,860**	**12,969**	**13,050**	**13,073**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies**
Future: **Current Trends & Policy**
Sensitivity: **FCPP 2027 exit**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$10,477 million**
20-Year NPV Carbon Emissions: **12.72 million tons**
20-Year NPV Water Consumption: **5.55 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **-3,004 MW**
20-Year NPV Rev Req: **-$1,279 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	16%	20%	23%	21%	21%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	185	159	159	93	92	18	18	12	5	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,878	1,941	2,211	2,202	2,429	2,434	2,426	2,583	2,851	3,404	3,419	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	1,156	1,356	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,518	1,558	1,569	2,092	2,092	2,092	2,092	2,092	2,093	2,096	2,974	3,667	3,796	4,113	4,443
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	236	265	293	312	301	306	327	329	325	321	337	357	372	375
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,301**	**5,476**	**5,579**	**6,253**	**6,264**	**6,879**	**6,890**	**7,001**	**7,360**	**7,828**	**9,255**	**9,979**	**9,508**	**9,884**	**9,867**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	699	1,033	918	882	484	509	159	186	134	65	4	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,297	1,863	1,741	1,877	1,936	2,366	2,381
Geothermal	GWh	66	55	51	53	49	53	55	52	47	62	38	43	40	35	21	13	20	56	56	13
Solar	GWh	1,671	3,182	3,465	3,977	3,954	4,391	4,588	4,638	5,272	5,209	5,090	5,204	5,018	5,152	5,624	6,917	7,193	7,492	7,583	7,702
Wind	GWh	2,205	2,057	1,960	1,948	1,968	2,064	2,052	2,001	1,959	2,025	3,161	3,215	3,807	4,505	5,046	4,874	4,958	5,005	4,469	4,346
4-hr Storage	GWh	-40	-113	-131	-247	-280	-381	-408	-427	-584	-597	-637	-647	-647	-671	-904	-1,384	-2,072	-2,527	-2,536	-2,506
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	676	795	910	1,005	1,024	1,115	1,205	1,224	1,269	1,252	1,315	1,384	1,444	1,434
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,092**	**10,248**	**10,237**	**10,449**	**10,588**	**11,132**	**11,476**	**11,982**	**12,607**	**12,923**	**13,414**	**13,291**	**13,346**	**13,382**	**13,370**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,627	1,547	1,639	1,515	1,484	933	690	280	-310	-544	-1,028	-821	-789	-760	-743
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies
Future: Current Trends & Policy
Sensitivity: High EV
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $10,823 **million**
20-Year NPV Carbon Emissions: 15.35 **million tons**
20-Year NPV Water Consumption: 7.07 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: -3,004 **MW**
20-Year NPV Rev Req: -$1,279 **million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,067	2,112	2,194	2,254	2,284	2,335	2,374	2,406	2,451	2,507	2,529	2,583	2,631	2,656	2,702	2,741	2,797	2,839	2,875	2,909
PRM	%	12%	11%	10%	19%	18%	17%	17%	17%	22%	19%	21%	20%	19%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	348	335	344	183	96	65	36	24	9	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,223	2,215	2,701	2,692	2,684	2,858	3,377	3,579	3,616	3,651	3,703	3,671
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,156	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,112	1,112	1,295	1,339	1,360	2,109	2,109	2,109	2,109	2,109	2,186	2,175	3,293	4,030	4,233	4,555	4,926
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	236	265	293	312	301	306	327	329	325	321	337	357	372	375
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,195**	**5,212**	**5,279**	**5,337**	**5,378**	**6,483**	**6,294**	**6,768**	**6,965**	**7,076**	**7,528**	**8,033**	**9,550**	**10,338**	**9,897**	**10,485**	**10,521**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,241	1,231	1,170	1,155	1,177	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	986	1,181	805	705	629	618	608	431	539	415	303	220	119	35	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,423	2,303	1,912	1,859	1,907	1,934	2,346	2,367
Geothermal	GWh	66	54	51	51	49	52	51	47	48	52	45	43	42	34	30	15	19	62	59	13
Solar	GWh	1,671	3,186	3,468	3,992	3,968	3,994	3,978	3,917	5,082	5,349	5,961	5,813	5,688	5,914	7,101	7,693	8,189	8,489	8,096	8,228
Wind	GWh	2,205	2,056	1,960	1,953	1,974	1,949	1,984	1,955	1,841	1,961	1,772	2,456	3,058	3,762	3,633	4,196	4,275	4,331	4,469	4,349
4-hr Storage	GWh	-40	-113	-131	-250	-282	-337	-357	-373	-592	-600	-641	-653	-658	-703	-926	-1,468	-2,126	-2,542	-2,678	-2,639
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	676	795	910	1,005	1,025	1,115	1,205	1,225	1,270	1,253	1,316	1,384	1,445	1,435
Total Generation	**GWh**	**9,262**	**9,797**	**10,286**	**10,502**	**10,390**	**10,390**	**10,471**	**10,423**	**10,649**	**10,681**	**10,873**	**11,436**	**11,977**	**12,655**	**13,057**	**13,548**	**13,580**	**13,657**	**13,737**	**13,752**
Net Purchases	GWh	1,074	863	1,030	1,055	1,241	1,371	1,380	1,526	1,406	1,502	1,327	888	469	-146	-437	-891	-806	-764	-749	-730
Total Supply	**GWh**	**10,336**	**10,660**	**11,316**	**11,556**	**11,630**	**11,761**	**11,851**	**11,949**	**12,055**	**12,184**	**12,200**	**12,324**	**12,446**	**12,508**	**12,619**	**12,657**	**12,774**	**12,893**	**12,987**	**13,022**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	High NG
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,532 million
20-Year NPV Carbon Emissions:	15.29 million tons
20-Year NPV Water Consumption:	7.05 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004 MW
20-Year NPV Rev Req:	-$1,279 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	20%	21%	20%	20%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	343	344	171	83	67	37	23	10	1	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,815	2,389	2,381	2,801	2,793	2,784	2,775	3,000	3,410	3,425	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,156	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,271	1,311	1,319	1,981	1,981	1,981	1,981	1,981	2,063	2,096	3,019	3,673	3,806	4,124	4,454
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	194	215	243	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,202**	**5,234**	**5,287**	**5,382**	**6,520**	**6,331**	**6,739**	**6,936**	**7,047**	**7,321**	**7,577**	**9,106**	**9,989**	**9,517**	**9,893**	**9,876**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,259	1,248	1,238	1,229	1,238	583	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,342	868	1,082	652	574	479	514	564	456	555	528	384	320	245	109	1	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,359	2,413	2,303	2,054	1,857	1,776	1,820	2,462	2,472
Geothermal	GWh	66	56	51	50	48	51	47	50	45	46	39	38	36	35	31	18	19	57	56	13
Solar	GWh	1,671	3,180	3,464	3,943	3,916	3,925	3,905	3,900	5,131	5,385	5,837	5,684	5,590	5,569	6,306	7,121	7,294	7,554	7,344	7,500
Wind	GWh	2,205	2,060	1,964	1,941	1,966	1,930	1,964	1,905	1,715	1,863	1,647	2,363	2,986	3,733	3,671	4,185	4,887	4,955	4,465	4,342
4-hr Storage	GWh	-40	-114	-131	-248	-281	-332	-352	-364	-570	-585	-603	-606	-616	-660	-871	-1,379	-2,093	-2,539	-2,572	-2,553
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	560	665	784	903	1,001	1,018	1,107	1,198	1,218	1,265	1,249	1,309	1,377	1,438	1,429
Total Generation	**GWh**	**8,876**	**9,683**	**10,208**	**10,307**	**10,216**	**10,218**	**10,338**	**10,374**	**10,624**	**10,639**	**10,762**	**11,330**	**11,928**	**12,441**	**12,565**	**13,052**	**13,192**	**13,224**	**13,194**	**13,204**
Net Purchases	GWh	1,458	970	1,095	1,230	1,384	1,501	1,456	1,502	1,340	1,433	1,304	836	335	-145	-186	-666	-722	-667	-572	-578
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	High Tech Costs
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,379 million
20-Year NPV Carbon Emissions:	15.68 million tons
20-Year NPV Water Consumption:	7.16 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004 MW
20-Year NPV Rev Req:	-$1,279 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	18%	18%	17%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	349	331	336	207	120	103	63	44	10	1	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,831	1,847	2,002	1,993	2,188	2,180	2,171	2,770	2,987	3,388	3,384	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,156	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,100	1,100	1,254	1,284	1,297	2,001	2,001	2,001	2,001	2,001	2,056	2,096	3,013	3,674	3,776	4,094	4,424
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	215	238	266	294	315	303	308	330	331	327	324	340	360	375	378
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,183**	**5,199**	**5,239**	**5,357**	**5,414**	**6,155**	**5,967**	**6,151**	**6,347**	**6,458**	**7,313**	**7,566**	**9,080**	**9,953**	**9,491**	**9,867**	**9,850**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,158	1,183	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	804	700	633	587	566	539	649	604	461	320	123	44	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,090	1,894	1,859	1,883	2,228	2,254
Geothermal	GWh	66	54	52	51	52	52	51	48	52	49	52	50	46	36	31	19	33	54	50	13
Solar	GWh	1,671	3,183	3,466	3,976	3,951	3,954	4,000	3,952	4,659	4,929	5,219	5,022	4,904	5,619	6,360	7,180	7,206	7,596	7,773	7,868
Wind	GWh	2,205	2,058	1,958	1,949	1,967	1,937	1,945	1,904	1,915	2,018	1,964	2,668	3,238	3,760	3,709	4,219	4,947	5,001	4,440	4,333
4-hr Storage	GWh	-40	-113	-131	-247	-279	-327	-346	-358	-544	-553	-587	-604	-615	-659	-867	-1,366	-2,070	-2,556	-2,568	-2,545
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	571	682	802	916	1,019	1,039	1,128	1,219	1,239	1,281	1,267	1,329	1,398	1,458	1,449
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,357**	**10,445**	**10,393**	**10,464**	**10,484**	**10,588**	**11,087**	**11,538**	**12,420**	**12,649**	**13,214**	**13,304**	**13,375**	**13,383**	**13,371**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,362	1,349	1,483	1,499	1,587	1,478	1,079	724	-123	-270	-827	-834	-818	-761	-745
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	Low NG
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,306 million
20-Year NPV Carbon Emissions:	15.44 million tons
20-Year NPV Water Consumption:	7.05 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004 MW
20-Year NPV Rev Req:	-$1,279 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	18%	20%	19%	19%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	340	329	335	205	119	77	44	28	10	1	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	1,993	2,470	2,462	2,453	2,775	2,887	3,395	3,410	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,356	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,255	1,295	1,309	2,010	2,010	2,010	2,010	2,010	2,063	2,096	2,985	3,685	3,807	4,124	4,454
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	235	263	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,239**	**5,290**	**5,325**	**6,161**	**5,973**	**6,437**	**6,634**	**6,745**	**7,321**	**7,663**	**9,256**	**9,986**	**9,518**	**9,894**	**9,877**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,577	1,622	1,180	1,001	748	729	702	602	687	515	358	241	104	17	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,292	2,066	1,801	1,858	1,868	2,254	2,262
Geothermal	GWh	66	55	51	51	52	53	52	48	49	51	51	49	46	37	33	14	20	54	51	13
Solar	GWh	1,671	3,176	3,477	4,012	3,973	4,012	3,989	3,923	4,731	4,993	5,669	5,551	5,420	5,745	6,053	6,985	7,443	7,824	7,862	7,973
Wind	GWh	2,205	2,055	1,969	1,960	1,975	1,952	1,986	1,959	1,948	2,039	1,895	2,589	3,148	3,796	4,432	4,900	4,965	5,026	4,467	4,353
4-hr Storage	GWh	-40	-114	-131	-247	-279	-326	-344	-357	-541	-552	-605	-623	-634	-663	-879	-1,384	-2,066	-2,550	-2,524	-2,489
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	669	788	903	1,001	1,018	1,108	1,199	1,219	1,265	1,249	1,308	1,376	1,437	1,427
Total Generation	**GWh**	**10,317**	**10,323**	**10,697**	**10,814**	**10,614**	**10,516**	**10,586**	**10,507**	**10,619**	**10,593**	**10,838**	**11,393**	**11,845**	**12,529**	**12,988**	**13,565**	**13,527**	**13,600**	**13,546**	**13,539**
Net Purchases	GWh	17	330	606	722	987	1,203	1,209	1,369	1,345	1,479	1,228	774	418	-232	-609	-1,178	-1,057	-1,042	-924	-913
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	Low Tech Costs
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,976 **million**
20-Year NPV Carbon Emissions:	15.34 **million tons**
20-Year NPV Water Consumption:	7.06 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004 **MW**
20-Year NPV Rev Req:	-$1,279 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	19%	21%	20%	20%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	349	337	345	184	97	66	36	23	10	1	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,206	2,198	2,765	2,756	2,748	2,775	3,001	3,407	3,423	3,500	3,543	3,506
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,156	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,255	1,295	1,309	1,995	1,995	1,995	1,995	1,995	2,063	2,096	3,023	3,676	3,808	4,126	4,454
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	235	263	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,239**	**5,290**	**5,325**	**6,350**	**6,162**	**6,717**	**6,913**	**7,024**	**7,321**	**7,578**	**9,106**	**9,990**	**9,519**	**9,895**	**9,883**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,180	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	699	635	620	609	440	538	401	272	194	122	44	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,421	2,303	2,082	1,890	1,810	1,827	2,367	2,380
Geothermal	GWh	66	54	52	53	52	51	48	46	44	45	47	41	38	36	31	18	20	56	56	13
Solar	GWh	1,671	3,183	3,466	3,978	3,950	3,956	3,932	3,857	4,971	5,230	5,857	5,745	5,636	5,640	6,387	7,225	7,386	7,749	7,602	7,726
Wind	GWh	2,205	2,058	1,958	1,947	1,969	1,939	1,973	1,942	1,831	1,950	1,722	2,418	3,032	3,759	3,707	4,215	4,930	4,981	4,463	4,349
4-hr Storage	GWh	-40	-113	-131	-247	-280	-327	-347	-360	-565	-573	-611	-614	-624	-662	-868	-1,372	-2,081	-2,543	-2,542	-2,524
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	669	788	903	1,001	1,018	1,108	1,199	1,218	1,264	1,248	1,307	1,375	1,436	1,426
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,355**	**10,417**	**10,360**	**10,552**	**10,566**	**10,730**	**11,329**	**11,896**	**12,418**	**12,647**	**13,224**	**13,372**	**13,445**	**13,382**	**13,370**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,364	1,377	1,516	1,412	1,506	1,336	837	367	-121	-268	-837	-902	-888	-760	-743
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 0
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,368	**million**
20-Year NPV Carbon Emissions:	15.51	**million tons**
20-Year NPV Water Consumption:	7.12	**million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004	**MW**
20-Year NPV Rev Req:	-$1,279	**million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	18%	20%	19%	19%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	343	345	197	107	76	42	28	11	1	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,123	2,114	2,574	2,565	2,557	2,775	2,887	3,395	3,410	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,356	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,271	1,311	1,325	2,001	2,001	2,001	2,001	2,001	2,063	2,096	2,985	3,685	3,807	4,124	4,454
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	194	215	243	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,234**	**5,287**	**5,321**	**6,273**	**6,085**	**6,532**	**6,729**	**6,840**	**7,321**	**7,663**	**9,256**	**9,986**	**9,518**	**9,894**	**9,877**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,225	1,215	1,228	581	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	699	778	765	735	674	768	632	500	377	224	32	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,006	1,749	1,818	1,833	2,314	2,336
Geothermal	GWh	66	54	52	51	52	51	47	46	50	53	48	43	40	33	31	14	20	54	51	13
Solar	GWh	1,671	3,184	3,462	3,975	3,950	3,968	3,942	3,871	4,841	5,113	5,669	5,550	5,360	5,634	5,966	6,906	7,366	7,749	7,679	7,786
Wind	GWh	2,205	2,057	1,963	1,952	1,970	1,938	1,976	1,941	1,872	1,974	1,819	2,471	3,072	3,762	4,394	4,876	4,933	4,991	4,455	4,345
4-hr Storage	GWh	-40	-113	-131	-247	-280	-331	-351	-365	-561	-571	-608	-628	-623	-663	-892	-1,387	-2,083	-2,567	-2,554	-2,537
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	560	665	784	903	1,001	1,018	1,108	1,199	1,218	1,265	1,248	1,308	1,376	1,437	1,427
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,556**	**10,626**	**10,537**	**10,721**	**10,711**	**10,874**	**11,404**	**11,851**	**12,512**	**12,802**	**13,405**	**13,363**	**13,436**	**13,382**	**13,369**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,163	1,169	1,339	1,243	1,361	1,192	763	412	-215	-423	-1,019	-893	-879	-760	-743
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 20
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,705	million
20-Year NPV Carbon Emissions:	15.24	million tons
20-Year NPV Water Consumption:	7.00	million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004	MW
20-Year NPV Rev Req:	-$1,279	million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	19%	21%	20%	20%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	471	362	359	355	344	331	339	182	96	67	37	23	10	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,206	2,198	2,716	2,707	2,699	2,775	2,887	3,401	3,417	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,356	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,255	1,295	1,309	1,995	1,995	1,995	1,995	1,995	2,063	2,096	2,980	3,679	3,806	4,124	4,454
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	235	263	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,239**	**5,290**	**5,325**	**6,350**	**6,162**	**6,667**	**6,864**	**6,975**	**7,321**	**7,663**	**9,258**	**9,988**	**9,518**	**9,894**	**9,877**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,089	1,108	1,108	1,148	1,148	1,146	1,138	1,148	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,398	896	1,068	663	561	505	474	507	285	383	292	180	132	66	7	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,421	2,303	2,010	1,740	1,815	1,827	2,369	2,385
Geothermal	GWh	66	56	52	53	52	51	52	50	44	52	43	39	40	35	31	13	20	56	55	13
Solar	GWh	1,671	3,182	3,464	3,981	3,951	3,960	3,929	3,858	4,972	5,224	5,838	5,677	5,566	5,643	5,967	6,918	7,382	7,750	7,599	7,719
Wind	GWh	2,205	2,057	1,962	1,948	1,971	1,937	1,974	1,939	1,832	1,952	1,730	2,432	3,045	3,759	4,394	4,873	4,926	4,984	4,469	4,345
4-hr Storage	GWh	-40	-114	-131	-248	-280	-327	-346	-359	-562	-571	-608	-612	-623	-661	-897	-1,382	-2,083	-2,552	-2,547	-2,520
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	669	788	903	1,001	1,018	1,108	1,199	1,218	1,265	1,248	1,308	1,377	1,438	1,428
Total Generation	**GWh**	**8,917**	**9,647**	**10,123**	**10,254**	**10,148**	**10,203**	**10,257**	**10,228**	**10,399**	**10,415**	**10,609**	**11,183**	**11,780**	**12,363**	**12,778**	**13,411**	**13,368**	**13,441**	**13,382**	**13,369**
Net Purchases	GWh	1,416	1,006	1,180	1,282	1,453	1,516	1,538	1,649	1,565	1,657	1,457	983	482	-66	-399	-1,025	-898	-884	-760	-743
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 40
Phase:	Phase 3

Cost & Environmental Metrics		
20-Year NPV Revenue Requirement:	$10,988	million
20-Year NPV Carbon Emissions:	15.12	million tons
20-Year NPV Water Consumption:	6.97	million gallons

Final Reliability Adjustments to Portfolio		
2040 Storage (4hr) Capacity:	-3,004	MW
20-Year NPV Rev Req:	-$1,279	million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	19%	21%	20%	20%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	467	362	359	354	339	326	334	173	87	67	37	23	19	1	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,756	2,292	2,284	2,717	2,709	2,700	2,935	3,000	3,413	3,428	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	956	1,156	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,271	1,311	1,325	1,989	1,989	1,989	1,989	1,989	2,077	2,096	3,017	3,670	3,806	4,124	4,454
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	194	215	243	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,234**	**5,287**	**5,328**	**6,430**	**6,242**	**6,662**	**6,859**	**6,970**	**7,295**	**7,577**	**9,106**	**9,990**	**9,517**	**9,893**	**9,876**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,039	1,108	1,108	1,147	1,147	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,269	882	1,030	638	536	432	387	418	195	258	198	87	58	38	6	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,420	2,302	2,083	1,886	1,814	1,829	2,418	2,431
Geothermal	GWh	66	54	52	51	49	48	51	46	46	48	44	41	39	37	35	18	26	57	56	13
Solar	GWh	1,671	3,184	3,469	3,981	3,958	3,975	3,951	3,888	5,082	5,334	5,833	5,677	5,567	6,076	6,382	7,232	7,394	7,735	7,529	7,647
Wind	GWh	2,205	2,059	1,960	1,953	1,969	1,940	1,970	1,935	1,792	1,919	1,730	2,426	3,042	3,037	3,707	4,214	4,922	4,983	4,474	4,350
4-hr Storage	GWh	-40	-114	-131	-248	-280	-331	-351	-364	-568	-576	-607	-611	-620	-668	-868	-1,370	-2,088	-2,539	-2,533	-2,500
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	560	665	784	903	1,001	1,018	1,108	1,199	1,219	1,265	1,249	1,309	1,377	1,438	1,428
Total Generation	**GWh**	**8,739**	**9,635**	**10,089**	**10,232**	**10,124**	**10,137**	**10,178**	**10,151**	**10,377**	**10,358**	**10,512**	**11,088**	**11,705**	**12,041**	**12,609**	**13,228**	**13,376**	**13,441**	**13,382**	**13,369**
Net Purchases	GWh	1,595	1,018	1,214	1,305	1,477	1,582	1,617	1,725	1,587	1,714	1,554	1,078	557	256	-230	-842	-906	-884	-760	-743
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 8
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,507	million
20-Year NPV Carbon Emissions:	15.40	million tons
20-Year NPV Water Consumption:	7.08	million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004	MW
20-Year NPV Rev Req:	-$1,279	million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	18%	20%	20%	19%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	349	336	345	191	104	73	40	26	10	0	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,139	2,130	2,616	2,607	2,599	2,775	2,887	3,395	3,410	3,500	3,543	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,356	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,271	1,311	1,325	2,000	2,000	2,000	2,000	2,000	2,063	2,096	2,985	3,685	3,807	4,124	4,454
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	194	215	243	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,234**	**5,287**	**5,321**	**6,288**	**6,099**	**6,572**	**6,769**	**6,880**	**7,321**	**7,663**	**9,256**	**9,986**	**9,518**	**9,894**	**9,877**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,143	1,122	1,200	1,180	1,171	1,158	1,187	570	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,561	919	1,123	695	610	629	624	613	492	603	483	359	260	152	17	0	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,424	2,303	2,010	1,750	1,821	1,833	2,331	2,346
Geothermal	GWh	66	55	52	53	52	51	48	51	45	51	43	40	41	36	31	14	20	54	51	13
Solar	GWh	1,671	3,181	3,466	3,974	3,950	3,969	3,946	3,869	4,871	5,131	5,726	5,582	5,426	5,639	5,964	6,906	7,366	7,753	7,663	7,773
Wind	GWh	2,205	2,059	1,960	1,952	1,971	1,938	1,973	1,940	1,866	1,976	1,794	2,462	3,064	3,759	4,397	4,875	4,933	4,987	4,460	4,347
4-hr Storage	GWh	-40	-114	-131	-248	-280	-331	-351	-364	-560	-569	-608	-622	-624	-662	-896	-1,389	-2,086	-2,567	-2,559	-2,536
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	560	665	784	903	1,001	1,018	1,108	1,199	1,218	1,265	1,248	1,308	1,376	1,437	1,427
Total Generation	**GWh**	**9,095**	**9,705**	**10,192**	**10,336**	**10,227**	**10,355**	**10,431**	**10,377**	**10,547**	**10,567**	**10,753**	**11,290**	**11,791**	**12,445**	**12,788**	**13,405**	**13,363**	**13,436**	**13,382**	**13,370**
Net Purchases	GWh	1,238	948	1,111	1,200	1,373	1,364	1,364	1,499	1,417	1,505	1,313	877	472	-148	-409	-1,019	-893	-879	-760	-743
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	Stable ED
Phase:	Phase 3

Cost & Environmental Metrics	
20-Year NPV Revenue Requirement:	**$16,026 million**
20-Year NPV Carbon Emissions:	**16.58 million tons**
20-Year NPV Water Consumption:	**7.46 million gallons**

Final Reliability Adjustments to Portfolio	
2040 Storage (4hr) Capacity:	**-3,004 MW**
20-Year NPV Rev Req:	**-$1,279 million**
Final adjustments based on SERVM LOLP analysis	

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,282	2,321	2,412	2,534	2,640	2,747	2,865	2,952	3,072	3,185	3,276	3,386	3,483	3,596	3,701	3,807	3,886
PRM	%	12%	11%	10%	16%	16%	16%	16%	16%	21%	24%	23%	21%	18%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	391	388	380	364	372	339	145	85	46	19	22	18	8	10	13	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	2,219	3,446	3,491	3,511	3,502	3,494	3,904	4,652	4,739	4,821	7,082	8,410	9,044
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,064	1,081	1,397	1,575	1,696	2,918	2,918	2,918	2,918	2,918	3,173	4,223	5,972	7,054	6,477	6,874	7,007
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	186	215	238	266	294	315	303	308	330	332	328	324	340	360	375	378
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,147**	**5,200**	**5,382**	**5,574**	**6,186**	**8,515**	**8,381**	**8,789**	**9,186**	**9,297**	**9,964**	**11,759**	**13,591**	**14,771**	**15,775**	**17,514**	**17,978**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,246	1,238	1,175	1,162	1,194	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	972	895	856	1,073	973	434	659	454	301	294	325	148	223	273	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,354	2,418	2,288	1,973	2,220	2,296	1,739	2,330	2,127
Geothermal	GWh	66	54	51	51	50	55	55	52	42	47	41	41	43	50	37	41	52	40	16	5
Solar	GWh	1,671	3,182	3,465	4,012	4,026	4,226	4,437	5,360	8,091	8,545	8,319	8,228	8,273	9,401	11,571	12,162	12,705	17,082	18,008	19,378
Wind	GWh	2,205	2,059	1,960	1,956	1,990	2,007	2,121	1,978	1,683	1,829	3,217	4,739	5,383	5,388	5,300	5,364	5,406	5,032	4,426	4,255
4-hr Storage	GWh	-40	-113	-131	-237	-273	-357	-401	-469	-830	-862	-876	-901	-915	-1,033	-1,581	-2,007	-2,221	-3,488	-3,770	-3,885
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	457	571	682	802	915	1,019	1,038	1,129	1,221	1,243	1,285	1,272	1,335	1,402	1,463	1,453
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,710**	**10,674**	**10,899**	**11,495**	**12,186**	**13,263**	**13,612**	**14,488**	**15,891**	**16,718**	**17,662**	**18,733**	**19,274**	**19,848**	**21,807**	**22,473**	**23,332**
Net Purchases	GWh	1,072	862	1,028	1,097	1,291	1,516	1,645	1,674	1,259	1,596	1,282	542	388	70	-383	-355	-281	-1,063	-694	-711
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,807**	**11,965**	**12,415**	**13,140**	**13,860**	**14,522**	**15,209**	**15,769**	**16,433**	**17,106**	**17,733**	**18,351**	**18,919**	**19,567**	**20,745**	**21,779**	**22,621**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies
Future:	Current Trends & Policy
Sensitivity:	Tax credit 10-yr exp.
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$11,555	million
20-Year NPV Carbon Emissions:	15.17	million tons
20-Year NPV Water Consumption:	7.00	million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	-3,004	MW
20-Year NPV Rev Req:	-$1,279	million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	18%	34%	31%	29%	23%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	349	337	344	206	119	3	5	6	7	7	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,004	1,996	3,590	3,582	3,573	3,565	3,514	3,506	3,502	3,492	3,485	3,437
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	858	756	756	756	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,102	1,102	1,254	1,291	1,306	2,001	2,001	2,768	2,768	2,768	2,768	2,353	3,085	3,789	3,986	4,133	4,467
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	215	238	266	294	315	303	308	330	331	327	324	340	360	375	378
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,201**	**5,239**	**5,290**	**5,324**	**6,157**	**5,969**	**8,520**	**8,516**	**8,427**	**8,420**	**7,949**	**9,070**	**9,786**	**9,294**	**9,849**	**9,830**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,180	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	802	699	633	615	605	536	646	79	107	132	164	131	5	0	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,293	2,355	2,413	2,303	2,024	2,265	2,296	2,367	2,472	2,472
Geothermal	GWh	66	56	52	51	51	48	48	48	50	49	31	33	35	34	37	24	38	66	66	13
Solar	GWh	1,671	3,180	3,459	3,975	3,950	3,953	3,925	3,853	4,660	4,935	7,503	7,636	7,681	7,752	7,760	7,938	8,438	8,434	8,076	8,152
Wind	GWh	2,205	2,059	1,965	1,952	1,970	1,940	1,972	1,936	1,918	2,015	2,202	2,259	2,171	2,194	2,232	2,867	3,011	3,130	3,543	3,443
4-hr Storage	GWh	-40	-113	-131	-247	-280	-327	-346	-359	-544	-553	-838	-863	-876	-899	-959	-1,332	-1,925	-2,120	-2,242	-2,171
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	571	682	802	916	1,019	1,038	1,127	1,218	1,239	1,283	1,269	1,332	1,401	1,461	1,451
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,484**	**10,365**	**10,357**	**10,419**	**10,362**	**10,464**	**10,485**	**12,307**	**12,653**	**12,775**	**12,787**	**12,509**	**13,035**	**13,191**	**13,278**	**13,375**	**13,360**
Net Purchases	GWh	1,072	862	1,028	1,052	1,236	1,363	1,376	1,514	1,500	1,587	-241	-486	-512	-490	-130	-649	-721	-720	-753	-734
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Base Technologies**
Future:	**Current Trends & Policy**
Sensitivity:	**TOU**
Phase:	**Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$10,078 million**
20-Year NPV Carbon Emissions:	**15.54 million tons**
20-Year NPV Water Consumption:	**7.13 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**-3,004 MW**
20-Year NPV Rev Req:	**-$1,279 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,343	2,375	2,422	2,437	2,483	2,522	2,538	2,575	2,602	2,647	2,682	2,713	2,739
PRM	%	12%	11%	10%	19%	19%	17%	17%	18%	23%	19%	21%	20%	20%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	355	348	335	343	193	108	81	47	30	28	9	-	-	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,130	2,121	2,533	2,524	2,516	2,882	2,939	3,412	3,404	3,426	3,469	3,425
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	956	956	1,156	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,107	1,107	1,279	1,320	1,320	1,935	1,935	1,935	1,935	1,935	1,954	2,051	2,699	3,246	3,443	3,761	4,086
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	141	166	214	235	263	291	312	299	305	326	327	325	321	336	356	371	374
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,190**	**5,206**	**5,263**	**5,316**	**5,336**	**6,214**	**6,026**	**6,425**	**6,622**	**6,733**	**7,119**	**7,271**	**8,588**	**9,341**	**8,881**	**9,456**	**9,434**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,170	1,155	1,178	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	982	1,173	798	695	619	608	592	477	584	485	337	238	225	110	8	-	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,301	2,266	1,978	1,915	1,962	2,305	2,323
Geothermal	GWh	66	56	52	53	52	48	52	51	48	52	47	44	42	38	40	18	19	63	61	13
Solar	GWh	1,671	3,177	3,456	3,980	3,955	3,978	3,953	3,861	4,812	5,079	5,575	5,442	5,254	5,895	6,474	7,422	7,557	7,806	7,430	7,511
Wind	GWh	2,205	2,062	1,968	1,951	1,971	1,940	1,972	1,941	1,866	1,970	1,830	2,488	3,082	3,050	3,049	3,579	4,267	4,337	4,457	4,346
4-hr Storage	GWh	-40	-113	-131	-249	-281	-333	-353	-362	-545	-552	-586	-605	-602	-628	-823	-1,225	-1,848	-2,246	-2,343	-2,286
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	346	453	564	669	788	903	1,001	1,018	1,108	1,199	1,219	1,265	1,250	1,309	1,378	1,438	1,428
Total Generation	**GWh**	**9,260**	**9,791**	**10,275**	**10,484**	**10,365**	**10,355**	**10,423**	**10,344**	**10,489**	**10,507**	**10,663**	**11,175**	**11,639**	**12,101**	**12,382**	**13,030**	**13,221**	**13,301**	**13,349**	**13,335**
Net Purchases	GWh	1,073	862	1,028	1,052	1,236	1,364	1,372	1,509	1,452	1,542	1,380	968	600	172	-27	-669	-776	-769	-754	-735
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,794**	**11,854**	**11,941**	**12,049**	**12,043**	**12,143**	**12,239**	**12,273**	**12,355**	**12,361**	**12,445**	**12,531**	**12,596**	**12,600**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	DERMS
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,997 million
20-Year NPV Carbon Emissions:	15.48 million tons
20-Year NPV Water Consumption:	7.59 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400 MW
20-Year NPV Rev Req:	$86 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,097	2,143	2,222	2,280	2,311	2,361	2,400	2,408	2,438	2,477	2,480	2,522	2,558	2,573	2,611	2,640	2,687	2,721	2,750	2,772
PRM	%	12%	11%	12%	17%	17%	17%	17%	17%	23%	17%	34%	32%	30%	25%	19%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	499	473	358	354	351	339	329	337	236	110	23	25	31	16	17	10	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	815	1,499	1,639	1,860	1,859	1,857	1,856	1,855	1,944	2,260	2,902	2,901	2,950	2,949	2,981	3,232	3,232	3,433	3,435	3,498
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	858	756	956	956	956	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,033	1,033	1,266	1,308	1,308	1,308	1,308	1,308	1,308	1,308	1,308	1,308	1,429	1,732	2,517	2,560	2,626
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	232	249	266	247	250	268	262	267	262	276	292	303	303
Total Capacity	**MW**	**3,731**	**4,479**	**4,719**	**5,186**	**5,204**	**5,325**	**5,383**	**5,398**	**5,659**	**5,792**	**6,914**	**6,917**	**6,881**	**7,074**	**7,111**	**7,478**	**7,995**	**8,298**	**8,753**	**8,576**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,154	1,241	1,231	1,167	1,151	1,172	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,690	914	1,120	806	706	600	597	587	702	545	137	179	215	135	103	87	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,116	2,111	2,021	1,998	2,011	2,139
Geothermal	GWh	66	56	52	52	51	53	53	51	57	54	43	46	47	46	50	45	42	42	35	7
Solar	GWh	1,768	3,328	3,656	4,136	4,135	4,220	4,222	4,171	4,590	5,441	6,391	6,470	6,666	6,531	6,690	7,136	7,093	7,545	7,102	7,021
Wind	GWh	2,205	2,078	1,970	1,950	1,976	1,959	1,994	1,965	2,032	2,009	2,480	2,519	2,388	3,157	3,245	3,199	3,853	3,780	4,444	4,368
4-hr Storage	GWh	-40	-111	-128	-229	-260	-327	-344	-353	-337	-363	-368	-372	-384	-391	-403	-458	-578	-769	-827	-843
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-91	-133	-378	-378	-398	-378	-349	-345	-238	-188	-237	-139
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	682	762	847	839	910	988	988	1,047	1,028	1,084	1,144	1,195	1,179
Total Generation	**GWh**	**9,320**	**9,891**	**10,425**	**10,646**	**10,542**	**10,548**	**10,641**	**10,570**	**10,642**	**10,773**	**11,441**	**11,735**	**11,947**	**12,391**	**12,498**	**12,804**	**13,282**	**13,552**	**13,724**	**13,732**
Net Purchases	GWh	1,121	890	1,025	1,055	1,242	1,372	1,371	1,520	1,553	1,550	894	720	623	233	229	-50	-423	-584	-670	-653
Total Supply	**GWh**	**10,442**	**10,781**	**11,449**	**11,701**	**11,784**	**11,920**	**12,012**	**12,089**	**12,194**	**12,323**	**12,335**	**12,455**	**12,570**	**12,625**	**12,727**	**12,754**	**12,859**	**12,968**	**13,053**	**13,079**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	FCPP 2027 exit
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,293 **million**
20-Year NPV Carbon Emissions:	12.96 **million tons**
20-Year NPV Water Consumption:	6.30 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400 **MW**
20-Year NPV Rev Req:	$86 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	17%	16%	16%	16%	16%	31%	29%	27%	22%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	183	177	160	118	103	17	15	19	10	10	3	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,909	2,111	2,238	2,590	2,667	2,699	2,690	2,797	3,018	3,059	3,264	3,257	3,333
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	1,156	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,108	1,108	1,108	1,130	1,139	1,362	1,362	1,362	1,362	1,362	1,362	1,362	1,589	1,935	2,718	2,767	2,842
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	300	300	300	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	275	255	258	275	269	274	270	284	300	311	311
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,195**	**5,175**	**5,206**	**5,386**	**5,688**	**5,833**	**6,865**	**6,945**	**6,892**	**7,077**	**7,190**	**7,632**	**8,033**	**8,337**	**8,791**	**8,635**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	808	714	953	956	808	577	525	101	108	132	84	57	13	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,052	2,053	2,022	2,094	2,155	2,192
Geothermal	GWh	66	55	53	51	49	59	60	56	55	52	43	44	45	43	45	41	43	43	36	7
Solar	GWh	1,671	3,179	3,458	3,991	3,966	4,516	4,509	4,750	5,074	5,298	5,518	5,752	5,874	5,718	6,048	6,482	6,761	7,019	6,408	6,582
Wind	GWh	2,205	2,061	1,965	1,950	1,976	2,096	2,134	2,050	2,021	1,969	3,217	3,218	3,120	3,850	3,898	3,836	3,855	3,797	4,491	4,370
4-hr Storage	GWh	-40	-113	-131	-249	-281	-270	-282	-298	-372	-390	-382	-392	-399	-405	-427	-511	-656	-827	-885	-925
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-135	-138	-151	-131	-144	-339	-390	-381	-375	-350	-314	-234	-152	-132	-137
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	870	862	933	1,011	1,011	1,070	1,051	1,108	1,167	1,218	1,201
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,481**	**10,358**	**10,097**	**10,207**	**10,204**	**10,368**	**10,554**	**11,317**	**11,634**	**11,828**	**12,229**	**12,393**	**12,651**	**12,901**	**13,141**	**13,291**	**13,290**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,622	1,588	1,672	1,595	1,518	749	533	434	68	-14	-265	-431	-583	-669	-664
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	High EV
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$10,508 million**
20-Year NPV Carbon Emissions:	**15.33 million tons**
20-Year NPV Water Consumption:	**7.51 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**400 MW**
20-Year NPV Rev Req:	**$86 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,067	2,112	2,194	2,254	2,284	2,335	2,374	2,406	2,451	2,507	2,529	2,583	2,631	2,656	2,702	2,741	2,797	2,839	2,875	2,909
PRM	%	12%	11%	10%	19%	18%	17%	17%	17%	22%	17%	29%	28%	27%	21%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	350	339	345	228	91	32	18	12	5	2	0	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,755	1,937	2,416	2,662	2,654	2,645	2,637	2,586	2,659	2,981	3,108	3,300	3,649
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,058	1,156	1,356	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,121	1,121	1,316	1,365	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,487	1,776	2,091	2,892	2,985	3,026
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	260	262	280	274	279	274	288	304	315	315
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,198**	**5,208**	**5,282**	**5,342**	**5,391**	**5,749**	**6,050**	**6,776**	**6,970**	**7,077**	**7,262**	**7,508**	**7,865**	**8,516**	**8,760**	**9,055**	**9,139**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,241	1,231	1,169	1,154	1,177	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	986	1,181	809	719	640	639	628	637	468	183	119	65	53	7	5	2	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,023	2,088	1,904	1,859	2,090	2,184
Geothermal	GWh	66	55	51	53	52	48	52	47	55	57	46	45	44	40	37	36	35	34	35	7
Solar	GWh	1,671	3,184	3,469	4,005	3,983	4,027	4,020	3,983	4,574	5,532	5,967	5,784	5,591	5,410	5,196	5,425	6,178	6,529	6,889	7,051
Wind	GWh	2,205	2,057	1,959	1,953	1,978	1,957	1,992	1,967	2,007	1,952	2,573	3,252	3,815	4,541	5,295	5,268	5,167	5,116	4,477	4,365
4-hr Storage	GWh	-40	-113	-131	-252	-284	-342	-363	-381	-370	-406	-401	-402	-406	-411	-474	-594	-770	-957	-982	-1,003
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-109	-147	-351	-368	-362	-360	-239	-167	-185	-133	-114	-124
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	874	945	1,023	1,022	1,082	1,063	1,119	1,178	1,230	1,213
Total Generation	**GWh**	**9,262**	**9,797**	**10,286**	**10,499**	**10,383**	**10,377**	**10,461**	**10,411**	**10,507**	**10,714**	**11,188**	**11,736**	**12,195**	**12,599**	**12,928**	**13,125**	**13,452**	**13,626**	**13,625**	**13,693**
Net Purchases	GWh	1,074	863	1,030	1,057	1,247	1,384	1,389	1,538	1,547	1,470	1,012	588	251	-91	-309	-468	-678	-733	-638	-671
Total Supply	**GWh**	**10,336**	**10,660**	**11,316**	**11,556**	**11,630**	**11,761**	**11,851**	**11,949**	**12,055**	**12,184**	**12,200**	**12,324**	**12,446**	**12,508**	**12,619**	**12,657**	**12,774**	**12,893**	**12,987**	**13,022**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	High NG
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,329 million
20-Year NPV Carbon Emissions:	15.18 million tons
20-Year NPV Water Consumption:	7.51 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400 MW
20-Year NPV Rev Req:	$86 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	31%	29%	28%	22%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	345	338	202	93	14	14	9	11	9	2	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,910	2,156	2,392	2,709	2,712	2,703	2,695	2,893	3,021	3,062	3,272	3,265	3,341
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	1,156	1,156	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,111	1,111	1,291	1,335	1,345	1,345	1,345	1,345	1,345	1,345	1,345	1,346	1,594	1,943	2,726	2,775	2,850
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	253	270	250	254	271	265	270	265	279	296	307	307
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,188**	**5,198**	**5,238**	**5,291**	**5,474**	**5,912**	**5,965**	**6,962**	**6,968**	**7,075**	**7,060**	**7,265**	**7,636**	**8,040**	**8,349**	**8,802**	**8,646**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,259	1,249	1,238	1,229	1,236	586	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,342	868	1,082	653	585	488	528	547	570	568	139	166	111	148	88	23	5	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,009	2,035	1,998	2,079	2,167	2,299
Geothermal	GWh	66	56	52	50	49	47	52	43	51	50	39	41	40	41	42	38	42	40	34	7
Solar	GWh	1,671	3,183	3,473	3,959	3,937	3,955	3,941	4,064	4,763	5,404	5,600	5,714	5,513	5,621	6,074	6,384	6,646	6,901	6,227	6,276
Wind	GWh	2,205	2,058	1,956	1,940	1,968	1,942	1,974	1,882	1,922	1,905	3,086	3,099	3,683	3,804	3,828	3,804	3,814	3,760	4,468	4,366
4-hr Storage	GWh	-40	-114	-131	-250	-283	-337	-357	-373	-372	-392	-373	-382	-386	-398	-420	-511	-660	-833	-885	-913
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-118	-146	-404	-420	-398	-375	-354	-280	-194	-121	-104	-108
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	773	858	849	921	998	999	1,058	1,039	1,096	1,154	1,205	1,189
Total Generation	**GWh**	**8,876**	**9,683**	**10,208**	**10,302**	**10,209**	**10,207**	**10,330**	**10,385**	**10,535**	**10,621**	**11,233**	**11,498**	**11,986**	**12,144**	**12,324**	**12,532**	**12,746**	**12,980**	**13,112**	**13,116**
Net Purchases	GWh	1,458	970	1,095	1,234	1,392	1,513	1,465	1,491	1,429	1,451	833	668	276	153	55	-146	-276	-423	-491	-490
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	High Tech Costs
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,520 **million**
20-Year NPV Carbon Emissions:	15.57 **million tons**
20-Year NPV Water Consumption:	7.53 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400 **MW**
20-Year NPV Rev Req:	$86 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	29%	27%	26%	20%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	251	100	32	34	25	26	12	4	1	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,761	1,752	2,261	2,253	2,244	2,236	2,227	2,592	2,811	3,002	3,233	3,227	3,300
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	1,156	1,156	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,107	1,107	1,274	1,318	1,339	1,344	1,344	1,344	1,344	1,344	1,344	1,387	1,614	1,914	2,688	2,736	2,810
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	136	154	198	216	238	262	284	269	274	291	285	290	285	299	316	328	328
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,195**	**5,241**	**5,295**	**5,342**	**5,517**	**5,848**	**6,524**	**6,520**	**6,627**	**6,612**	**7,025**	**7,465**	**7,971**	**8,292**	**8,745**	**8,588**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	807	713	647	638	625	777	512	139	176	105	139	54	21	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,139	2,121	2,037	1,999	1,983	2,221
Geothermal	GWh	66	56	51	51	49	48	52	46	52	53	51	51	48	52	48	46	42	43	36	7
Solar	GWh	1,671	3,181	3,465	3,989	3,965	3,985	3,965	3,925	4,217	5,306	4,989	5,020	4,780	4,933	5,665	6,126	6,626	7,115	6,789	6,475
Wind	GWh	2,205	2,058	1,960	1,950	1,975	1,948	1,983	1,946	2,044	1,958	3,397	3,381	3,955	4,033	3,988	3,946	3,886	3,785	4,404	4,376
4-hr Storage	GWh	-40	-113	-131	-249	-281	-331	-352	-367	-348	-386	-382	-390	-387	-407	-429	-522	-646	-831	-899	-904
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-94	-146	-267	-261	-231	-246	-303	-256	-227	-187	-283	-140
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	329	415	512	602	702	799	896	900	981	1,059	1,059	1,118	1,099	1,155	1,215	1,268	1,252
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,346**	**10,411**	**10,352**	**10,375**	**10,568**	**11,123**	**11,319**	**11,754**	**11,865**	**12,280**	**12,580**	**12,876**	**13,141**	**13,298**	**13,288**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,373	1,384	1,524	1,589	1,504	943	848	509	432	99	-194	-406	-584	-676	-662
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	Low NG
Phase:	Phase 3

Cost & Environmental Metrics	
20-Year NPV Revenue Requirement:	**$10,117 million**
20-Year NPV Carbon Emissions:	**15.46 million tons**
20-Year NPV Water Consumption:	**7.60 million gallons**

Final Reliability Adjustments to Portfolio	
2040 Storage (4hr) Capacity:	**400 MW**
20-Year NPV Rev Req:	**$86 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	29%	27%	26%	21%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	342	331	339	237	98	36	35	38	21	15	9	1	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,825	2,291	2,541	2,594	2,699	2,691	3,073	3,065	3,057	3,256	3,250	3,324
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	858	756	956	956	956	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,346	1,621	1,927	2,710	2,759	2,834
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	260	262	280	274	279	274	288	304	315	315
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,584**	**5,872**	**6,603**	**6,657**	**6,678**	**6,863**	**7,253**	**7,516**	**8,027**	**8,325**	**8,779**	**8,623**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,577	1,622	1,185	1,018	762	747	725	779	534	197	221	232	149	72	74	7	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,079	2,129	2,040	2,010	2,023	2,243
Geothermal	GWh	66	55	52	53	52	51	49	52	57	51	50	51	52	49	45	49	44	45	38	8
Solar	GWh	1,671	3,178	3,477	4,029	3,991	4,041	4,033	3,976	4,405	5,433	5,827	5,977	6,276	6,147	6,811	6,939	6,833	7,294	6,842	6,654
Wind	GWh	2,205	2,054	1,968	1,957	1,979	1,960	1,994	1,967	2,042	1,964	2,657	2,650	2,500	3,265	3,168	3,235	3,895	3,814	4,470	4,396
4-hr Storage	GWh	-40	-114	-131	-249	-281	-330	-350	-366	-351	-386	-389	-389	-399	-405	-425	-531	-656	-831	-902	-904
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-107	-153	-354	-369	-410	-401	-448	-349	-241	-214	-266	-163
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	874	946	1,023	1,023	1,082	1,063	1,120	1,179	1,231	1,213
Total Generation	**GWh**	**10,317**	**10,323**	**10,697**	**10,813**	**10,611**	**10,506**	**10,578**	**10,491**	**10,537**	**10,701**	**11,159**	**11,447**	**11,701**	**12,129**	**12,385**	**12,608**	**13,041**	**13,299**	**13,434**	**13,448**
Net Purchases	GWh	17	330	606	723	990	1,213	1,217	1,385	1,426	1,371	907	719	562	168	-6	-222	-571	-742	-812	-821
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	Low Tech Costs
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,431 **million**
20-Year NPV Carbon Emissions:	15.51 **million tons**
20-Year NPV Water Consumption:	7.28 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400 **MW**
20-Year NPV Rev Req:	$86 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	22%	19%	19%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	346	335	345	254	117	21	21	23	22	14	3	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	465	465	465	465	465	465	465	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,815	2,402	2,724	2,746	3,094	3,267	3,263	3,254	3,319	3,394	3,387	3,500
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,172	1,210	1,232	1,232	1,232	1,232	1,232	1,232	1,269	1,476	1,641	1,903	2,621	2,678	2,753
8-12hr Storage	MW	-	-	-	-	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	297	594	591	588	585	582	580	577	574	571	569
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	256	278	259	261	278	272	278	273	287	303	314	314
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,219**	**5,266**	**5,299**	**5,560**	**5,966**	**6,731**	**6,752**	**7,012**	**7,214**	**7,419**	**7,768**	**8,106**	**8,447**	**8,905**	**8,784**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,167	1,154	1,177	571	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	620	612	610	810	609	105	121	100	128	77	12	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,421	2,299	2,055	2,061	2,014	2,078	2,069	2,404
Geothermal	GWh	66	55	52	51	48	50	53	50	58	53	46	46	44	43	47	44	44	45	41	12
Solar	GWh	1,671	3,180	3,461	3,993	3,972	4,053	4,029	3,981	4,574	5,685	5,980	6,108	6,768	7,162	7,381	7,194	7,488	7,717	7,363	7,103
Wind	GWh	2,205	2,060	1,962	1,950	1,973	1,964	2,002	1,964	2,106	1,945	3,313	3,307	3,059	3,102	3,172	3,869	3,853	3,805	4,504	4,400
4-hr Storage	GWh	-40	-113	-131	-249	-282	-302	-320	-334	-322	-353	-350	-358	-364	-386	-472	-540	-649	-790	-866	-870
8-12hr Storage	GWh	-	-	-	-	-	-85	-83	-83	-80	-97	-108	-118	-125	-127	-120	-112	-91	-56	-62	-38
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-539	-587	-983	-968	-1,110	-1,121	-1,007	-966	-921	-911	-1,016	-952
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	782	878	871	942	1,019	1,020	1,078	1,059	1,116	1,175	1,227	1,209
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,340**	**10,411**	**10,351**	**10,319**	**10,509**	**11,171**	**11,440**	**11,812**	**12,120**	**12,211**	**12,621**	**12,856**	**13,064**	**13,259**	**13,270**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,379	1,384	1,525	1,644	1,563	895	727	450	177	168	-235	-386	-507	-637	-644
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 0
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,155 million
20-Year NPV Carbon Emissions:	15.69 million tons
20-Year NPV Water Consumption:	7.72 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400 MW
20-Year NPV Rev Req:	$86 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	30%	28%	26%	20%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	346	345	244	101	29	30	36	38	31	19	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,825	2,291	2,712	2,735	2,771	2,893	3,213	3,205	3,197	3,254	3,247	3,322
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	858	756	756	756	756	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,389	1,666	1,898	2,708	2,757	2,832
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	260	263	281	274	280	275	289	305	316	316
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,584**	**5,872**	**6,774**	**6,799**	**6,751**	**6,867**	**7,237**	**7,502**	**8,139**	**8,322**	**8,776**	**8,620**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,226	1,216	1,229	583	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	796	788	768	958	725	270	337	380	411	303	266	9	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,068	2,130	1,953	1,988	2,006	2,234
Geothermal	GWh	66	54	53	52	52	48	52	50	56	50	43	47	46	48	43	50	40	44	37	7
Solar	GWh	1,671	3,185	3,459	3,992	3,969	3,990	3,967	3,915	4,343	5,338	5,996	6,090	6,256	6,561	7,142	7,340	6,978	7,185	6,742	6,503
Wind	GWh	2,205	2,056	1,964	1,950	1,972	1,943	1,981	1,949	2,026	1,953	2,496	2,517	2,395	2,462	2,424	2,475	3,799	3,780	4,437	4,379
4-hr Storage	GWh	-40	-113	-131	-249	-282	-332	-353	-369	-352	-387	-385	-386	-399	-413	-438	-548	-647	-841	-908	-911
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-112	-151	-386	-405	-423	-454	-467	-395	-295	-195	-251	-138
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	874	949	1,026	1,026	1,085	1,066	1,122	1,182	1,233	1,216
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,547**	**10,619**	**10,531**	**10,647**	**10,785**	**11,205**	**11,510**	**11,707**	**11,945**	**12,161**	**12,385**	**12,959**	**13,143**	**13,296**	**13,289**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,172	1,176	1,345	1,317	1,287	861	657	555	352	218	2	-489	-586	-674	-663
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Base Technologies + all LDES**
Future:	**Current Trends & Policy**
Sensitivity:	**NMPRC CO2 20**
Phase:	**Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$10,527 million**
20-Year NPV Carbon Emissions:	**15.18 million tons**
20-Year NPV Water Consumption:	**7.50 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**400 MW**
20-Year NPV Rev Req:	**$86 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	30%	29%	27%	21%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	471	362	359	355	346	334	330	217	92	27	13	18	20	8	2	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,889	1,982	2,381	2,723	2,715	2,732	2,723	2,900	3,010	3,002	3,000	3,015	3,335
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,058	956	956	1,156	1,156	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,331	1,331	1,331	1,331	1,331	1,331	1,331	1,331	1,581	1,892	2,712	2,808	2,829
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	10	10	10	10	10	10	10	10	10	10
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	256	273	254	257	274	268	273	268	282	299	310	310
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,459**	**5,727**	**5,942**	**6,775**	**6,969**	**6,902**	**6,888**	**7,270**	**7,625**	**8,142**	**8,276**	**8,597**	**8,633**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,089	1,108	1,108	1,148	1,148	1,146	1,138	1,148	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,398	896	1,068	663	571	514	486	483	389	312	93	50	61	98	24	4	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,026	2,056	1,953	2,131	2,246	2,295
Geothermal	GWh	66	55	52	53	52	52	52	49	53	51	43	43	43	48	41	41	37	40	37	7
Solar	GWh	1,671	3,182	3,466	3,993	3,971	3,989	3,974	4,072	4,588	5,446	6,027	5,841	5,931	6,086	6,186	6,481	6,348	6,292	6,156	6,443
Wind	GWh	2,205	2,057	1,959	1,951	1,975	1,943	1,978	1,897	1,991	1,921	2,494	3,185	3,108	3,182	3,861	3,837	4,517	4,508	4,520	4,390
4-hr Storage	GWh	-40	-114	-131	-250	-282	-331	-351	-368	-356	-385	-381	-382	-389	-403	-412	-510	-656	-826	-870	-903
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-11	-12	-12	-11	-12	-11	-10	-3	-3	-5
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-119	-148	-385	-416	-397	-398	-380	-310	-234	-119	-121	-136
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	782	867	859	930	1,008	1,008	1,067	1,048	1,104	1,163	1,214	1,198
Total Generation	**GWh**	**8,917**	**9,647**	**10,123**	**10,248**	**10,137**	**10,190**	**10,244**	**10,271**	**10,256**	**10,439**	**11,037**	**11,599**	**11,779**	**11,914**	**12,402**	**12,636**	**13,063**	**13,186**	**13,180**	**13,289**
Net Purchases	GWh	1,416	1,006	1,180	1,288	1,463	1,529	1,550	1,605	1,708	1,633	1,029	567	484	383	-23	-250	-593	-629	-558	-662
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 40
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,820 million
20-Year NPV Carbon Emissions:	14.99 million tons
20-Year NPV Water Consumption:	7.46 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400 MW
20-Year NPV Rev Req:	$86 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	31%	29%	27%	21%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	467	362	359	355	341	328	325	196	94	14	13	18	20	9	2	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,900	2,145	2,333	2,672	2,716	2,742	2,757	2,894	3,021	3,062	3,272	3,265	3,341
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,291	1,335	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,594	1,943	2,726	2,775	2,850
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	253	270	250	254	271	265	270	265	279	296	307	307
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,238**	**5,291**	**5,465**	**5,901**	**5,907**	**6,926**	**6,973**	**6,915**	**6,924**	**7,266**	**7,636**	**8,040**	**8,349**	**8,802**	**8,646**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,039	1,108	1,108	1,147	1,147	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,269	882	1,030	638	545	438	397	404	233	240	29	30	32	38	37	4	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,027	2,053	2,023	2,083	2,176	2,256
Geothermal	GWh	66	54	52	53	52	49	53	49	51	51	41	42	44	46	42	41	43	44	36	7
Solar	GWh	1,671	3,185	3,467	3,993	3,971	4,003	3,981	4,096	4,833	5,411	5,668	5,838	5,950	6,142	6,178	6,496	6,772	7,048	6,395	6,506
Wind	GWh	2,205	2,058	1,962	1,953	1,977	1,949	1,986	1,899	1,937	1,937	3,176	3,187	3,096	3,172	3,858	3,835	3,855	3,795	4,493	4,382
4-hr Storage	GWh	-40	-114	-131	-250	-282	-336	-356	-373	-371	-388	-376	-387	-394	-409	-418	-514	-658	-832	-883	-914
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-127	-148	-397	-417	-402	-409	-378	-313	-232	-151	-132	-137
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	773	858	850	921	999	999	1,058	1,039	1,096	1,154	1,206	1,189
Total Generation	**GWh**	**8,739**	**9,635**	**10,089**	**10,225**	**10,113**	**10,121**	**10,162**	**10,208**	**10,257**	**10,334**	**11,288**	**11,575**	**11,750**	**11,883**	**12,405**	**12,642**	**12,901**	**13,141**	**13,291**	**13,290**
Net Purchases	GWh	1,595	1,018	1,214	1,312	1,488	1,599	1,633	1,669	1,707	1,738	778	591	512	414	-26	-256	-431	-584	-669	-664
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Base Technologies + all LDES**
Future:	**Current Trends & Policy**
Sensitivity:	**NMPRC CO2 8**
Phase:	**Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$10,299 million**
20-Year NPV Carbon Emissions:	**15.43 million tons**
20-Year NPV Water Consumption:	**7.59 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**400 MW**
20-Year NPV Rev Req:	**$86 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	30%	29%	27%	21%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	351	340	345	237	99	29	14	20	21	15	10	1	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,774	1,851	2,301	2,702	2,693	2,691	2,714	3,037	3,029	3,021	3,011	3,005	3,324
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,058	956	956	956	956	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,350	1,626	1,933	2,713	2,815	2,834
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	260	262	280	274	279	274	288	304	315	315
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,355**	**5,608**	**5,880**	**6,761**	**6,954**	**6,867**	**6,885**	**7,222**	**7,484**	**7,998**	**8,284**	**8,590**	**8,623**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,143	1,122	1,200	1,180	1,171	1,158	1,188	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,561	919	1,123	696	622	648	647	630	712	538	194	124	156	197	126	115	10	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,051	2,126	2,035	2,031	2,153	2,241
Geothermal	GWh	66	56	52	51	52	53	51	46	56	52	44	43	45	46	43	47	43	38	36	7
Solar	GWh	1,671	3,180	3,465	3,994	3,971	3,986	3,969	3,950	4,385	5,355	5,978	5,787	5,849	6,057	6,674	6,754	6,681	6,427	6,277	6,499
Wind	GWh	2,205	2,059	1,960	1,950	1,973	1,944	1,982	1,939	2,021	1,946	2,504	3,196	3,123	3,184	3,142	3,216	3,879	4,489	4,493	4,379
4-hr Storage	GWh	-40	-114	-131	-250	-282	-331	-352	-369	-352	-387	-384	-385	-392	-407	-424	-531	-653	-848	-889	-911
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-107	-148	-382	-410	-384	-399	-434	-330	-227	-121	-121	-138
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	874	945	1,023	1,023	1,082	1,063	1,120	1,178	1,230	1,213
Total Generation	**GWh**	**9,095**	**9,705**	**10,192**	**10,332**	**10,219**	**10,346**	**10,422**	**10,374**	**10,429**	**10,613**	**11,125**	**11,660**	**11,845**	**12,004**	**12,260**	**12,461**	**12,888**	**13,195**	**13,179**	**13,289**
Net Purchases	GWh	1,238	948	1,111	1,205	1,382	1,373	1,372	1,502	1,535	1,459	940	506	417	292	119	-75	-418	-637	-557	-663
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + all LDES
Future: Current Trends & Policy
Sensitivity: Stable ED
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $14,385 **million**
20-Year NPV Carbon Emissions: 16.68 **million tons**
20-Year NPV Water Consumption: 8.85 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: 400 **MW**
20-Year NPV Rev Req: $86 **million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,282	2,321	2,412	2,534	2,640	2,747	2,865	2,952	3,072	3,185	3,276	3,386	3,483	3,596	3,701	3,807	3,886
PRM	%	12%	11%	10%	16%	16%	19%	16%	16%	25%	22%	28%	25%	22%	17%	16%	16%	16%	18%	17%	17%
Carbon Intensity	lbs/MWh	503	477	391	388	381	353	353	328	169	94	44	19	20	24	25	23	22	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,872	2,265	3,286	3,691	3,731	3,723	3,714	3,941	4,023	4,282	4,661	7,290	8,682	9,318
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,070	1,093	1,093	1,166	1,272	1,506	1,546	1,546	1,546	1,546	1,619	1,970	2,349	2,842	4,058	4,949	5,331
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	300	300	300	600	600	800	800	800	800	800	800	800	800	800	800
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	174	198	217	239	263	287	272	276	293	288	293	289	303	319	331	329
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,147**	**5,200**	**5,360**	**5,559**	**6,080**	**7,513**	**7,782**	**8,407**	**8,803**	**8,910**	**9,204**	**9,642**	**10,275**	**11,162**	**14,323**	**16,616**	**17,328**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,246	1,238	1,160	1,154	1,171	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	978	904	722	898	828	538	714	357	217	207	272	260	330	364	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,351	2,414	2,297	2,093	2,103	2,018	1,718	1,879	1,902
Geothermal	GWh	66	55	51	51	51	56	57	55	46	45	42	42	44	44	47	56	59	22	10	2
Solar	GWh	1,671	3,177	3,464	4,019	4,051	4,418	4,783	5,613	7,705	8,643	8,798	8,725	8,728	9,432	9,981	10,802	11,681	15,502	16,870	17,778
Wind	GWh	2,205	2,063	1,961	1,961	1,991	2,062	2,114	2,006	1,778	1,822	3,237	4,725	5,371	5,419	5,475	5,502	5,479	4,989	4,291	4,161
4-hr Storage	GWh	-40	-113	-131	-239	-276	-267	-295	-346	-417	-450	-442	-454	-459	-502	-642	-788	-889	-1,405	-1,796	-1,988
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-132	-139	-159	-346	-394	-600	-612	-597	-614	-486	-451	-495	-862	-766	-769
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	419	512	606	705	803	905	907	989	1,066	1,069	1,130	1,112	1,170	1,230	1,282	1,264
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,708**	**10,667**	**10,897**	**11,545**	**12,169**	**13,034**	**13,658**	**14,595**	**15,983**	**16,773**	**17,418**	**17,857**	**18,666**	**19,385**	**21,194**	**21,770**	**22,350**
Net Purchases	GWh	1,072	862	1,028	1,099	1,298	1,518	1,595	1,691	1,487	1,551	1,175	450	334	315	494	253	182	-958	-913	-939
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,807**	**11,965**	**12,415**	**13,140**	**13,860**	**14,522**	**15,209**	**15,769**	**16,433**	**17,106**	**17,733**	**18,351**	**18,919**	**19,567**	**20,236**	**20,857**	**21,412**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	Tax credit 10-yr exp.
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,608 million
20-Year NPV Carbon Emissions:	15.61 million tons
20-Year NPV Water Consumption:	7.35 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	400 MW
20-Year NPV Rev Req:	$86 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	40%	38%	36%	29%	22%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	266	140	8	8	13	15	17	19	11	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,775	2,180	3,206	3,198	3,189	3,181	3,130	3,121	3,113	3,104	3,097	3,312
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	956	956	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,344	1,426	1,531	1,545	1,545	1,545	1,545	1,545	1,558	1,897	2,743	2,834	2,882
8-12hr Storage	MW	-	-	-	-	-	-	-	-	300	300	500	500	500	500	500	500	500	500	500	500
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	264	269	287	281	286	281	295	313	324	325
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,616**	**5,948**	**7,873**	**7,870**	**7,777**	**7,762**	**7,716**	**7,717**	**8,061**	**8,614**	**8,911**	**8,868**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	713	647	638	631	785	553	49	76	84	121	97	121	118	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,071	2,129	2,209	2,358	2,472	2,472
Geothermal	GWh	66	55	52	51	52	48	52	47	53	52	36	38	40	42	45	47	46	36	34	7
Solar	GWh	1,671	3,179	3,457	3,989	3,968	3,988	3,967	3,916	4,227	5,245	6,840	6,949	6,993	7,118	7,153	7,115	7,263	6,891	6,882	6,814
Wind	GWh	2,205	2,061	1,967	1,954	1,974	1,946	1,982	1,953	2,015	1,989	2,951	3,029	2,951	3,006	3,134	3,192	3,170	4,029	3,914	4,143
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-368	-375	-435	-436	-452	-457	-471	-492	-505	-635	-829	-882	-921
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-88	-132	-575	-562	-545	-536	-473	-462	-432	-446	-446	-456
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-262	-247	-248	-256	-199	-191	-140	-41	-43	-41
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	884	966	1,043	1,044	1,104	1,085	1,142	1,204	1,260	1,244
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,347**	**10,330**	**10,527**	**11,783**	**12,159**	**12,288**	**12,371**	**12,441**	**12,531**	**12,740**	**13,202**	**13,191**	**13,263**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,530	1,634	1,545	283	8	-26	-74	-62	-145	-270	-645	-569	-636
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES
Future:	Current Trends & Policy
Sensitivity:	TOU
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$10,173 million**
20-Year NPV Carbon Emissions:	**15.46 million tons**
20-Year NPV Water Consumption:	**7.58 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**400 MW**
20-Year NPV Rev Req:	**$86 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,343	2,375	2,422	2,437	2,483	2,522	2,538	2,575	2,602	2,647	2,682	2,713	2,739
PRM	%	12%	11%	10%	19%	18%	17%	17%	18%	24%	17%	32%	31%	29%	24%	17%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	355	350	338	345	246	117	28	14	20	11	13	4	0	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,800	2,129	2,710	2,701	2,693	2,684	2,643	2,939	2,931	2,937	2,995	3,319
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,058	956	1,156	1,156	1,156	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,116	1,116	1,299	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,518	1,815	2,621	2,727	2,752
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	600	600	600	600	600	600	600	600	600	600
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	232	249	266	247	250	265	258	264	259	273	289	300	300
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,192**	**5,203**	**5,266**	**5,320**	**5,328**	**5,551**	**5,697**	**6,758**	**6,953**	**6,857**	**7,042**	**7,007**	**7,471**	**7,975**	**8,302**	**8,477**	**8,520**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,170	1,155	1,178	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	982	1,173	803	708	633	624	622	734	580	151	91	120	72	57	23	3	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,093	2,076	1,979	1,884	2,116	2,112
Geothermal	GWh	66	55	51	53	49	53	53	50	51	52	44	43	45	42	48	43	38	30	35	7
Solar	GWh	1,671	3,180	3,465	3,997	3,977	4,003	3,988	3,917	4,304	5,149	5,999	5,813	5,868	5,712	5,768	6,344	6,188	6,059	6,299	6,659
Wind	GWh	2,205	2,060	1,960	1,950	1,973	1,950	1,985	1,950	2,037	2,004	2,505	3,193	3,122	3,852	3,987	3,868	4,537	5,136	4,495	4,359
4-hr Storage	GWh	-40	-113	-131	-251	-283	-338	-358	-368	-350	-379	-385	-386	-393	-399	-414	-491	-613	-852	-867	-906
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-99	-143	-381	-411	-382	-377	-321	-317	-222	-143	-134	-157
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	682	762	847	839	910	979	979	1,038	1,019	1,076	1,135	1,186	1,169
Total Generation	**GWh**	**9,260**	**9,791**	**10,275**	**10,483**	**10,359**	**10,346**	**10,413**	**10,327**	**10,366**	**10,483**	**11,069**	**11,612**	**11,783**	**12,183**	**12,255**	**12,566**	**12,985**	**13,249**	**13,129**	**13,243**
Net Purchases	GWh	1,073	862	1,028	1,054	1,242	1,373	1,381	1,526	1,575	1,567	974	531	455	89	100	-205	-540	-718	-534	-643
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,794**	**11,854**	**11,941**	**12,049**	**12,043**	**12,143**	**12,239**	**12,273**	**12,355**	**12,361**	**12,445**	**12,531**	**12,596**	**12,600**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	DERMS
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,300 million**
20-Year NPV Carbon Emissions:	**16.12 million tons**
20-Year NPV Water Consumption:	**7.26 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,097	2,143	2,222	2,280	2,311	2,361	2,400	2,408	2,438	2,477	2,480	2,522	2,558	2,573	2,611	2,640	2,687	2,721	2,750	2,772
PRM	%	12%	11%	12%	17%	17%	17%	17%	17%	22%	17%	20%	19%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	499	473	358	354	351	347	343	339	239	147	67	41	50	40	33	27	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	969	969	969	946	946	946	946	946	946	1,028	1,110	1,192	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	659	659	659
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	815	1,499	1,639	1,860	1,859	1,857	1,856	1,855	2,022	2,203	2,234	2,234	2,233	2,728	2,763	2,830	2,894	2,893	2,895	2,939
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,033	1,033	1,110	1,144	1,144	1,385	1,385	1,385	1,385	1,385	1,424	1,537	1,650	1,804	2,010	2,105	2,147
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	279	274	288	304	315	315
Total Capacity	**MW**	**3,731**	**4,479**	**4,719**	**5,186**	**5,204**	**5,272**	**5,323**	**5,341**	**5,768**	**5,771**	**6,183**	**6,384**	**6,299**	**6,827**	**7,062**	**7,320**	**7,634**	**7,522**	**7,831**	**7,610**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,154	1,241	1,231	1,176	1,161	1,186	571	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,690	914	1,120	806	706	692	678	672	799	889	410	291	343	294	224	221	197	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	17	16
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,197	2,267	2,257	2,197	2,376	2,458
Geothermal	GWh	66	56	52	51	49	49	51	47	46	51	45	41	45	38	38	37	40	34	33	9
Solar	GWh	1,768	3,326	3,649	4,134	4,135	4,105	4,098	4,042	4,449	4,956	4,507	4,409	4,512	5,294	5,550	5,764	6,031	5,948	5,784	5,879
Wind	GWh	2,205	2,080	1,977	1,953	1,977	1,937	1,968	1,937	1,950	1,949	3,335	3,980	3,917	3,836	3,821	3,841	3,821	4,533	4,592	4,428
4-hr Storage	GWh	-40	-111	-128	-229	-260	-287	-305	-311	-385	-401	-412	-422	-426	-442	-500	-550	-619	-715	-759	-779
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,082	1,063	1,120	1,179	1,230	1,213
Total Generation	**GWh**	**9,320**	**9,891**	**10,425**	**10,646**	**10,542**	**10,544**	**10,615**	**10,558**	**10,575**	**10,701**	**11,057**	**11,605**	**11,840**	**12,347**	**12,414**	**12,643**	**12,848**	**13,190**	**13,274**	**13,224**
Net Purchases	GWh	1,121	890	1,025	1,055	1,242	1,377	1,398	1,531	1,620	1,622	1,279	850	730	279	313	112	12	-221	-220	-146
Total Supply	**GWh**	**10,442**	**10,781**	**11,449**	**11,701**	**11,784**	**11,920**	**12,013**	**12,090**	**12,195**	**12,323**	**12,335**	**12,456**	**12,570**	**12,626**	**12,727**	**12,755**	**12,860**	**12,969**	**13,053**	**13,078**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + CT
Future: Current Trends & Policy
Sensitivity: FCPP 2027 exit
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,547 million**
20-Year NPV Carbon Emissions: **14.05 million tons**
20-Year NPV Water Consumption: **5.88 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	16%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	205	196	205	155	145	62	37	43	33	35	37	24	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	1,010	1,010	1,010	905	905	905	905	905	905	1,069	1,233	1,233	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	659	659	659
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,118	2,192	2,184	2,310	2,640	2,589	2,581	2,708	2,789	2,904	2,938
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,356	1,050
4-hr Storage	MW	170	620	632	1,110	1,110	1,277	1,321	1,343	1,538	1,538	1,538	1,538	1,538	1,687	1,687	1,687	1,954	2,280	2,350	2,417
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	260	282	262	267	285	279	284	279	293	310	321	321
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,208**	**5,261**	**5,297**	**5,663**	**5,800**	**6,256**	**6,452**	**6,494**	**6,966**	**7,085**	**7,236**	**7,644**	**7,494**	**7,890**	**7,684**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	1,223	1,201	1,218	900	860	390	274	302	254	236	281	213	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	26	25
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,301	2,203	2,275	2,255	2,310	2,445	2,472
Geothermal	GWh	66	54	52	53	49	54	56	55	51	51	42	41	40	37	39	39	39	41	40	10
Solar	GWh	1,671	3,184	3,462	3,992	3,973	4,266	4,251	4,210	4,645	4,804	4,394	4,215	4,465	5,191	5,205	5,189	5,640	6,016	5,950	6,073
Wind	GWh	2,205	2,056	1,962	1,949	1,972	2,021	2,061	2,038	1,982	1,931	3,270	3,956	3,834	3,813	3,821	3,865	3,825	3,800	3,831	3,656
4-hr Storage	GWh	-40	-113	-131	-249	-282	-327	-346	-361	-433	-450	-463	-464	-472	-536	-555	-566	-678	-811	-855	-889
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	791	888	880	962	1,039	1,039	1,098	1,079	1,136	1,197	1,249	1,233
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,114**	**10,190**	**10,155**	**10,297**	**10,458**	**10,810**	**11,345**	**11,634**	**12,100**	**12,047**	**12,161**	**12,430**	**12,574**	**12,685**	**12,579**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,605	1,605	1,721	1,667	1,614	1,256	821	629	197	332	225	40	-16	-64	48
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	High EV
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,827 million
20-Year NPV Carbon Emissions:	16.64 million tons
20-Year NPV Water Consumption:	7.41 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,067	2,112	2,194	2,254	2,284	2,335	2,374	2,406	2,451	2,507	2,529	2,583	2,631	2,656	2,702	2,741	2,797	2,839	2,875	2,909
PRM	%	12%	11%	10%	19%	18%	17%	17%	17%	22%	17%	18%	16%	16%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	344	345	257	136	123	116	91	56	32	19	12	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	905	905	905	905	905	946	1,069	1,233	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	741	741	741
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,813	2,225	2,693	2,752	2,744	2,735	2,684	2,676	2,668	2,670	2,743	2,926
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	658	756	956	1,156	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,121	1,121	1,257	1,304	1,336	1,595	1,599	1,599	1,624	1,656	1,762	1,798	1,798	1,919	2,282	2,397	2,424
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	264	269	287	281	286	281	295	312	324	324
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,198**	**5,208**	**5,265**	**5,322**	**5,365**	**5,728**	**5,966**	**6,419**	**6,508**	**6,647**	**6,979**	**7,293**	**7,644**	**8,052**	**7,860**	**8,060**	**7,964**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,241	1,231	1,172	1,158	1,182	570	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	986	1,181	809	719	676	668	666	862	828	755	786	545	382	228	168	79	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	21	20
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,419	2,303	2,199	2,159	2,059	2,138	2,349	2,472
Geothermal	GWh	66	54	51	53	52	48	48	49	53	49	41	43	43	43	38	37	33	35	40	7
Solar	GWh	1,671	3,181	3,463	4,003	3,982	3,985	3,977	3,928	4,206	5,015	5,443	5,652	5,587	5,616	5,502	5,299	5,205	5,488	5,782	5,865
Wind	GWh	2,205	2,061	1,965	1,955	1,980	1,946	1,983	1,957	1,978	1,910	1,742	1,729	2,348	3,116	3,818	4,536	5,190	5,211	4,565	4,413
4-hr Storage	GWh	-40	-113	-131	-252	-284	-327	-348	-366	-435	-471	-479	-496	-515	-564	-596	-607	-669	-835	-872	-895
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	886	967	1,044	1,045	1,104	1,085	1,141	1,202	1,255	1,239
Total Generation	**GWh**	**9,262**	**9,797**	**10,286**	**10,499**	**10,383**	**10,378**	**10,453**	**10,406**	**10,380**	**10,587**	**10,683**	**11,041**	**11,471**	**11,940**	**12,294**	**12,675**	**13,039**	**13,247**	**13,140**	**13,122**
Net Purchases	GWh	1,074	863	1,030	1,057	1,247	1,383	1,398	1,543	1,675	1,597	1,516	1,283	974	568	325	-18	-265	-353	-153	-100
Total Supply	**GWh**	**10,336**	**10,660**	**11,316**	**11,556**	**11,630**	**11,761**	**11,851**	**11,949**	**12,055**	**12,184**	**12,200**	**12,324**	**12,446**	**12,508**	**12,619**	**12,657**	**12,774**	**12,893**	**12,987**	**13,022**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	High NG
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,712 million
20-Year NPV Carbon Emissions:	15.63 million tons
20-Year NPV Water Consumption:	7.16 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	17%	19%	18%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	345	345	221	125	48	15	21	19	21	21	18	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	823	823	823	823	823	905	1,069	1,192	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,764	2,097	2,247	2,332	2,324	2,315	2,507	2,455	2,481	2,528	2,531	2,725	2,846
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,111	1,111	1,291	1,335	1,356	1,656	1,656	1,656	1,656	1,656	1,692	1,692	1,741	1,879	2,233	2,256	2,287
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	267	285	279	284	279	293	310	321	320
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,188**	**5,198**	**5,238**	**5,291**	**5,341**	**5,994**	**5,966**	**6,432**	**6,828**	**6,735**	**7,038**	**7,157**	**7,349**	**7,629**	**7,429**	**7,857**	**7,703**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,259	1,249	1,238	1,229	1,240	588	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,342	868	1,082	653	585	488	528	603	713	801	426	175	254	285	285	280	275	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	22	21
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,425	2,302	2,200	2,279	2,264	2,350	2,471	2,472
Geothermal	GWh	66	56	51	50	49	48	47	50	49	48	35	32	32	33	35	32	33	33	33	8
Solar	GWh	1,671	3,182	3,470	3,957	3,939	3,957	3,941	3,900	4,558	5,007	4,603	4,214	4,281	4,748	4,747	4,844	5,051	5,284	5,204	5,388
Wind	GWh	2,205	2,059	1,959	1,942	1,966	1,940	1,979	1,938	1,856	1,889	3,132	4,538	4,487	4,491	4,497	4,522	4,507	4,529	4,547	4,389
4-hr Storage	GWh	-40	-114	-131	-250	-283	-337	-357	-373	-470	-491	-502	-496	-504	-534	-556	-583	-647	-789	-813	-839
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	961	1,038	1,039	1,098	1,079	1,135	1,194	1,246	1,230
Total Generation	**GWh**	**8,876**	**9,683**	**10,208**	**10,302**	**10,209**	**10,207**	**10,330**	**10,349**	**10,446**	**10,516**	**10,871**	**11,785**	**12,014**	**12,364**	**12,305**	**12,453**	**12,620**	**12,617**	**12,710**	**12,669**
Net Purchases	GWh	1,458	970	1,095	1,234	1,392	1,513	1,465	1,527	1,518	1,556	1,194	382	248	-67	74	-67	-150	-60	-89	-43
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	High Tech Costs
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,949 million**
20-Year NPV Carbon Emissions:	**16.50 million tons**
20-Year NPV Water Consumption:	**7.27 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	18%	17%	16%	16%	16%	22%	16%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	475	362	359	355	352	348	345	273	163	122	53	45	42	46	37	30	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	987	987	987	987	987	1,110	1,274	1,356	1,397	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	823	823	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,997	1,988	1,980	1,987	2,028	1,977	2,321	2,426	2,420	2,506	2,573
Wind	MW	658	658	658	658	658	658	658	658	658	658	858	1,258	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,085	1,085	1,182	1,219	1,238	1,377	1,442	1,442	1,442	1,456	1,473	1,473	1,500	1,659	1,965	2,012	2,056
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	266	271	289	283	288	283	297	314	326	326
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,162**	**5,172**	**5,211**	**5,257**	**5,290**	**5,522**	**5,665**	**5,841**	**6,237**	**6,374**	**6,549**	**6,667**	**7,116**	**7,434**	**7,377**	**7,523**	**7,327**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,242	1,233	1,178	1,163	1,187	572	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	825	731	705	694	696	967	996	743	351	268	287	280	254	226	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	60	59
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,361	2,312	2,267	2,226	2,352	2,472
Geothermal	GWh	66	57	52	53	52	48	52	46	54	51	48	41	41	40	41	37	39	34	39	10
Solar	GWh	1,671	3,176	3,468	3,969	3,947	3,912	3,885	3,825	3,928	4,572	4,343	3,928	3,795	4,000	4,024	4,457	4,768	4,780	5,110	5,121
Wind	GWh	2,205	2,062	1,956	1,943	1,967	1,933	1,964	1,935	1,979	1,956	2,689	4,031	4,590	4,672	4,703	4,603	4,577	5,240	4,562	4,406
4-hr Storage	GWh	-40	-113	-131	-243	-275	-308	-327	-340	-377	-419	-428	-441	-451	-468	-479	-498	-566	-700	-719	-744
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	892	973	1,050	1,051	1,110	1,091	1,147	1,208	1,262	1,246
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,480**	**10,358**	**10,342**	**10,393**	**10,342**	**10,274**	**10,418**	**10,582**	**11,244**	**11,719**	**11,884**	**12,040**	**12,257**	**12,458**	**12,809**	**12,667**	**12,570**
Net Purchases	GWh	1,072	862	1,028	1,057	1,243	1,377	1,402	1,534	1,690	1,653	1,484	923	543	413	339	130	12	-252	-45	56
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	Low NG
Phase:	Phase 3

Cost & Environmental Metrics		
20-Year NPV Revenue Requirement:	$9,442	**million**
20-Year NPV Carbon Emissions:	16.54	**million tons**
20-Year NPV Water Consumption:	7.36	**million gallons**

Final Reliability Adjustments to Portfolio		
2040 Storage (4hr) Capacity:	0	**MW**
20-Year NPV Rev Req:	$0	**million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	352	345	345	259	139	136	89	66	42	40	42	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	969	969	969	905	905	905	905	905	987	1,110	1,274	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	741	741	741
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,767	1,759	2,188	2,418	2,490	2,586	2,577	2,526	2,518	2,510	2,500	2,573	2,771
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,156	1,156	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,130	1,168	1,200	1,520	1,524	1,524	1,524	1,524	1,575	1,637	1,637	1,809	2,135	2,219	2,219
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	279	274	288	304	315	315
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,200**	**5,247**	**5,309**	**5,598**	**5,854**	**6,065**	**6,339**	**6,550**	**6,868**	**7,007**	**7,158**	**7,578**	**7,536**	**7,704**	**7,596**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,577	1,622	1,185	1,018	855	845	816	955	880	877	600	414	290	234	274	141	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	29	28
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,419	2,291	2,292	2,359	2,279	2,234	2,364	2,472
Geothermal	GWh	66	55	52	51	53	53	51	51	52	51	46	44	42	40	38	42	39	31	38	9
Solar	GWh	1,671	3,176	3,485	4,022	3,990	3,922	3,901	3,882	4,105	4,936	5,175	5,107	5,122	5,098	5,137	5,116	5,099	5,082	5,414	5,473
Wind	GWh	2,205	2,056	1,960	1,966	1,979	1,934	1,962	1,937	2,005	1,916	1,866	2,519	3,112	3,871	3,863	3,900	4,578	5,262	4,585	4,419
4-hr Storage	GWh	-40	-114	-131	-249	-281	-293	-312	-327	-413	-447	-459	-465	-470	-499	-538	-548	-623	-770	-799	-816
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,082	1,063	1,120	1,179	1,230	1,214
Total Generation	**GWh**	**10,317**	**10,323**	**10,697**	**10,813**	**10,611**	**10,489**	**10,549**	**10,491**	**10,417**	**10,593**	**10,676**	**11,111**	**11,662**	**12,115**	**12,109**	**12,208**	**12,633**	**13,029**	**12,862**	**12,799**
Net Purchases	GWh	17	330	606	723	990	1,230	1,246	1,385	1,547	1,479	1,390	1,055	601	182	270	178	-163	-472	-240	-173
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies + CT**
Future: **Current Trends & Policy**
Sensitivity: **Low Tech Costs**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,343 million**
20-Year NPV Carbon Emissions: **15.79 million tons**
20-Year NPV Water Consumption: **7.19 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	19%	18%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	344	345	226	132	46	26	34	33	25	28	20	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	905	987	1,151	1,192	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	618	618	618
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,143	2,355	2,346	2,440	2,642	2,653	2,645	2,746	2,900	3,036	3,074
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,356	1,050
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,296	1,660	1,660	1,660	1,660	1,660	1,691	1,831	1,831	2,053	2,355	2,416	2,496
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	264	282	276	281	276	290	306	317	317
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,307**	**5,903**	**5,866**	**6,458**	**6,651**	**6,661**	**6,970**	**7,207**	**7,358**	**7,736**	**7,634**	**8,043**	**7,855**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,174	1,159	1,184	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	675	661	656	689	772	310	211	249	257	186	229	185	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	18	15
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,421	2,302	2,211	2,285	2,260	2,235	2,366	2,430
Geothermal	GWh	66	56	52	51	49	51	48	51	51	51	39	40	38	38	38	38	40	39	37	9
Solar	GWh	1,671	3,178	3,458	3,992	3,968	3,955	3,938	3,874	4,483	4,946	4,705	4,552	4,767	5,199	5,427	5,419	5,785	6,232	6,161	6,261
Wind	GWh	2,205	2,061	1,966	1,952	1,977	1,939	1,972	1,942	1,910	1,935	3,163	3,915	3,806	3,812	3,803	3,844	3,810	3,778	3,812	3,646
4-hr Storage	GWh	-40	-113	-131	-249	-282	-321	-341	-356	-467	-485	-504	-503	-512	-538	-606	-619	-714	-842	-885	-928
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	951	1,029	1,029	1,088	1,069	1,125	1,184	1,236	1,219
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,344**	**10,400**	**10,343**	**10,387**	**10,482**	**10,889**	**11,527**	**11,799**	**12,099**	**12,146**	**12,264**	**12,491**	**12,641**	**12,745**	**12,652**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,375	1,395	1,533	1,576	1,590	1,177	640	464	198	233	122	-21	-83	-123	-26
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 0
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,521 million**
20-Year NPV Carbon Emissions:	**16.29 million tons**
20-Year NPV Water Consumption:	**7.30 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	241	136	132	54	40	34	36	38	29	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	864	864	864	864	864	905	1,069	1,233	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,934	2,208	2,425	2,416	2,408	2,639	2,588	2,580	2,572	2,563	2,730	2,807
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	1,058	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,182	1,220	1,239	1,581	1,581	1,581	1,581	1,581	1,687	1,687	1,687	1,906	2,224	2,257	2,306
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	267	285	279	283	278	292	308	319	319
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,211**	**5,258**	**5,291**	**5,797**	**5,892**	**6,089**	**6,486**	**6,593**	**6,966**	**7,082**	**7,233**	**7,499**	**7,450**	**7,862**	**7,682**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,229	1,220	1,231	587	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	831	825	815	912	927	916	512	415	396	399	460	416	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	21	18
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,421	2,301	2,204	2,275	2,295	2,326	2,371	2,472
Geothermal	GWh	66	54	52	51	52	48	48	46	52	49	48	40	39	38	39	38	42	34	36	7
Solar	GWh	1,671	3,182	3,460	3,992	3,968	3,918	3,886	3,825	4,332	4,943	5,157	4,746	4,637	5,180	5,198	5,184	5,461	5,397	5,427	5,474
Wind	GWh	2,205	2,059	1,963	1,952	1,974	1,927	1,964	1,935	1,931	1,901	1,851	3,196	3,808	3,813	3,820	3,862	3,858	4,557	4,552	4,410
4-hr Storage	GWh	-40	-113	-131	-249	-282	-308	-327	-341	-444	-467	-478	-477	-485	-536	-556	-566	-668	-791	-821	-847
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	962	1,039	1,039	1,093	1,074	1,130	1,189	1,241	1,225
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,518**	**10,578**	**10,504**	**10,522**	**10,615**	**10,670**	**11,339**	**11,874**	**12,232**	**12,197**	**12,327**	**12,534**	**12,727**	**12,828**	**12,760**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,201	1,217	1,373	1,441	1,457	1,396	828	388	65	182	59	-64	-170	-206	-133
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies + CT**
Future: **Current Trends & Policy**
Sensitivity: **NMPRC CO2 20**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,862 million**
20-Year NPV Carbon Emissions: **15.64 million tons**
20-Year NPV Water Consumption: **7.12 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	471	362	359	355	350	338	345	223	131	50	28	22	19	21	23	18	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	905	1,069	1,233	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,143	2,254	2,245	2,240	2,508	2,457	2,449	2,530	2,521	2,732	2,804
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,356	1,356	1,356	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,296	1,660	1,660	1,660	1,660	1,660	1,695	1,695	1,695	1,885	2,245	2,261	2,311
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	265	283	277	281	276	290	306	317	317
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,307**	**5,903**	**5,866**	**6,357**	**6,552**	**6,662**	**7,041**	**7,158**	**7,309**	**7,634**	**7,427**	**7,865**	**7,682**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,089	1,108	1,108	1,148	1,148	1,146	1,138	1,148	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,398	896	1,068	663	571	549	521	559	552	638	245	160	118	104	109	139	116	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	22	19
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,302	2,211	2,291	2,265	2,357	2,421	2,455
Geothermal	GWh	66	55	52	51	50	52	53	50	50	50	41	40	37	35	34	35	37	34	33	9
Solar	GWh	1,671	3,180	3,465	3,991	3,973	3,958	3,933	3,875	4,490	4,944	4,588	4,397	4,270	4,820	4,821	4,823	5,129	5,352	5,372	5,501
Wind	GWh	2,205	2,059	1,960	1,955	1,975	1,937	1,975	1,943	1,904	1,938	3,235	3,937	4,537	4,520	4,531	4,561	4,540	4,565	4,565	4,403
4-hr Storage	GWh	-40	-114	-131	-250	-282	-321	-341	-355	-465	-483	-501	-501	-508	-536	-553	-568	-651	-793	-823	-850
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	955	1,032	1,032	1,088	1,069	1,125	1,184	1,235	1,219
Total Generation	**GWh**	**8,917**	**9,647**	**10,123**	**10,248**	**10,137**	**10,194**	**10,242**	**10,211**	**10,249**	**10,350**	**10,785**	**11,349**	**11,912**	**12,277**	**12,240**	**12,349**	**12,559**	**12,714**	**12,826**	**12,755**
Net Purchases	GWh	1,416	1,006	1,180	1,288	1,463	1,526	1,553	1,665	1,715	1,722	1,281	818	351	20	139	37	-89	-156	-204	-129
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + CT
Future: Current Trends & Policy
Sensitivity: NMPRC CO2 40
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $10,157 **million**
20-Year NPV Carbon Emissions: 15.61 **million tons**
20-Year NPV Water Consumption: 7.13 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: 0 **MW**
20-Year NPV Rev Req: $0 **million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	19%	18%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	467	362	359	355	345	334	342	216	129	47	26	35	23	25	28	24	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	823	987	1,151	1,233	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	659	659	659
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,047	2,151	2,333	2,324	2,344	2,710	2,659	2,651	2,708	2,789	2,935	2,970
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,356	1,050
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,296	1,659	1,659	1,659	1,659	1,659	1,826	1,826	1,826	1,954	2,280	2,338	2,404
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	267	285	279	284	279	293	310	321	321
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,307**	**5,946**	**5,872**	**6,434**	**6,631**	**6,566**	**7,094**	**7,212**	**7,363**	**7,643**	**7,495**	**7,909**	**7,704**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,039	1,108	1,108	1,147	1,147	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,269	882	1,030	638	545	488	442	481	456	544	162	106	137	70	82	93	83	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	27	26
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,302	2,205	2,279	2,255	2,310	2,453	2,472
Geothermal	GWh	66	55	51	53	52	48	52	47	51	51	42	39	41	37	37	40	40	41	40	9
Solar	GWh	1,671	3,184	3,471	3,998	3,974	3,961	3,940	3,875	4,545	4,956	4,673	4,517	4,630	5,414	5,434	5,426	5,646	6,014	5,936	6,067
Wind	GWh	2,205	2,057	1,959	1,948	1,973	1,940	1,970	1,948	1,889	1,933	3,185	3,918	3,820	3,795	3,800	3,840	3,824	3,800	3,832	3,654
4-hr Storage	GWh	-40	-114	-131	-250	-282	-322	-341	-356	-468	-484	-502	-501	-510	-583	-604	-618	-678	-811	-851	-885
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	962	1,039	1,039	1,098	1,079	1,136	1,197	1,249	1,233
Total Generation	**GWh**	**8,739**	**9,635**	**10,089**	**10,225**	**10,113**	**10,133**	**10,164**	**10,134**	**10,190**	**10,261**	**10,736**	**11,402**	**11,581**	**12,074**	**12,052**	**12,140**	**12,305**	**12,572**	**12,685**	**12,577**
Net Purchases	GWh	1,595	1,018	1,214	1,312	1,488	1,586	1,631	1,742	1,774	1,810	1,330	765	682	223	327	247	165	-14	-63	50
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies + CT**
Future: **Current Trends & Policy**
Sensitivity: **NMPRC CO2 8**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,655 million**
20-Year NPV Carbon Emissions: **15.85 million tons**
20-Year NPV Water Consumption: **7.21 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	352	344	345	227	132	51	29	36	33	36	34	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	905	1,069	1,192	1,192	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	618	618	618
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,147	2,211	2,203	2,320	2,632	2,581	2,573	2,735	2,851	2,996	3,000
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,356	1,050
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,296	1,657	1,657	1,657	1,657	1,657	1,680	1,680	1,738	2,036	2,353	2,411	2,489
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	262	284	268	273	291	284	290	285	299	316	327	327
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,307**	**5,901**	**5,868**	**6,317**	**6,513**	**6,546**	**6,957**	**7,076**	**7,243**	**7,718**	**7,593**	**8,007**	**7,784**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,143	1,122	1,200	1,180	1,174	1,161	1,193	572	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,561	919	1,123	696	622	676	671	666	710	796	368	266	300	294	291	321	253	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	18	17
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,302	2,203	2,302	2,260	2,273	2,391	2,472
Geothermal	GWh	66	54	52	53	52	51	48	47	50	46	43	39	40	37	37	40	37	36	38	10
Solar	GWh	1,671	3,184	3,470	3,991	3,971	3,952	3,937	3,878	4,480	4,948	4,518	4,349	4,582	5,164	5,176	5,216	5,742	6,151	6,090	6,152
Wind	GWh	2,205	2,057	1,955	1,951	1,973	1,942	1,973	1,942	1,908	1,933	3,267	3,951	3,825	3,812	3,823	3,862	3,812	3,787	3,817	3,649
4-hr Storage	GWh	-40	-114	-131	-250	-282	-321	-342	-356	-466	-484	-500	-504	-510	-534	-552	-585	-709	-840	-881	-914
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	797	894	897	979	1,056	1,056	1,115	1,096	1,152	1,214	1,265	1,249
Total Generation	**GWh**	**9,095**	**9,705**	**10,192**	**10,332**	**10,219**	**10,345**	**10,411**	**10,361**	**10,411**	**10,508**	**10,890**	**11,441**	**11,719**	**12,131**	**12,091**	**12,252**	**12,547**	**12,634**	**12,739**	**12,635**
Net Purchases	GWh	1,238	948	1,111	1,205	1,382	1,374	1,383	1,515	1,553	1,564	1,176	726	544	166	288	135	-77	-77	-118	-8
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	Stable ED
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$12,772 **million**
20-Year NPV Carbon Emissions:	19.14 **million tons**
20-Year NPV Water Consumption:	8.05 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 **MW**
20-Year NPV Rev Req:	$0 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,282	2,321	2,412	2,534	2,640	2,747	2,865	2,952	3,072	3,185	3,276	3,386	3,483	3,596	3,701	3,807	3,886
PRM	%	12%	11%	10%	16%	17%	16%	16%	16%	21%	17%	20%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	391	388	383	381	377	374	290	184	116	70	61	66	64	65	53	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,043	1,051	1,051	1,092	1,028	1,028	1,028	1,028	1,028	1,110	1,192	1,315	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	741	823	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,766	2,070	2,336	3,088	3,298	3,290	3,313	3,510	3,635	3,841	4,208	4,911	5,429	6,072
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,070	1,070	1,142	1,305	1,363	1,839	1,839	1,984	1,984	2,088	2,287	2,559	2,719	3,225	3,716	4,037	4,557
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	174	198	217	239	263	287	272	276	294	287	293	288	303	320	332	332
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,147**	**5,218**	**5,314**	**5,497**	**5,923**	**6,624**	**7,200**	**7,940**	**8,336**	**8,578**	**9,050**	**9,534**	**10,018**	**10,907**	**11,544**	**12,476**	**13,334**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,246	1,239	1,198	1,188	1,216	576	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	978	926	1,054	1,274	1,390	1,523	1,780	1,062	711	630	735	711	805	699	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	202	362	267
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,281	2,333	2,411	2,290	2,184	2,207	2,194	2,172	2,373	2,472
Geothermal	GWh	66	56	51	51	53	51	55	52	51	46	43	41	42	45	49	47	54	46	52	11
Solar	GWh	1,671	3,181	3,462	4,024	4,027	4,065	4,297	4,899	5,813	7,068	7,315	7,264	7,432	8,151	8,791	9,379	10,495	11,899	12,924	14,021
Wind	GWh	2,205	2,059	1,962	1,956	1,987	1,966	2,067	1,972	2,022	1,848	3,304	4,759	5,420	5,495	5,498	5,507	5,483	5,441	4,673	4,480
4-hr Storage	GWh	-40	-113	-131	-239	-270	-295	-341	-377	-511	-552	-603	-617	-663	-749	-864	-939	-1,138	-1,366	-1,512	-1,756
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	417	512	606	706	804	906	909	990	1,067	1,068	1,128	1,111	1,168	1,232	1,286	1,270
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,708**	**10,669**	**10,918**	**11,513**	**12,155**	**12,639**	**13,470**	**14,310**	**15,481**	**16,339**	**17,034**	**17,497**	**18,116**	**18,955**	**19,625**	**20,158**	**20,765**
Net Purchases	GWh	1,072	862	1,028	1,099	1,296	1,497	1,627	1,704	1,882	1,739	1,459	951	767	699	853	803	612	610	699	646
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,807**	**11,965**	**12,415**	**13,140**	**13,860**	**14,522**	**15,209**	**15,769**	**16,433**	**17,106**	**17,733**	**18,351**	**18,919**	**19,567**	**20,236**	**20,857**	**21,412**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + CT
Future: Current Trends & Policy
Sensitivity: Tax credit 10-yr exp.
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $9,740 **million**
20-Year NPV Carbon Emissions: 15.72 **million tons**
20-Year NPV Water Consumption: 7.17 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: 0 **MW**
20-Year NPV Rev Req: $0 **million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	24%	23%	21%	16%	16%	16%	17%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	345	345	238	138	27	14	19	23	25	28	32	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	823	987	1,151	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	782	823	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,891	2,064	2,737	2,729	2,720	2,712	2,660	2,652	2,644	2,635	2,628	2,578
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,356	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,221	1,259	1,280	1,683	1,683	1,826	1,826	1,826	1,826	1,826	1,826	1,826	2,013	2,022	2,062
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	260	282	262	267	285	279	284	279	293	310	322	322
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,228**	**5,276**	**5,311**	**5,815**	**5,810**	**7,006**	**7,203**	**7,110**	**7,095**	**7,213**	**7,364**	**7,534**	**7,196**	**7,450**	**7,335**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,174	1,160	1,185	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	713	680	668	663	743	792	176	107	148	201	178	221	261	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	98	59
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,289	2,343	2,418	2,302	2,204	2,280	2,256	2,364	2,472	2,472
Geothermal	GWh	66	54	51	51	52	48	52	51	47	47	34	34	35	37	37	39	38	39	40	9
Solar	GWh	1,671	3,183	3,461	3,991	3,964	3,951	3,920	3,861	4,344	4,868	5,320	5,278	5,324	5,417	5,436	5,425	5,436	5,593	5,593	5,460
Wind	GWh	2,205	2,058	1,964	1,952	1,978	1,933	1,971	1,939	1,958	1,971	3,053	3,825	3,749	3,792	3,798	3,840	3,844	3,825	3,711	4,093
4-hr Storage	GWh	-40	-113	-131	-249	-282	-318	-337	-351	-463	-486	-541	-556	-565	-583	-604	-619	-629	-712	-736	-760
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	791	888	880	961	1,039	1,039	1,098	1,079	1,136	1,198	1,251	1,236
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,399**	**10,343**	**10,349**	**10,455**	**11,211**	**11,992**	**12,147**	**12,205**	**12,148**	**12,266**	**12,342**	**12,370**	**12,430**	**12,570**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,396	1,533	1,614	1,617	855	174	116	92	231	120	128	188	191	57
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + CT
Future:	Current Trends & Policy
Sensitivity:	TOU
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,512 million**
20-Year NPV Carbon Emissions:	**16.27 million tons**
20-Year NPV Water Consumption:	**7.30 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,343	2,375	2,422	2,437	2,483	2,522	2,538	2,575	2,602	2,647	2,682	2,713	2,739
PRM	%	12%	11%	10%	19%	18%	17%	17%	18%	23%	17%	17%	18%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	355	352	348	345	239	139	137	58	42	35	31	32	18	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	864	864	864	864	864	864	987	1,151	1,233	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	659	659	659
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,947	2,201	2,415	2,406	2,398	2,630	2,610	2,601	2,593	2,584	2,732	2,819
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	1,058	1,156	1,156	1,156	1,156	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,116	1,116	1,203	1,242	1,242	1,531	1,531	1,531	1,531	1,531	1,663	1,729	1,729	1,823	2,177	2,243	2,286
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	263	281	275	280	275	289	306	317	317
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,192**	**5,203**	**5,232**	**5,280**	**5,292**	**5,758**	**5,833**	**6,027**	**6,422**	**6,529**	**6,887**	**7,061**	**7,212**	**7,594**	**7,580**	**7,806**	**7,631**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,176	1,162	1,187	570	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	982	1,173	803	708	692	680	680	764	822	825	371	282	259	215	261	154	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	21	19
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,424	2,301	2,202	2,277	2,188	2,126	2,376	2,472
Geothermal	GWh	66	54	51	53	52	52	52	51	45	50	43	39	39	37	36	39	33	28	32	8
Solar	GWh	1,671	3,182	3,468	3,998	3,974	3,932	3,907	3,824	4,321	4,883	5,096	4,696	4,580	5,155	5,275	5,259	5,159	5,183	5,401	5,451
Wind	GWh	2,205	2,059	1,957	1,949	1,973	1,931	1,966	1,936	1,921	1,899	1,849	3,196	3,808	3,817	3,816	3,857	4,523	5,186	4,559	4,401
4-hr Storage	GWh	-40	-113	-131	-251	-283	-313	-333	-341	-430	-451	-462	-461	-468	-528	-570	-583	-628	-796	-817	-836
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	950	1,027	1,028	1,086	1,067	1,124	1,183	1,234	1,217
Total Generation	**GWh**	**9,260**	**9,791**	**10,275**	**10,483**	**10,359**	**10,342**	**10,396**	**10,323**	**10,337**	**10,459**	**10,523**	**11,152**	**11,693**	**12,070**	**12,061**	**12,178**	**12,553**	**12,917**	**12,805**	**12,733**
Net Purchases	GWh	1,073	862	1,028	1,054	1,242	1,377	1,399	1,531	1,604	1,590	1,520	991	546	203	294	184	-108	-385	-210	-133
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,794**	**11,854**	**11,941**	**12,049**	**12,043**	**12,143**	**12,239**	**12,273**	**12,355**	**12,361**	**12,445**	**12,531**	**12,596**	**12,600**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES + CTs
Future:	Current Trends & Policy
Sensitivity:	DERMS
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,258 million
20-Year NPV Carbon Emissions:	16.13 million tons
20-Year NPV Water Consumption:	7.27 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,097	2,143	2,222	2,280	2,311	2,361	2,400	2,408	2,438	2,477	2,480	2,522	2,558	2,573	2,611	2,640	2,687	2,721	2,750	2,772
PRM	%	12%	11%	12%	17%	17%	17%	17%	17%	22%	17%	20%	19%	17%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	499	473	358	354	351	347	343	339	239	147	67	40	50	40	28	29	30	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	969	969	969	946	946	946	946	946	946	987	1,151	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	815	1,499	1,639	1,860	1,859	1,857	1,856	1,855	2,022	2,203	2,234	2,233	2,233	2,730	2,794	2,794	2,794	2,888	2,890	2,939
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,556	1,250
4-hr Storage	MW	170	620	632	1,033	1,033	1,110	1,144	1,144	1,385	1,385	1,385	1,385	1,385	1,423	1,608	1,608	1,643	1,946	1,998	2,037
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	279	274	288	304	315	315
Total Capacity	**MW**	**3,731**	**4,479**	**4,719**	**5,186**	**5,204**	**5,272**	**5,323**	**5,341**	**5,768**	**5,771**	**6,182**	**6,384**	**6,299**	**6,828**	**7,123**	**7,283**	**7,454**	**7,294**	**7,759**	**7,541**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,154	1,241	1,231	1,176	1,161	1,186	571	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,690	914	1,120	806	706	692	678	672	796	885	409	290	342	292	197	237	262	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	26	24
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,205	2,283	2,278	2,348	2,364	2,450
Geothermal	GWh	66	57	53	51	49	52	52	51	51	50	44	42	44	39	37	40	40	38	35	9
Solar	GWh	1,768	3,326	3,654	4,138	4,135	4,104	4,093	4,033	4,447	4,970	4,508	4,413	4,516	5,303	5,669	5,680	5,749	6,113	5,716	5,795
Wind	GWh	2,205	2,079	1,971	1,949	1,977	1,934	1,972	1,941	1,949	1,940	3,338	3,978	3,917	3,832	3,808	3,850	3,851	3,853	4,582	4,422
4-hr Storage	GWh	-40	-111	-128	-229	-260	-287	-305	-311	-385	-401	-411	-422	-426	-442	-524	-536	-558	-680	-716	-739
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,082	1,063	1,120	1,179	1,230	1,213
Total Generation	**GWh**	**9,320**	**9,891**	**10,425**	**10,646**	**10,542**	**10,544**	**10,615**	**10,558**	**10,575**	**10,701**	**11,058**	**11,607**	**11,842**	**12,350**	**12,473**	**12,617**	**12,742**	**12,889**	**13,237**	**13,175**
Net Purchases	GWh	1,121	890	1,025	1,055	1,242	1,377	1,398	1,531	1,621	1,623	1,277	848	728	275	254	138	118	79	-184	-96
Total Supply	**GWh**	**10,442**	**10,781**	**11,449**	**11,701**	**11,784**	**11,920**	**12,013**	**12,090**	**12,195**	**12,323**	**12,335**	**12,456**	**12,570**	**12,626**	**12,727**	**12,755**	**12,860**	**12,968**	**13,053**	**13,079**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES + CTs
Future:	Current Trends & Policy
Sensitivity:	FCPP 2027 exit
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,496 million**
20-Year NPV Carbon Emissions:	**14.07 million tons**
20-Year NPV Water Consumption:	**5.90 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	16%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	205	196	205	156	145	61	37	43	32	35	37	33	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	1,010	1,010	1,010	905	905	905	905	905	905	1,069	1,233	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	741	741	741
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,993	2,113	2,194	2,185	2,323	2,645	2,594	2,586	2,578	2,715	2,824	2,914
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,156	1,356	1,050
4-hr Storage	MW	170	620	632	1,110	1,110	1,277	1,321	1,343	1,539	1,539	1,539	1,539	1,539	1,691	1,691	1,691	1,822	2,104	2,176	2,223
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	238	260	282	262	264	282	276	279	274	288	305	316	314
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,208**	**5,261**	**5,297**	**5,655**	**5,797**	**6,258**	**6,452**	**6,505**	**6,972**	**7,088**	**7,239**	**7,458**	**7,320**	**7,712**	**7,542**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	1,223	1,201	1,218	903	861	389	276	301	255	237	282	277	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	56	56
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,301	2,203	2,275	2,294	2,331	2,471	2,472
Geothermal	GWh	66	54	51	53	52	53	55	55	50	50	43	41	40	36	39	40	42	43	39	9
Solar	GWh	1,671	3,181	3,463	3,991	3,970	4,263	4,253	4,211	4,630	4,799	4,392	4,222	4,493	5,209	5,223	5,208	5,361	5,784	5,724	5,874
Wind	GWh	2,205	2,059	1,962	1,950	1,973	2,025	2,059	2,037	1,989	1,934	3,273	3,957	3,826	3,811	3,821	3,862	3,868	3,810	3,839	3,649
4-hr Storage	GWh	-40	-113	-131	-249	-282	-327	-346	-361	-432	-451	-463	-465	-472	-537	-557	-568	-630	-744	-785	-815
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	699	791	888	880	952	1,029	1,029	1,083	1,064	1,120	1,180	1,231	1,212
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,114**	**10,190**	**10,155**	**10,293**	**10,457**	**10,811**	**11,343**	**11,642**	**12,104**	**12,050**	**12,164**	**12,331**	**12,449**	**12,574**	**12,458**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,605	1,605	1,721	1,671	1,615	1,255	823	621	193	329	222	139	108	48	169
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES + CTs
Future:	Current Trends & Policy
Sensitivity:	High EV
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$12,147 **million**
20-Year NPV Carbon Emissions:	15.84 **million tons**
20-Year NPV Water Consumption:	7.44 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 **MW**
20-Year NPV Rev Req:	$0 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,067	2,112	2,194	2,254	2,284	2,335	2,374	2,406	2,451	2,507	2,529	2,583	2,631	2,656	2,702	2,741	2,797	2,839	2,875	2,909
PRM	%	12%	11%	10%	19%	18%	17%	17%	17%	22%	17%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	488	362	359	355	326	317	327	266	169	64	38	26	16	18	14	18	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	864	864	864	864	864	946	1,110	1,274	1,438	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	864	864	864
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,941	2,209	2,249	2,240	2,538	2,697	2,645	2,637	2,629	2,620	2,857	2,984
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,356	1,050
4-hr Storage	MW	170	620	632	1,121	1,121	1,271	1,321	1,352	1,667	1,667	1,667	1,667	1,667	1,725	1,741	1,742	1,754	2,040	2,106	2,176
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	279	274	288	304	315	314
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,198**	**5,208**	**5,259**	**5,318**	**5,361**	**5,887**	**5,977**	**6,397**	**6,591**	**6,805**	**7,097**	**7,231**	**7,383**	**7,565**	**7,483**	**7,798**	**7,687**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,241	1,231	1,172	1,157	1,180	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	986	1,181	809	719	671	664	660	755	788	364	261	265	276	258	308	360	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49	104	102
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,420	2,301	2,209	2,286	2,271	2,305	2,453	2,472
Geothermal	GWh	66	54	51	53	49	52	52	47	48	50	41	40	38	38	40	42	43	42	43	9
Solar	GWh	1,671	3,184	3,463	4,005	3,987	3,996	3,987	3,944	4,435	5,061	4,630	4,471	4,959	5,369	5,403	5,397	5,424	5,474	5,855	6,038
Wind	GWh	2,205	2,058	1,965	1,953	1,978	1,945	1,984	1,959	1,945	1,926	3,268	3,956	3,797	3,820	3,831	3,874	3,877	4,561	3,850	3,664
4-hr Storage	GWh	-40	-113	-131	-252	-284	-330	-352	-370	-463	-489	-504	-508	-514	-550	-575	-588	-603	-724	-761	-811
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,082	1,063	1,120	1,179	1,231	1,211
Total Generation	**GWh**	**9,262**	**9,797**	**10,286**	**10,499**	**10,383**	**10,377**	**10,454**	**10,405**	**10,436**	**10,592**	**10,970**	**11,526**	**11,988**	**12,278**	**12,249**	**12,383**	**12,491**	**12,887**	**12,775**	**12,686**
Net Purchases	GWh	1,074	863	1,030	1,057	1,247	1,384	1,396	1,543	1,619	1,592	1,230	798	458	231	371	275	283	6	213	336
Total Supply	**GWh**	**10,336**	**10,660**	**11,316**	**11,556**	**11,630**	**11,761**	**11,851**	**11,949**	**12,055**	**12,184**	**12,200**	**12,324**	**12,446**	**12,508**	**12,619**	**12,657**	**12,774**	**12,893**	**12,987**	**13,022**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + all LDES + CTs
Future: Current Trends & Policy
Sensitivity: High NG
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,658 million**
20-Year NPV Carbon Emissions: **15.68 million tons**
20-Year NPV Water Consumption: **7.18 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	19%	18%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	345	345	231	131	48	16	21	16	18	20	23	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	823	823	823	823	823	864	1,028	1,192	1,356	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	782	782	782
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,168	2,329	2,320	2,312	2,553	2,502	2,494	2,486	2,501	2,617	2,686
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,111	1,111	1,291	1,335	1,357	1,660	1,660	1,660	1,660	1,660	1,767	1,767	1,767	1,767	2,044	2,099	2,151
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	280	261	263	280	274	278	271	285	301	312	312
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,188**	**5,198**	**5,238**	**5,291**	**5,327**	**5,903**	**5,889**	**6,430**	**6,824**	**6,731**	**7,114**	**7,230**	**7,379**	**7,549**	**7,284**	**7,665**	**7,480**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,259	1,249	1,238	1,229	1,240	589	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,342	868	1,082	653	585	488	528	609	757	832	429	181	259	256	254	275	333	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	44	41
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,425	2,302	2,182	2,280	2,262	2,341	2,468	2,472
Geothermal	GWh	66	56	51	50	49	52	47	46	44	45	36	32	34	33	32	32	36	35	35	8
Solar	GWh	1,671	3,180	3,463	3,958	3,939	3,956	3,945	3,888	4,444	4,939	4,604	4,216	4,279	4,884	4,886	4,893	4,905	5,141	5,047	5,231
Wind	GWh	2,205	2,061	1,966	1,941	1,967	1,936	1,975	1,942	1,896	1,913	3,134	4,540	4,492	4,480	4,489	4,519	4,527	4,532	4,563	4,409
4-hr Storage	GWh	-40	-114	-131	-250	-283	-337	-357	-373	-467	-488	-503	-497	-505	-560	-582	-592	-605	-720	-753	-793
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	884	876	947	1,024	1,025	1,078	1,055	1,111	1,170	1,221	1,205
Total Generation	**GWh**	**8,876**	**9,683**	**10,208**	**10,302**	**10,209**	**10,207**	**10,330**	**10,344**	**10,415**	**10,500**	**10,873**	**11,779**	**12,008**	**12,419**	**12,339**	**12,462**	**12,570**	**12,533**	**12,625**	**12,574**
Net Purchases	GWh	1,458	970	1,095	1,234	1,392	1,513	1,465	1,532	1,549	1,572	1,193	388	254	-122	40	-76	-99	24	-3	52
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + all LDES + CTs
Future: Current Trends & Policy
Sensitivity: High Tech Costs
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,919 million**
20-Year NPV Carbon Emissions: **16.25 million tons**
20-Year NPV Water Consumption: **7.36 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	25%	24%	23%	17%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	281	169	67	41	31	35	29	31	28	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	1,069	1,069	1,069	1,069	1,069	1,069	1,151	1,315	1,397	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	823	823	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,064	2,056	2,047	2,039	2,030	2,191	2,183	2,261	2,338	2,452	2,595
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,107	1,107	1,167	1,205	1,224	1,257	1,299	1,299	1,299	1,299	1,299	1,320	1,320	1,403	1,656	1,690	1,691
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	136	154	198	216	238	260	283	263	265	282	276	282	277	291	306	317	316
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,195**	**5,217**	**5,264**	**5,297**	**5,484**	**5,672**	**6,244**	**6,437**	**6,544**	**6,530**	**6,800**	**6,950**	**7,207**	**7,179**	**7,338**	**7,174**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,178	1,163	1,188	574	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	807	713	710	698	701	1,037	1,092	390	273	206	246	191	231	224	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	51	55
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,311	2,367	2,296	2,253	2,339	2,464
Geothermal	GWh	66	54	52	53	51	52	48	50	53	47	49	46	44	46	43	45	45	35	39	10
Solar	GWh	1,671	3,184	3,466	3,986	3,963	3,901	3,881	3,812	3,842	4,498	4,336	4,183	3,959	4,123	4,425	4,434	4,676	4,676	5,079	5,126
Wind	GWh	2,205	2,056	1,958	1,951	1,976	1,926	1,956	1,930	1,965	1,905	3,400	4,041	4,632	4,715	4,662	4,698	4,674	5,304	4,611	4,426
4-hr Storage	GWh	-40	-113	-131	-249	-281	-304	-323	-336	-347	-380	-381	-388	-383	-399	-417	-426	-470	-569	-589	-601
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-190	-188	-179	-185	-188	-191	-193	-146	-170	-195
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	329	415	512	602	702	794	891	883	954	1,032	1,032	1,091	1,072	1,128	1,185	1,237	1,217
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,342**	**10,392**	**10,343**	**10,278**	**10,427**	**10,784**	**11,281**	**11,737**	**11,883**	**12,119**	**12,230**	**12,380**	**12,750**	**12,595**	**12,502**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,377	1,403	1,533	1,686	1,645	1,282	885	526	414	260	156	90	-193	27	124
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies + all LDES + CTs**
Future: **Current Trends & Policy**
Sensitivity: **Low NG**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,398 million**
20-Year NPV Carbon Emissions: **16.49 million tons**
20-Year NPV Water Consumption: **7.35 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	16%	16%	16%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	352	345	345	259	140	136	90	66	38	40	25	18	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	969	969	969	905	905	905	905	905	946	1,110	1,274	1,397	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	823	823	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,767	1,759	2,166	2,411	2,468	2,518	2,510	2,458	2,450	2,442	2,433	2,500	2,599
Wind	MW	658	658	658	658	658	658	658	658	658	658	658	858	956	1,156	1,156	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,130	1,168	1,200	1,520	1,530	1,530	1,530	1,540	1,654	1,654	1,654	1,666	1,981	2,048	2,077
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	278	271	285	301	312	312
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,200**	**5,247**	**5,309**	**5,598**	**5,837**	**6,063**	**6,322**	**6,498**	**6,839**	**6,956**	**7,305**	**7,645**	**7,394**	**7,538**	**7,360**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,577	1,622	1,185	1,018	855	845	816	956	886	876	602	417	270	236	175	106	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	57	56
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,419	2,298	2,350	2,331	2,162	2,266	2,397	2,472
Geothermal	GWh	66	55	52	53	52	53	51	48	49	52	45	45	43	41	39	37	32	32	40	8
Solar	GWh	1,671	3,177	3,484	4,025	3,990	3,925	3,898	3,882	4,113	4,918	5,180	5,106	5,050	5,081	5,075	4,850	4,658	4,878	5,189	5,252
Wind	GWh	2,205	2,054	1,961	1,961	1,980	1,932	1,965	1,940	1,999	1,922	1,865	2,521	3,123	3,879	3,875	4,594	5,266	5,285	4,596	4,443
4-hr Storage	GWh	-40	-114	-131	-249	-281	-293	-312	-327	-413	-447	-461	-471	-477	-527	-545	-554	-568	-708	-733	-767
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,078	1,054	1,110	1,169	1,221	1,205
Total Generation	**GWh**	**10,317**	**10,323**	**10,697**	**10,813**	**10,611**	**10,489**	**10,549**	**10,491**	**10,417**	**10,587**	**10,675**	**11,110**	**11,599**	**12,064**	**12,109**	**12,487**	**12,766**	**12,944**	**12,768**	**12,669**
Net Purchases	GWh	17	330	606	723	990	1,230	1,246	1,385	1,547	1,485	1,391	1,057	664	233	270	-101	-295	-386	-146	-43
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
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Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies + all LDES + CTs**
Future: **Current Trends & Policy**
Sensitivity: **Low Tech Costs**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,272 million**
20-Year NPV Carbon Emissions: **15.27 million tons**
20-Year NPV Water Consumption: **7.03 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	17%	16%	16%	22%	16%	18%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	340	332	342	224	90	31	16	11	9	11	13	15	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	782	946	1,110	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,975	2,506	2,497	2,489	2,604	2,679	2,630	2,621	2,613	2,604	2,791	3,000
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,105	1,105	1,105	1,105	1,124	1,558	1,567	1,567	1,567	1,572	1,648	1,648	1,648	1,648	1,958	1,985	1,985
8-12hr Storage	MW	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	150	174	192	208	251	273	253	256	270	264	267	261	273	289	300	298
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,182**	**5,189**	**5,249**	**5,258**	**5,285**	**5,842**	**6,203**	**6,575**	**6,769**	**7,002**	**7,228**	**7,347**	**7,496**	**7,664**	**7,607**	**7,831**	**7,732**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,232	1,162	1,153	1,172	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	809	721	586	594	590	643	497	211	138	81	81	68	92	120	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	12	11
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,417	2,303	2,060	2,129	2,126	2,088	2,323	2,472
Geothermal	GWh	66	55	52	51	51	52	51	54	49	50	38	40	34	34	36	37	39	31	36	8
Solar	GWh	1,671	3,182	3,459	3,986	3,969	4,137	4,098	4,028	4,584	5,574	5,055	4,985	5,040	5,322	5,332	5,347	5,364	5,271	5,525	5,563
Wind	GWh	2,205	2,057	1,965	1,952	1,972	1,982	2,016	1,991	1,962	1,861	3,161	3,903	4,481	4,506	4,538	4,580	4,579	5,222	4,571	4,413
4-hr Storage	GWh	-40	-113	-131	-248	-280	-280	-288	-300	-425	-463	-457	-467	-473	-514	-539	-553	-560	-708	-711	-733
8-12hr Storage	GWh	-	-	-	-	-	-163	-166	-165	-120	-169	-164	-224	-232	-231	-142	-143	-147	-95	-112	-135
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	403	495	586	668	764	861	853	924	993	993	1,047	1,022	1,074	1,133	1,184	1,164
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,481**	**10,357**	**10,338**	**10,410**	**10,333**	**10,387**	**10,585**	**10,993**	**11,659**	**12,341**	**12,493**	**12,399**	**12,511**	**12,595**	**12,947**	**12,830**	**12,763**
Net Purchases	GWh	1,072	862	1,028	1,055	1,244	1,381	1,385	1,543	1,577	1,487	1,073	507	-78	-197	-20	-125	-125	-390	-208	-137
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES + CTs
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 0
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,463 million**
20-Year NPV Carbon Emissions:	**16.08 million tons**
20-Year NPV Water Consumption:	**7.28 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	247	138	59	36	40	33	36	39	44	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	864	864	864	864	864	905	1,069	1,233	1,397	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	823	823	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,878	2,172	2,163	2,155	2,381	2,638	2,587	2,579	2,571	2,561	2,562	2,605
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,299	1,592	1,592	1,592	1,592	1,592	1,696	1,696	1,696	1,696	1,943	2,012	2,075
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	277	270	284	301	312	312
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,308**	**5,749**	**5,865**	**6,237**	**6,431**	**6,573**	**6,968**	**7,085**	**7,234**	**7,404**	**7,283**	**7,564**	**7,364**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,228	1,219	1,230	587	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	814	804	787	947	937	535	411	417	396	398	461	523	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	61	56
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,423	2,302	2,210	2,283	2,260	2,276	2,421	2,472
Geothermal	GWh	66	56	51	54	52	48	52	46	47	46	44	40	39	44	37	38	40	35	39	8
Solar	GWh	1,671	3,181	3,463	3,992	3,967	3,955	3,935	3,880	4,271	4,918	4,408	4,263	4,618	5,172	5,215	5,197	5,204	5,213	5,079	5,177
Wind	GWh	2,205	2,058	1,961	1,948	1,975	1,941	1,968	1,943	1,953	1,919	3,293	3,962	3,814	3,829	3,821	3,866	3,866	4,544	4,576	4,430
4-hr Storage	GWh	-40	-113	-131	-249	-282	-322	-342	-357	-442	-468	-479	-489	-490	-539	-558	-569	-580	-686	-721	-766
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,077	1,053	1,109	1,168	1,220	1,204
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,536**	**10,599**	**10,515**	**10,509**	**10,608**	**10,971**	**11,493**	**11,846**	**12,226**	**12,200**	**12,329**	**12,421**	**12,597**	**12,675**	**12,581**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,183	1,196	1,361	1,455	1,464	1,095	673	417	71	179	57	49	-39	-53	45
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Base Technologies + all LDES + CTs**
Future:	**Current Trends & Policy**
Sensitivity:	**NMPRC CO2 20**
Phase:	**Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,800 million**
20-Year NPV Carbon Emissions:	**15.85 million tons**
20-Year NPV Water Consumption:	**7.19 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	19%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	471	362	359	355	350	338	345	223	131	47	48	35	33	35	38	33	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	905	1,069	1,233	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	741	741	741
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,143	2,329	2,378	2,370	2,635	2,583	2,575	2,567	2,558	2,649	2,735
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,296	1,660	1,660	1,660	1,660	1,660	1,694	1,694	1,694	1,825	2,123	2,188	2,233
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	264	282	276	279	274	288	305	316	316
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,307**	**5,903**	**5,866**	**6,432**	**6,484**	**6,591**	**6,964**	**7,081**	**7,232**	**7,451**	**7,382**	**7,749**	**7,574**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,089	1,108	1,108	1,148	1,148	1,146	1,138	1,148	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,398	896	1,068	663	571	549	521	559	551	637	229	249	190	177	186	225	218	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	29	27
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,302	2,210	2,283	2,294	2,313	2,463	2,472
Geothermal	GWh	66	54	52	53	53	59	51	52	51	50	38	40	41	36	37	40	40	37	37	7
Solar	GWh	1,671	3,185	3,458	3,994	3,969	3,899	3,936	3,875	4,479	4,949	4,676	4,807	4,669	5,197	5,209	5,197	5,363	5,335	5,225	5,391
Wind	GWh	2,205	2,056	1,967	1,950	1,975	1,989	1,973	1,942	1,915	1,935	3,184	3,217	3,817	3,812	3,825	3,862	3,866	4,553	4,581	4,412
4-hr Storage	GWh	-40	-114	-131	-250	-282	-321	-341	-355	-465	-483	-503	-508	-512	-538	-557	-569	-633	-754	-788	-818
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	952	1,029	1,029	1,083	1,064	1,120	1,179	1,231	1,215
Total Generation	**GWh**	**8,917**	**9,647**	**10,123**	**10,248**	**10,137**	**10,194**	**10,242**	**10,211**	**10,249**	**10,350**	**10,802**	**11,119**	**11,659**	**12,016**	**11,994**	**12,103**	**12,270**	**12,686**	**12,777**	**12,708**
Net Purchases	GWh	1,416	1,006	1,180	1,288	1,463	1,526	1,553	1,665	1,715	1,722	1,264	1,048	603	281	385	283	201	-129	-155	-81
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES + CTs
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 40
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$10,103 **million**
20-Year NPV Carbon Emissions:	15.63 **million tons**
20-Year NPV Water Consumption:	7.14 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 **MW**
20-Year NPV Rev Req:	$0 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	19%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	467	362	359	355	341	328	337	217	128	46	26	35	32	35	37	33	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	823	823	823	823	823	905	1,069	1,233	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	741	741	741
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,035	2,156	2,342	2,333	2,360	2,635	2,583	2,575	2,567	2,558	2,656	2,747
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,291	1,335	1,357	1,659	1,659	1,659	1,659	1,659	1,694	1,694	1,694	1,825	2,123	2,185	2,228
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	264	282	276	279	274	288	305	316	316
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,238**	**5,291**	**5,327**	**5,935**	**5,877**	**6,444**	**6,637**	**6,579**	**6,964**	**7,081**	**7,232**	**7,451**	**7,382**	**7,753**	**7,581**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,039	1,108	1,108	1,147	1,147	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,269	882	1,030	638	545	438	397	430	457	540	159	105	134	112	129	141	130	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	29	27
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,302	2,212	2,283	2,294	2,314	2,472	2,472
Geothermal	GWh	66	56	52	51	49	49	51	47	45	58	40	39	39	38	40	40	43	37	35	7
Solar	GWh	1,671	3,181	3,464	3,995	3,975	4,002	3,989	3,923	4,525	4,911	4,692	4,537	4,656	5,197	5,212	5,199	5,365	5,335	5,214	5,391
Wind	GWh	2,205	2,059	1,965	1,954	1,975	1,950	1,981	1,959	1,906	1,977	3,173	3,917	3,819	3,814	3,822	3,865	3,866	4,553	4,582	4,412
4-hr Storage	GWh	-40	-114	-131	-250	-282	-336	-356	-372	-468	-484	-503	-502	-511	-538	-559	-569	-633	-754	-786	-816
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	951	1,029	1,029	1,083	1,064	1,120	1,179	1,231	1,215
Total Generation	**GWh**	**8,739**	**9,635**	**10,089**	**10,225**	**10,113**	**10,121**	**10,162**	**10,126**	**10,183**	**10,263**	**10,738**	**11,407**	**11,593**	**11,953**	**11,939**	**12,024**	**12,186**	**12,686**	**12,778**	**12,709**
Net Purchases	GWh	1,595	1,018	1,214	1,312	1,488	1,599	1,633	1,750	1,781	1,808	1,327	759	670	344	440	362	284	-129	-156	-82
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES + CTs
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 8
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,596 million**
20-Year NPV Carbon Emissions:	**15.91 million tons**
20-Year NPV Water Consumption:	**7.23 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	352	344	345	228	133	51	29	35	33	36	38	44	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	905	1,069	1,233	1,397	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	823	823	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,990	2,137	2,223	2,214	2,347	2,635	2,583	2,575	2,567	2,558	2,591	2,608
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,235	1,274	1,296	1,662	1,662	1,662	1,662	1,662	1,694	1,694	1,694	1,694	1,944	2,004	2,073
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	218	260	282	262	264	282	276	279	272	285	301	312	312
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,222**	**5,271**	**5,307**	**5,893**	**5,861**	**6,327**	**6,521**	**6,570**	**6,964**	**7,081**	**7,230**	**7,398**	**7,281**	**7,585**	**7,365**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,143	1,122	1,200	1,180	1,174	1,161	1,193	572	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,561	919	1,123	696	622	676	671	666	715	801	368	269	299	296	292	345	407	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	61	56
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,302	2,212	2,283	2,261	2,279	2,472	2,472
Geothermal	GWh	66	57	52	53	49	52	50	50	51	46	43	40	40	37	38	40	42	35	39	9
Solar	GWh	1,671	3,177	3,469	3,993	3,969	3,953	3,935	3,871	4,470	4,938	4,545	4,373	4,633	5,186	5,204	5,189	5,196	5,206	5,020	5,184
Wind	GWh	2,205	2,061	1,956	1,950	1,978	1,939	1,972	1,946	1,913	1,942	3,260	3,950	3,823	3,816	3,822	3,867	3,867	4,545	4,583	4,418
4-hr Storage	GWh	-40	-114	-131	-250	-282	-321	-342	-356	-467	-485	-502	-505	-512	-538	-558	-569	-580	-687	-717	-765
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	695	791	888	880	952	1,029	1,029	1,083	1,059	1,110	1,169	1,221	1,205
Total Generation	**GWh**	**9,095**	**9,705**	**10,192**	**10,332**	**10,219**	**10,345**	**10,411**	**10,361**	**10,405**	**10,505**	**10,891**	**11,439**	**11,737**	**12,128**	**12,093**	**12,213**	**12,303**	**12,595**	**12,679**	**12,579**
Net Purchases	GWh	1,238	948	1,111	1,205	1,382	1,374	1,383	1,515	1,559	1,567	1,175	727	525	169	286	173	167	-38	-57	47
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	Base Technologies + all LDES + CTs
Future:	Current Trends & Policy
Sensitivity:	Stable ED
Phase:	Phase 3

Cost & Environmental Metrics	
20-Year NPV Revenue Requirement:	$12,824 **million**
20-Year NPV Carbon Emissions:	18.22 **million tons**
20-Year NPV Water Consumption:	8.57 **million gallons**

Final Reliability Adjustments to Portfolio	
2040 Storage (4hr) Capacity:	0 **MW**
20-Year NPV Rev Req:	$0 **million**
Final adjustments based on SERVM LOLP analysis	

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,282	2,321	2,412	2,534	2,640	2,747	2,865	2,952	3,072	3,185	3,276	3,386	3,483	3,596	3,701	3,807	3,886
PRM	%	12%	11%	10%	16%	16%	16%	16%	16%	21%	16%	23%	21%	17%	16%	16%	16%	16%	16%	17%	17%
Carbon Intensity	lbs/MWh	503	477	391	388	381	381	377	374	256	154	76	41	38	41	39	42	42	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	1,010	1,010	1,010	864	864	864	864	864	864	864	987	1,028	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	454	495	495
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,763	2,028	2,509	3,207	3,565	3,556	3,547	3,750	3,924	4,082	4,321	5,095	5,927	6,673
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,070	1,094	1,195	1,359	1,484	1,575	1,575	1,575	1,575	1,575	1,813	2,141	2,282	2,614	3,001	3,307	3,526
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	500	500	500	500	500	500	500	500	500	500
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	174	197	215	238	260	282	266	271	289	283	288	283	297	313	324	323
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,147**	**5,200**	**5,326**	**5,505**	**5,918**	**6,665**	**7,185**	**8,128**	**8,524**	**8,631**	**9,065**	**9,573**	**9,989**	**10,616**	**11,219**	**12,410**	**13,067**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,246	1,238	1,191	1,181	1,209	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	978	904	1,016	1,235	1,305	1,174	1,283	625	341	358	431	383	496	522	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57	117	108
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,288	2,340	2,408	2,294	2,108	2,150	2,097	2,064	2,212	2,330
Geothermal	GWh	66	56	52	51	54	51	54	62	56	50	43	43	43	44	48	54	55	42	47	12
Solar	GWh	1,671	3,180	3,466	4,022	4,049	4,105	4,338	4,911	6,269	7,636	8,196	8,125	8,163	8,933	9,622	10,128	10,906	12,390	13,786	14,612
Wind	GWh	2,205	2,059	1,958	1,959	1,991	1,979	2,081	2,046	2,028	1,895	3,249	4,734	5,374	5,464	5,505	5,547	5,537	5,418	4,633	4,423
4-hr Storage	GWh	-40	-113	-131	-239	-276	-308	-354	-407	-435	-467	-464	-469	-482	-583	-712	-773	-907	-1,095	-1,237	-1,357
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-140	-199	-444	-454	-445	-438	-358	-359	-343	-386	-403	-411
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	417	509	600	699	791	888	892	973	1,050	1,051	1,110	1,091	1,147	1,206	1,259	1,240
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,708**	**10,666**	**10,910**	**11,501**	**12,121**	**12,671**	**13,461**	**14,384**	**15,632**	**16,470**	**17,196**	**17,706**	**18,335**	**19,014**	**19,696**	**20,415**	**20,957**
Net Purchases	GWh	1,072	862	1,028	1,099	1,299	1,505	1,639	1,738	1,850	1,748	1,385	801	636	536	644	584	553	540	512	547
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,807**	**11,965**	**12,415**	**13,140**	**13,860**	**14,522**	**15,209**	**15,769**	**16,433**	**17,106**	**17,733**	**18,351**	**18,919**	**19,567**	**20,236**	**20,928**	**21,504**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + all LDES + CTs
Future: Current Trends & Policy
Sensitivity: Tax credit 10-yr exp.
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $9,854 million
20-Year NPV Carbon Emissions: 15.42 million tons
20-Year NPV Water Consumption: 7.34 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: 0 MW
20-Year NPV Rev Req: $0 million
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	33%	31%	29%	23%	17%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	221	106	10	10	16	18	20	23	27	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	741	741	741	741	741	741	741	864	1,028	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	495	495	495
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,002	2,341	3,147	3,139	3,130	3,122	3,070	3,062	3,054	3,045	3,038	2,988
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	956	956	956	956	956	956	956	850
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,344	1,648	1,648	1,648	1,648	1,648	1,648	1,648	1,648	1,648	1,864	2,035	2,035
8-12hr Storage	MW	-	-	-	-	-	-	-	-	100	100	100	100	100	100	100	100	100	100	100	100
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	275	255	258	272	263	268	263	277	295	306	305
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,906**	**6,062**	**7,548**	**7,542**	**7,446**	**7,429**	**7,383**	**7,493**	**7,663**	**7,353**	**7,529**	**7,372**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,179	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	713	647	638	631	642	610	86	108	127	166	132	181	216	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	58	26
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,280	2,345	2,412	2,303	2,081	2,131	2,074	2,204	2,472	2,472
Geothermal	GWh	66	54	51	54	49	48	52	46	51	48	35	38	38	40	41	46	45	42	47	11
Solar	GWh	1,671	3,183	3,463	3,992	3,967	3,988	3,969	3,919	4,627	5,368	6,495	6,601	6,652	6,737	6,739	6,724	6,745	6,913	7,015	6,850
Wind	GWh	2,205	2,058	1,962	1,948	1,978	1,946	1,981	1,950	1,961	1,913	2,960	3,042	2,968	3,015	3,104	3,152	3,143	3,129	2,495	2,902
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-368	-455	-484	-478	-493	-501	-518	-535	-545	-557	-654	-730	-743
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-145	-162	-188	-184	-179	-176	-172	-167	-166	-168	-156	-157
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-414	-394	-391	-387	-303	-298	-299	-272	-275	-273
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	870	862	933	1,002	995	1,054	1,035	1,092	1,154	1,208	1,189
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,347**	**10,395**	**10,538**	**11,638**	**11,996**	**12,128**	**12,175**	**12,141**	**12,259**	**12,292**	**12,354**	**12,133**	**12,278**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,530	1,569	1,534	428	170	134	122	238	127	178	203	489	348
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + all LDES + CTs
Future:	Current Trends & Policy
Sensitivity:	TOU
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,452 million
20-Year NPV Carbon Emissions:	15.96 million tons
20-Year NPV Water Consumption:	7.23 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,343	2,375	2,422	2,437	2,483	2,522	2,538	2,575	2,602	2,647	2,682	2,713	2,739
PRM	%	12%	11%	10%	19%	18%	17%	17%	18%	23%	17%	20%	18%	17%	16%	16%	16%	17%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	355	352	348	345	227	137	51	53	38	29	31	32	37	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	823	823	823	823	823	823	987	1,151	1,315	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	741	741	741
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,007	2,132	2,299	2,317	2,308	2,668	2,617	2,608	2,600	2,591	2,614	2,700
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,058	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,116	1,116	1,203	1,242	1,242	1,612	1,612	1,612	1,612	1,612	1,734	1,734	1,734	1,734	1,979	2,083	2,127
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	277	270	284	300	311	311
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,192**	**5,203**	**5,232**	**5,280**	**5,292**	**5,857**	**5,803**	**6,351**	**6,371**	**6,478**	**6,954**	**7,070**	**7,219**	**7,389**	**7,266**	**7,605**	**7,428**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,176	1,162	1,187	569	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	982	1,173	803	708	692	680	680	693	792	328	366	272	234	213	260	298	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	43	42
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,302	2,202	2,277	2,254	2,256	2,472	2,472
Geothermal	GWh	66	55	51	53	48	48	51	46	47	50	41	42	39	37	36	38	41	33	37	8
Solar	GWh	1,671	3,179	3,459	3,995	3,972	3,933	3,906	3,832	4,450	4,889	4,585	4,715	4,542	5,279	5,300	5,287	5,297	5,276	5,099	5,269
Wind	GWh	2,205	2,061	1,966	1,952	1,973	1,934	1,967	1,933	1,914	1,937	3,207	3,230	3,830	3,804	3,814	3,856	3,853	4,541	4,584	4,409
4-hr Storage	GWh	-40	-113	-131	-251	-283	-313	-333	-341	-454	-471	-487	-498	-495	-552	-571	-584	-595	-701	-747	-777
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	874	946	1,023	1,023	1,076	1,052	1,108	1,167	1,218	1,203
Total Generation	**GWh**	**9,260**	**9,791**	**10,275**	**10,483**	**10,359**	**10,342**	**10,396**	**10,323**	**10,365**	**10,454**	**10,844**	**11,161**	**11,636**	**12,127**	**12,070**	**12,185**	**12,257**	**12,610**	**12,708**	**12,625**
Net Purchases	GWh	1,073	862	1,028	1,054	1,242	1,377	1,399	1,531	1,576	1,595	1,199	982	603	146	285	176	188	-78	-112	-25
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,794**	**11,854**	**11,941**	**12,049**	**12,043**	**12,143**	**12,239**	**12,273**	**12,355**	**12,361**	**12,445**	**12,531**	**12,596**	**12,600**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	DERMS
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,291 million**
20-Year NPV Carbon Emissions:	**15.30 million tons**
20-Year NPV Water Consumption:	**7.16 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,097	2,143	2,222	2,280	2,311	2,361	2,400	2,408	2,438	2,477	2,480	2,522	2,558	2,573	2,611	2,640	2,687	2,721	2,750	2,772
PRM	%	12%	11%	12%	17%	17%	17%	17%	17%	22%	17%	18%	17%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	499	473	358	354	351	347	338	339	171	57	31	29	34	25	20	20	22	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	782	782	782	782	782	782	864	987	1,151	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	577	577	591
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	815	1,499	1,639	1,860	1,859	1,857	1,856	1,855	1,854	2,204	2,290	2,431	2,647	2,901	2,908	2,942	2,942	2,941	3,013	3,132
Wind	MW	658	658	658	658	658	658	658	658	1,058	1,058	1,258	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,033	1,033	1,162	1,202	1,202	1,222	1,222	1,222	1,222	1,222	1,338	1,445	1,481	1,481	1,724	1,772	1,779
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	212	254	276	256	259	276	270	276	271	283	299	310	310
Total Capacity	**MW**	**3,731**	**4,479**	**4,719**	**5,186**	**5,204**	**5,283**	**5,339**	**5,354**	**5,870**	**6,041**	**6,308**	**6,451**	**6,583**	**6,947**	**7,148**	**7,336**	**7,512**	**7,397**	**7,728**	**7,561**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,154	1,241	1,231	1,172	1,157	1,181	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,690	914	1,120	806	706	662	649	644	379	309	199	197	206	189	120	148	182	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	6
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,078	2,125	2,109	2,112	2,341	2,472
Geothermal	GWh	66	56	52	51	49	52	52	47	49	45	41	42	40	37	41	43	43	36	36	9
Solar	GWh	1,768	3,329	3,655	4,136	4,135	4,143	4,141	4,098	3,871	4,623	4,507	4,807	5,225	5,839	6,005	6,101	6,156	6,094	6,336	6,326
Wind	GWh	2,205	2,077	1,972	1,951	1,977	1,945	1,982	1,943	3,385	3,378	3,971	3,952	3,780	3,789	3,855	3,882	3,871	4,553	4,120	4,023
4-hr Storage	GWh	-40	-111	-128	-229	-260	-300	-319	-327	-327	-351	-354	-353	-361	-412	-464	-485	-496	-601	-629	-647
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-144	-186	-189	-223	-265	-275	-196	-197	-202	-156	-143	-165
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	677	774	871	863	934	1,012	1,012	1,071	1,052	1,104	1,163	1,215	1,198
Total Generation	**GWh**	**9,320**	**9,891**	**10,425**	**10,646**	**10,542**	**10,545**	**10,625**	**10,560**	**10,914**	**11,064**	**11,334**	**11,718**	**12,062**	**12,483**	**12,509**	**12,669**	**12,767**	**13,207**	**13,280**	**13,224**
Net Purchases	GWh	1,121	890	1,025	1,055	1,242	1,375	1,388	1,530	1,281	1,260	1,001	738	508	141	218	86	93	-238	-226	-144
Total Supply	**GWh**	**10,442**	**10,781**	**11,449**	**11,701**	**11,784**	**11,920**	**12,013**	**12,090**	**12,195**	**12,324**	**12,335**	**12,455**	**12,570**	**12,625**	**12,727**	**12,755**	**12,860**	**12,969**	**13,054**	**13,080**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: All Technologies
Future: Current Trends & Policy
Sensitivity: FCPP 2027 exit
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,507 million**
20-Year NPV Carbon Emissions: **13.09 million tons**
20-Year NPV Water Consumption: **5.70 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	200	191	148	87	62	36	29	35	25	20	22	25	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	969	969	969	823	823	823	823	823	823	905	1,069	1,233	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	662	688	696
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,064	2,138	2,493	2,619	2,729	2,729	2,721	2,713	2,719	2,797	2,938
Wind	MW	658	658	658	658	658	658	658	858	1,058	1,058	1,258	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,338	1,382	1,382	1,404	1,411	1,411	1,411	1,448	1,643	1,781	1,781	1,781	2,012	2,013	2,016
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	100	100	100	100	100	100	100	100	100	100	100	100
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	235	258	280	260	262	280	274	279	272	286	302	313	312
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,228**	**5,281**	**5,493**	**5,682**	**6,035**	**6,290**	**6,646**	**6,725**	**7,025**	**7,250**	**7,398**	**7,568**	**7,450**	**7,766**	**7,611**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	1,174	1,151	808	463	350	243	215	233	198	124	169	205	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	19	22
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,354	2,418	2,301	2,141	2,220	2,200	2,311	2,378	2,472
Geothermal	GWh	66	54	52	51	52	53	53	49	50	53	40	36	38	39	40	40	42	34	34	8
Solar	GWh	1,671	3,183	3,458	3,991	3,967	4,300	4,293	4,057	3,865	4,236	4,142	4,720	5,017	5,465	5,678	5,668	5,682	5,717	5,890	5,857
Wind	GWh	2,205	2,058	1,966	1,952	1,975	2,038	2,078	2,752	3,476	3,388	3,935	3,873	3,766	3,792	3,814	3,854	3,855	4,306	4,059	3,970
4-hr Storage	GWh	-40	-113	-131	-249	-282	-340	-361	-373	-383	-414	-421	-417	-437	-519	-588	-602	-613	-714	-728	-745
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-82	-97	-98	-139	-141	-138	-98	-101	-103	-83	-78	-91
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	693	785	882	874	946	1,023	1,023	1,082	1,058	1,114	1,174	1,225	1,206
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,102**	**10,181**	**10,283**	**10,535**	**10,772**	**11,012**	**11,587**	**11,918**	**12,161**	**12,192**	**12,307**	**12,382**	**12,756**	**12,800**	**12,701**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,618	1,613	1,593	1,429	1,300	1,054	580	344	136	187	79	88	-199	-178	-74
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: All Technologies
Future: Current Trends & Policy
Sensitivity: High EV
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $9,821 million
20-Year NPV Carbon Emissions: 15.23 million tons
20-Year NPV Water Consumption: 7.13 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: 0 MW
20-Year NPV Rev Req: $0 million
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,067	2,112	2,194	2,254	2,284	2,335	2,374	2,406	2,451	2,507	2,529	2,583	2,631	2,656	2,702	2,741	2,797	2,839	2,875	2,909
PRM	%	12%	11%	10%	19%	18%	17%	17%	21%	22%	17%	17%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	299	217	59	49	25	18	12	13	8	11	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	782	782	782	782	782	782	946	1,110	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,096	2,412	2,602	2,622	2,633	2,582	2,574	2,566	2,691	2,767	3,005
Wind	MW	658	658	658	658	658	658	658	858	858	1,058	1,058	1,258	1,356	1,356	1,356	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,121	1,121	1,204	1,247	1,247	1,401	1,401	1,401	1,401	1,446	1,661	1,677	1,677	1,680	1,956	2,036	2,044
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	100	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	232	254	276	256	259	276	270	274	267	281	297	308	306
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,198**	**5,208**	**5,253**	**5,306**	**5,613**	**5,734**	**6,112**	**6,409**	**6,802**	**6,982**	**7,202**	**7,334**	**7,683**	**7,856**	**7,699**	**7,867**	**7,805**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,157	1,241	1,231	1,176	1,162	1,162	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	986	1,181	809	719	707	698	389	626	327	294	179	109	85	70	29	50	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	11
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,355	2,418	2,297	2,154	2,091	2,096	2,243	2,359	2,472
Geothermal	GWh	66	54	52	52	52	52	48	50	55	47	42	38	38	35	38	37	38	35	41	8
Solar	GWh	1,671	3,183	3,463	4,007	3,986	3,943	3,929	3,768	3,943	4,494	4,877	5,101	5,049	5,346	5,382	5,127	5,176	5,626	5,993	6,267
Wind	GWh	2,205	2,059	1,964	1,952	1,976	1,936	1,973	2,676	2,734	3,387	3,234	3,861	4,465	4,508	4,583	5,270	5,278	4,993	4,358	4,046
4-hr Storage	GWh	-40	-113	-131	-252	-284	-313	-334	-340	-375	-407	-410	-414	-432	-522	-546	-571	-570	-690	-729	-757
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-92	-131	-183	-196	-273	-264	-245	-179	-143	-157	-136	-151	-176
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	682	774	871	863	934	1,011	1,012	1,065	1,040	1,096	1,156	1,208	1,189
Total Generation	**GWh**	**9,262**	**9,797**	**10,286**	**10,499**	**10,383**	**10,377**	**10,443**	**10,591**	**10,553**	**10,910**	**11,001**	**11,781**	**12,394**	**12,517**	**12,568**	**12,880**	**13,007**	**13,231**	**13,089**	**13,060**
Net Purchases	GWh	1,074	863	1,030	1,057	1,247	1,384	1,407	1,358	1,502	1,274	1,198	543	52	-9	52	-222	-233	-338	-101	-38
Total Supply	**GWh**	**10,336**	**10,660**	**11,316**	**11,556**	**11,630**	**11,761**	**11,851**	**11,949**	**12,055**	**12,184**	**12,200**	**12,324**	**12,446**	**12,508**	**12,619**	**12,657**	**12,774**	**12,893**	**12,987**	**13,022**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: All Technologies
Future: Current Trends & Policy
Sensitivity: High NG
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,669 million**
20-Year NPV Carbon Emissions: **14.60 million tons**
20-Year NPV Water Consumption: **6.95 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	304	310	153	30	17	13	15	9	9	10	12	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	823	987	1,151	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	577	577	588
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,124	2,198	2,543	2,588	2,670	2,660	2,652	2,644	2,816	2,891	3,000
Wind	MW	658	658	658	658	658	658	858	858	1,258	1,258	1,458	1,458	1,356	1,356	1,356	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,111	1,111	1,291	1,302	1,327	1,370	1,401	1,401	1,404	1,459	1,661	1,726	1,726	1,726	1,953	2,012	2,019
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	280	260	262	280	274	279	272	284	300	311	311
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,188**	**5,198**	**5,238**	**5,458**	**5,495**	**6,025**	**6,262**	**6,516**	**6,866**	**6,882**	**7,160**	**7,343**	**7,492**	**7,660**	**7,502**	**7,847**	**7,667**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,170	1,176	1,259	1,249	1,238	1,212	1,220	575	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,342	868	1,082	653	585	488	330	398	289	208	151	128	169	152	109	121	163	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	6
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,351	2,414	2,303	2,032	2,134	2,228	2,205	2,386	2,472
Geothermal	GWh	66	56	52	50	49	51	42	48	44	37	34	32	32	34	36	34	35	33	33	9
Solar	GWh	1,671	3,180	3,471	3,958	3,936	3,953	3,655	3,598	3,320	4,131	3,934	4,682	4,862	5,242	5,371	5,359	5,473	5,908	6,183	6,122
Wind	GWh	2,205	2,060	1,957	1,941	1,969	1,940	2,657	2,622	3,969	3,906	4,493	4,459	4,400	4,438	4,509	4,529	4,342	4,216	3,778	3,778
4-hr Storage	GWh	-40	-114	-131	-250	-283	-337	-351	-366	-375	-412	-394	-406	-431	-519	-582	-576	-591	-689	-727	-747
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-126	-171	-203	-261	-255	-237	-162	-149	-155	-145	-130	-150
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	882	873	945	1,022	1,023	1,082	1,058	1,110	1,169	1,221	1,204
Total Generation	**GWh**	**8,876**	**9,683**	**10,208**	**10,302**	**10,209**	**10,207**	**10,508**	**10,507**	**10,843**	**10,955**	**11,185**	**11,928**	**12,213**	**12,435**	**12,396**	**12,509**	**12,604**	**12,702**	**12,748**	**12,694**
Net Purchases	GWh	1,458	970	1,095	1,234	1,392	1,513	1,287	1,369	1,121	1,117	881	238	50	-138	-17	-123	-134	-145	-126	-67
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	High Tech Costs
Phase:	Phase 3

Cost & Environmental Metrics	
20-Year NPV Revenue Requirement:	$9,798 million
20-Year NPV Carbon Emissions:	15.50 million tons
20-Year NPV Water Consumption:	7.19 million gallons

Final Reliability Adjustments to Portfolio	
2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	17%	22%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	348	345	212	84	37	30	25	18	21	23	17	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	969	969	969	823	864	864	864	864	905	1,069	1,233	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,731	1,723	1,970	2,144	2,265	2,214	2,206	2,337	2,615	2,634	2,732
Wind	MW	658	658	658	658	658	658	658	858	858	1,058	1,458	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,108	1,108	1,123	1,154	1,154	1,154	1,154	1,154	1,154	1,166	1,290	1,290	1,290	1,423	1,595	1,668	1,695
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	232	254	276	260	266	283	277	281	276	291	307	318	318
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,185**	**5,195**	**5,213**	**5,253**	**5,461**	**5,628**	**5,683**	**6,059**	**6,311**	**6,414**	**6,693**	**6,810**	**6,961**	**7,280**	**7,372**	**7,475**	**7,294**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,181	1,168	1,179	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	807	714	742	732	469	630	484	227	174	181	158	161	200	171	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	18	18
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,288	2,354	2,279	2,115	2,283	2,287
Geothermal	GWh	66	56	51	53	52	52	47	43	52	53	43	42	41	47	45	45	45	35	38	10
Solar	GWh	1,671	3,182	3,458	3,991	3,968	3,862	3,834	3,511	3,879	3,934	3,371	3,767	4,167	4,550	4,551	4,556	4,896	5,301	5,557	5,962
Wind	GWh	2,205	2,057	1,966	1,948	1,971	1,920	1,947	2,619	2,732	3,512	4,835	4,753	4,594	4,654	4,684	4,715	4,679	4,998	4,382	3,981
4-hr Storage	GWh	-40	-113	-131	-249	-281	-292	-309	-317	-305	-316	-325	-325	-339	-391	-403	-410	-469	-550	-587	-607
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-230	-245	-219	-251	-305	-304	-265	-266	-265	-219	-238	-268
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	682	774	871	874	955	1,033	1,034	1,089	1,070	1,126	1,185	1,237	1,221
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,481**	**10,358**	**10,341**	**10,386**	**10,481**	**10,461**	**10,666**	**11,102**	**11,476**	**11,797**	**12,050**	**12,151**	**12,265**	**12,460**	**12,869**	**12,690**	**12,604**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,379	1,409	1,395	1,503	1,406	964	690	466	247	228	121	10	-312	-68	22
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	Low NG
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,420 million
20-Year NPV Carbon Emissions:	15.61 million tons
20-Year NPV Water Consumption:	7.21 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	474	362	359	355	352	341	345	256	74	37	30	32	22	19	21	25	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	928	928	928	782	782	782	782	782	782	864	1,028	1,192	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	618	618	618
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,829	2,021	2,197	2,478	2,782	2,772	2,764	2,756	2,746	2,739	2,903
Wind	MW	658	658	658	658	658	658	658	658	658	1,058	1,258	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,182	1,220	1,241	1,394	1,394	1,394	1,394	1,394	1,543	1,662	1,662	1,662	1,912	1,983	1,995
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	258	278	259	261	278	272	276	269	281	298	309	307
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,211**	**5,258**	**5,291**	**5,531**	**5,841**	**6,213**	**6,391**	**6,588**	**7,035**	**7,230**	**7,379**	**7,547**	**7,429**	**7,705**	**7,572**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,783	1,577	1,622	1,185	1,018	820	811	797	935	429	252	226	213	157	91	124	156	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	7	8
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,424	2,289	2,106	2,210	2,154	2,146	2,197	2,344
Geothermal	GWh	66	54	51	54	52	50	52	52	57	54	47	46	43	40	42	44	44	37	36	9
Solar	GWh	1,671	3,180	3,486	4,025	3,994	3,970	3,946	3,896	4,192	4,181	4,238	4,563	5,051	5,758	5,878	5,865	5,879	5,823	5,786	6,290
Wind	GWh	2,205	2,053	1,961	1,960	1,976	1,944	1,976	1,948	2,036	3,500	4,111	4,049	3,824	3,815	3,879	3,893	3,894	4,568	4,570	3,946
4-hr Storage	GWh	-40	-114	-131	-249	-281	-306	-325	-339	-369	-389	-408	-416	-425	-488	-548	-557	-567	-670	-723	-730
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-136	-163	-182	-197	-268	-277	-207	-209	-214	-164	-151	-185
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	785	879	871	942	1,020	1,020	1,074	1,050	1,101	1,160	1,212	1,193
Total Generation	**GWh**	**10,317**	**10,323**	**10,697**	**10,813**	**10,611**	**10,496**	**10,560**	**10,487**	**10,428**	**10,866**	**11,224**	**11,574**	**11,881**	**12,314**	**12,316**	**12,420**	**12,447**	**12,906**	**12,934**	**12,876**
Net Purchases	GWh	17	330	606	723	990	1,224	1,235	1,389	1,536	1,206	842	593	381	-18	63	-34	23	-349	-312	-249
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	Low Tech Costs
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,215 million
20-Year NPV Carbon Emissions:	15.16 million tons
20-Year NPV Water Consumption:	7.17 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	24%	16%	19%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	350	339	345	175	67	22	21	25	17	12	14	16	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	741	905	1,069	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	495	495	499
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,897	2,348	2,431	2,577	2,867	2,900	2,892	2,884	2,874	2,937	3,120
Wind	MW	658	658	658	658	658	658	658	658	1,058	1,058	1,258	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,291	1,335	1,365	1,365	1,365	1,365	1,365	1,365	1,516	1,697	1,697	1,697	1,943	1,995	2,012
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	300	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	212	229	266	247	250	265	258	262	255	267	283	294	293
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,238**	**5,291**	**5,328**	**5,892**	**5,886**	**6,517**	**6,603**	**6,662**	**7,097**	**7,356**	**7,505**	**7,673**	**7,552**	**7,877**	**7,773**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,170	1,155	1,177	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	641	633	628	373	364	133	150	168	133	70	102	131	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	5
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,423	2,301	2,057	2,113	2,058	2,031	2,262	2,236
Geothermal	GWh	66	54	52	53	49	48	53	47	51	51	37	40	40	38	40	42	44	37	35	9
Solar	GWh	1,671	3,183	3,456	3,991	3,969	3,999	3,981	3,936	3,742	4,283	4,655	4,907	5,216	5,904	6,170	6,158	6,178	6,083	6,334	6,583
Wind	GWh	2,205	2,058	1,968	1,950	1,976	1,950	1,983	1,957	3,402	3,474	3,897	3,886	3,766	3,753	3,804	3,863	3,868	4,533	4,020	3,851
4-hr Storage	GWh	-40	-113	-131	-249	-282	-336	-356	-373	-365	-381	-390	-401	-407	-473	-556	-566	-579	-705	-719	-736
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-183	-227	-301	-345	-386	-399	-300	-293	-287	-217	-193	-229
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	677	758	847	839	910	979	979	1,032	1,008	1,059	1,119	1,170	1,151
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,412**	**10,345**	**10,704**	**10,785**	**11,166**	**11,508**	**11,799**	**12,237**	**12,317**	**12,426**	**12,472**	**12,884**	**12,913**	**12,872**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,383	1,531	1,259	1,287	899	658	463	60	62	-40	-2	-326	-291	-245
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **All Technologies**
Future: **Current Trends & Policy**
Sensitivity: **NMPRC CO2 0**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,505 million**
20-Year NPV Carbon Emissions: **15.19 million tons**
20-Year NPV Water Consumption: **7.14 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	352	345	345	176	55	26	22	25	17	16	18	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	823	987	1,151	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	577	579	587
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,064	2,244	2,493	2,731	2,827	2,815	2,807	2,799	2,789	2,874	3,000
Wind	MW	658	658	658	658	658	658	658	658	1,058	1,058	1,258	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,291	1,335	1,360	1,419	1,448	1,448	1,448	1,461	1,660	1,725	1,725	1,725	1,968	2,012	2,019
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	262	280	274	279	272	286	302	313	313
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,238**	**5,291**	**5,328**	**5,854**	**6,050**	**6,410**	**6,661**	**6,827**	**7,116**	**7,298**	**7,446**	**7,616**	**7,492**	**7,833**	**7,668**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,225	1,216	1,228	577	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	712	794	787	764	567	440	284	276	292	260	214	256	312	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	6
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,418	2,302	2,075	2,125	2,112	2,101	2,316	2,452
Geothermal	GWh	66	55	51	51	52	52	48	51	49	49	40	39	36	36	40	42	43	35	35	9
Solar	GWh	1,671	3,178	3,458	3,989	3,968	3,994	3,983	3,923	3,692	4,443	4,401	4,909	5,361	5,778	5,890	5,884	5,906	5,843	6,133	6,102
Wind	GWh	2,205	2,062	1,967	1,955	1,974	1,950	1,984	1,955	3,385	3,389	3,936	3,875	3,740	3,761	3,824	3,866	3,862	4,522	4,029	3,922
4-hr Storage	GWh	-40	-113	-131	-249	-282	-336	-357	-373	-385	-421	-419	-429	-439	-523	-570	-582	-591	-700	-726	-740
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-134	-178	-185	-262	-276	-268	-196	-195	-201	-152	-141	-164
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	945	1,023	1,023	1,082	1,058	1,114	1,172	1,225	1,208
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,551**	**10,623**	**10,534**	**10,892**	**10,979**	**11,229**	**11,714**	**12,155**	**12,369**	**12,358**	**12,453**	**12,557**	**12,825**	**12,874**	**12,794**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,169	1,171	1,342	1,071	1,093	837	452	108	-72	21	-67	-87	-268	-252	-167
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 20
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,835 million**
20-Year NPV Carbon Emissions:	**14.89 million tons**
20-Year NPV Water Consumption:	**7.02 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	17%	22%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	471	362	359	355	346	334	298	174	51	25	20	24	16	16	18	21	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	823	987	1,151	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	577	581	589
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,109	2,274	2,537	2,735	2,830	2,819	2,811	2,802	2,819	2,876	3,000
Wind	MW	658	658	658	658	658	658	658	858	1,058	1,058	1,258	1,258	1,156	1,156	1,156	1,156	1,156	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,319	1,407	1,443	1,443	1,443	1,464	1,663	1,730	1,730	1,730	1,965	2,012	2,019
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	232	254	276	256	259	276	270	276	269	283	299	310	310
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,503**	**5,859**	**6,085**	**6,430**	**6,696**	**6,831**	**7,120**	**7,302**	**7,451**	**7,621**	**7,515**	**7,834**	**7,667**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,089	1,108	1,108	1,148	1,148	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,398	896	1,068	663	571	514	486	310	276	192	101	87	94	72	57	78	121	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	6
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,418	2,302	2,074	2,126	2,112	2,214	2,315	2,472
Geothermal	GWh	66	54	52	51	52	52	52	47	51	47	40	39	37	37	39	41	43	35	35	9
Solar	GWh	1,671	3,181	3,465	3,994	3,971	3,991	3,972	3,651	3,682	4,504	4,440	4,988	5,381	5,802	5,917	5,909	5,934	5,990	6,137	6,065
Wind	GWh	2,205	2,059	1,961	1,952	1,975	1,942	1,981	2,637	3,392	3,370	3,933	3,867	3,744	3,760	3,822	3,867	3,860	4,272	4,034	3,949
4-hr Storage	GWh	-40	-114	-131	-250	-282	-331	-351	-362	-380	-419	-415	-427	-441	-524	-571	-584	-592	-696	-726	-743
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-136	-181	-190	-266	-275	-266	-195	-194	-199	-153	-141	-164
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	682	774	871	863	934	1,012	1,012	1,071	1,047	1,103	1,163	1,214	1,198
Total Generation	**GWh**	**8,917**	**9,647**	**10,123**	**10,248**	**10,137**	**10,190**	**10,244**	**10,408**	**10,587**	**10,757**	**11,068**	**11,581**	**11,969**	**12,195**	**12,214**	**12,290**	**12,381**	**12,829**	**12,872**	**12,791**
Net Purchases	GWh	1,416	1,006	1,180	1,288	1,463	1,529	1,550	1,468	1,377	1,315	997	586	293	102	165	97	89	-271	-250	-164
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **All Technologies**
Future: **Current Trends & Policy**
Sensitivity: **NMPRC CO2 40**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$10,156 million**
20-Year NPV Carbon Emissions: **14.66 million tons**
20-Year NPV Water Consumption: **6.95 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	17%	22%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	467	362	359	355	341	328	294	172	47	16	12	14	9	11	12	14	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	864	1,028	1,192	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	618	618	618
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	2,190	2,216	2,538	2,592	2,692	2,643	2,634	2,626	2,814	2,819	3,000
Wind	MW	658	658	658	658	658	658	658	858	1,058	1,058	1,458	1,458	1,356	1,356	1,356	1,356	1,356	1,356	1,556	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,291	1,335	1,335	1,407	1,424	1,424	1,426	1,471	1,671	1,671	1,671	1,671	1,897	1,965	1,972
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	212	254	276	256	259	276	270	274	267	279	295	306	305
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,238**	**5,291**	**5,499**	**5,859**	**6,148**	**6,553**	**6,880**	**6,895**	**7,188**	**7,306**	**7,455**	**7,623**	**7,479**	**7,763**	**7,644**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,039	1,108	1,108	1,147	1,147	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,269	882	1,030	638	545	438	397	239	205	125	48	31	37	13	18	20	31	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	7	8
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,351	2,413	2,303	2,057	2,135	2,133	2,190	2,344	2,472
Geothermal	GWh	66	54	52	53	51	49	52	50	51	42	37	34	35	33	38	39	40	35	35	9
Solar	GWh	1,671	3,184	3,471	3,993	3,972	4,003	3,983	3,664	3,698	4,596	4,095	4,783	4,973	5,367	5,389	5,386	5,406	5,949	6,017	5,993
Wind	GWh	2,205	2,058	1,958	1,953	1,976	1,949	1,986	2,637	3,377	3,322	4,549	4,541	4,454	4,471	4,547	4,581	4,581	4,283	4,077	3,987
4-hr Storage	GWh	-40	-114	-131	-250	-282	-336	-356	-367	-381	-417	-406	-417	-440	-523	-552	-561	-568	-671	-708	-729
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-140	-188	-214	-258	-258	-244	-177	-173	-182	-161	-146	-169
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	677	774	871	862	934	1,011	1,011	1,065	1,040	1,092	1,152	1,203	1,184
Total Generation	**GWh**	**8,739**	**9,635**	**10,089**	**10,225**	**10,113**	**10,121**	**10,162**	**10,343**	**10,510**	**10,725**	**11,268**	**11,998**	**12,227**	**12,431**	**12,383**	**12,469**	**12,534**	**12,782**	**12,830**	**12,755**
Net Purchases	GWh	1,595	1,018	1,214	1,312	1,488	1,599	1,633	1,533	1,453	1,347	798	168	36	-134	-4	-82	-64	-225	-208	-129
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 8
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,582 million
20-Year NPV Carbon Emissions:	15.24 million tons
20-Year NPV Water Consumption:	7.13 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	19%	18%	16%	16%	17%	22%	16%	17%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	470	362	359	355	348	339	300	213	70	58	33	25	18	16	17	12	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	782	782	782	782	782	782	864	1,028	1,151	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	577	577	577
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,929	2,204	2,301	2,472	2,618	2,579	2,571	2,562	2,596	2,691	2,876
Wind	MW	658	658	658	658	658	658	658	858	858	1,058	1,058	1,258	1,356	1,356	1,356	1,356	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,272	1,310	1,310	1,320	1,320	1,320	1,320	1,320	1,502	1,625	1,625	1,658	1,945	1,994	1,994
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	177	195	212	234	276	256	259	273	267	270	264	278	294	305	302
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,219**	**5,267**	**5,474**	**5,634**	**5,865**	**6,120**	**6,420**	**6,703**	**7,025**	**7,194**	**7,343**	**7,704**	**7,467**	**7,622**	**7,498**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,142	1,122	1,201	1,179	1,170	1,158	1,171	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,562	912	1,105	702	627	639	640	415	636	403	378	249	178	142	101	134	64	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	12	18
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,418	2,303	2,105	2,189	2,038	2,262	2,357	2,428
Geothermal	GWh	66	54	51	53	49	48	51	47	52	51	47	41	36	36	38	40	33	33	36	9
Solar	GWh	1,671	3,187	3,483	3,987	3,970	4,004	3,980	3,662	3,894	4,203	4,541	4,522	4,646	5,112	5,232	5,221	5,037	5,322	5,673	6,005
Wind	GWh	2,205	2,063	1,965	1,952	1,974	1,951	1,986	2,642	2,727	3,442	3,334	3,945	4,479	4,478	4,556	4,595	5,235	4,969	4,336	3,962
4-hr Storage	GWh	-40	-113	-131	-243	-276	-330	-349	-361	-354	-377	-390	-387	-390	-465	-529	-540	-566	-682	-710	-726
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-144	-178	-193	-227	-257	-255	-170	-167	-147	-122	-132	-159
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	505	595	677	770	871	863	934	1,003	1,003	1,056	1,032	1,088	1,147	1,199	1,177
Total Generation	**GWh**	**9,096**	**9,707**	**10,196**	**10,341**	**10,227**	**10,354**	**10,430**	**10,549**	**10,509**	**10,789**	**10,875**	**11,437**	**12,113**	**12,354**	**12,390**	**12,503**	**12,782**	**12,930**	**12,771**	**12,713**
Net Purchases	GWh	1,237	946	1,107	1,196	1,374	1,365	1,364	1,327	1,455	1,283	1,191	730	149	-57	-11	-117	-312	-373	-149	-87
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	Stable ED
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$12,509 million
20-Year NPV Carbon Emissions:	16.87 million tons
20-Year NPV Water Consumption:	7.69 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,282	2,321	2,412	2,534	2,640	2,747	2,865	2,952	3,072	3,185	3,276	3,386	3,483	3,596	3,701	3,807	3,886
PRM	%	12%	11%	10%	16%	17%	16%	16%	16%	21%	16%	19%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	391	388	383	381	337	275	172	74	32	38	47	46	51	45	40	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,043	1,010	1,010	1,010	864	864	864	864	864	864	1,037	1,087	1,137	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	563	570	608
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,914	2,369	3,021	3,368	3,508	3,721	3,786	4,043	4,298	4,897	5,620	6,153
Wind	MW	658	658	658	658	658	658	858	1,258	1,458	1,458	1,658	1,658	1,556	1,556	1,556	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,070	1,070	1,195	1,331	1,363	1,578	1,578	1,678	1,681	1,845	2,146	2,236	2,502	2,881	3,288	3,749	3,998
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	300	300	300	300	300	300	300	300	300	300	300
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	174	197	215	238	262	284	268	273	291	284	290	285	299	315	326	325
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,147**	**5,218**	**5,326**	**5,672**	**6,117**	**6,775**	**7,151**	**8,088**	**8,444**	**8,663**	**9,170**	**9,504**	**10,072**	**10,770**	**11,218**	**12,421**	**12,933**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,246	1,239	1,191	1,165	1,169	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	978	926	1,016	878	548	623	550	309	377	468	512	598	651	669	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170	255	260
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,294	2,330	2,407	2,292	2,136	2,167	2,130	2,142	2,240	2,339
Geothermal	GWh	66	56	52	51	51	51	51	49	51	52	40	41	42	46	50	49	55	49	48	11
Solar	GWh	1,671	3,180	3,462	4,023	4,028	4,108	4,147	3,843	4,307	5,587	6,625	7,487	8,046	8,849	9,230	9,989	10,878	12,439	14,054	14,780
Wind	GWh	2,205	2,059	1,962	1,957	1,988	1,976	2,789	4,206	4,964	5,011	5,409	5,441	5,374	5,466	5,505	5,507	5,377	5,043	4,067	3,872
4-hr Storage	GWh	-40	-113	-131	-239	-270	-308	-350	-368	-426	-450	-492	-511	-580	-700	-750	-861	-1,017	-1,206	-1,406	-1,529
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-101	-234	-377	-410	-400	-384	-336	-327	-268	-291	-324	-353
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	417	509	600	699	797	894	897	978	1,056	1,056	1,115	1,096	1,152	1,212	1,264	1,246
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,708**	**10,669**	**10,910**	**11,647**	**12,442**	**13,142**	**13,785**	**14,705**	**15,734**	**16,413**	**17,136**	**17,547**	**18,272**	**18,975**	**19,558**	**20,198**	**20,626**
Net Purchases	GWh	1,072	862	1,028	1,099	1,296	1,505	1,493	1,418	1,379	1,424	1,065	699	694	597	803	647	592	677	659	785
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,807**	**11,965**	**12,415**	**13,140**	**13,860**	**14,522**	**15,209**	**15,769**	**16,433**	**17,106**	**17,733**	**18,351**	**18,919**	**19,567**	**20,236**	**20,857**	**21,412**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	Tax credit 10-yr exp.
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,654 million**
20-Year NPV Carbon Emissions:	**15.18 million tons**
20-Year NPV Water Consumption:	**7.12 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,387	2,424	2,472	2,488	2,535	2,575	2,592	2,630	2,658	2,704	2,737	2,765	2,791
PRM	%	12%	11%	10%	19%	18%	16%	16%	16%	22%	16%	22%	19%	18%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	477	362	359	355	351	340	345	212	68	9	7	11	13	15	17	19	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	782	946	1,110	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	748	808	823
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,872	2,659	2,650	2,642	2,633	2,582	2,574	2,566	2,556	2,550	2,500
Wind	MW	658	658	658	658	658	658	658	658	858	1,058	1,458	1,458	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,250
4-hr Storage	MW	170	620	632	1,110	1,110	1,275	1,319	1,348	1,467	1,523	1,550	1,550	1,565	1,565	1,565	1,565	1,565	1,739	1,739	1,739
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	232	249	266	247	250	268	262	265	258	272	289	300	300
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,332**	**5,714**	**5,919**	**7,113**	**7,108**	**7,030**	**7,098**	**7,214**	**7,363**	**7,533**	**7,187**	**7,252**	**7,111**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,171	1,156	1,178	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,727	982	1,173	806	713	647	638	633	588	375	22	27	53	83	74	100	140	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	94	65
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,284	2,348	2,413	2,302	2,072	2,147	2,143	2,250	2,464	2,472
Geothermal	GWh	66	54	52	53	52	52	60	46	54	51	29	32	32	36	38	40	40	37	42	10
Solar	GWh	1,671	3,181	3,463	3,990	3,971	3,986	3,921	3,922	3,957	4,246	4,928	5,072	5,129	5,218	5,231	5,232	5,247	5,350	5,575	5,367
Wind	GWh	2,205	2,060	1,961	1,951	1,971	1,944	2,022	1,956	2,717	3,466	4,433	4,504	4,442	4,485	4,564	4,601	4,601	4,582	3,780	4,209
4-hr Storage	GWh	-40	-113	-131	-249	-282	-331	-352	-369	-392	-427	-442	-459	-472	-488	-511	-520	-530	-603	-614	-626
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-121	-145	-269	-257	-252	-255	-184	-184	-190	-172	-191	-188
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	682	762	847	838	910	987	988	1,042	1,018	1,074	1,133	1,185	1,168
Total Generation	**GWh**	**9,261**	**9,791**	**10,275**	**10,482**	**10,359**	**10,345**	**10,411**	**10,345**	**10,492**	**10,787**	**11,823**	**12,177**	**12,333**	**12,368**	**12,326**	**12,434**	**12,524**	**12,600**	**12,334**	**12,477**
Net Purchases	GWh	1,072	862	1,028	1,055	1,242	1,374	1,384	1,531	1,472	1,285	243	-11	-70	-72	53	-48	-54	-43	288	150
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	All Technologies
Future:	Current Trends & Policy
Sensitivity:	TOU
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,511 million
20-Year NPV Carbon Emissions:	15.34 million tons
20-Year NPV Water Consumption:	7.11 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,110	2,191	2,249	2,276	2,323	2,359	2,343	2,375	2,422	2,437	2,483	2,522	2,538	2,575	2,602	2,647	2,682	2,713	2,739
PRM	%	12%	11%	10%	19%	18%	17%	17%	20%	23%	17%	17%	17%	17%	16%	16%	17%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	476	362	359	355	352	343	304	216	69	63	33	23	18	20	12	14	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	887	887	887	823	823	823	823	823	823	987	1,151	1,274	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	700	700
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	1,740	1,991	2,217	2,393	2,478	2,470	2,419	2,411	2,403	2,539	2,603	2,738
Wind	MW	658	658	658	658	658	658	658	858	858	1,058	1,058	1,258	1,356	1,356	1,356	1,556	1,556	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,116	1,116	1,242	1,283	1,283	1,377	1,380	1,380	1,380	1,397	1,583	1,583	1,583	1,615	1,882	1,951	1,969
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	100	100	100	100	100	100	100	100	100	100	100	100
Electrolysis	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	MW	69	96	117	135	154	197	215	232	254	276	256	259	276	270	274	267	281	297	308	306
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,192**	**5,203**	**5,250**	**5,300**	**5,508**	**5,651**	**5,928**	**6,134**	**6,512**	**6,730**	**6,902**	**7,018**	**7,367**	**7,528**	**7,373**	**7,517**	**7,363**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,166	1,156	1,241	1,231	1,172	1,158	1,168	568	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	982	1,173	803	708	667	654	409	619	377	365	224	153	129	126	64	85	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	31	32
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,419	2,296	2,218	2,165	2,164	2,287	2,411	2,472
Geothermal	GWh	66	55	51	51	51	48	52	42	50	46	40	39	35	37	39	32	35	34	35	9
Solar	GWh	1,671	3,184	3,461	3,998	3,971	3,960	3,940	3,622	3,825	4,171	4,456	4,546	4,578	4,836	4,844	4,601	4,652	5,103	5,426	5,645
Wind	GWh	2,205	2,056	1,963	1,952	1,977	1,944	1,975	2,633	2,695	3,384	3,276	3,893	4,487	4,531	4,568	5,249	5,257	4,986	4,357	4,077
4-hr Storage	GWh	-40	-113	-131	-251	-283	-323	-344	-354	-375	-402	-412	-408	-416	-496	-515	-524	-547	-661	-695	-725
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-81	-96	-101	-137	-138	-130	-97	-80	-83	-74	-80	-92
Electrolysis	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSM	GWh	87	165	244	326	412	509	600	682	774	871	863	934	1,012	1,012	1,065	1,040	1,096	1,156	1,208	1,189
Total Generation	**GWh**	**9,260**	**9,791**	**10,275**	**10,483**	**10,359**	**10,345**	**10,403**	**10,498**	**10,436**	**10,724**	**10,785**	**11,451**	**12,128**	**12,215**	**12,247**	**12,547**	**12,658**	**12,840**	**12,691**	**12,605**
Net Purchases	GWh	1,073	862	1,028	1,054	1,242	1,374	1,392	1,356	1,505	1,325	1,259	693	110	58	108	-185	-214	-309	-95	-6
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,794**	**11,854**	**11,941**	**12,049**	**12,043**	**12,143**	**12,239**	**12,273**	**12,355**	**12,361**	**12,445**	**12,531**	**12,596**	**12,600**

Peak load does not include impact of future EE programs, which are modeled as a resource

New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

“DSM” includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

“Total Supply” matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	DERMS
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$8,706 **million**
20-Year NPV Carbon Emissions:	15.54 **million tons**
20-Year NPV Water Consumption:	7.08 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 **MW**
20-Year NPV Rev Req:	$0 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,096	2,142	2,220	2,275	2,303	2,350	2,387	2,400	2,429	2,467	2,470	2,504	2,533	2,544	2,578	2,606	2,651	2,684	2,711	2,733
PRM	%	12%	11%	12%	21%	21%	17%	17%	17%	22%	17%	19%	19%	18%	16%	16%	16%	16%	16%	17%	16%
Carbon Intensity	lbs/MWh	499	467	358	354	351	347	338	339	220	112	54	20	22	21	11	9	6	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	815	1,499	1,639	1,860	1,859	1,857	1,856	1,855	2,472	2,837	2,842	2,842	2,841	3,218	3,209	3,293	3,397	3,505	3,617	3,652
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,010	1,010	1,128	1,159	1,162	1,229	1,232	1,232	1,232	1,232	1,280	1,569	1,637	1,796	2,165	2,322	2,322
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	262	280	274	279	274	288	305	317	317
Total Capacity	**MW**	**3,731**	**4,479**	**4,719**	**5,163**	**5,181**	**5,166**	**5,214**	**5,236**	**6,052**	**6,262**	**6,647**	**7,049**	**6,964**	**7,384**	**7,669**	**7,944**	**8,317**	**8,311**	**8,591**	**8,320**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,153	1,241	1,231	1,174	1,159	1,183	572	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,691	908	1,109	812	707	670	662	649	850	820	358	104	156	139	63	60	43	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	485	493	494	496	495	498	497	496	495	498	7	22
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,261	2,315	2,241	2,024	2,260	2,472
Geothermal	GWh	66	56	53	53	53	49	51	51	51	47	42	37	38	34	37	34	35	32	35	12
Solar	GWh	1,768	3,331	3,670	4,126	4,130	4,141	4,127	4,071	5,751	6,544	6,050	5,667	5,754	6,443	6,750	6,939	7,257	7,472	6,416	6,342
Wind	GWh	2,205	2,083	1,975	1,954	1,977	1,940	1,977	1,943	1,995	1,931	3,315	4,649	4,560	4,508	4,532	4,525	4,508	5,131	4,504	4,409
4-hr Storage	GWh	-40	-112	-128	-223	-254	-291	-308	-315	-335	-355	-363	-355	-358	-383	-506	-537	-608	-807	-853	-843
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,926	-1,957	-1,960	-1,970	-1,964	-1,976	-1,973	-1,970	-1,965	-1,977	-26	-88
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	945	1,023	1,023	1,081	1,062	1,119	1,180	1,234	1,219
Total Generation	**GWh**	**9,321**	**9,893**	**10,433**	**10,654**	**10,546**	**10,555**	**10,631**	**10,567**	**10,585**	**10,780**	**11,108**	**11,933**	**12,129**	**12,588**	**12,742**	**12,924**	**13,125**	**13,553**	**13,578**	**13,546**
Net Purchases	GWh	1,121	887	1,016	1,048	1,237	1,365	1,381	1,522	1,611	1,543	1,227	523	442	38	-16	-168	-265	-583	-437	-383
Total Supply	**GWh**	**10,442**	**10,781**	**11,449**	**11,701**	**11,784**	**11,920**	**12,013**	**12,090**	**12,195**	**12,323**	**12,335**	**12,456**	**12,570**	**12,626**	**12,727**	**12,755**	**12,860**	**12,969**	**13,141**	**13,163**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: Base Technologies + Electrolysis
Future: Current Trends & Policy
Sensitivity: FCPP 2027 exit
Phase: Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: $8,926 million
20-Year NPV Carbon Emissions: 13.47 million tons
20-Year NPV Water Consumption: 5.76 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: 0 MW
20-Year NPV Rev Req: $0 million
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	17%	19%	16%	19%	18%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	195	186	198	132	126	59	19	24	17	8	6	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	32	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,773	1,765	2,457	2,483	2,602	2,594	2,585	3,100	3,068	3,144	3,310	3,300	3,390	3,510
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,359	1,396	1,396	1,396	1,396	1,396	1,396	1,396	1,494	1,810	1,889	2,039	2,460	2,767	2,803
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	197	215	232	249	271	253	259	276	270	276	271	285	302	313	313
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,125**	**5,189**	**5,228**	**6,016**	**6,065**	**6,565**	**6,963**	**6,870**	**7,476**	**7,765**	**8,043**	**8,469**	**8,397**	**8,806**	**8,656**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,156	1,241	1,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	974	1,161	811	712	1,146	1,115	1,156	913	895	379	118	174	126	51	48	38	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	497	494	495	497	496	499	498	497	496	499	8	21
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,268	2,322	2,202	2,077	2,367	2,324
Geothermal	GWh	66	54	52	51	52	53	53	54	52	53	45	39	38	34	37	36	34	31	33	9
Solar	GWh	1,671	3,189	3,482	3,988	3,967	4,327	4,344	4,292	6,044	6,132	5,776	5,311	5,465	6,269	6,565	6,727	7,105	7,126	5,897	6,214
Wind	GWh	2,205	2,062	1,964	1,952	1,973	2,047	2,079	2,050	2,020	2,010	3,356	4,671	4,582	4,501	4,525	4,526	4,483	5,163	4,549	4,383
4-hr Storage	GWh	-40	-113	-131	-243	-275	-344	-364	-372	-381	-396	-414	-412	-429	-460	-596	-632	-706	-918	-1,015	-1,048
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,972	-1,963	-1,965	-1,973	-1,968	-1,979	-1,977	-1,974	-1,970	-1,981	-30	-84
DSM	GWh	87	165	244	326	412	509	600	682	762	859	853	935	1,012	1,012	1,071	1,051	1,108	1,169	1,224	1,207
Total Generation	**GWh**	**9,260**	**9,793**	**10,285**	**10,489**	**10,362**	**10,105**	**10,195**	**10,158**	**10,295**	**10,458**	**10,821**	**11,547**	**11,795**	**12,304**	**12,442**	**12,602**	**12,790**	**13,167**	**13,033**	**13,026**
Net Purchases	GWh	1,074	860	1,018	1,048	1,238	1,614	1,600	1,718	1,669	1,614	1,245	619	467	-7	-63	-216	-320	-610	-411	-400
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,622**	**12,627**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	High EV
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,155 million
20-Year NPV Carbon Emissions:	15.64 million tons
20-Year NPV Water Consumption:	7.10 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,066	2,109	2,190	2,248	2,276	2,323	2,361	2,390	2,429	2,481	2,503	2,554	2,599	2,624	2,669	2,706	2,761	2,802	2,836	2,867
PRM	%	12%	11%	10%	23%	22%	17%	17%	17%	22%	17%	18%	17%	16%	16%	16%	16%	16%	16%	17%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	230	116	60	22	25	18	7	6	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	416	512	512	512	512
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,376	2,831	2,822	2,814	2,983	3,154	3,137	3,226	3,457	3,447	3,588	3,701
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,092	1,092	1,184	1,223	1,247	1,330	1,362	1,362	1,362	1,362	1,576	1,914	1,944	2,091	2,525	2,878	2,878
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	265	283	277	282	277	291	308	320	320
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,169**	**5,179**	**5,131**	**5,179**	**5,215**	**6,057**	**6,386**	**6,758**	**7,155**	**7,240**	**7,618**	**7,944**	**8,220**	**8,707**	**8,648**	**9,153**	**8,960**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,156	1,241	1,232	1,177	1,162	1,187	574	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	978	1,169	818	722	710	704	712	893	830	381	133	176	133	56	61	43	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	489	491	492	495	494	497	497	496	494	497	9	25
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,419	2,303	2,266	2,308	2,123	2,017	2,252	2,472
Geothermal	GWh	66	56	51	51	52	52	52	51	51	48	41	37	36	35	36	36	35	35	35	10
Solar	GWh	1,671	3,188	3,485	3,999	3,979	3,941	3,922	3,873	5,619	6,483	5,981	5,599	5,919	6,448	6,788	6,951	7,452	7,509	6,469	6,438
Wind	GWh	2,205	2,062	1,965	1,952	1,976	1,941	1,974	1,944	1,966	1,876	3,238	4,620	4,501	4,506	4,536	4,526	4,456	5,148	4,535	4,413
4-hr Storage	GWh	-40	-113	-131	-245	-277	-308	-327	-341	-366	-399	-407	-400	-405	-489	-628	-652	-728	-950	-1,079	-1,070
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,941	-1,949	-1,955	-1,966	-1,961	-1,975	-1,973	-1,970	-1,961	-1,975	-37	-98
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	955	1,033	1,033	1,091	1,072	1,129	1,190	1,244	1,229
Total Generation	**GWh**	**9,260**	**9,798**	**10,296**	**10,506**	**10,387**	**10,386**	**10,449**	**10,410**	**10,427**	**10,636**	**10,942**	**11,833**	**12,213**	**12,491**	**12,668**	**12,830**	**13,043**	**13,472**	**13,428**	**13,419**
Net Purchases	GWh	1,076	862	1,020	1,051	1,244	1,375	1,401	1,538	1,628	1,548	1,257	491	233	17	-49	-172	-269	-578	-434	-390
Total Supply	**GWh**	**10,336**	**10,660**	**11,316**	**11,556**	**11,630**	**11,761**	**11,851**	**11,949**	**12,055**	**12,184**	**12,200**	**12,324**	**12,446**	**12,508**	**12,619**	**12,657**	**12,774**	**12,893**	**12,994**	**13,029**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	High NG
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,048 million
20-Year NPV Carbon Emissions:	15.50 million tons
20-Year NPV Water Consumption:	7.07 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	217	116	51	17	21	14	8	7	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,757	2,436	2,814	2,805	2,797	2,838	3,085	3,059	3,134	3,295	3,306	3,406	3,559
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,087	1,087	1,148	1,181	1,199	1,268	1,284	1,284	1,284	1,284	1,479	1,791	1,865	2,012	2,427	2,625	2,651
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	264	269	287	281	286	281	295	312	324	324
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,094**	**5,137**	**5,175**	**6,056**	**6,291**	**6,668**	**7,064**	**7,020**	**7,456**	**7,747**	**8,020**	**8,437**	**8,381**	**8,691**	**8,563**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,169	1,175	1,260	1,248	1,240	1,234	1,244	592	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,343	861	1,067	662	588	575	602	689	782	785	414	173	241	201	82	74	62	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	437	438	444	455	455	466	470	473	473	498	64	75
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,302	2,231	2,299	2,169	2,024	2,348	2,472
Geothermal	GWh	66	54	52	50	49	47	47	45	51	43	40	32	35	32	31	31	30	32	33	9
Solar	GWh	1,671	3,191	3,487	3,952	3,933	3,861	3,834	3,785	5,616	6,290	5,759	5,367	5,501	6,155	6,451	6,613	6,998	7,038	5,944	6,078
Wind	GWh	2,205	2,061	1,962	1,942	1,970	1,922	1,951	1,918	1,925	1,858	3,180	4,544	4,479	4,471	4,499	4,501	4,443	5,121	4,538	4,401
4-hr Storage	GWh	-40	-113	-131	-244	-276	-299	-317	-329	-354	-375	-381	-370	-374	-454	-591	-624	-697	-913	-961	-978
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,734	-1,737	-1,763	-1,807	-1,807	-1,849	-1,867	-1,880	-1,879	-1,977	-254	-297
DSM	GWh	87	165	244	326	412	505	595	689	781	882	886	966	1,043	1,044	1,102	1,083	1,139	1,201	1,255	1,240
Total Generation	**GWh**	**8,877**	**9,685**	**10,213**	**10,313**	**10,214**	**10,218**	**10,314**	**10,337**	**10,457**	**10,558**	**10,875**	**11,721**	**11,998**	**12,368**	**12,409**	**12,571**	**12,739**	**13,025**	**12,969**	**13,001**
Net Purchases	GWh	1,457	968	1,090	1,223	1,386	1,501	1,481	1,539	1,507	1,514	1,191	446	264	-71	-30	-185	-269	-468	-312	-340
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,657**	**12,661**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies + Electrolysis**
Future: **Current Trends & Policy**
Sensitivity: **High Tech Costs**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$9,442 million**
20-Year NPV Carbon Emissions: **15.86 million tons**
20-Year NPV Water Consumption: **7.15 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	255	138	65	27	32	23	16	16	7	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	320	480	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,112	2,420	2,443	2,435	2,451	2,692	2,768	2,883	3,153	3,177	3,175	3,335
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,084	1,084	1,133	1,167	1,183	1,249	1,366	1,366	1,366	1,371	1,555	1,727	1,727	2,038	2,459	2,762	2,790
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	136	154	198	216	238	262	284	269	274	291	285	290	285	299	316	328	328
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,162**	**5,172**	**5,100**	**5,143**	**5,173**	**5,738**	**5,984**	**6,392**	**6,788**	**6,725**	**7,144**	**7,462**	**7,732**	**8,326**	**8,287**	**8,600**	**8,482**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,156	1,241	1,231	1,180	1,164	1,189	574	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	974	1,161	811	712	715	710	715	994	972	442	176	225	181	106	113	56	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	323	475	484	489	486	492	490	486	485	490	9	20
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,426	2,303	2,361	2,367	2,294	2,148	2,287	2,391
Geothermal	GWh	66	56	52	53	52	51	48	46	51	54	46	42	42	41	40	40	37	34	33	8
Solar	GWh	1,671	3,188	3,479	3,987	3,965	3,892	3,862	3,794	4,867	5,941	5,498	5,063	5,202	5,785	6,106	6,279	6,825	6,878	6,006	6,053
Wind	GWh	2,205	2,061	1,967	1,948	1,973	1,924	1,957	1,930	1,972	2,003	3,407	4,714	4,637	4,601	4,587	4,576	4,504	5,180	4,531	4,409
4-hr Storage	GWh	-40	-113	-131	-243	-275	-294	-312	-324	-346	-392	-403	-415	-420	-495	-568	-587	-697	-902	-1,026	-1,025
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,282	-1,888	-1,923	-1,941	-1,930	-1,953	-1,947	-1,930	-1,924	-1,945	-34	-80
DSM	GWh	87	165	244	329	415	512	602	702	799	896	900	981	1,059	1,059	1,118	1,099	1,154	1,213	1,267	1,251
Total Generation	**GWh**	**9,260**	**9,793**	**10,285**	**10,489**	**10,363**	**10,347**	**10,398**	**10,349**	**10,312**	**10,436**	**10,748**	**11,470**	**11,727**	**12,014**	**12,291**	**12,443**	**12,733**	**13,096**	**13,073**	**13,027**
Net Purchases	GWh	1,074	860	1,018	1,047	1,238	1,372	1,397	1,527	1,651	1,636	1,318	697	535	283	88	-57	-263	-539	-436	-386
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,636**	**12,640**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	Low NG
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$8,851 million
20-Year NPV Carbon Emissions:	15.75 million tons
20-Year NPV Water Consumption:	7.09 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	469	362	359	355	350	342	345	256	133	67	24	28	21	10	8	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,295	2,812	2,803	2,795	2,861	3,073	3,057	3,133	3,293	3,283	3,397	3,581
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,148	1,181	1,200	1,269	1,278	1,278	1,278	1,278	1,482	1,790	1,865	2,012	2,435	2,632	2,649
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	265	283	277	282	277	291	308	320	320
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,095**	**5,137**	**5,167**	**5,915**	**6,283**	**6,655**	**7,052**	**7,034**	**7,443**	**7,741**	**8,014**	**8,432**	**8,363**	**8,685**	**8,579**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,111	1,108	1,148	1,149	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	2,782	1,577	1,612	1,187	1,019	831	821	806	996	915	421	160	194	136	52	49	40	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	466	497	496	496	496	497	496	496	496	497	1	0
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,419	2,292	2,315	2,366	2,221	2,096	2,236	2,436
Geothermal	GWh	66	55	51	53	52	52	49	48	51	48	42	37	37	36	36	37	36	34	35	8
Solar	GWh	1,671	3,182	3,495	4,021	3,991	3,960	3,934	3,884	5,445	6,385	5,905	5,539	5,688	6,284	6,577	6,744	7,111	7,146	6,167	6,113
Wind	GWh	2,205	2,059	1,973	1,961	1,978	1,941	1,973	1,946	1,989	1,880	3,281	4,666	4,542	4,534	4,552	4,536	4,507	5,193	4,547	4,420
4-hr Storage	GWh	-40	-114	-130	-242	-275	-297	-315	-326	-349	-373	-380	-374	-377	-459	-585	-621	-694	-901	-981	-980
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,852	-1,975	-1,969	-1,969	-1,969	-1,975	-1,969	-1,969	-1,969	-1,975	-2	-2
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	955	1,033	1,033	1,092	1,073	1,129	1,190	1,244	1,228
Total Generation	**GWh**	**10,316**	**10,333**	**10,710**	**10,818**	**10,617**	**10,505**	**10,564**	**10,491**	**10,454**	**10,634**	**10,967**	**11,871**	**12,062**	**12,378**	**12,566**	**12,711**	**12,876**	**13,281**	**13,247**	**13,224**
Net Purchases	GWh	17	320	593	718	983	1,214	1,231	1,385	1,510	1,438	1,099	295	200	-81	-187	-325	-406	-724	-577	-549
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,670**	**12,674**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	**Base Technologies + Electrolysis**
Future:	**Current Trends & Policy**
Sensitivity:	**Low Tech Costs**
Phase:	**Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$8,657 million**
20-Year NPV Carbon Emissions:	**15.61 million tons**
20-Year NPV Water Consumption:	**7.09 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	228	118	62	22	26	19	8	7	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,381	2,847	2,839	2,830	2,918	3,088	3,063	3,179	3,354	3,344	3,488	3,649
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,148	1,181	1,200	1,269	1,274	1,274	1,274	1,274	1,487	1,800	1,862	2,005	2,426	2,558	2,575
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	262	280	274	279	274	288	305	317	317
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,094**	**5,137**	**5,167**	**6,001**	**6,314**	**6,686**	**7,080**	**7,084**	**7,461**	**7,753**	**8,054**	**8,482**	**8,411**	**8,698**	**8,570**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,156	1,241	1,231	1,179	1,163	1,188	575	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	974	1,161	811	712	710	705	711	882	842	376	142	185	132	56	51	39	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	491	491	492	495	494	497	497	496	494	498	7	23
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,419	2,302	2,263	2,283	2,140	2,020	2,234	2,459
Geothermal	GWh	66	54	51	51	52	48	51	50	46	46	39	35	35	33	36	35	35	33	34	8
Solar	GWh	1,671	3,189	3,481	3,991	3,964	3,905	3,873	3,812	5,555	6,349	5,861	5,499	5,704	6,227	6,530	6,734	7,145	7,182	6,086	6,050
Wind	GWh	2,205	2,062	1,966	1,948	1,975	1,930	1,959	1,929	1,958	1,860	3,188	4,600	4,498	4,501	4,522	4,514	4,455	5,135	4,516	4,411
4-hr Storage	GWh	-40	-113	-131	-243	-275	-298	-316	-329	-352	-372	-379	-369	-374	-458	-590	-624	-698	-915	-953	-954
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,948	-1,948	-1,952	-1,966	-1,961	-1,975	-1,973	-1,969	-1,963	-1,976	-28	-91
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	945	1,023	1,023	1,081	1,062	1,119	1,180	1,234	1,218
Total Generation	**GWh**	**9,260**	**9,793**	**10,285**	**10,489**	**10,362**	**10,347**	**10,398**	**10,348**	**10,348**	**10,525**	**10,797**	**11,741**	**12,023**	**12,282**	**12,422**	**12,582**	**12,766**	**13,157**	**13,129**	**13,125**
Net Purchases	GWh	1,074	860	1,018	1,048	1,238	1,372	1,396	1,528	1,615	1,547	1,269	425	239	14	-43	-195	-296	-600	-439	-428
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,691**	**12,696**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario: **Base Technologies + Electrolysis**
Future: **Current Trends & Policy**
Sensitivity: **NMPRC CO2 0**
Phase: **Phase 3**

Cost & Environmental Metrics

20-Year NPV Revenue Requirement: **$8,914 million**
20-Year NPV Carbon Emissions: **15.71 million tons**
20-Year NPV Water Consumption: **7.12 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity: **0 MW**
20-Year NPV Rev Req: **$0 million**
Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	238	130	65	23	28	21	9	7	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,380	2,823	2,815	2,806	2,873	3,080	3,059	3,135	3,305	3,304	3,397	3,581
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,148	1,181	1,200	1,269	1,278	1,278	1,278	1,278	1,483	1,793	1,868	2,012	2,432	2,632	2,649
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	265	283	277	282	277	291	308	320	320
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,094**	**5,137**	**5,167**	**6,001**	**6,295**	**6,667**	**7,063**	**7,046**	**7,451**	**7,746**	**8,020**	**8,444**	**8,380**	**8,685**	**8,579**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,156	1,241	1,231	1,230	1,221	1,232	588	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	974	1,161	811	712	838	834	827	1,012	997	546	276	315	261	151	148	128	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	491	495	495	497	496	498	497	497	497	497	7	22
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,423	2,302	2,261	2,317	2,181	2,051	2,304	2,472
Geothermal	GWh	66	54	51	51	52	48	48	46	52	44	37	33	35	33	36	35	35	33	34	10
Solar	GWh	1,671	3,190	3,484	3,989	3,966	3,902	3,870	3,814	5,556	6,330	5,834	5,448	5,623	6,196	6,501	6,661	7,068	7,110	5,967	6,022
Wind	GWh	2,205	2,060	1,963	1,950	1,974	1,932	1,962	1,931	1,949	1,863	3,201	4,605	4,507	4,496	4,521	4,522	4,468	5,146	4,544	4,406
4-hr Storage	GWh	-40	-113	-131	-243	-275	-298	-316	-329	-352	-374	-380	-371	-376	-457	-587	-625	-699	-911	-973	-979
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,949	-1,964	-1,966	-1,971	-1,971	-1,977	-1,971	-1,972	-1,972	-1,974	-29	-88
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	955	1,033	1,033	1,091	1,072	1,129	1,190	1,244	1,229
Total Generation	**GWh**	**9,260**	**9,793**	**10,285**	**10,489**	**10,362**	**10,524**	**10,582**	**10,506**	**10,488**	**10,648**	**10,937**	**11,832**	**12,086**	**12,385**	**12,499**	**12,655**	**12,833**	**13,141**	**13,097**	**13,095**
Net Purchases	GWh	1,074	860	1,018	1,048	1,238	1,195	1,213	1,371	1,476	1,424	1,129	335	177	-88	-120	-269	-363	-584	-428	-422
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,669**	**12,674**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 20
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,241 million
20-Year NPV Carbon Emissions:	15.54 million tons
20-Year NPV Water Consumption:	7.05 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	467	362	359	355	352	344	345	222	117	61	22	26	19	8	7	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,381	2,830	2,822	2,813	2,879	3,086	3,060	3,136	3,314	3,312	3,395	3,580
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,148	1,181	1,200	1,269	1,279	1,279	1,279	1,279	1,484	1,795	1,871	2,012	2,432	2,634	2,651
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	265	283	277	282	277	291	308	320	320
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,094**	**5,137**	**5,167**	**6,001**	**6,303**	**6,674**	**7,071**	**7,053**	**7,458**	**7,750**	**8,024**	**8,453**	**8,388**	**8,685**	**8,580**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,089	1,108	1,108	1,148	1,148	1,147	1,138	1,148	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,398	888	1,050	670	575	604	578	622	650	666	279	81	117	77	27	26	26	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	448	460	483	493	491	496	494	493	492	498	7	22
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,360	2,423	2,302	2,263	2,318	2,174	2,044	2,306	2,472
Geothermal	GWh	66	56	51	53	49	52	51	51	50	46	40	35	35	32	33	36	33	33	30	9
Solar	GWh	1,671	3,185	3,487	3,990	3,967	3,905	3,874	3,813	5,549	6,350	5,849	5,477	5,653	6,221	6,519	6,681	7,095	7,130	5,957	6,018
Wind	GWh	2,205	2,064	1,962	1,950	1,979	1,929	1,961	1,931	1,961	1,863	3,208	4,607	4,506	4,500	4,525	4,521	4,466	5,144	4,554	4,409
4-hr Storage	GWh	-40	-113	-131	-244	-275	-298	-316	-328	-350	-373	-380	-371	-376	-457	-589	-625	-698	-911	-974	-979
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,777	-1,826	-1,919	-1,960	-1,951	-1,968	-1,961	-1,956	-1,953	-1,976	-30	-88
DSM	GWh	87	165	244	326	412	505	595	689	781	882	874	955	1,033	1,033	1,091	1,072	1,129	1,190	1,244	1,229
Total Generation	**GWh**	**8,918**	**9,648**	**10,128**	**10,258**	**10,146**	**10,211**	**10,249**	**10,222**	**10,239**	**10,443**	**10,730**	**11,678**	**11,931**	**12,238**	**12,403**	**12,566**	**12,762**	**13,152**	**13,096**	**13,093**
Net Purchases	GWh	1,416	1,005	1,175	1,278	1,454	1,509	1,546	1,654	1,724	1,629	1,336	488	331	59	-24	-180	-292	-595	-428	-420
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,669**	**12,673**

Peak load does not include impact of future EE programs, which are modeled as a resource

New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040

"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 40
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,536 **million**
20-Year NPV Carbon Emissions:	15.35 **million tons**
20-Year NPV Water Consumption:	7.00 **million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 **MW**
20-Year NPV Rev Req:	$0 **million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	22%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	462	362	359	352	348	340	345	211	114	50	16	21	14	8	7	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,428	2,814	2,805	2,797	2,837	3,084	3,058	3,134	3,294	3,305	3,405	3,559
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,148	1,181	1,200	1,269	1,284	1,284	1,284	1,284	1,480	1,791	1,865	2,012	2,427	2,626	2,651
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	264	269	287	281	286	281	295	312	324	324
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,094**	**5,137**	**5,167**	**6,049**	**6,291**	**6,667**	**7,064**	**7,020**	**7,456**	**7,747**	**8,020**	**8,437**	**8,380**	**8,690**	**8,563**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,038	1,108	1,108	1,147	1,147	1,146	1,138	1,147	566	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,269	874	1,011	645	550	550	505	554	485	534	170	64	91	46	17	14	14	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	447	442	470	493	490	495	494	492	492	498	7	22
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,422	2,302	2,263	2,319	2,189	2,049	2,327	2,472
Geothermal	GWh	66	56	52	54	52	51	51	50	48	47	38	35	37	33	33	34	33	31	34	10
Solar	GWh	1,671	3,189	3,488	3,991	3,972	3,906	3,876	3,816	5,652	6,351	5,850	5,460	5,598	6,214	6,511	6,672	7,062	7,111	5,901	5,997
Wind	GWh	2,205	2,062	1,962	1,950	1,973	1,930	1,961	1,931	1,945	1,873	3,214	4,608	4,513	4,499	4,524	4,521	4,474	5,150	4,557	4,413
4-hr Storage	GWh	-40	-113	-131	-244	-275	-298	-316	-329	-351	-375	-382	-373	-378	-455	-587	-623	-696	-910	-964	-979
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,776	-1,757	-1,867	-1,959	-1,947	-1,964	-1,960	-1,954	-1,952	-1,977	-29	-87
DSM	GWh	87	165	244	326	412	505	595	689	781	882	886	966	1,044	1,044	1,103	1,083	1,140	1,201	1,256	1,240
Total Generation	**GWh**	**8,738**	**9,636**	**10,092**	**10,234**	**10,122**	**10,158**	**10,177**	**10,155**	**10,157**	**10,372**	**10,675**	**11,654**	**11,870**	**12,214**	**12,397**	**12,558**	**12,753**	**13,153**	**13,089**	**13,090**
Net Purchases	GWh	1,595	1,016	1,211	1,302	1,479	1,562	1,618	1,721	1,806	1,700	1,391	512	393	83	-18	-172	-283	-596	-421	-417
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,669**	**12,673**

Peak load does not include impact of future EE programs, which are modeled as a resource

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"DSM" includes demand response and energy efficiency

Negative generation for energy storage resources reflects roundtrip losses

Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	NMPRC CO2 8
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$9,065 million
20-Year NPV Carbon Emissions:	15.62 million tons
20-Year NPV Water Consumption:	7.09 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,062	2,103	2,185	2,243	2,271	2,308	2,322	2,352	2,391	2,446	2,455	2,463	2,504	2,524	2,568	2,604	2,652	2,685	2,715	2,740
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	17%	16%	18%	17%	16%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	470	362	359	355	352	348	345	231	121	62	23	27	20	9	7	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	480	480	480	480
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,380	2,825	2,817	2,808	2,875	3,082	3,059	3,135	3,307	3,306	3,380	3,581
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,148	1,181	1,200	1,269	1,278	1,278	1,278	1,278	1,483	1,794	1,869	2,012	2,432	2,632	2,649
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	260	265	283	277	282	277	291	308	320	320
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,094**	**5,137**	**5,167**	**6,001**	**6,297**	**6,669**	**7,065**	**7,048**	**7,453**	**7,747**	**8,021**	**8,446**	**8,382**	**8,667**	**8,579**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,139	1,119	1,193	1,167	1,169	1,162	1,185	567	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,552	810	1,004	559	451	515	451	477	641	625	175	43	78	46	19	14	15	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	496	495	498	498	498	500	498	498	498	500	-	-
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,425	2,303	2,160	2,204	2,054	1,930	2,204	2,433
Geothermal	GWh	66	58	55	54	59	59	50	49	51	48	43	41	38	38	45	40	38	33	39	11
Solar	GWh	1,671	3,295	3,577	4,124	4,005	3,952	3,922	3,811	5,652	6,417	6,048	5,776	5,899	6,386	6,762	6,903	7,308	7,386	6,368	6,436
Wind	GWh	2,201	2,130	2,038	2,028	2,058	1,999	2,028	2,014	2,019	1,953	3,294	4,775	4,604	4,626	4,640	4,634	4,591	5,307	4,636	4,456
4-hr Storage	GWh	-41	-111	-124	-235	-267	-293	-312	-326	-344	-372	-380	-375	-385	-459	-589	-632	-723	-915	-978	-990
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,971	-1,966	-1,979	-1,979	-1,979	-1,984	-1,979	-1,979	-1,979	-1,984	0	0
DSM	GWh	87	165	244	326	412	504	595	688	780	881	874	954	1,031	1,031	1,090	1,071	1,127	1,188	1,242	1,226
Total Generation	**GWh**	**9,082**	**9,784**	**10,271**	**10,414**	**10,175**	**10,274**	**10,263**	**10,194**	**10,252**	**10,454**	**10,869**	**12,093**	**12,209**	**12,486**	**12,645**	**12,753**	**12,930**	**13,445**	**13,512**	**13,571**
Net Purchases	GWh	1,252	869	1,033	1,123	1,426	1,445	1,531	1,682	1,711	1,618	1,197	73	53	-189	-266	-367	-460	-887	-842	-896
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,669**	**12,675**

Peak load does not include impact of future EE programs, which are modeled as a resource

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Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources

"Total Supply" matches the annual energy from the corresponding load forecast

The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information	
Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	Stable ED
Phase:	Phase 3

Cost & Environmental Metrics	
20-Year NPV Revenue Requirement:	$12,499 million
20-Year NPV Carbon Emissions:	18.59 million tons
20-Year NPV Water Consumption:	7.93 million gallons

Final Reliability Adjustments to Portfolio	
2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,275	2,311	2,399	2,517	2,619	2,723	2,838	2,924	3,039	3,148	3,237	3,345	3,439	3,550	3,653	3,756	3,836
PRM	%	12%	11%	11%	18%	17%	16%	16%	16%	23%	20%	20%	17%	16%	16%	16%	16%	16%	18%	16%	16%
Carbon Intensity	lbs/MWh	503	473	391	388	384	371	377	364	230	145	94	58	70	64	74	71	57	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	448	576	576	576	576	608
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,782	2,115	3,126	3,772	3,829	3,821	4,103	4,376	4,418	4,659	5,026	6,959	8,286	8,950
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	992	992	1,275	1,442	1,554	1,860	1,955	1,971	1,971	2,037	2,410	2,528	2,719	3,278	4,337	4,781	5,165
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	179	198	220	244	268	272	277	294	288	294	289	304	321	333	331
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,069**	**5,080**	**5,224**	**5,425**	**5,893**	**7,343**	**7,908**	**8,386**	**8,782**	**9,046**	**9,686**	**10,043**	**10,599**	**11,540**	**14,048**	**15,831**	**16,604**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,156	1,248	1,241	1,182	1,171	1,204	575	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	974	1,161	1,018	976	948	1,151	1,204	1,224	1,308	907	631	706	737	815	876	749	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	470	494	497	500	495	501	497	494	494	497	29	40
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,358	2,418	2,302	2,233	2,236	2,199	1,736	1,935	1,951
Geothermal	GWh	66	56	51	51	50	52	57	54	52	48	41	41	43	44	48	50	52	27	23	3
Solar	GWh	1,671	3,186	3,478	3,968	3,973	4,180	4,431	5,131	7,716	9,057	8,904	8,794	9,506	10,453	10,828	11,482	12,670	15,925	15,913	16,766
Wind	GWh	2,205	2,063	1,968	1,947	1,978	1,996	2,095	2,000	1,969	1,883	3,308	4,757	4,655	4,716	4,741	4,742	4,718	5,134	4,408	4,265
4-hr Storage	GWh	-40	-113	-131	-219	-250	-329	-373	-427	-528	-582	-596	-602	-640	-782	-842	-927	-1,141	-1,686	-1,872	-2,071
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,866	-1,961	-1,975	-1,986	-1,967	-1,989	-1,974	-1,961	-1,960	-1,972	-116	-158
DSM	GWh	87	165	244	326	415	511	605	704	802	904	911	992	1,070	1,073	1,133	1,116	1,175	1,238	1,290	1,272
Total Generation	**GWh**	**9,260**	**9,793**	**10,285**	**10,704**	**10,673**	**10,906**	**11,504**	**12,166**	**12,774**	**13,524**	**14,294**	**15,486**	**16,286**	**17,055**	**17,479**	**18,108**	**18,954**	**20,898**	**21,610**	**22,067**
Net Purchases	GWh	1,074	860	1,018	1,103	1,292	1,509	1,636	1,693	1,748	1,685	1,476	947	821	677	871	811	613	-556	-587	-558
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,807**	**11,965**	**12,415**	**13,140**	**13,860**	**14,522**	**15,209**	**15,769**	**16,433**	**17,106**	**17,733**	**18,351**	**18,919**	**19,567**	**20,342**	**21,023**	**21,508**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	Tax credit 10-yr exp.
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	**$9,311 million**
20-Year NPV Carbon Emissions:	**15.45 million tons**
20-Year NPV Water Consumption:	**7.04 million gallons**

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	**0 MW**
20-Year NPV Rev Req:	**$0 million**

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,187	2,243	2,268	2,312	2,346	2,371	2,402	2,447	2,462	2,506	2,543	2,560	2,596	2,624	2,668	2,700	2,726	2,749
PRM	%	12%	11%	11%	23%	22%	16%	16%	16%	22%	16%	31%	30%	28%	22%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	228	129	31	4	9	10	12	11	5	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	288	448	480	480	480	512
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,380	2,453	3,373	3,364	3,356	3,347	3,296	3,288	3,280	3,270	3,269	3,229
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,086	1,086	1,148	1,181	1,200	1,269	1,403	1,656	1,656	1,656	1,656	1,656	1,691	2,013	2,437	2,682	2,699
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	260	264	269	287	281	286	281	295	312	324	324
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,163**	**5,173**	**5,095**	**5,137**	**5,167**	**6,001**	**6,029**	**7,607**	**8,003**	**7,910**	**7,895**	**7,882**	**8,064**	**8,424**	**8,355**	**8,610**	**8,314**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,156	1,241	1,231	1,179	1,163	1,188	575	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,726	974	1,161	811	712	710	705	711	882	916	163	28	45	71	66	78	43	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	491	493	493	496	494	497	496	495	494	497	8	20
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,286	2,348	2,414	2,300	2,015	2,125	2,199	2,261	2,472	2,472
Geothermal	GWh	66	54	51	51	49	51	50	46	52	53	32	28	31	30	32	32	34	32	38	9
Solar	GWh	1,671	3,189	3,481	3,990	3,966	3,905	3,878	3,815	5,555	6,070	6,867	6,657	6,695	6,757	6,724	6,744	7,031	7,148	5,942	6,096
Wind	GWh	2,205	2,061	1,966	1,949	1,977	1,928	1,955	1,931	1,952	2,019	3,027	4,471	4,414	4,446	4,459	4,457	4,477	4,857	4,347	4,213
4-hr Storage	GWh	-40	-113	-131	-243	-275	-298	-316	-329	-352	-398	-482	-490	-499	-515	-555	-562	-696	-888	-973	-979
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,948	-1,957	-1,958	-1,970	-1,962	-1,975	-1,970	-1,964	-1,960	-1,974	-32	-80
DSM	GWh	87	165	244	326	412	505	595	689	781	878	885	966	1,043	1,044	1,104	1,084	1,140	1,202	1,257	1,241
Total Generation	**GWh**	**9,260**	**9,793**	**10,285**	**10,489**	**10,362**	**10,347**	**10,398**	**10,348**	**10,348**	**10,447**	**11,314**	**12,533**	**12,676**	**12,655**	**12,370**	**12,490**	**12,762**	**13,135**	**13,059**	**12,992**
Net Purchases	GWh	1,074	860	1,018	1,048	1,238	1,372	1,396	1,528	1,615	1,624	752	-367	-413	-358	9	-104	-292	-578	-401	-344
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,601**	**11,719**	**11,795**	**11,876**	**11,964**	**12,072**	**12,066**	**12,166**	**12,262**	**12,297**	**12,379**	**12,386**	**12,470**	**12,557**	**12,658**	**12,648**

Peak load does not include impact of future EE programs, which are modeled as a resource
New “Hydrogen-Ready” resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
“DSM” includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
“Total Supply” matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Scenario Information

Scenario:	Base Technologies + Electrolysis
Future:	Current Trends & Policy
Sensitivity:	TOU
Phase:	Phase 3

Cost & Environmental Metrics

20-Year NPV Revenue Requirement:	$8,897 million
20-Year NPV Carbon Emissions:	15.65 million tons
20-Year NPV Water Consumption:	7.11 million gallons

Final Reliability Adjustments to Portfolio

2040 Storage (4hr) Capacity:	0 MW
20-Year NPV Rev Req:	$0 million

Final adjustments based on SERVM LOLP analysis

Key Annual Metrics

Metric	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Peak load	MW	2,065	2,107	2,186	2,242	2,267	2,312	2,345	2,336	2,360	2,397	2,411	2,454	2,490	2,506	2,541	2,568	2,611	2,642	2,672	2,697
PRM	%	12%	11%	11%	23%	22%	17%	17%	18%	23%	17%	19%	18%	17%	16%	16%	16%	16%	16%	16%	16%
Carbon Intensity	lbs/MWh	503	473	362	359	355	352	348	345	228	124	64	23	28	22	11	8	4	-	-	-

Installed Capacity by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	MW	200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
Contract	MW	508	105	172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	MW	1,002	1,002	1,002	1,002	1,002	846	846	846	700	700	700	700	700	700	700	700	700	-	-	-
Hydrogen	MW	-	-	-	-	-	-	-	-	256	256	256	256	256	256	256	384	416	416	416	416
Nuclear	MW	298	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288
Geothermal	MW	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Solar	MW	762	1,438	1,570	1,783	1,774	1,766	1,757	1,749	2,388	2,787	2,793	2,784	2,787	3,046	3,039	3,116	3,340	3,330	3,424	3,611
Wind	MW	658	658	658	658	658	658	658	658	658	658	1,058	1,458	1,356	1,356	1,356	1,356	1,356	1,556	1,556	1,250
4-hr Storage	MW	170	620	632	1,079	1,079	1,169	1,203	1,203	1,235	1,237	1,237	1,237	1,237	1,393	1,681	1,753	2,021	2,437	2,702	2,702
8-12hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	MW	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
DSM	MW	69	96	117	135	154	177	195	215	238	280	264	269	287	281	286	281	295	312	324	324
Total Capacity	**MW**	**3,678**	**4,418**	**4,650**	**5,156**	**5,166**	**5,116**	**5,159**	**5,171**	**5,975**	**6,218**	**6,607**	**7,004**	**6,923**	**7,331**	**7,618**	**7,890**	**8,428**	**8,350**	**8,721**	**8,603**

Annual Generation by Resource Type

Resource Type	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	GWh	1,103	1,165	1,156	1,241	1,232	1,177	1,162	1,187	575	-	-	-	-	-	-	-	-	-	-	-
Contract	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	GWh	1,724	974	1,161	816	717	699	689	692	879	878	385	140	187	150	66	60	29	-	-	-
Hydrogen	GWh	-	-	-	-	-	-	-	-	493	490	492	496	494	498	497	496	495	498	7	23
Nuclear	GWh	2,443	2,297	2,357	2,364	2,290	2,367	2,367	2,296	2,361	2,374	2,296	2,361	2,424	2,302	2,259	2,309	2,148	2,025	2,279	2,446
Geothermal	GWh	66	56	53	50	50	52	51	46	50	46	40	34	37	33	35	32	34	29	33	9
Solar	GWh	1,671	3,187	3,484	3,980	3,958	3,922	3,892	3,810	5,543	6,257	5,773	5,393	5,476	6,078	6,393	6,551	7,130	7,151	5,979	5,999
Wind	GWh	2,205	2,062	1,962	1,952	1,977	1,932	1,964	1,937	1,946	1,867	3,214	4,612	4,521	4,505	4,517	4,522	4,457	5,139	4,508	4,395
4-hr Storage	GWh	-40	-113	-131	-241	-274	-304	-322	-329	-342	-360	-367	-357	-362	-425	-547	-581	-703	-917	-1,007	-1,002
8-12hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24+hr Storage	GWh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrolysis	GWh	-	-	-	-	-	-	-	-	-1,956	-1,945	-1,953	-1,968	-1,962	-1,975	-1,973	-1,969	-1,965	-1,978	-28	-93
DSM	GWh	87	165	244	326	412	505	595	689	781	882	886	966	1,044	1,044	1,103	1,084	1,140	1,201	1,256	1,239
Total Generation	**GWh**	**9,258**	**9,793**	**10,284**	**10,487**	**10,362**	**10,350**	**10,400**	**10,329**	**10,328**	**10,490**	**10,766**	**11,677**	**11,858**	**12,209**	**12,348**	**12,503**	**12,764**	**13,149**	**13,026**	**13,017**
Net Purchases	GWh	1,075	860	1,019	1,049	1,238	1,369	1,395	1,525	1,613	1,560	1,277	466	380	63	7	-142	-319	-617	-430	-417
Total Supply	**GWh**	**10,333**	**10,653**	**11,303**	**11,536**	**11,600**	**11,719**	**11,794**	**11,854**	**11,941**	**12,049**	**12,043**	**12,143**	**12,239**	**12,273**	**12,355**	**12,361**	**12,445**	**12,531**	**12,596**	**12,600**

Peak load does not include impact of future EE programs, which are modeled as a resource
New "Hydrogen-Ready" resources operate using natural gas as a primary fuel through 2039, then convert to hydrogen-fueled operations in 2040
"DSM" includes demand response and energy efficiency
Negative generation for energy storage resources reflects roundtrip losses
Negative generation for electrolysis reflects energy required to produced hydrogen fuel with portfolio resources
"Total Supply" matches the annual energy from the corresponding load forecast
The impacts of final reliability adjustments on cost and portfolio metrics are reflected in results shown here

Appendix K. MCEP Loads and Resources Tables

This appendix presents loads and resources tables for the portfolio identified as MCEP in the IRP: the All Technologies scenario. For completeness, both the installed capacity and the accredited capacity of each resource in the portfolio are provided; the accredited capacity is used to show how each resource contributes to the planning reserve margin.

For completeness, this appendix also includes a version of the loads and resources table without any new resources beyond PNM's existing portfolio. The resource needs identified in this table align with those shown in Section 7.1 of the main report. Note that the accredited capacity for renewables and storage shown in the existing resource table will differ from that shown in the MCEP table because accredited capacity attributed to each resource is adjusted as new resources are added to the portfolio.

Public Service Company of New Mexico
2023 Integrated Resource Plan
Most Cost Effective Portfolio (All Technologies Scenario)
Loads & Resources Table - Nameplate Capacity

Line No.	Nameplate Capacity (MW) Description	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	SoN Classification
(1)	EUEA Energy Efficiency	(A)	37	63	85	85	85	85	82	82	82	82	45	42	42	19	19	-	-	-	-	-	CFR
(2)	Incremental Energy Efficiency	(A)	-	-	-	18	37	60	81	101	123	145	162	168	185	202	207	220	232	248	259	257	CFR
(3)	**Total Energy Efficiency (MW)**		**37**	**63**	**85**	**103**	**121**	**145**	**163**	**183**	**205**	**227**	**208**	**210**	**227**	**221**	**226**	**220**	**232**	**248**	**259**	**257**	
(4)	Peak Saver		11	11	11	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(Existing)
(5)	Power Saver		22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(Existing)
(6)	Peak Saver Extension		-	-	-	-	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	DBR
(7)	Power Saver Extension		-	-	-	-	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	DBR
(8)	DR Expansion		-	-	-	-	-	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	DBR
(9)	**Total Demand Response (MW)**		**33**	**33**	**33**	**33**	**33**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	
(10)	*Total Demand Response Additions (MW)*	*(B)*	-	-	-	-	*33*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	*53*	
(11)	Four Corners		200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-	(Existing)
(12)	**Total Coal Resources (MW)**		**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	-	-	-	-	-	-	-	-	-	-	-	
(13)	Palo Verde Unit 1	(C)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	(Existing)
(14)	Palo Verde Unit 2		134	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	(Existing)
(15)	Palo Verde Unit 3		134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	(Existing)
(16)	**Total Nuclear Resources (MW)**		**298**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	
(17)	Afton		235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	-	-	-	(Existing)
(18)	La Luz	(D)	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	(Existing)
(19)	Lordsburg	(D)	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	(Existing)
(20)	Luna		190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	-	-	-	(Existing)
(21)	Reeves		146	146	146	146	146	146	146	146	-	-	-	-	-	-	-	-	-	-	-	-	(Existing)
(22)	Rio Bravo		149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	-	-	-	(Existing)
(23)	Valencia PPA		155	155	155	155	155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(Existing)
(24)	Generic Hydrogen-Ready Thermal	(D)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	132	296	460	460	460	465	FGR
(25)	**Total Natural Gas/Hydrogen Resources (MW)**		**1,002**	**1,002**	**1,002**	**1,002**	**1,002**	**846**	**846**	**846**	**700**	**700**	**700**	**700**	**700**	**700**	**832**	**996**	**1,160**	**586**	**586**	**591**	
(26)	*Total Natural Gas/Hydrogen Additions (MW)*	*(B)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*132*	*296*	*460*	*460*	*460*	*465*	
(27)	Dale Burgett		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	(Existing)
(28)	**Total Geothermal Resources (MW)**		**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	
(29)	Casa Mesa Wind		50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	(Existing)
(30)	La Joya Wind 1		165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	-	(Existing)
(31)	La Joya Wind 2		141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	-	(Existing)
(32)	New Mexico Wind Energy Center		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	(Existing)
(33)	Red Mesa Wind Energy Center		102	102	102	102	102	102	102	102	102	102	102	102	-	-	-	-	-	-	-	-	(Existing)
(34)	Generic Wind		-	-	-	-	-	-	-	-	400	400	600	600	600	600	600	600	600	800	1,000	1,000	CFR
(35)	**Total Wind Resources (MW)**		**658**	**658**	**658**	**658**	**658**	**658**	**658**	**658**	**1,058**	**1,058**	**1,258**	**1,258**	**1,156**	**1,156**	**1,156**	**1,156**	**1,156**	**1,356**	**1,556**	**1,250**	
(36)	*Total Wind Additions (MW)*	*(2)*	-	-	-	-	-	-	-	-	*400*	*400*	*600*	*600*	*600*	*600*	*600*	*600*	*600*	*800*	*1,000*	*1,000*	
(37)	PNM Existing Utility-Owned Solar	(E)	151	150	149	148	147	146	145	144	143	142	141	140	140	139	138	137	136	135	134	114	(Existing)
(38)	Arroyo Solar	(E)	291	289	287	285	283	281	278	276	274	272	270	268	266	264	262	260	257	255	253	251	(Existing)
(39)	Britton Solar	(E)	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	42	42	42	41	(Existing)
(40)	Encino North Solar	(E)	50	50	49	48	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	(Existing)
(41)	Encino Solar	(E)	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	42	42	42	41	(Existing)
(42)	Jicarilla I Solar	(E)	50	49	48	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	42	(Existing)
(43)	NMRD Solar	(E)	28	28	28	28	28	27	27	27	27	27	26	26	26	26	26	25	25	25	25	1	(Existing)
(44)	Route 66 Solar	(E)	49	48	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	42	42	(Existing)
(45)	Solar Direct Solar I	(E)	48	47	47	46	46	46	45	45	45	44	44	44	43	43	-	-	-	-	-	-	(Existing)
(46)	Atrisco Solar	(E)	-	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	CFR
(47)	San Juan Solar	(E)	-	193	191	190	188	187	186	184	183	181	180	179	177	176	174	173	172	169	169	169	CFR
(48)	Sky Ranch I Solar	(E)	-	190	190	184	183	182	180	179	178	176	175	174	172	171	170	168	167	166	164	163	CFR
(49)	TAG I Solar	(E)	-	-	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	CFR
(50)	Community Solar	(E)	-	-	-	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	CFR
(51)	Quail Ranch Solar	(E)	-	-	-	100	100	99	99	98	98	97	97	96	96	95	95	94	94	93	93	92	CFR
(52)	Generic Solar	(E)	-	-	-	-	-	-	-	-	-	351	533	797	1,026	1,130	1,143	1,143	1,143	1,143	1,220	1,436	CFR
(53)	**Total Solar Resources (MW)**		**762**	**1,438**	**1,570**	**1,783**	**1,774**	**1,766**	**1,757**	**1,749**	**1,740**	**2,082**	**2,256**	**2,511**	**2,731**	**2,827**	**2,789**	**2,781**	**2,772**	**2,763**	**2,833**	**3,000**	
(54)	*Total Solar Additions (MW)*	*(B)*	-	*683*	*821*	*1,039*	*1,036*	*1,033*	*1,029*	*1,026*	*1,023*	*1,370*	*1,550*	*1,810*	*2,036*	*2,136*	*2,146*	*2,143*	*2,140*	*2,135*	*2,210*	*2,425*	

Public Service Company of New Mexico
2023 Integrated Resource Plan
Most Cost Effective Portfolio (All Technologies Scenario)
Loads & Resources Table - Nameplate Capacity

Line No.	Nameplate Capacity (MW) Description	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	SoN Classification
(55)	Arroyo BESS		150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	(Existing)
(56)	Jicarilla I BESS		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	(Existing)
(57)	Atrisco BESS		-	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	DBR
(58)	San Juan BESS		-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	DBR
(59)	Sky Ranch I BESS		-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	DBR
(60)	Distribution BESS		-	-	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	DBR
(61)	Quail Ranch BESS		-	-	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	DBR
(62)	Route 66 BESS		-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	DBR
(63)	Sandia BESS		-	-	-	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	DBR
(64)	Sky Ranch BESS		-	-	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	DBR
(65)	TAG I BESS		-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	DBR
(66)	Generic Battery (4hr)		-	-	-	118	118	283	327	352	411	452	452	452	469	668	722	722	722	968	1,018	1,020	DBR
(67)	Generic Long Duration Storage (24+hr)		-	-	-	-	-	-	-	-	200	200	200	200	200	200	200	200	200	200	200	200	FGR
(68)	**Total Storage Resources (MW)**		**170**	**620**	**632**	**1,110**	**1,110**	**1,275**	**1,319**	**1,344**	**1,603**	**1,644**	**1,644**	**1,644**	**1,661**	**1,860**	**1,914**	**1,914**	**1,914**	**2,160**	**2,210**	**2,212**	
(69)	*Total Storage Additions (MW)*	*(B)*	*-*	*450*	*462*	*940*	*940*	*1,105*	*1,149*	*1,174*	*1,433*	*1,474*	*1,474*	*1,474*	*1,491*	*1,690*	*1,744*	*1,744*	*1,744*	*1,990*	*2,040*	*2,042*	
(70)	**Generic Capacity Resources (MW)**		**508**	**105**	**172**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
(71)	**Total Installed Capacty**		**3,678**	**4,418**	**4,650**	**5,187**	**5,197**	**5,242**	**5,295**	**5,331**	**5,858**	**6,063**	**6,418**	**6,675**	**6,827**	**7,116**	**7,269**	**7,418**	**7,586**	**7,465**	**7,797**	**7,662**	
							SoN Yr 1					**SoN Yr 2**										**SoN Yr 3**	
(72)	Low-Cost Carbon Free Additions	(F)	-	709	869	1,105	1,121	1,141	1,156	1,172	1,591	1,961	2,321	2,583	2,826	2,938	2,953	2,963	2,972	3,183	3,469	3,683	CFR
(73)	Balancing Resource Additions	(G)	-	450	462	940	973	1,157	1,201	1,226	1,285	1,327	1,327	1,327	1,343	1,542	1,596	1,596	1,596	1,843	1,893	1,895	DBR
(74)	Firm Resource Additions	(G)	-	-	-	-	-	-	-	-	200	200	200	200	200	200	332	496	660	660	660	665	FGR
(75)	**Cumulative New Installed Capacity**		**-**	**1,159**	**1,331**	**2,046**	**2,093**	**2,298**	**2,357**	**2,399**	**3,076**	**3,488**	**3,848**	**4,110**	**4,370**	**4,680**	**4,882**	**5,055**	**5,228**	**5,686**	**6,022**	**6,242**	

Notes
A. "Installed capacity" of energy efficiency reflects peak load reductions
B. "Total Additions" are shown relative to 2023 capacity, do not account for retirements
C. Palo Verde Unit 1 capacity reflects ownership share only; leased capacity expired January 15, 2023
D. All natural gas capacity remaining in 2040 is converted to operate using carbon-free hydrogen fuel
E. Reported capacity for solar PV includes impacts of degradation
F. Listed totals differ slightly from values reported in the Statement of Need for 2027, 2032, and 2042 due to gradual degradation of solar PV capacity
G. Listed totals are fully aligned with values reported in Statement of Need

Public Service Company of New Mexico
2023 Integrated Resource Plan
Most Cost Effective Portfolio (All Technologies Scenario)
Loads & Resources Table - Accredited Capacity

Line No.	Loads and Accredited Capacity (MW) Description	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
(1)	**Forecasted System Peak Demand (MW)**	**(A)**	**2,066**	**2,110**	**2,191**	**2,249**	**2,276**	**2,323**	**2,359**	**2,387**	**2,424**	**2,472**	**2,488**	**2,535**	**2,575**	**2,592**	**2,630**	**2,658**	**2,704**	**2,737**	**2,765**	**2,791**
(2)	EUEA Energy Efficiency		-28	-49	-65	-68	-68	-68	-66	-66	-66	-66	-36	-34	-34	-15	-15	-	-	-	-	-
(3)	Incremental Energy Efficiency		-	-	-	-14	-29	-48	-65	-81	-99	-116	-130	-134	-148	-162	-166	-176	-186	-199	-207	-206
(4)	**Net System Peak Demand (MW)**	**(B)**	**2,038**	**2,061**	**2,125**	**2,167**	**2,179**	**2,207**	**2,229**	**2,240**	**2,259**	**2,290**	**2,322**	**2,367**	**2,393**	**2,415**	**2,448**	**2,482**	**2,518**	**2,538**	**2,557**	**2,584**
(5)	Peak Saver	(C)	8	8	8	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(6)	Power Saver	(C)	15	15	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(7)	Peak Saver Extension	(C)	-	-	-	-	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
(8)	Power Saver Extension	(C)	-	-	-	-	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
(9)	DR Expansion	(C)	-	-	-	-	-	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
(10)	**Total Demand Response (MW)**		**23**	**23**	**23**	**23**	**23**	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**
(11)	Four Corners	(D)	160	160	160	160	160	160	160	160	160	-	-	-	-	-	-	-	-	-	-	-
(12)	**Total Coal Resources (MW)**		**160**	**160**	**160**	**160**	**160**	**160**	**160**	**160**	**160**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
(13)	Palo Verde Unit 1	(D)	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
(14)	Palo Verde Unit 2	(D)	131	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122
(15)	Palo Verde Unit 3	(D)	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131
(16)	**Total Nuclear Resources (MW)**		**292**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**
(17)	Afton	(D) (E)	230	230	230	230	230	230	230	230	230	230	230	230	230	184	138	92	46	-	-	-
(18)	La Luz	(D) (F)	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
(19)	Lordsburg	(D) (F)	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
(20)	Luna	(D) (E)	184	184	184	184	184	184	184	184	184	184	184	184	184	147	111	74	37	-	-	-
(21)	Reeves	(D)	141	141	141	141	141	141	141	141	-	-	-	-	-	-	-	-	-	-	-	-
(22)	Rio Bravo	(D) (E)	141	141	141	141	141	141	141	141	141	141	141	141	141	113	85	56	28	-	-	-
(23)	Valencia PPA	(D)	150	150	150	150	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(24)	Generic Hydrogen-Ready Thermal	(D) (E)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	128	287	445	445	445	450
(25)	**Total Natural Gas/Hydrogen Resources (MW)**		**968**	**968**	**968**	**968**	**968**	**818**	**818**	**818**	**677**	**677**	**677**	**677**	**677**	**565**	**583**	**630**	**678**	**566**	**566**	**571**
(26)	Dale Burgett	(D)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	-
(27)	**Total Geothermal Resources (MW)**		**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**-**
(28)	Casa Mesa Wind	(C)	10	10	10	10	10	10	10	10	10	10	9	9	9	9	9	9	9	9	9	9
(29)	La Joya Wind 1	(C)	33	33	33	33	33	33	33	33	32	32	30	30	31	31	31	31	31	28	-	-
(30)	La Joya Wind 2	(C)	28	28	28	28	28	28	28	28	27	27	25	25	27	27	27	27	27	24	-	-
(31)	New Mexico Wind Energy Center	(C)	40	40	40	40	40	40	40	40	39	39	36	36	38	38	38	38	38	34	36	36
(32)	Red Mesa Wind Energy Center	(C)	21	21	21	21	21	21	21	21	20	20	18	18	-	-	-	-	-	-	-	-
(33)	Generic Wind	(C)	-	-	-	-	-	-	-	-	78	78	108	108	113	113	113	113	113	138	181	181
(34)	**Total Wind Resources (MW)**		**132**	**132**	**132**	**132**	**132**	**132**	**132**	**132**	**206**	**206**	**227**	**227**	**218**	**218**	**218**	**218**	**218**	**234**	**227**	**227**
(35)	PNM Existing Utility-Owned Solar	(C)	9	9	9	9	9	9	9	9	9	26	26	25	24	24	24	24	24	31	26	26
(36)	Arroyo Solar	(C)	17	17	17	17	17	17	17	17	16	50	49	48	46	46	45	45	45	59	58	56
(37)	Britton Solar	(C)	3	3	3	3	3	3	3	3	3	8	8	8	8	8	7	7	7	10	10	9
(38)	Encino North Solar	(C)	3	3	3	3	3	3	3	3	3	8	8	8	8	8	8	8	8	10	10	10
(39)	Encino Solar	(C)	3	3	3	3	3	3	3	3	3	8	8	8	8	8	7	7	7	10	10	9
(40)	Jicarilla I Solar	(C)	3	3	3	3	3	3	3	3	3	8	8	8	8	8	8	8	8	10	10	9
(41)	NMRD Solar	(C)	2	2	2	2	2	2	2	2	2	5	5	5	4	4	4	4	4	6	0	0
(42)	Route 66 Solar	(C)	3	3	3	3	3	3	3	3	3	8	8	8	8	8	8	8	7	10	10	9
(43)	Solar Direct Solar I	(C)	3	3	3	3	3	3	3	3	3	8	8	8	8	7	-	-	-	-	-	-
(44)	Atrisco Solar	(C)	-	18	18	18	18	18	18	18	18	55	54	53	52	52	52	52	52	69	69	67
(45)	San Juan Solar	(C)	-	11	11	11	11	11	11	11	11	33	32	31	31	30	30	30	30	39	39	38
(46)	Sky Ranch I Solar	(C)	-	11	11	11	11	11	11	11	11	32	32	31	30	30	30	29	29	38	38	37
(47)	TAG I Solar	(C)	-	-	-	8	8	8	8	8	8	26	25	25	24	24	24	24	24	32	32	31
(48)	Community Solar	(C)	-	-	-	7	7	7	7	7	7	23	23	22	22	22	22	22	22	29	29	28
(49)	Quail Ranch Solar	(C)	-	-	-	6	6	6	6	6	6	18	17	17	17	16	16	16	16	22	21	21
(50)	Generic Solar	(C)	-	-	-	-	-	-	-	-	-	64	97	141	179	196	199	199	199	264	281	323
(51)	**Total Solar Resources (MW)**		**46**	**86**	**85**	**107**	**106**	**105**	**105**	**104**	**104**	**382**	**408**	**446**	**477**	**490**	**485**	**484**	**482**	**639**	**643**	**674**

Public Service Company of New Mexico
2023 Integrated Resource Plan
Most Cost Effective Portfolio (All Technologies Scenario)
Loads & Resources Table - Accredited Capacity

Line No.	Loads and Accredited Capacity (MW) Description	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
(52)	Arroyo BESS	(C)	127	127	127	126	126	124	123	122	121	96	96	96	96	95	95	95	95	79	79	79
(53)	Jicarilla I BESS	(C)	17	17	17	17	17	17	16	16	16	13	13	13	13	13	13	13	13	11	11	11
(54)	Atrisco BESS	(C)	-	254	254	251	251	248	246	245	243	191	191	191	191	190	189	189	189	158	158	158
(55)	San Juan BESS	(C)	-	85	85	84	84	83	82	82	81	64	64	64	64	63	63	63	63	53	53	53
(56)	Sky Ranch I BESS	(C)	-	42	42	42	42	41	41	41	40	32	32	32	32	32	32	32	32	26	26	26
(57)	Distribution BESS	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(58)	Quail Ranch BESS	(C)	-	-	-	84	84	83	82	82	81	64	64	64	64	63	63	63	63	53	53	53
(59)	Route 66 BESS	(C)	-	-	-	42	42	41	41	41	40	32	32	32	32	32	32	32	32	26	26	26
(60)	Sandia BESS	(C)	-	-	-	50	50	50	49	49	49	38	38	38	38	38	38	38	38	32	32	32
(61)	Sky Ranch BESS	(C)	-	-	-	84	84	83	82	82	81	64	64	64	64	63	63	63	63	53	53	53
(62)	TAG I BESS	(C)	-	-	-	42	42	41	41	41	40	32	32	32	32	32	32	32	32	26	26	26
(63)	Generic Battery (4hr)	(C)	-	-	-	99	99	233	268	287	332	288	288	288	299	424	455	455	455	510	536	537
(64)	Generic Long Duration Storage (24+hr)	(D)	-	-	-	-	-	-	-	-	190	190	190	190	190	190	190	190	190	190	190	190
(65)	**Total Energy Storage Resources (MW)**		**144**	**526**	**526**	**919**	**919**	**1,042**	**1,071**	**1,087**	**1,315**	**1,103**	**1,103**	**1,103**	**1,113**	**1,236**	**1,263**	**1,263**	**1,263**	**1,216**	**1,243**	**1,243**
(66)	**Generic Capacity Resources (MW)**		**508**	**105**	**172**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
(67)	**Total Accredited Capacity (MW)**		**2,278**	**2,287**	**2,354**	**2,596**	**2,595**	**2,579**	**2,607**	**2,622**	**2,783**	**2,688**	**2,735**	**2,773**	**2,805**	**2,830**	**2,869**	**2,916**	**2,962**	**2,976**	**2,999**	**3,031**
(68)	**Reserve Margin (MW)**		240	226	228	429	416	372	378	382	524	398	413	406	412	415	421	433	444	438	442	447
(69)	**Reserve Margin (%)**		12%	11%	11%	20%	19%	17%	17%	17%	23%	17%	18%	17%	17%	17%	17%	17%	18%	17%	17%	17%

Notes
A. "Forecasted System Peak Demand" does not include impacts of energy efficiency, which is shown below as a load adjustment
B. "Net System Peak Demand" includes impacts of all load modifying reosurces, including energy efficiency
C. Accredited capacity for non-firm resources (renewables, storage, demand response) reported using "Effective Load Carrying Capability" (ELCC) convention
D. Accredited capacity for firm resources (nuclear, coal, and natural gas) reported using "Unforced Capacity" (UCAP) convention
E. Firm capacity from natural gas units retiring by at end of 2039 assumed to decline over four years to allow gradual transition to carbon-free portfolio
F. All natural gas capacity remaining in 2040 is converted to operate using carbon-free hydrogen fuel

Public Service Company of New Mexico
2023 Integrated Resource Plan
Existing Resources Only
Loads & Resources Table - Nameplate Capacity

Line No.	Nameplate Capacity (MW) Description	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
(1)	EUEA Energy Efficiency	(A)	37	63	85	85	85	85	82	82	82	82	45	42	42	19	19	-	-	-	-	-
(2)	Incremental Energy Efficiency	(A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3)	**Total Energy Efficiency (MW)**		**37**	**63**	**85**	**85**	**85**	**85**	**82**	**82**	**82**	**82**	**45**	**42**	**42**	**19**	**19**	**-**	**-**	**-**	**-**	**-**
(4)	Peak Saver		11	11	11	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(5)	Power Saver		22	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(6)	Peak Saver Extension		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(7)	Power Saver Extension		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(8)	DR Expansion		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(9)	**Total Demand Response (MW)**		**33**	**33**	**33**	**33**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
(10)	*Total Demand Response Additions (MW)*	*(B)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(11)	Four Corners		200	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-	-	-	-	-
(12)	**Total Coal Resources (MW)**		**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
(13)	Palo Verde Unit 1	(C)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
(14)	Palo Verde Unit 2		134	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124
(15)	Palo Verde Unit 3		134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134
(16)	**Total Nuclear Resources (MW)**		**298**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**	**288**
(17)	Afton		235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	-	-	-
(18)	La Luz	(D)	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
(19)	Lordsburg	(D)	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
(20)	Luna		190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	-	-	-
(21)	Reeves		146	146	146	146	146	146	146	146	-	-	-	-	-	-	-	-	-	-	-	-
(22)	Rio Bravo		149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	-	-	-
(23)	Valencia PPA		155	155	155	155	155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(24)	Generic Hydrogen-Ready Thermal	(D)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(25)	**Total Natural Gas Resources (MW)**		**1,002**	**1,002**	**1,002**	**1,002**	**1,002**	**846**	**846**	**846**	**700**	**700**	**700**	**700**	**700**	**700**	**700**	**700**	**700**	**126**	**126**	**126**
(26)	*Total Natural Gas Additions (MW)*	*(B)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(27)	Dale Burgett		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
(28)	**Total Geothermal Resources (MW)**		**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
(29)	Casa Mesa Wind		50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
(30)	La Joya Wind 1		165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	-
(31)	La Joya Wind 2		141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	-
(32)	New Mexico Wind Energy Center		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
(33)	Red Mesa Wind Energy Center		102	102	102	102	102	102	102	102	102	102	102	102	-	-	-	-	-	-	-	-
(34)	Generic Wind		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(35)	**Total Wind Resources (MW)**		**658**	**658**	**658**	**658**	**658**	**658**	**658**	**658**	**658**	**658**	**658**	**658**	**556**	**556**	**556**	**556**	**556**	**556**	**556**	**250**
(36)	*Total Wind Additions (MW)*	*(B)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(37)	PNM Existing Utility-Owned Solar	(E)	151	150	149	148	147	146	145	144	143	142	141	140	140	139	138	137	136	135	134	114
(38)	Arroyo Solar	(E)	291	289	287	285	283	281	278	276	274	272	270	268	266	264	262	260	257	255	253	251
(39)	Britton Solar	(E)	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	42	42	42	41
(40)	Encino North Solar	(E)	50	50	49	48	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43
(41)	Encino Solar	(E)	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	42	42	42	41
(42)	Jicarilla I Solar	(E)	50	49	48	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	42
(43)	NMRD Solar	(E)	28	28	28	28	28	27	27	27	27	27	26	26	26	26	26	25	25	25	25	1
(44)	Route 66 Solar	(E)	49	48	48	47	47	47	46	46	46	45	45	45	44	44	44	43	43	43	42	42
(45)	Solar Direct Solar I	(E)	48	47	47	46	46	46	45	45	45	44	44	44	43	43	-	-	-	-	-	-
(46)	Atrisco Solar	(E)	-	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
(47)	San Juan Solar	(E)	-	193	191	190	188	187	186	184	183	181	180	179	177	176	174	173	172	169	169	169
(48)	Sky Ranch I Solar	(E)	-	190	190	184	183	182	180	179	178	176	175	174	172	171	170	168	167	166	164	163
(49)	TAG I Solar	(E)	-	-	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
(50)	Community Solar	(E)	-	-	-	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125
(51)	Quail Ranch Solar	(E)	-	-	-	100	100	99	99	98	98	97	97	96	96	95	95	94	94	93	93	92
(52)	Generic Solar	(E)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(53)	**Total Solar Resources (MW)**		**762**	**1,438**	**1,570**	**1,783**	**1,774**	**1,766**	**1,757**	**1,749**	**1,740**	**1,731**	**1,723**	**1,714**	**1,706**	**1,697**	**1,646**	**1,638**	**1,630**	**1,620**	**1,614**	**1,564**
(54)	*Total Solar Additions (MW)*	*(B)*	-	*683*	*821*	*1,039*	*1,036*	*1,033*	*1,029*	*1,026*	*1,023*	*1,020*	*1,017*	*1,013*	*1,010*	*1,007*	*1,004*	*1,001*	*997*	*993*	*991*	*989*

Public Service Company of New Mexico
2023 Integrated Resource Plan
Existing Resources Only
Loads & Resources Table - Nameplate Capacity

Line No.	Nameplate Capacity (MW) Description	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
(55)	Arroyo BESS		150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
(56)	Jicarilla I BESS		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
(57)	Atrisco BESS		-	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
(58)	San Juan BESS		-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
(59)	Sky Ranch I BESS		-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
(60)	Distribution BESS		-	-	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
(61)	Quail Ranch BESS		-	-	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
(62)	Route 66 BESS		-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
(63)	Sandia BESS		-	-	-	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
(64)	Sky Ranch BESS		-	-	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
(65)	TAG I BESS		-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
(66)	Generic Battery (4hr)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(67)	Generic Long Duration Storage (24+hr)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(68)	**Total Storage Resources (MW)**		**170**	**620**	**632**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**	**992**
(69)	*Total Storage Additions (MW)*	*(B)*	-	*450*	*462*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*	*822*
(70)	**Generic Capacity Resources (MW)**		**508**	**105**	**172**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
(71)	**Total Installed Capacty (MW)**		**3,678**	**4,418**	**4,650**	**5,051**	**5,010**	**4,846**	**4,835**	**4,826**	**4,672**	**4,463**	**4,418**	**4,406**	**4,295**	**4,264**	**4,213**	**4,186**	**4,178**	**3,594**	**3,587**	**3,231**

Notes
A. "Installed capacity" of energy efficiency reflects peak load reductions
B. "Total Additions" are shown relative to 2023 capacity, do not account for retirements
C. Palo Verde Unit 1 capacity reflects ownership share only; leased capacity expired January 15, 2023
D. All natural gas capacity remaining in 2040 is converted to operate using carbon-free hydrogen fuel
E. Reported capacity for solar PV includes impacts of degradation

Public Service Company of New Mexico
2023 Integrated Resource Plan
Existing Resources Only
Loads & Resources Table - Accredited Capacity

Line No.	Loads and Accredited Capacity (MW) Description	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
(1)	**Forecasted System Peak Demand (MW)**	**(A)**	**2,066**	**2,110**	**2,191**	**2,249**	**2,276**	**2,323**	**2,359**	**2,387**	**2,424**	**2,472**	**2,488**	**2,535**	**2,575**	**2,592**	**2,630**	**2,658**	**2,704**	**2,737**	**2,765**	**2,791**
(2)	EUEA Energy Efficiency		-28	-49	-65	-68	-68	-68	-66	-66	-66	-66	-36	-34	-34	-15	-15	-	-	-	-	-
(3)	Incremental Energy Efficiency		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(4)	**Net System Peak Demand (MW)**	**(B)**	**2,038**	**2,061**	**2,125**	**2,181**	**2,208**	**2,255**	**2,294**	**2,321**	**2,358**	**2,407**	**2,452**	**2,501**	**2,541**	**2,577**	**2,614**	**2,658**	**2,704**	**2,737**	**2,765**	**2,791**
(5)	Peak Saver	(C)	8	8	8	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(6)	Power Saver	(C)	15	15	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(7)	Peak Saver Extension	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(8)	Power Saver Extension	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(9)	DR Expansion	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(10)	**Total Demand Response (MW)**		**23**	**23**	**23**	**23**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
(11)	Four Corners	(D)	160	160	160	160	160	160	160	160	160	-	-	-	-	-	-	-	-	-	-	-
(12)	**Total Coal Resources (MW)**		**160**	**160**	**160**	**160**	**160**	**160**	**160**	**160**	**160**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
(13)	Palo Verde Unit 1	(D)	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
(14)	Palo Verde Unit 2	(D)	131	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122
(15)	Palo Verde Unit 3	(D)	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131
(16)	**Total Nuclear Resources (MW)**		**292**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**
(17)	Afton	(D) (E)	230	230	230	230	230	230	230	230	230	230	230	230	230	184	138	92	46	-	-	-
(18)	La Luz	(D) (F)	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
(19)	Lordsburg	(D) (F)	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
(20)	Luna	(D) (E)	184	184	184	184	184	184	184	184	184	184	184	184	184	147	111	74	37	-	-	-
(21)	Reeves	(D)	141	141	141	141	141	141	141	141	-	-	-	-	-	-	-	-	-	-	-	-
(22)	Rio Bravo	(D) (E)	141	141	141	141	141	141	141	141	141	141	141	141	141	113	85	56	28	-	-	-
(23)	Valencia PPA	(D)	150	150	150	150	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(24)	Generic Hydrogen-Ready Thermal	(D) (E)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(25)	**Total Natural Gas/Hydrogen Resources (MW)**		**968**	**968**	**968**	**968**	**968**	**818**	**818**	**818**	**677**	**677**	**677**	**677**	**677**	**565**	**454**	**343**	**232**	**121**	**121**	**121**
(0)																						
(26)	Dale Burgett	(D)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	-
(27)	**Total Geothermal Resources (MW)**		**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**-**
(28)	Casa Mesa Wind	(C)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
(29)	La Joya Wind 1	(C)	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	-
(30)	La Joya Wind 2	(C)	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	-
(31)	New Mexico Wind Energy Center	(C)	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
(32)	Red Mesa Wind Energy Center	(C)	21	21	21	21	21	21	21	21	21	21	21	21	-	-	-	-	-	-	-	-
(33)	Generic Wind	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(34)	**Total Wind Resources (MW)**		**132**	**132**	**132**	**132**	**132**	**132**	**132**	**132**	**132**	**132**	**132**	**132**	**112**	**112**	**112**	**112**	**112**	**112**	**112**	**50**
(35)	PNM Existing Utility-Owned Solar	(C)	9	9	8	9	9	9	9	9	9	8	8	8	8	8	8	8	8	8	8	7
(36)	Arroyo Solar	(C)	17	17	16	17	17	17	17	17	16	16	16	16	16	16	16	16	15	15	15	15
(37)	Britton Solar	(C)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2
(38)	Encino North Solar	(C)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
(39)	Encino Solar	(C)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2
(40)	Jicarilla I Solar	(C)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
(41)	NMRD Solar	(C)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	0
(42)	Route 66 Solar	(C)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
(43)	Solar Direct Solar I	(C)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-	-	-	-
(44)	Atrisco Solar	(C)	-	18	16	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
(45)	San Juan Solar	(C)	-	12	10	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	10	10
(46)	Sky Ranch I Solar	(C)	-	11	10	11	11	11	11	11	11	11	10	10	10	10	10	10	10	10	10	10
(47)	TAG I Solar	(C)	-	-	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
(48)	Community Solar	(C)	-	-	-	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
(49)	Quail Ranch Solar	(C)	-	-	-	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
(50)	Generic Solar	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(51)	**Total Solar Resources (MW)**		**46**	**86**	**85**	**107**	**106**	**105**	**105**	**104**	**104**	**103**	**103**	**102**	**102**	**101**	**98**	**98**	**97**	**97**	**96**	**93**

Public Service Company of New Mexico
2023 Integrated Resource Plan
Existing Resources Only
Loads & Resources Table - Accredited Capacity

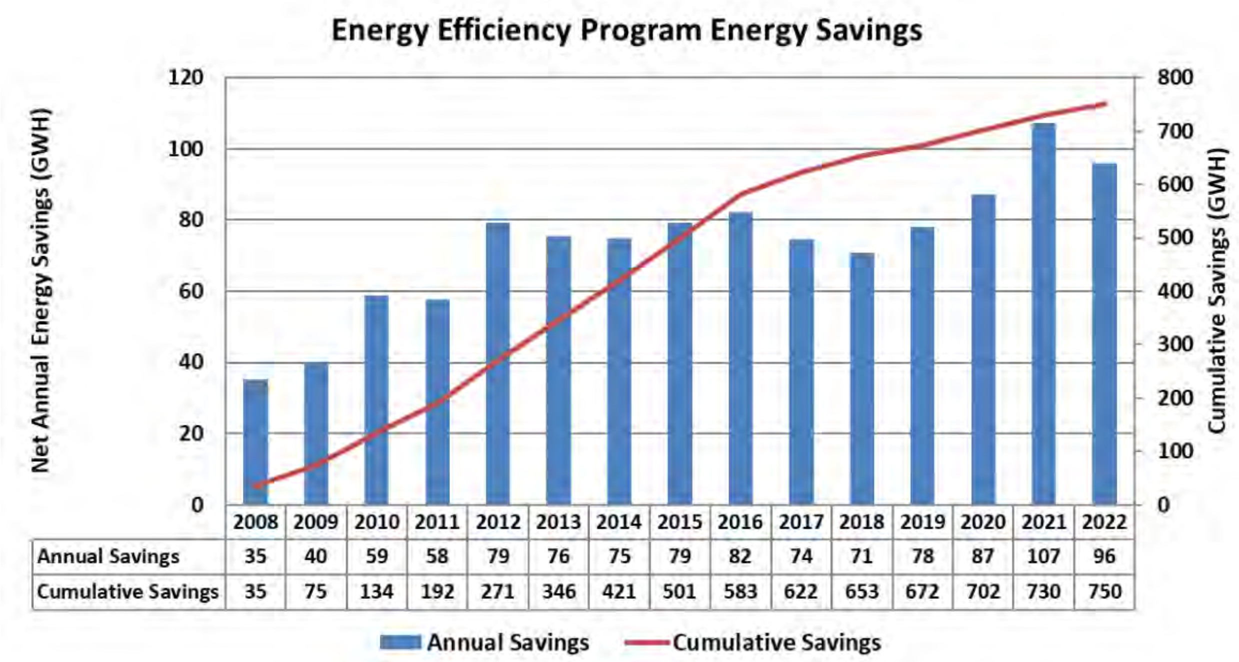
Line No.	Loads and Accredited Capacity (MW) Description	Notes	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
(52)	Arroyo BESS	(C)	127	127	125	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124
(53)	Jicarilla I BESS	(C)	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
(54)	Atrisco BESS	(C)	-	254	250	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
(55)	San Juan BESS	(C)	-	85	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
(56)	Sky Ranch I BESS	(C)	-	42	42	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
(57)	Distribution BESS	(C)	-	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
(58)	Quail Ranch BESS	(C)	-	-	-	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
(59)	Route 66 BESS	(C)	-	-	-	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
(60)	Sandia BESS	(C)	-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
(61)	Sky Ranch BESS	(C)	-	-	-	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
(62)	TAG I BESS	(C)	-	-	-	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
(63)	Generic Battery (4hr)	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(64)	Generic Long Duration Storage (24+hr)	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(65)	**Total Energy Storage Resources (MW)**		**144**	**526**	**526**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**	**820**
(66)	**Generic Capacity Resources (MW)**		**508**	**105**	**172**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
(67)	**Total Accredited Capacity (MW)**		**2,278**	**2,287**	**2,354**	**2,497**	**2,474**	**2,323**	**2,323**	**2,322**	**2,180**	**2,020**	**2,019**	**2,019**	**1,998**	**1,886**	**1,772**	**1,660**	**1,549**	**1,437**	**1,437**	**1,367**
(68)	**Reserve Margin (MW)**		240	226	228	316	265	68	29	1	-177	-387	-433	-482	-543	-691	-842	-998	-1,155	-1,300	-1,328	-1,424
(69)	**Reserve Margin (%)**		12%	11%	11%	14%	12%	3%	1%	0%	-8%	-16%	-18%	-19%	-21%	-27%	-32%	-38%	-43%	-48%	-48%	-51%

Notes
A. "Forecasted System Peak Demand" does not include impacts of energy efficiency, which is shown below as a load adjustment
B. "Net System Peak Demand" includes impacts of all load modifying reosources, including energy efficiency
C. Accredited capacity for non-firm resources (renewables, storage, demand response) reported using "Effective Load Carrying Capability" (ELCC) convention
D. Accredited capacity for firm resources (nuclear, coal, and natural gas) reported using "Unforced Capacity" (UCAP) convention
E. Firm capacity from natural gas units retiring by at end of 2039 assumed to decline over four years to allow gradual transition to carbon-free portfolio
F. All natural gas capacity remaining in 2040 is converted to operate using carbon-free hydrogen fuel

Description of Existing Demand-Side Management Programs

PNM's demand-side management programs include both energy efficiency and demand response. These programs provide savings for our customers by reducing our loads and needs for new capacity resources. Historical savings provided by PNM's current demand-side programs is shown in Figure below.

Figure L-1: PNM's historical DSM programs



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Annual Savings	35	40	59	58	79	76	75	79	82	74	71	78	87	107	96
Cumulative Savings	35	75	134	192	271	346	421	501	583	622	653	672	702	730	750

A brief description of each of PNM's current DSM programs follows.

Commercial Comprehensive Program

The Commercial Comprehensive program is PNM's flagship program for non-residential customers. PNM contracted with DNV, Inc. to implement the Commercial Comprehensive energy efficiency program which is comprised of seven sub-programs. New Construction, Retrofit Rebates, Building Tune-Up, Quick Saver small business, Distributor Discount programs and the Multifamily sub-programs in 2022.

New Construction and Retrofit Rebates offer pre-set and custom incentives for installing qualifying equipment in new and existing buildings, and for implementing efficient designs in new buildings. Eligible equipment includes energy efficient lighting, HVAC, refrigeration, food service equipment, motors and variable speed drives, window film and plug load controls.

Building Tune-Up offers incentives for building owners and operators to improve whole-system building efficiency through retro-commissioning, performing advanced tune-ups of air conditioning systems, and to support building operator certification training.

PNM Quick Saver is a direct-install program for small business customers who have an annual peak electric demand of 200 kW or less. It offers business customers pre-set incentives for installing qualifying lighting products and refrigeration in existing buildings. An important aspect of the program is ongoing training of participating contractors for continued and successful program implementation. For 2022, the Quick Saver program processed over $1.3 million in incentives on 198 customer projects which will save approximately 7.5 million kWh per year across the PNM service area.

In the PNM **Distributor Discount program,** a participating distributor sells high-efficiency equipment from an approved product list to an eligible PNM customer; the customer receives an instant discount at the point of purchase, and PNM pays the rebate directly to the distributor.

The **Multifamily** component targets a unique and hard-to-reach customer segment. The target audience consists of owners of multifamily (apartment) dwellings, who are eligible to receive rebates and direct-install measures for energy efficiency upgrades in common areas and residential housing units in properties that include five or more residential housing units. The goal is to offer a program that is streamlined and offers a simple approach to better engage property owners to participate which in turn, will make their buildings more energy efficient and enable tenants to save money on their utility bills.

Residential Comprehensive

Refrigerator Recycling

Through a third-party contractor, ARCA Inc., PNM operates a center in Albuquerque that disassembles and recycles all refrigerators and freezers collected through the program. The program recycled 6,880 units in 2022. The Retailer Recycling component was added in 2021 to the Refrigerator Recycling program. Through this offering, customers who purchase new refrigerators at participating appliance retailers can easily schedule a pickup of their old appliance at their home while visiting the retailer's location. This convenient one-stop-shop feature allows customers to also arrange for the removal of outdated, inefficient units at the point of sale of their new unit which offsets overall program costs by allowing the program implementer to collect multiple units at a single central location versus traveling across the PNM service area.

In addition, retailers also qualify for incentive payments for their partnership, thereby encouraging other local businesses to participate in the program. Although this retailer component has experienced difficulty gaining traction, PNM plans to continue recruitment efforts into 2023. The Refrigerator Recycling program as a whole achieved approximately 4 million kWh savings in 2022.

Home Energy Checkup, Low-Income

In the Home Energy Checkup program, a Home Energy Specialist visits a customer’s home and completes a walk-through energy assessment and provides a comprehensive report which includes personalized recommendations based on the conducted assessment. The Energy Specialist installs a selection of direct installation (“DI”) measures, including LEDs, weather stripping, door sweeps, outlet gaskets, big gap filler, and advanced power strips. Wi-Fi smart thermostats are installed at the time of the energy assessment for a nominal co-pay in homes with refrigerated air conditioning. The Energy Specialist also visually inspects and makes recommendations regarding existing windows and level of insulation in the home as well as the age and condition of the existing appliances and provides information about available rebates for early appliance replacement with new ENERGY STAR® qualified appliances. Rebates for installing high efficiency cooling equipment are also available for eligible participants with old inefficient cooling equipment.

All in-home Energy Specialists are bilingual and bilingual call center Customer Representatives or virtual Energy Specialists are available upon request to ensure that customers are easily able to make appointments and have their energy efficiency questions and concerns answered. Customers have the flexibility to self-schedule appointments via the internet as well

In 2022 PNM continued to offer customers a way to participate in this program virtually. The virtual offering includes rebate applications for appliances and/or cooling equipment, and customized DI measures mailed. Following the initial interaction, the customers receive a follow-up video phone call to review energy savings tips, address customer questions, and to verify that DI measures were installed. A total of 1,333 customers throughout PNM's service area received a Home Energy Checkup achieving over 1.7 million kWh savings.

Residential Midstream Cooling

In 2021, the Residential Cooling program was modified from a downstream mail-in rebate program to a midstream program offering discounted HVAC systems, heat pumps, heat pump water heaters, and smart thermostats at the distributor level. The program works with distributors across the PNM service area to offer discounts to contractors on high efficiency cooling equipment when the unit is purchased and installed in an active residential PNM customer's home. With the discount being offered by distributors, customers are no longer required to submit paperwork to receive the benefit. Rebates for evaporative cooling equipment are still available, however, they are offered through the Residential Retail Products Program. A/C tune-ups were added to the cooling program in 2021 as well.

The newly modified midstream program did not perform as well as expected in 2021 due to a number of factors exacerbated by the ongoing effects of the COVID-19 pandemic including: minimal response to training and recruitment efforts due to time and resource constraints within the HVAC contractor and wholesaler community, equipment cost increases, and low inventory of eligible equipment components due to ongoing supply chain issues. However, while some COVID-19 related issues such as supply chain and resource constraints continued into 2022, the program is seeing continued improvement in recruiting additional wholesale partners to participate in the program. The program achieved savings of approximately 369,000 kWh in 2022. There are 13 wholesale distributors currently participating in the program

Residential Products

In 2021, the Residential Lighting program was expanded to become the Residential Products program to continue incentivizing LED bulbs, in addition to, in-store discounts on additional non-lighting measures such as advanced power strips, ceiling fans, and air purifiers to name a few. In addition to these newly added discounted items, the program also offers mail-in, online, and instant rebates on high efficiency home appliances and evaporative cooling equipment. A total of 250 retailers including large home improvement stores, warehouse clubs, discount retailers, drug stores, independent hardware, charity retailers, and dollar stores participated in the program throughout the PNM service area achieving a total of approximately 39 million kWh savings and providing approximately $4 million in total incentives.

Each participating retailer displayed point-of-purchase (“POP”) materials describing the benefits of LEDs, in addition to the newly expanded non-lighting product list and implemented other mass marketing strategies to engage customers. Retailer training was completed in person by field representatives in 2022. Field representatives visited participating retailers on either a bi-weekly or monthly basis depending on the retailer’s sales volume. Field representatives visited stores 2,849 times in 2022.

Home Works

The PNM Home Works program provides energy efficiency education and energy saving kits to fifth graders and to high school students through the Energy Innovation program. Due to the continued COVID-19 pandemic restrictions in spring of 2021, the Home Works and Energy Innovation programs were delivered through an Energy Champion elearning course, 100% virtual presentations, and a Kahoot game with a primary focus on energy efficiency, renewable and nonrenewable natural resources, and how electricity is created and delivered into homes and businesses with a special emphasis on sustainability and the unique energy usage footprint of a high school-aged student in the home. Virtual presentations are still offered if requested, however most participating schools have returned to requesting in-person presentations.

Once presentations are completed, each fifth grade and high school student receives a sealed customized PNM kit of energy efficiency devices to install at home, which includes easyto-install lighting And weatherization measures including outlet gaskets, weather stripping, and door sweeps and a written guide to assist students and parents with installation of the efficient technologies while also learning about additional ways to reduce energy waste in the home. The high school kit also contains a tier-two advanced power strip. Participating teachers have the opportunity to receive a mini grant to use in their classrooms to help maximize the number of surveys returned from students and to confirm students installed the kits at home. The value of the mini grant is based on student participation levels.

The program provided just under 14,000 kits to 153 schools throughout the PNM service area during the 2022 spring and fall semesters. The program achieved approximately 3.8 million kWh savings in 2022.

New Home Construction

This program incentivizes home builders to exceed the level of energy efficiency required by the applicable building code. The program offers participants incentives for building new, highly efficient, single-family residential homes through either a prescriptive or a performance path. Under the prescriptive path, home builders receive rebates for specific energy efficient technologies, whereas under the performance path home builders can choose to receive rebates for overall home performance upon verification by credentialed home energy raters. The program provided incentives for 1,402 homes in 2022, 528 ofwhich were prescriptive homes, and 874 of which were performance homes. A total of 52 builders participated in the program in 2022; 32 in the central region, 15 in the northern region, and 5 in the southern region of our service area. Supply chain delays, as well as increased building costs and delayed home completion time continued to impact this program in 2022.

Low-Income Focused Programs

In 2022, the portfolio as a whole expended approximately 9% of the budget in low-income focused program offerings throughout our service area.

Easy Savings Kit

In 2022, a custom pick-a-kit portal offered low-income PNM customers the choice to customize an energy kit from a list of pre-selected DI measures that include various specialty LEDs, advanced power strip and other energy saving items. If the customer does not want to customize their own energy saving kit offerings, they may choose the option of a traditional pre-made energy kit that has a standardized mix of DI measures from those listed above. The primary channels for recruiting customers are direct mail or email campaigns. In 2022, the measure mix was enhanced to include outlet gaskets, weather stripping as well as a door sweep. As the market changes, the measure mix will continue to be evaluated for cost effectiveness.

PNM continues to work with agencies to retain continued awareness of the PNM Easy Savings Kit program and to encourage agencies to provide information and links on their websites as applicable. In 2022, over 4,600 kits were mailed to customers generating approximately 2.6 million kWh energy savings.

EnergySmart

PNM is contracted with the New Mexico Mortgage Finance Authority ("MFA") to install LEDs and replace inefficient refrigerators. Additional weatherization efficiency measures such as attic insulation, air and duct sealing, window and door replacement, and programmable thermostats are also offered through the program to help income-qualified single family and multifamily customers save money and energy in their homes. In 2022, MFA and its subcontractors leveraged PNM and federal funding, and provided services to 300 income-qualified homes including 75 multifamily and achieved 1.2 million kWh energy savings.

Behavioral Comprehensive

Commercial Strategic Energy Management (SEM) Program

This program targets commercial and industrial customer classes by focusing on business practice change from senior management through employee staff to positively affect organizational culture in reducing energy waste and improving energy intensity. The SEM approach emphasizes the importance of equipping and enabling plant management and staff to impact energy consumption through behavioral and operational change and structured planning of facility upgrades and process improvements.

Beginning in 2021, the SEM program implementer, Strategic Energy Group (SEG), began working in conjunction with the PNM Strategic Account Management team to contact a list of customers whose annual electric usage exceeds 4 GWh as the minimum threshold to participate. In addition to working with the Account Management team, other recruitment strategies were put into place including multiple SEM overview webinars both real-time and recorded, email campaigns, and virtual lunch and learn meetings. In total, there are currently five participants in the SEM program from the healthcare, education, and governmental customer segments with other prospective pending participants being engaged.

While only a small number of customers were able to participate in 2022, other customers could not participate due to issues stemming from COVID-19, lack of available resources, and prior recent participation in similar energy management programs. By nature, a behavioral-based program sees customers realizing savings slowly over the course of a multi-year implementation process. The program achieved 1.3 million kWh energy savings in the 2022 program year.

Residential Home Energy Report Program

This behavior-based program offering utilizes more digital versus the historical paper only delivery method which reduces paper waste and offers a broader sample of participants personalized tips and efficiency rebate recommendations through a phone app, website and/or emailed report. Participants have the capability to fill in any gaps about their homes on a pre-populated online survey, view energy efficiency tips and other program offerings and discover which high level end-use categories specific to their homes, such as cooling, heating and "always on" equipment are consuming the most energy.

This program made its debut in summer 2021 to over 200,000 residential customers within PNM's service area. However, lower residential annual consumption averages and higher than expected attrition rates due to customer move in/move outs contributed to a decrease in energy savings achieved. A digital expansion wave was launched to over 21,312 customers to counteract the rising attrition rates. Over 3.8 million e-mails were sent in 2022 with a high delivery rate of 97%, and healthy open and click rates of 45% and 4% respectively. Almost 217,000 paper reports were sent to selected customers who did not have e-mail addresses on record.

This program has been very well received by participants with an average e-mail like rate of 80% and is in the top three of the most preferred means to learn about customer specific energy consumption. This program achieved over 2.9 million kWh energy savings for the 2022 program year with new engagement strategies in place to encourage even more behavior-based energy savings in 2023.

Market Transformation

The goal of the Market Transformation ("MT") strategy increases awareness of energy efficiency to induce behavioral changes that result in the adoption of energy efficient measures. In 2022, MT strategy continued to focus on outreach across the PNM service area to help customers better understand how they use energy and how to make better-informed decisions on ways they can use energy more efficiently. This outreach took a variety of forms, including social media outreach and promotional campaigns highlighting the benefits of energy efficiency.

Power Saver and Peak Saver Load Management

Peak Saver and Power Saver are the PNM load management programs. PNM customers with annual peak demand of 50 kW or greater can participate in Peak Saver and customers with annual peak demand of less than 50 kW, including residential customers, can participate in Power Saver. These load management programs were successfully utilized to offset the need for peaking resources during the summer of 2022. PNM dispatched the load management resource three times for a total of about 10 hours. The peak 15-minute load curtailment amount was 76.3 MW.

Table L-1: Times and Durations of Curtailment Events in 2022

Date	Start Time (MDT)	End Time (MDT)	Duration (Hr)
6/10/2022	3:00 PM	7:00 PM	4
7/11/2022	3:00 PM	7:00 PM	4
9/2/2022	5:00 PM	7:00 PM	2

On October 28, 2020, the NMPRC issued a final order in Case No. 20-00087-UT, PNM's energy efficiency program application for 2021, 2022 and 2023, which directed Evergreen Economics, as independent program evaluator for PNM's energy efficiency and load management ("EE/LM") programs, to do the following:

- In PNM's future M&V reports, the independent evaluator shall verify that load reductions from deployment of PNM's LM Programs avoided or offset the need for or use of additional peaking units or power purchases or shifted demand from peak to off peak period.

Evergreen addressed these points in the Load Management as a Resource section of the M&V Report. Evergreen made the statement below. Note that the Figures referenced are figures in the M&V report which will be posted to PNM.com/regulatory.

- The evaluation team concludes that PNM's demand response (DR) programs, Power Saver and Peak Saver, were highly effective reducing peak demand during the summer of 2022 when PNM faced tight supply conditions.
- The LM programs achieved their intended objective of helping to fulfill PNM's reserve margin and responding quickly to operational needs. Both functions offset the need for construction or purchase of traditional peak capacity resources. The LM programs made a significant contribution during on-peak hours, as demonstrated by Figure 43. This figure shows the actual system load with DR in place and the counterfactual load without DR on June 10th. Both Peak Saver and Power Saver were activated on this day due to a resource constraint brought on by the unexpected loss of a generation resource. During the four-hour event, which was dispatched between 3:00 PM and 7:00 PM, an average of 45.2 MW of load was reduced on PNM's system. Figure 45 shows that PNM system load would have peaked at the hour ending 7:00 PM at approximately

1842 MW absent dispatch of the LM programs. Dispatching DR lowered the net peak for the day by almost 2.5 percent.

Appendix M. Resource Adequacy Study

This IRP uses loss-of-load-probability modeling to develop a planning reserve margin requirement, to calculate ELCCs for renewables and storage, and to evaluate the reliability of select portfolios. This analysis, completed by Astrape Consulting using the SERVM model, is summarized in the attached report.

2023 PNM Planning Reserve Margin (PRM) and Effective Load Carrying Capability (ELCC) Analysis

12/15/2023

PREPARED FOR

PNM Resources

PREPARED BY

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Nick Simmons
Astrapé Consulting

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

EXECUTIVE SUMMARY

Astrapé conducted a Planning Reserve Margin (PRM) and Effective Load Carrying Capability (ELCC) analysis supporting the PNM 2023 IRP. This analysis was done utilizing the Strategic Energy Risk Valuation Model (SERVM). Conducting these studies in parallel ensures that the calculation of planning reserve margin and resource accreditation are synchronized. SERVM was also used to verify that the future portfolios provided by PNM reached reliability targets. Additionally, resiliency analysis and a variety of sensitivities were conducted at the request of PNM and its stakeholders using SERVM.

The results of the existing ELCC and PRM analyses for the expected 2025 PNM portfolio are found in Figure ES.1 and Figure ES.2 below. The studied resource mix using the existing ELCC values was found to need a 16% UCAP PRM for 0.1 LOLE.

Figure ES.1: 2025 Existing ELCC Results

Resource Type	Average ELCC (%)
Wind	20%
Solar	6%
Solar Battery	85%
DR	70%

Figure ES.2: 2025 PNM UCAP PRM Results

Resource Type	Installed Capacity	Multiplier (ELCC/UCAP)	UCAP Accreditation	ICAP Accreditation
Nuclear	288	98%	282	288
ST Coal	200	80%	160	200
CC	425	96%	408	425
CT	416	97%	404	416
Geothermal	11	77%	8	11
ST Gas	146	97%	142	146
Wind	607	20%	122	122
Solar	1,531	6%	92	92
Solar Battery	650	85%	551	551
DR	49	70%	34	34
0.2 LOLE		Perfect Capacity MW	220	220
		Total Accreditation MW	2,423	2,505
		Load MW	2,158	2,158
		PRM %	12%	16%
0.1 LOLE		Perfect Capacity MW	295	295

	Total Accreditation MW	2,498	2,581
	Load MW	2,158	2,158
	PRM %	16%	20%

ELCC analysis for incremental penetrations of solar, wind, and storage were conducted to provide PNM with ELCC values to be used in the expansion planning process. The output of this analysis is five surface tables containing portfolio ELCC values for differing combinations of solar, wind, and storage resources. These surfaces can be used in combination with the Delta Method[1] to calculate technology specific ELCC values for values of solar between 1,500MW and 3,500MW, values of wind between 600MW[2] and 1,100MW, and values of 4-HR storage between 650MW and 2,450MW. The ELCC surface provides sufficient characterization of the resource contributions so that average or incremental ELCCs of each technology for a desired portfolio within the range described above can be calculated. The methodology behind this ELCC study is detailed further in the body of this document.

Utilizing the incremental ELCC values resulting from the ELCC analysis, PNM created expansion planning portfolios assuming different technology types. Current technologies ("S1"), long-duration storage technologies ("S1+S2"), combustion turbines and similar technologies ("S3"), and all technologies available ("Kitchen Sink") portfolios were provided.

Astrapé analyzed these portfolios to verify that they were reliable using SERVM. Two futures were analyzed, (1) Current Trends and Policy (CTP) and (2) High Economic Growth (HEG). The CTP future was analyzed for both the 2032 and 2040 study years, while the HEG future was only analyzed for the 2040 study year. All the 2032 CTP portfolios had LOLE less than the target of 0.1, indicating they were reliable. The 2040 CTP and 2040 HEG portfolios were either near 0.1 LOLE or additional analysis was done by Astrapé to see how much 4-HR storage would need to be added or subtracted to reach target reliability. Generally, portfolios that contained 4-HR storage penetrations that were beyond the surface ELCCs developed needed corrections but portfolios that finished within the ELCC surface performed reasonably well. The results of the CTP analysis can be found in Table 1 and Table 2 below.

Table 1: IRP Portfolio LOLE Results

Scenario	**LOLE**			
	S1	S1+S2	S3	Kitchen Sink
2032 CTP	0.04	0.08	0.05	0.06

[1] Described in detail in the Study Methodology section of this document.

[2] 50MW Casa Mesa wind is modeled within the NWWEC wind unit in SERVM due to real world transmission constraints, so the actual capacity of the system is 657MW, but it is modeled at 607MW.

2040 CTP	0.02	0.27	0.12	0.09

Table 2: 4-HR Storage Adjustments

Scenario	4-Hr Storage Needed for 0.1 LOLE (MW)			
	S1’	S1+S2’	S3’	Kitchen Sink’
2040 CTP	(2,997)	379	[redacted]	[redacted]
	[redacted]			

To understand how the different portfolios perform in extreme weather conditions, a resiliency analysis was conducted. This analysis was only done for the CTP future in the 2040 study year. Each of the portfolios, with 4-HR storage adjustments from Table 2 included, were simulated to ensure all portfolios began at a 0.1 LOLE. To isolate the impact of extreme weather conditions on the portfolios, specific weather years were simulated instead of 43 years used in the base case. The 2020 weather year was selected for summer analysis, while the 2011 weather year was chosen for winter. Each of the four portfolios were simulated with and without market assistance[3], for a total of 8 scenarios simulated for the summer weather year and the winter weather year. Week 34 (hours 5545-5712) of the 2020 summer and week 5 (hours 673-840) of the 2011 winter were analyzed in depth as representatives for summer and winter extreme weather. The reliability results, measured by EUE (Expected Unserved Energy in MWh) of these studies are shown in Table 3 and Table 4 below.

Table 3: 2040 CTP Summer Resiliency EUE

2020 Weather Year	Weekly EUE	
	Market	Island
S1	454	274
S1+S2	1,732	2,156
S3	74	19
Kitchen Sink	103	17

Table 4: 2040 CTP Winter Resiliency EUE

2011 Weather Year	Weekly EUE	
	Market	Island
S1	2,717	13,070
S1+S2	1,380	18,542
S3	980	5,390

[3] The Palo Verde resource was turned off in the market-included summer resiliency simulations to create a severe scenario that would be compatible across all portfolios.

Kitchen Sink	610	4,862

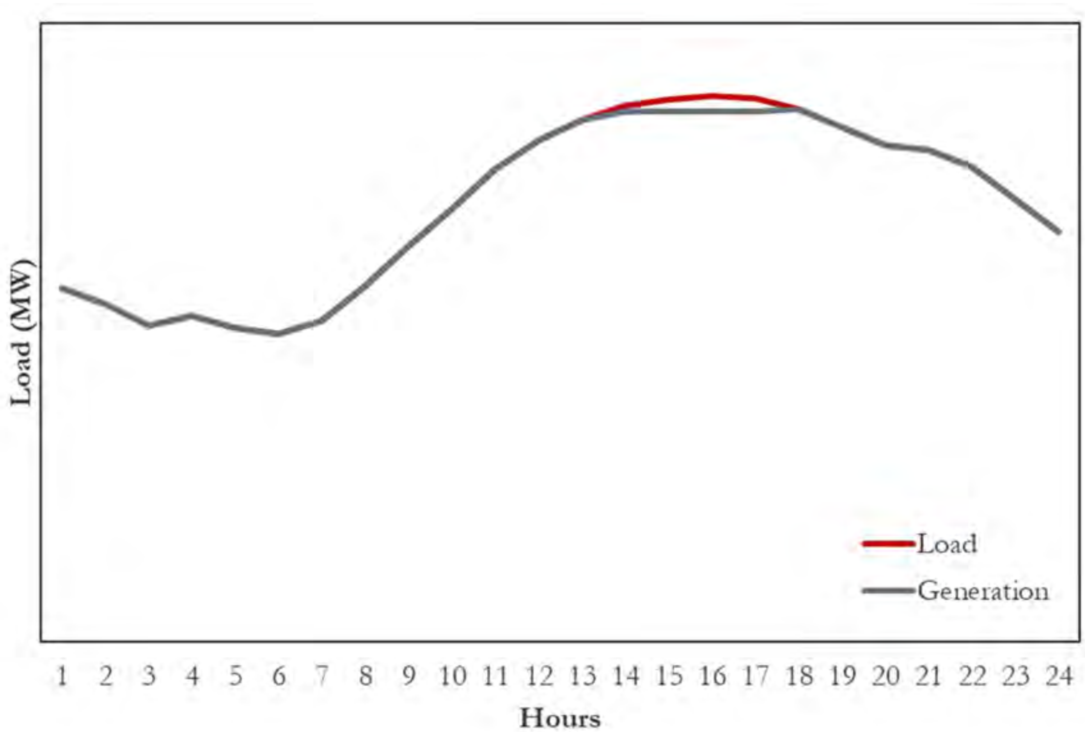
Study Methodology

LOSS OF LOAD EXPECTATION (LOLE)

SERVM optimizes the commitment and dispatch of resources such that reliability events driven by a lack of capacity achieve specific targets at minimum cost. The reliability target used for this analysis was Loss of Load Expectation (LOLE) and is defined below:

- **LOLE**: number of days of loss of load events due to capacity shortages, calculated in events per year. Figure 1 shows an example of a capacity shortfall which typically occurs across the peak of a day.

Figure 1: LOLE Example (Illustrative)



Consistent with the objective to calculate resource ELCC and a PRM, the primary focus of this study is the LOLE metric. Though LOLE is a measure of days of load shed, SERVM was simulated in intra-hour mode, and as such models the inherent uncertainty within the system and forces the production cost model to make decisions without perfect knowledge of the load, wind, solar, or conventional generator availability.

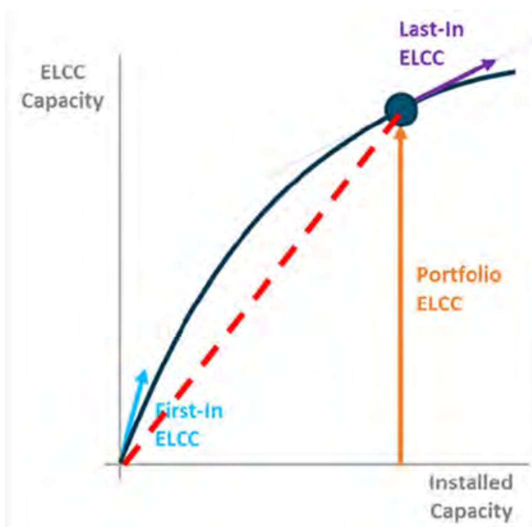
Reliability targets for capacity shortfalls (i.e., Figure 1) have been defined by the industry for decades and are most often measured using the metric of LOLE. LOLE is reported in terms of expected events per year. For this study, the reliability target of 0.1 LOLE (or 1 day every 10 years) was selected as the reliability standard for this IRP. This is more stringent than the 0.2 LOLE used in previous studies. To meet this standard, plans must be in place to have adequate capacity such that firm load is expected to be shed twice or fewer times in a 10-year period.

To measure the PRM (Planning Reserve Margin), the expected resource mix is simulated for the target year. Then, load or perfect capacity is added until the system returns to 0.1 LOLE. The sum of installed capacity for conventional resources multiplied by (1 – EFOR) and ELCC for energy limited / non-dispatchable resources divided by the expected peak determines the UCAP PRM.

THE DELTA METHOD

To calculate the ELCC of existing 2025 resources, the delta method was used. The delta method by E3 is a generally accepted mechanism to allocate portfolio ELCC to individual class resources.[4] As shown in Figure 2, the delta method relies on three measured ELCC values:

Figure 2: Delta Method



- **<u>Portfolio ELCC</u>**: total ELCC for a combination of intermittent and energy-limited resources
- **<u>First-In ELCC</u>**: represents the marginal ELCC of each individual resource in a portfolio with no other intermittent or energy limited resources.

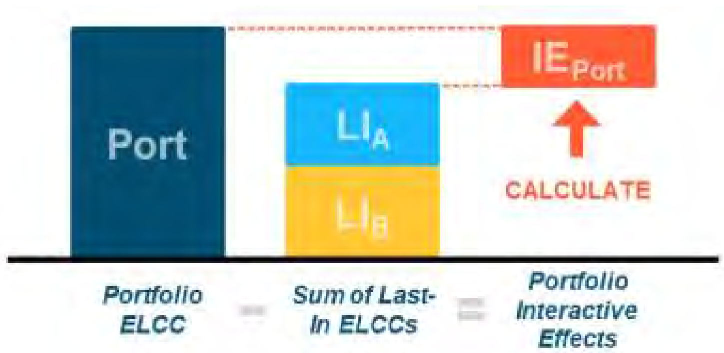
[4] https://www.ethree.com/wp-content/uploads/2020/08/E3-Practical-Application-of-ELCC.pdf

- **Last-In ELCC**: the marginal ELCC value of each individual resource when taken in the context of the full portfolio.

The steps of the delta method are as follows:

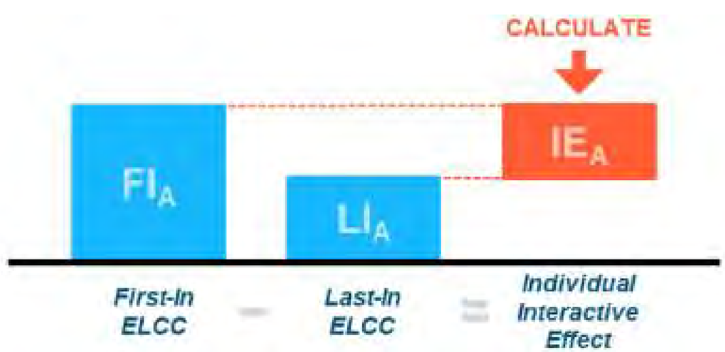
1. **Calculate Portfolio Interactive Effects**: Calculated as the difference between the portfolio ELCC and the sum of the Last-In ELCCs for all individual resources as shown in Figure 3.

Figure 3: Portfolio Interactive Effects



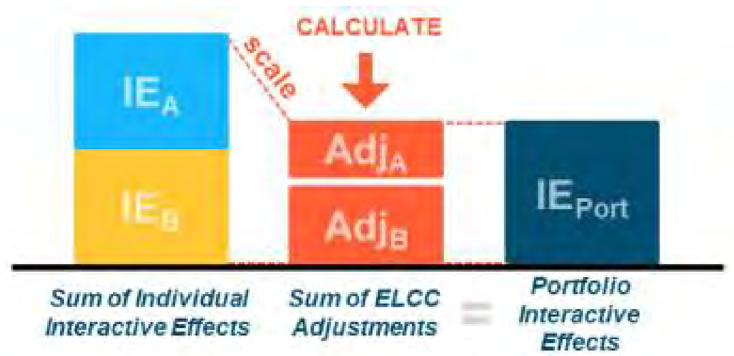
2. **Calculate Individual Interactive Effects**: Calculated as the difference between the First-In ELCC and the Last-In ELCC for each individual resource as shown in Figure 4.

Figure 4. Individual Interactive Effects



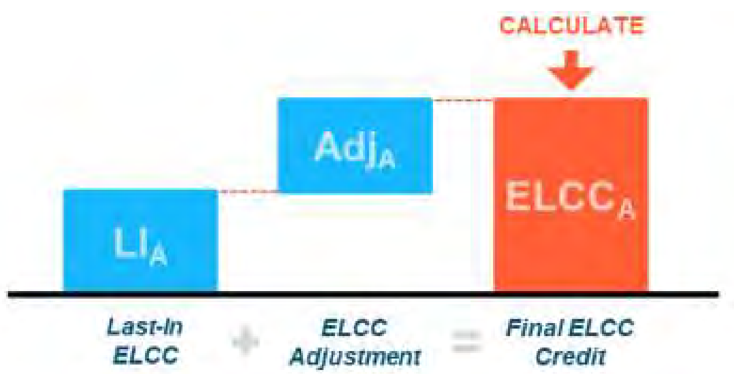
3. **Calculate Individual ELCC Adjustments**: Calculated by scaling all individual interactive effects to match the portfolio interactive effects as shown in Figure 5.

Figure 5. Individual ELCC Adjustments



4. **Calculate ELCC Accreditation:** Add individual resource ELCC adjustments to Last-In ELCC for each individual resource to get final ELCC credit as seen in Figure 6.

Figure 6. Final ELCC Accreditation



FUTURE RESOURCE ELCC METHODOLOGY

To determine the ELCC of resource additions beyond the existing fleet in 2025, the desired resources were added to the PNM system set at base case LOLE, which caused LOLE to decrease. Load was added until the system returned to base case LOLE. The ratio between load added and marginal resource being studied determined the ELCC. The process was repeated for varying technologies and increasing penetrations to calculate over 108 portfolio ELCC values and develop an ELCC surface. From this surface, average and marginal ELCCs for each technology under a wide range of portfolios can be calculated.

MODEL INPUTS

The following sections discuss the major modeling inputs associated with the study performed.

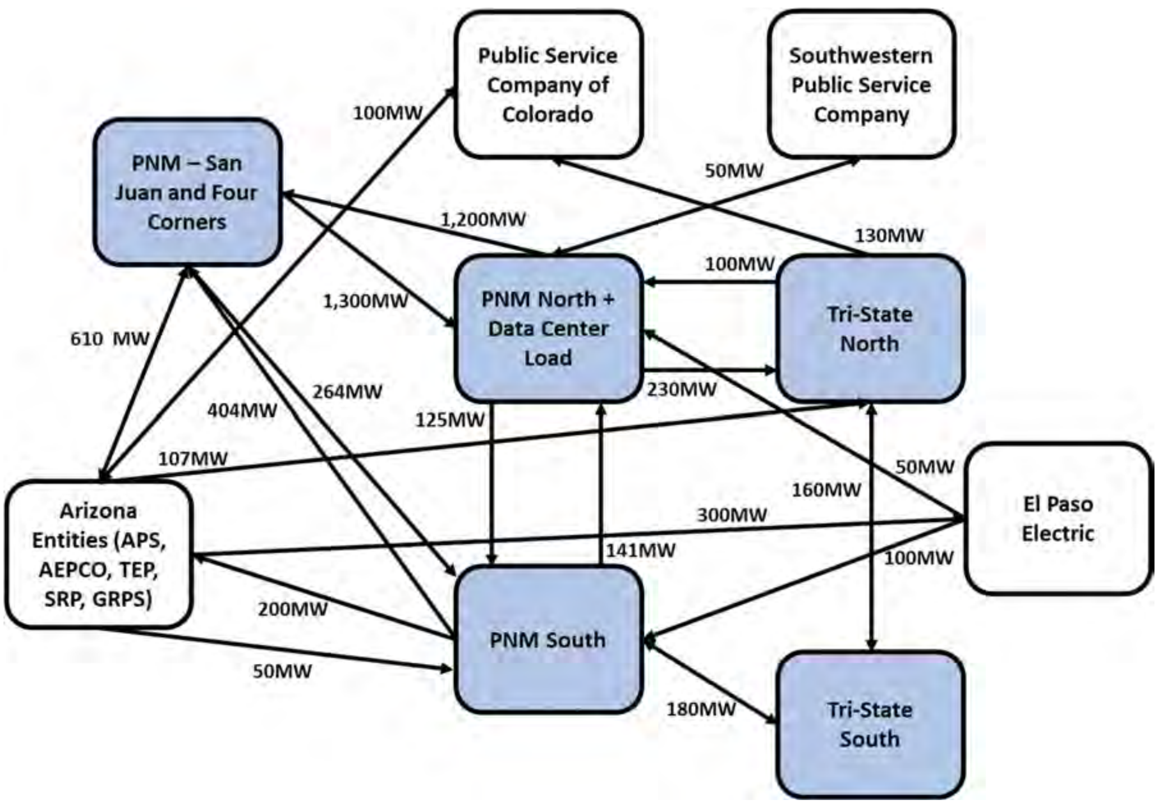
SERVM FRAMEWORK

Since reliability events are high impact and low probability, many scenarios must be considered to accurately assess the reliability of the PNM system. For this study, SERVM utilized 42 years of historical weather and load shapes, 5 points of economic load growth forecast error, and 10 iterations of Monte Carlo unit outage draws for each scenario to represent the full distribution of realistic scenarios. The number of yearly simulation cases for each scenario is 42 weather years * 5 load forecast errors * 10 unit outage iterations = 2,100 total iterations for each scenario studied[5]. Weather years and solar profiles were each given equal probability while the load forecast error multipliers were given their associated probabilities as reported in the input section of the report.

STUDY TOPOLOGY

The PNM Balancing Area (BA) and tier one neighbors were modeled with transfer limits as indicated in Figure 7. The PNM BA was committed and dispatched as a single region along with Tri-State North and Tri-State South, highlighted in blue in Figure 7.

Figure 7: Study Topology and Market Assistance



[5] For some ELCC studies, additional iterations were needed to reach convergence.

For the base case set of results, aggregate import capability from all neighbors was limited to 200MW-300MW for all hours in which hourly gross load was greater than or equal to 85% of the annual gross peak load. In June, July, and August, two additional aggregate market assistance constraints were applied to the PNM BA. The first additional aggregated constraint limited market assistance to 100MW-150MW for hours 16-18 in which hourly gross load was greater than or equal to 85% of the annual gross peak load. Additionally, a 50MW restriction was applied to hours 19-22 when hourly gross load was greater than or equal to 80% of the annual gross peak load. In SERVM, the percentage of annual peak load is provided for each constrained period modeled. To ensure the constraint was applied on peak load days, the percentage of annual peak load had to be decreased from 85% to 80% for hours 19-22 because these hours have a gross load much less than peak daily load. These market assistance updates were made to address some concerns recent events such as August 2020 when imports from neighbors were scarce and is consistent with recent RFP work conducted by PNM such as the replacement resources for Palo Verde and the 2026 RFP filing. Updates to tier 1 neighbors (EPE, PSCO, Arizona, SPS) were made based on recent southwest E3 study data[6] along with public ERP and IRP data for PSCO and SPS. These updates were made for study years up to 2033 and then held constant.

LOAD FORECASTS AND LOAD SHAPES

There are three loads being served by the PNM BA in SERVM: PNM North, PNM South, and Data Center. PNM North and South have seasonal load forecasts while Data Center load is forecasted monthly. Table 34 in the Appendix shows how seasons are defined in SERVM for this study. SERVM scales load shapes such that the average peak load for all weather years matches the values given as inputs for their respective time periods. The forecasted loads used for the PRM and ELCC analysis are shown in Table 5, and Table 6 below, and Table 7. Because the PRM and ELCC analysis is done early in the IRP process, the loads used for the portfolio verification step were based on the most recent load forecast modeled in Encompass by PNM in the IRP.

Table 5: 2025 PNM North Seasonal Load Forecast

Season	Peak Load (MW)	Energy (GWh)
Spring	1,116	1,777
Summer	1,826	3,665
Winter	1,314	1,372
Autumn	1,216	1,224

[6] https://www.ethree.com/wp-content/uploads/2022/02/E3_SW_Resource_Adequacy_Final_Report_FINAL.pdf

Table 6: 2025 PNM South Seasonal Load Forecast

Season	Peak Load (MW)	Energy (GWh)
Spring	82	134
Summer	135	276
Winter	96	103
Autumn	89	92

Table 7: 2025 Data Center Monthly Load Forecast

Month	Peak Load (MW)	Energy (GWh)
1	224	152
2	227	140
3	224	152
4	225	149
5	228	155
6	237	156
7	236	158
8	236	159
9	238	155
10	242	163
11	240	158
12	241	163

To model the effects of weather uncertainty, 42 historical weather years (1980-2021) were developed to reflect the impact of weather on retail load. Based on historical weather and load, a neural network program was used to develop relationships between weather observations and load. Equal probabilities were given to each of the 42 load shapes in the simulation. The load shapes were scaled to align the normal summer peaks with the Company's projected load forecast for 2025. Thus the "normal" summer peak reflects an average of the summer peak demands from the 42 load shapes. This data was validated against actual data and showed a consistent relationship between load and temperature between the simulated and historical data.

Figure 8, Figure 9, Figure 10, and Figure 11 below show the results of the weather load modeling by displaying the peak load variance for the summer and winter seasons for both the PNM North and PNM South regions. The y-axis represents the percentage deviation from the 50/50 load forecast. Thus, the bars represent the variance in projected peak loads for 2025 based on weather experienced during the historic weather years.

Figure 8: PNM North Winter Peak Weather Variability

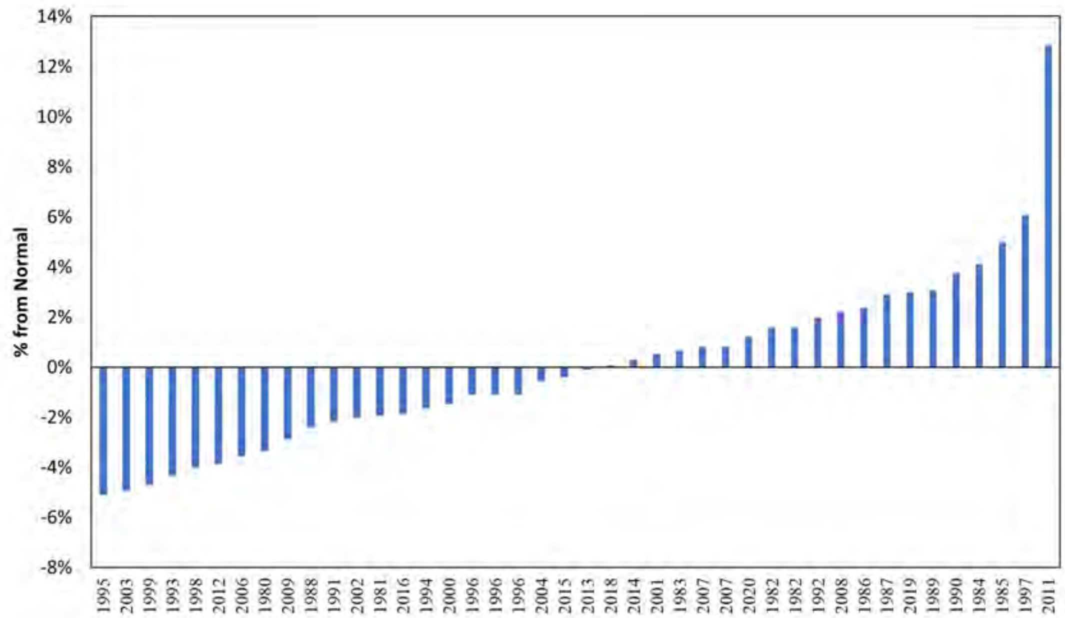


Figure 9: PNM North Summer Peak Weather Variability

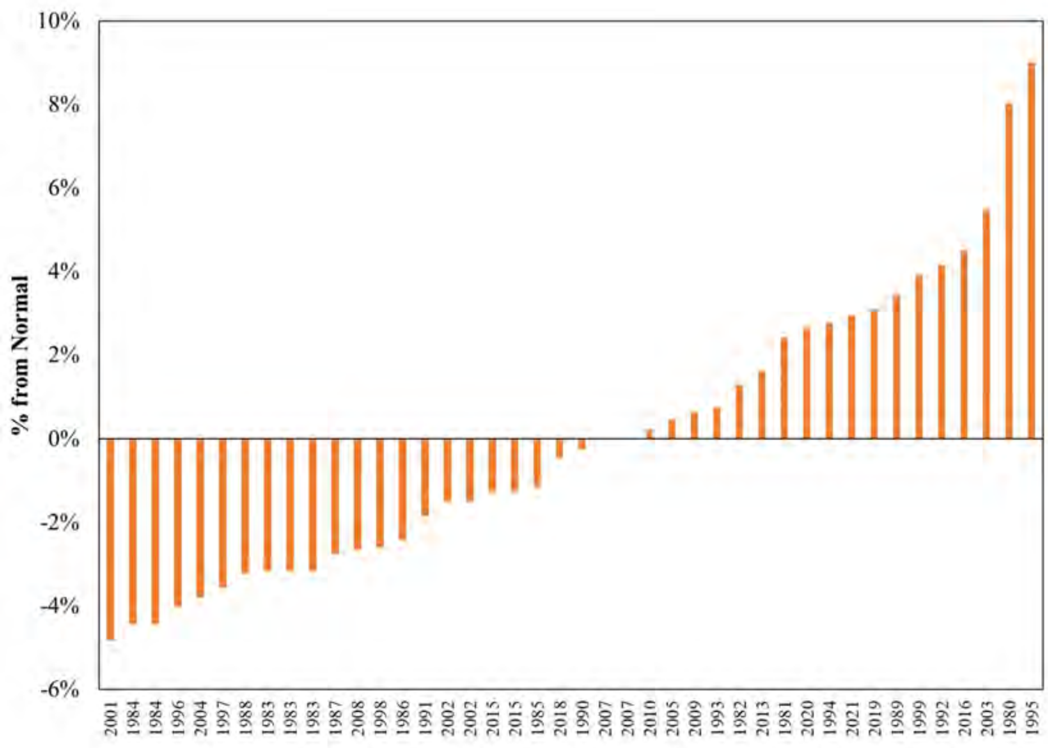


Figure 10: PNM South Winter Peak Weather Variability

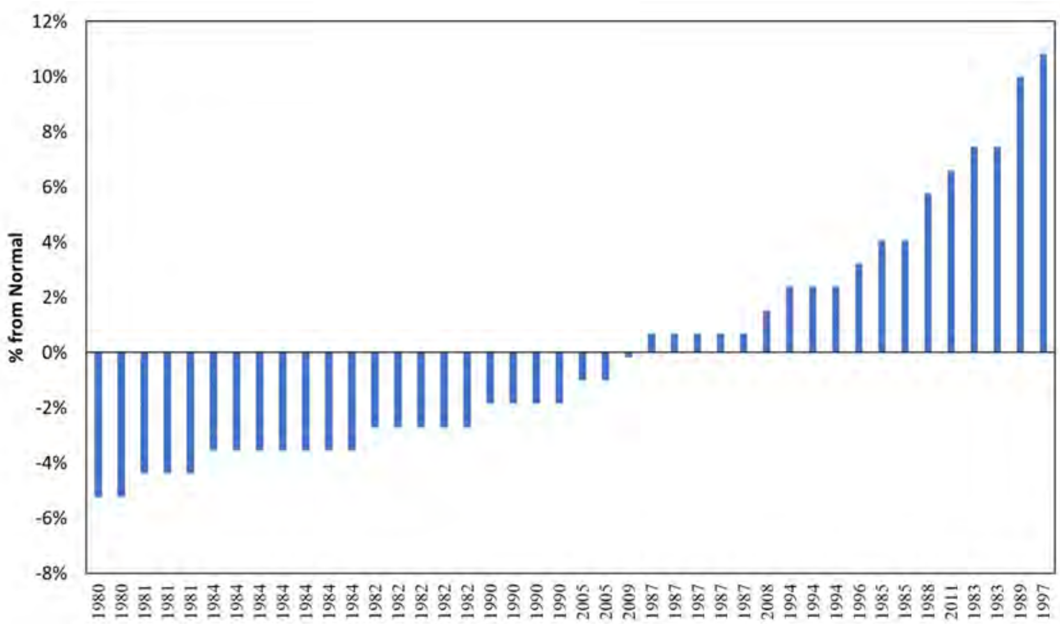
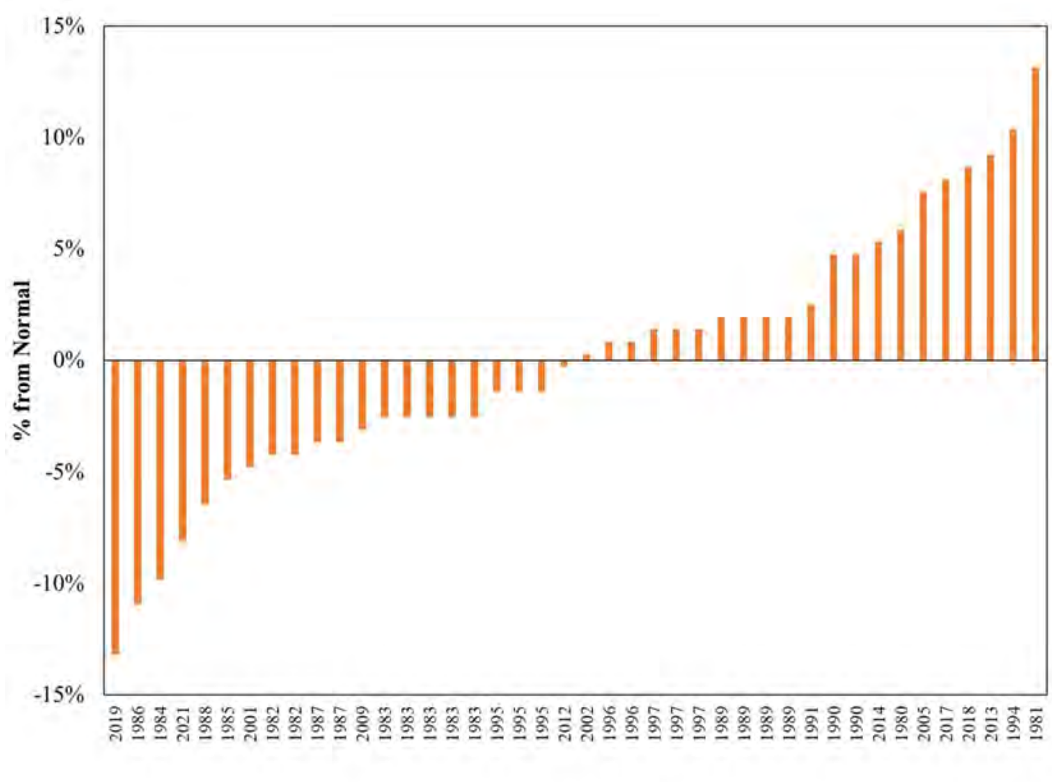


Figure 11: PNM South Summer Peak Weather Variability



Economic load forecast error multipliers were included to isolate the economic uncertainty that the Company may have in their long-term load forecasts. To estimate economic load forecast error, the difference between Congressional Budget Office (CBO) GDP forecasts and actual data was fit to a normal distribution. Because electric load grows at a slower rate than GDP, a multiplier was applied to the raw CBO forecast error distribution. The results of this approach are shown in Table 8.

As an illustration, 11% of the time, it is expected that load will be under-forecasted by 4%. The SERVM model utilized each of the 42 weather years and applied each of these 5 load forecast error points to create 210 different load scenarios. As mentioned previously, each weather year was given an equal probability of occurrence.

Table 8: Economic Load Forecast Error

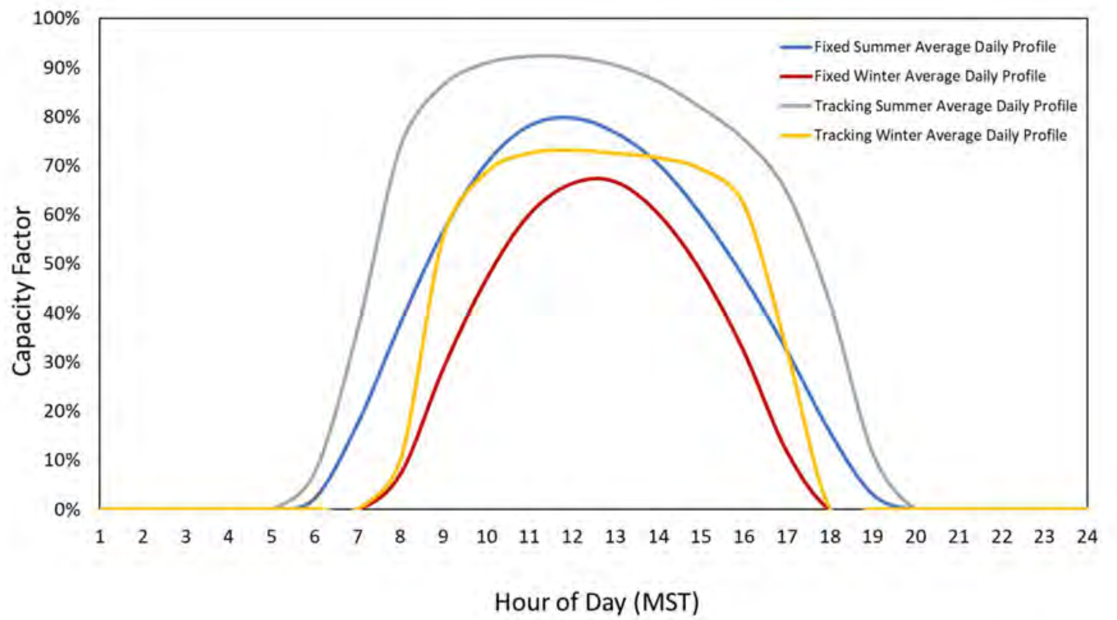
Load Forecast Error Multipliers	Probability (%)
0.96	11%
0.98	23%
1.00	32%
1.02	23%
1.04	11%

SOLAR SHAPES

Data was downloaded from the NREL National Solar Radiation Database (NSRDB) Data Viewer using the latitude and longitude locations of the 23 locations provided below for the available years 1998 through 2020. By using 23 locations, the modeling incorporates diversity among future solar projects. Historical solar data from the NREL NSRDB Data Viewer included variables such as temperature, cloud cover, humidity, dew point, and global solar irradiance. The data obtained from the NSRDB Data Viewer was input into NREL's System Advisory Model (SAM) for each year and location to generate the hourly solar profiles based on the solar weather data for fixed and tracking solar PV plants. Inputs in SAM included the DC to AC ratio of the inverter module and the tilt and azimuth angle of the PV array. Data was normalized by dividing each point by the input array size. This served as the basis for solar profiles for the years 1998-2020. Solar Profiles for 1980-1997 and 2021 were constructed from the 1998-2020 data by developing correlations between daily load shapes and solar profiles. The daily load shapes in the 1980-1997 and 2021 were compared to daily load shapes in the 1998-2020 data and where close correlations were found, the solar shapes from those days were used.

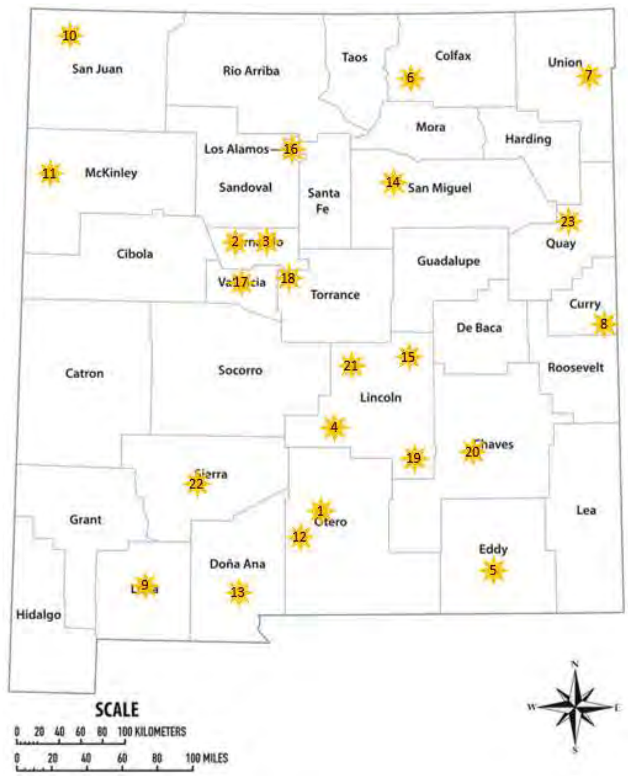
This process was repeated for each of the 23 locations, shown below. In addition to these hourly shapes, a ~1% EFOR assumption is embedded in solar profiles by adjusting annual capacity factor downwards. Figure 12 shows the resulting normalized aggregate solar profiles used in the simulation broken up into tracking and fixed technologies as well as summer and winter seasons.

Figure 12: Average Daily Solar Profiles



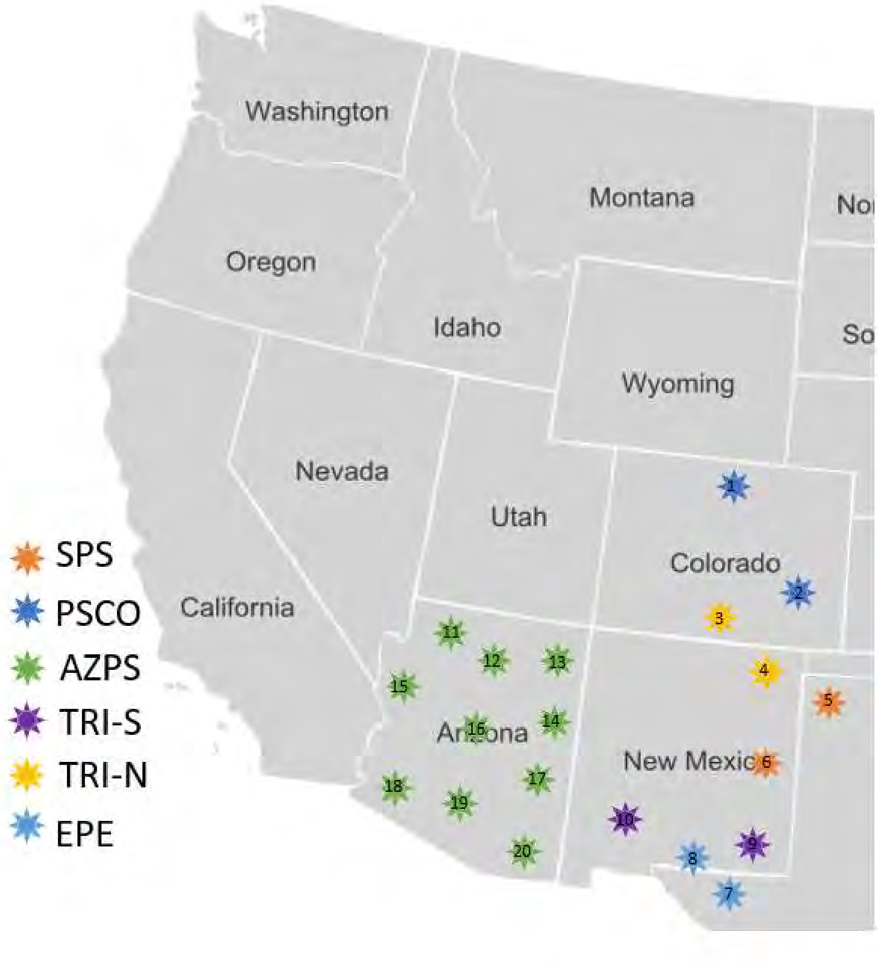
The physical locations represented by the solar shapes are shown below in Figure 13, and the latitude and longitude for each location can be found in Table 35 in the Appendix.

Figure 13: PNM Solar Profile Locations



The same process as described above was used to create solar profiles for neighboring regions. The physical locations represented by the solar shapes are shown below in Figure 14, and the latitude and longitude for each location can be found in Table 36 in the Appendix.

Figure 14: Neighbor Solar Profile Locations



WIND SHAPES

Wind profiles were produced using historic actual data between 2012 and 2021. To construct wind shapes back to 1980, random days were selected from the 2012 to 2021 dataset based on aggregate PNM retail load. Wind projects without existing data were scaled to a capacity factor of 45% and assumed to have similar profiles and locations to existing wind projects in the east part of PNMs service area. To represent this, Incremental wind was calibrated such that new wind was related to existing wind by a Pearson correlation coefficient of 0.75.

Locations for existing and planned wind are shown below in Figure 15. Expected summer production profiles are shown for the aggregate wind portfolio as simulated in our 2025 base case in Figure 16.

Figure 15: Wind Profile Locations

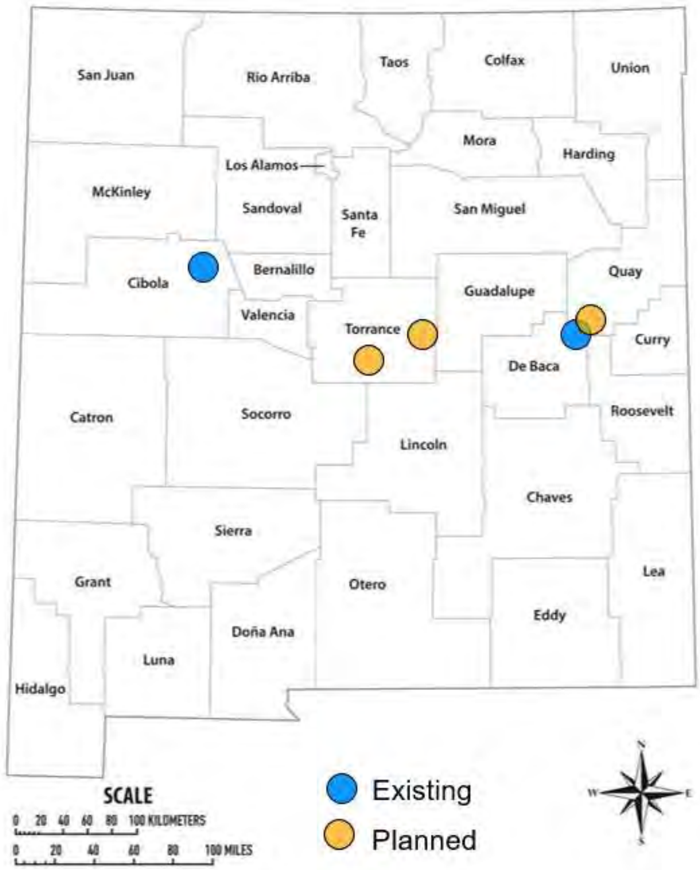
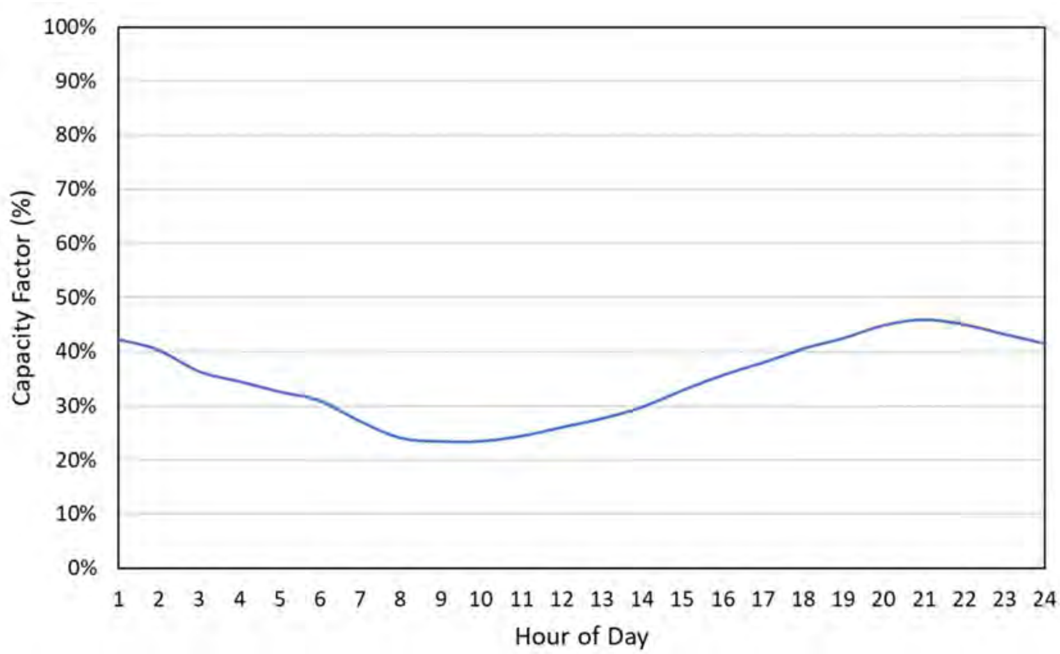


Figure 16: 2025 Existing Aggregate Summer Wind Output



CONVENTIONAL THERMAL RESOURCES AND RESOURCE MIX

Conventional thermal resources owned by the company and controlled via Purchase Power Agreements were modeled consistent with the 2025 study year. These resources are economically committed and dispatched to load on a 5-minute basis respecting all unit constraints including startup times, ramp rates, minimum up times, minimum down times, and shutdown times. All thermal resources are allowed to serve regulation (if AGC capable), spinning, and load following reserves assuming the minimum capacity level is less than the maximum capacity. The PNM system resource mix and respective EFOR as studied is provided in Table 9 below.

Table 9: PNM Resource Mix

Unit Type	Capacity (MW)	EFOR (%)
CC	425	4%
CT	416	3%
DR	33	0%
Geothermal	11	24%
Nuclear	288	2%
Solar	1,531	0%
Solar Battery	650	8%
ST Coal	200	20%
ST Gas	146	3%
Wind[7]	607	0%
Total	4,527	

Equivalent Forced Outage Rates are based on historical performance or expected future performance provided by PNM. Unlike typical production cost models, SERVM does not use an Equivalent Forced Outage Rate (EFOR) for each unit as an input. Instead, historical (GADS) data events are used to create an outage probability distribution for each unit and SERVM randomly draws from this distribution for each unit to simulate outages. Units without historical data use data from similar units. Outage distributions were scaled to an expected EFOR provided by PNM. Outage distributions are constructed using the following variables.

<u>Full Outage Modeling</u>

- Time-to-Repair Hours
- Time-to-Fail Hours

[7] 50MW Casa Mesa wind is modeled within the NWWEC wind unit in SERVM due to real world transmission constraints, so the actual capacity of the system is 657MW, but it is modeled at 607MW.

- Start Probability

Partial Outage Modeling

- Partial Outage Time-to-Repair Hours
- Partial Outage Derate Percentage
- Partial Outage Time-to-Fail Hours

Maintenance Outages

- Maintenance Outage Rate

The Maintenance Outage Rate describes the fraction of time in a month that the unit will be on maintenance outage. SERVM uses this percentage and schedules the maintenance outages during off peak periods. Planned maintenance events are modeled separately and dates are entered in the model representing a typical year.

BATTERY MODELING

650 MW of energy storage was included in the base case. These hybrid facilities were modeled with maximum combined output capacity and round-trip losses consistent with project specific information and are economically scheduled and dispatched. These resources charge during low net demand periods, subject to constraints, and are dispatched during net peak load periods. Rather than storage units being always available and having no EFOR, these battery units are modeled at 92.5% availability. These modeling decisions were included based on a recent study conducted by E3[8] on the real-world first year operation of California batteries.

DEMAND RESPONSE MODELING

Demand Response (DR) programs were modeled as resources in the simulations with specific contract limits including availability by season, hours per call, calls per season, and calls per day. For 2025, 33 MW of demand response was included in the Power Saver and Peak Saver programs. Table 10 below provides modeling characteristics for each of the modeled programs.

Table 10: Demand Response Parameters

	Power Saver	**Peak Saver**
Available Months	Summer	Summer
Capacity (MW)	22	11

[8] https://www.aps.com/-/media/APS/APSCOM-PDFs/About/Our-Company/Doing-business-with-us/Resource-Planning-and-Management/APS-RPAC-Meeting-Presentation-102622.ashx?la=en&hash=9AE20E699D178AFCF8AB30BF9C64FFED

Hours per Day	4	4
Hours Per Year Available	100	100
Weekends Available	N	N

ANCILLARY SERVICES

SERVM commits resources to meet energy needs plus ancillary service requirements, which are defined as SERVM model inputs. In real-world operation, these ancillary services are needed for uncertain movement in net load or sudden loss of generators during the simulations. Within SERVM, these include regulation up and down, spinning reserves, load following reserves, and quick start reserves. Table 11 shows the definition of each ancillary service for this study. An LOLE event was determined when there was not sufficient generation to serve load and regulation up requirements.

Table 11: Ancillary Services

Ancillary Service	Definition
Regulation Down Requirement	10 Minute Product served by units with AGC capability
Regulation Up Requirement	10 Minute Product served by units with AGC capability
Spinning Reserves Requirement	10 Minute Product served by units who have minimum load less than maximum load
Load Following Down Reserves	10 Minute Product served by units who have minimum load less than maximum load
Load Following Up Reserves	10 Minute Product served by units who have minimum load less than maximum load
Quick Start Reserves Requirement	Served by units who are offline and have quick start capability

RESERVE MARGIN AND EXISTING ELCC

RESULTS

Results for the ELCC analyses are shown in Table 12 below. An initial simulation of the 2025 existing PNM system determined that 295MW of perfect capacity was needed to get the system to 0.1 LOLE. Using the ELCC methodology found in the “Study Methodology” section of this document in combination with the Delta Method (see The Delta Method section above), average ELCC values were calculated for wind, solar, 4-HR storage, and DR resources, respectively.

Table 12: 2025 Existing ELCC Results

Resource Type	Average ELCC (%)
Wind	20%
Solar	6%
Solar Battery	85%
DR	70%

The ELCCs identified for the 2025 portfolio were then applied to the resource accreditation of the PNM system at the target LOLE of 0.2 and 0.1, as shown Table 13. Summing the Installed Capacity (ICAP) resource contributions at 0.1 LOLE yields a 20% PRM target. The sum of the Unforced Capacity (UCAP) resource contributions at 0.1 LOLE yields a 16% PRM target. UCAP methodology accounts resources by derating conventional units by their EFOR.

Table 13: 2025 PNM PRM Results

Resource Type	Installed Capacity	Multiplier (ELCC/UCAP)	UCAP Accreditation	ICAP Accreditation
Nuclear	288	98%	282	288
ST Coal	200	80%	160	200
CC	425	96%	408	425
CT	416	97%	404	416
Geothermal	11	77%	8	11
ST Gas	146	97%	142	146
Wind	607	20%	122	122
Solar	1,531	6%	92	92
Solar Battery	650	85%	551	551
DR	49	70%	34	34
0.2 LOLE		Perfect Capacity	220	220
		Total Accreditation	2,423	2,505
		Load	2,158	2,158
		PRM	12%	16%
0.1 LOLE		Perfect Capacity	295	295
		Total Accreditation	2,498	2,581
		Load	2,158	2,158
		PRM	16%	20%

PLANNING RESERVE MARGIN

The previous IRP resource adequacy work performed by Astrapé determined that a 18% UCAP planning reserve margin at 0.2 LOLE was needed compared to the 16% value found in this study. Figure 15 shows a waterfall chart of the driving factors of this change. The largest driver was the existing solar accreditation which decreased for two reasons. First, the changes in the market import limit assumptions detailed in the previous Study Topology section which had not been incorporated when calculating the existing solar ELCC in the 2020 Study but was used when determining the need. The added restrictions shift the resource adequacy risk hours to later hours of the day, which lowers the existing solar accreditation. Second, the changes in neighbor resource mix which increased solar penetration decreased the accreditation of PNM's solar. Higher penetrations of solar resources in neighbor regions, which are assumed to exist before accrediting PNM's solar resources, lowers PNM's solar accreditation which lowers PNM's PRM calculations. These two factors and their effects on when EUE occurs are illustrated in Figure 18 which shift resource adequacy hours on an aggregate basis to later in the day. Lastly, the shift from 0.2 to 0.1 LOLE increases the reserve margin back up to 16%.

Figure 17: PRM Change Waterfall

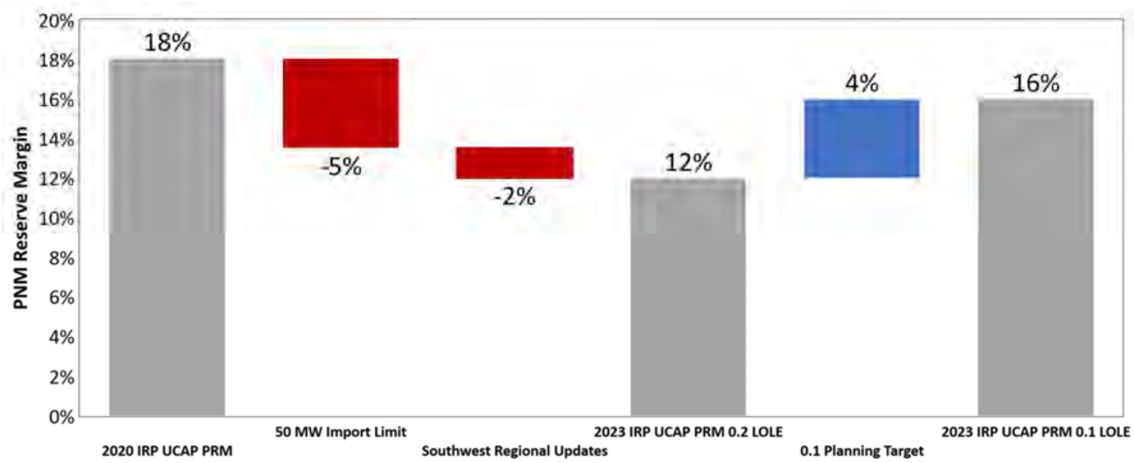
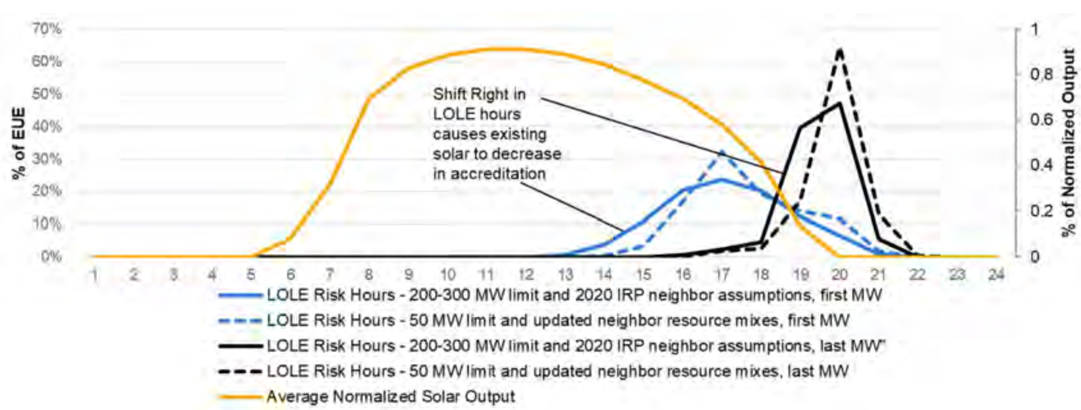


Figure 18: IRP Risk Hour Comparisons



ELCC SURFACES AND ADDITIONAL SENSITIVITIES

METHODOLOGY AND RESULTS

Calculating the ELCC of a resource depends on the underlying portfolio of the system. With three technologies (solar, wind, and storage) changing at the same time, there are many portfolios that can be relevant in the expansion planning process. To further complicate ELCC calculations, different technologies typically interact with each other and have “synergies” that change ELCC valuesas the penetrations vary. Directly simulating all possible portfolios is ideal, but the simulation time needed for that is unfeasible. ELCC surface creation and smoothing is a process developed by Astrapé that helps to tackle the issue.

The creation of ELCC surfaces help accurately calculate the ELCC of different technologies at different penetration levels. Different combinations of the three technologies are simulated in SERVM and the portfolio’s ELCC MW value is determined at each discrete point. These results allow for the creation of a sparse matrix. Table 14 below shows the sparse matrix used in this study. The “x’s” mark portfolios that were simulated in SERVM. This sparse matrix was simulated for varying levels 4-hr storage. The 4-hr storage penetration levels simulated were 650MW, 850MW, 1,250MW, 1,650MW, 2,050MW, and 2,450MW, for a total of 6 matrices and 108 portfolios simulated.

Table 14: Portfolio Combinations Simulated in SERVM

Total Solar (MW)	Total Wind (MW)					
	607	707	807	907	1,007	1,107
1,531	x		x		x	
1,931		x		x		x
2,331	x		x		x	
2,731		x		x		x
3,131	x		x		x	
3,531		x		x		x

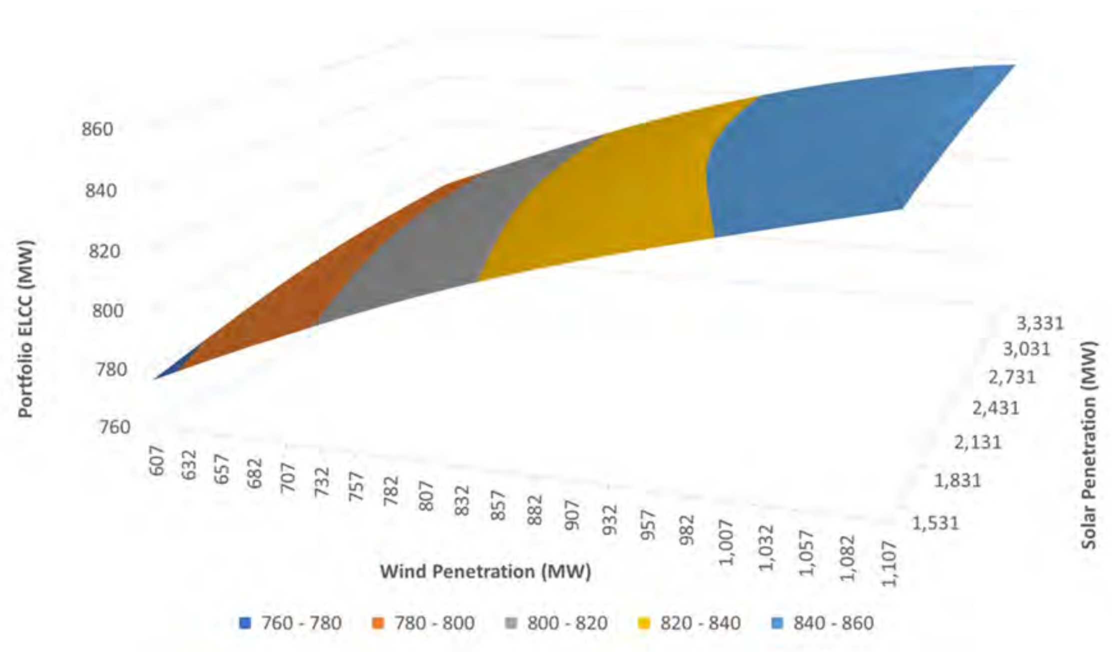
The sparse matrices are then expanded into a dense matrix through interpolation. The matrix has solar values increasing in each row, wind values increasing in each column, and 4-HR storage increasing in subsequent tables. These dense matrices are then smoothed to create monotonically decreasing marginal ELCC values at every point, as well as capture the synergistic benefits in ELCC value. These final, smoothed surfaces can be used to calculate marginal ELCC values for respective technologies within the bounds of the row, column, and table values via the preference of the user. Table 15 shows a finalized dense matrix. Note that the values in each cell are the incremental ELCC MWs to the PNM existing system (650MW 4-HR, 607MW wind, and 1,531MW solar).

Table 15: Dense ELCC Matrix at 650MW 4-HR Storage

650MW 4-HR		Total Wind (MW)																				
		607	632	657	682	707	732	757	782	807	832	857	882	907	932	957	982	1,007	1,032	1,057	1,082	1,107
Total Solar (MW)	1,531	-	5	11	16	22	27	32	37	41	45	48	52	55	57	60	62	65	68	70	73	76
	1,631	2	7	12	17	23	28	33	37	42	45	49	52	55	58	61	63	66	69	71	74	77
	1,731	3	9	14	19	24	29	34	38	43	47	50	53	57	59	62	65	67	70	72	75	78
	1,831	5	10	15	20	25	30	35	39	44	48	51	55	58	61	63	66	69	71	73	76	79
	1,931	7	11	17	22	27	31	36	41	45	49	52	56	59	62	65	67	70	72	75	77	79
	2,031	8	13	18	23	28	33	37	42	46	50	54	57	60	63	66	68	71	73	76	78	80
	2,131	10	14	19	24	29	34	38	43	47	51	55	58	61	64	67	69	72	74	77	78	80
	2,231	11	15	20	25	30	35	39	44	48	52	56	59	63	65	68	70	73	75	77	79	80
	2,331	12	16	21	26	31	36	40	45	49	53	57	60	64	66	69	71	74	76	78	79	81
	2,431	13	17	22	26	32	37	41	46	50	54	58	61	64	67	70	72	74	77	79	80	81
	2,531	14	18	22	27	32	37	42	47	51	55	59	62	65	68	70	73	75	77	79	80	81
	2,631	14	18	23	28	33	38	43	47	52	56	59	62	66	68	71	73	75	78	80	80	81
	2,731	15	19	23	28	33	39	43	48	52	56	60	63	66	69	71	74	76	78	80	81	81
	2,831	15	19	23	28	34	39	44	48	52	56	60	63	67	69	71	74	76	78	80	81	81
	2,931	15	19	24	29	34	39	44	48	53	57	60	63	67	69	72	74	76	78	80	81	81
	3,031	15	19	24	29	34	39	44	49	53	57	60	64	67	69	72	74	76	78	80	81	81
	3,131	15	20	24	29	34	39	44	49	53	57	60	64	67	69	72	74	76	78	81	81	81
	3,231	15	20	24	29	35	40	44	49	53	57	61	64	67	69	72	74	76	79	81	81	82
	3,331	15	20	24	29	35	40	44	49	53	57	61	64	67	70	72	74	76	79	81	81	82
	3,431	16	20	25	30	35	40	44	49	53	57	61	64	67	70	72	74	76	79	81	81	82
	3,531	16	20	25	30	35	40	45	49	53	57	61	64	67	70	72	74	76	79	81	81	82

Similar dense matrices were constructed for all the 4-HR storage levels mentioned above. These matrices can be found in Table 37, Table 38, Table 39, Table 40, and Table 41 in the Appendix. Starting from these surfaces, ELCCs to be used in expansion planning can be calculated for the individual resource classes that make up the portfolio at different penetration levels. Charting these tables can help visually demonstrate the synergistic benefits that occur between resources. Figure 19 shows the ELCC Surface that corresponds to the data in Table 15.

Figure 19: ELCC Surface at 650MW 4-HR Storage



Using all the dense matrices, marginal ELCC curves for specific technologies can be created. Figure 20 and Figure 21 show how 4-HR storage has higher marginal ELCC as solar penetration increases, and vice versa.

Figure 20: 4-HR Marginal ELCC at Fixed Wind Penetration

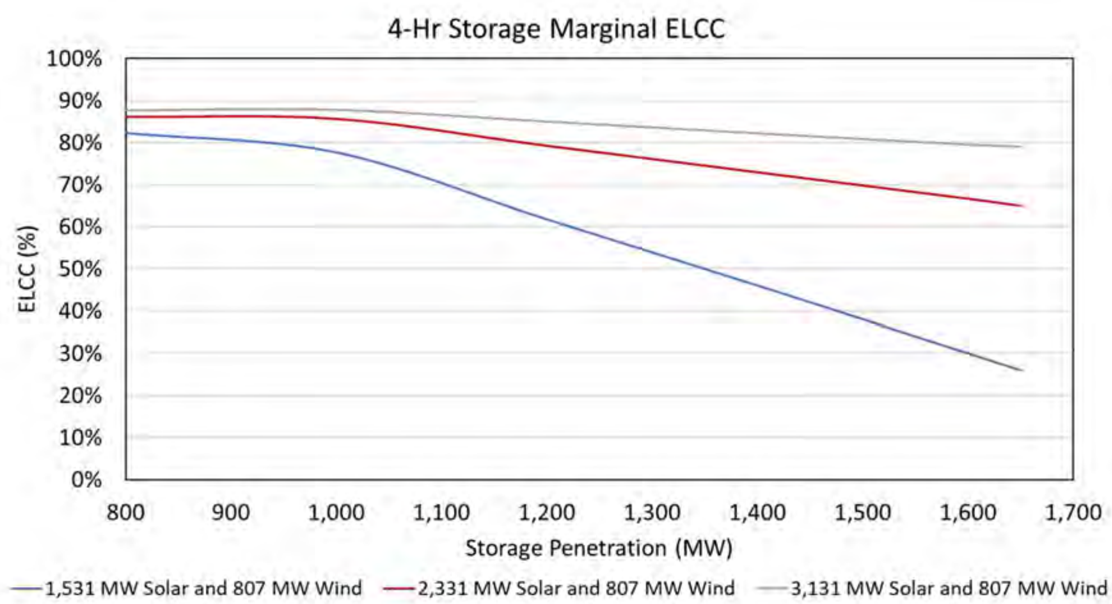
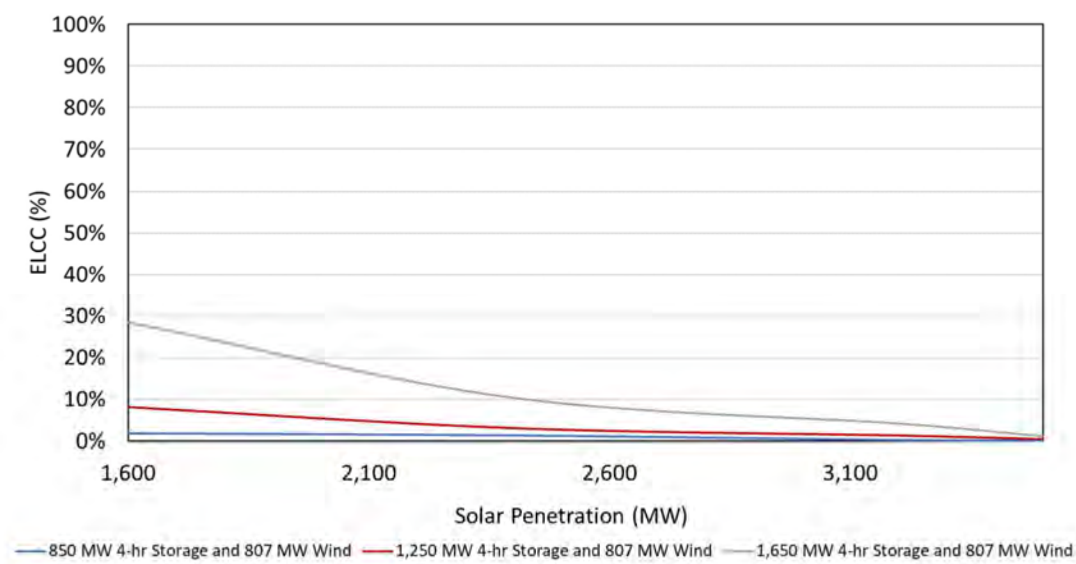


Figure 21: Solar Marginal ELCC at Fixed Wind Penetration



Astrapé developed an Excel calculator that takes the final matrices created from the analysis and calculates average and marginal ELCCs using the Delta Method and interpolation. A user can input any combination of wind, solar, and 4-HR storage within the bounds of the dense matrices and the workbook will output average and marginal ELCCs for each of the three resources. Figure 22 shows the interface of the tool and the outputs of an example portfolio. The First In % of first 100 MWs value comes from the existing system ELCC analysis.

Figure 22: ELCC Calculator Example Portfolio

Technology	Installed Capacity (MW)	First In % of first 100 MWs	Last In ELCC (Marginal ELCC)	Average ELCC % of Entire Installed Capacity	Individual Interactive Effect (MW)	Scaled Interactive Effect (MW)	Allocation
Storage	651	72%	85.58%	85.23%	88.3	(2.32)	555
Solar	1531	35%	3.19%	4.02%	(486.7)	13	62
Wind	610	24%	23.37%	23.38%	(3.9)	0	143

8-HR STORAGE SENSITIVITY

An additional set of scenarios were simulated as a sensitivity to compare the ELCC of 8-HR storage to 4-HR storage. The results of this sensitivity are shown in Table 16 below. For this sensitivity, the average ELCC for 200MW incremental storage was calculated for both 4-HR and 8-HR storage. Solar and wind were held constant in most of the scenarios, but two scenarios with higher solar penetrations were simulated to see how the higher penetrations of solar affected the 8-HR storage compared to 4-HR.

Table 16: 8-HR Storage Sensitivity Results

Total Storage Level (MW)	Initial 4-hr Storage Capacity (MW)	Solar Level	200 MW Incremental 4-hr ELCC (%)	200 MW Incremental 8-hr ELCC (%)
850	650	2,331	86%	88%
1,050	850	2,331	85%	87%
1,250	1,050	2,331	82%	85%
1,450	1,250	2,331	81%	82%
1,650	1,450	2,331	65%	79%
1,850	1,650	2,331	52%	69%

2035 SENSITIVITY

To see how resource ELCC changes depending on the study year, six scenarios were simulated for the 2035 study year. Varying levels of wind, solar, and 4-HR storage were added to the portfolio and the incremental ELCC values were calculated. The 2035 sensitivity results are shown in Table 17 below. Likely due to the expansion of renewables and storage in surrounding regions, the ELCC just slightly dropped as shown in the Delta column (I.E. 13 – 27 MWs) when simulating the future year test

Table 17: 2035 Sensitivity Results

Incremental Storage (MW)	Incremental Solar (MW)	Incremental Wind (MW)	2025 Incremental ELCC (MW)	2035 Incremental ELCC (MW)	Delta (MW)
600	-	-	469	452	(17)
600	-	300	511	495	(15)
600	-	500	516	503	(12)
600	1,200	-	542	519	(23)
600	1,200	300	585	572	(13)
600	1,200	500	607	580	(26)

PORTFOLIO VERIFICATION

PORTFOLIO SUMMARIES

PNM provided Astrapé with multiple portfolios created through the expansion planning process. These portfolios represent different technology options available in the expansion planning process. Current technologies ("S1"), long-duration storage technologies ("S1+S2"), combustion turbines and similar technologies ("S3"), and all technologies available ("Kitchen Sink") portfolios were provided. Astrapé analyzed these portfolios to verify that they were reliable using SERVM. Two futures were analyzed, (1) Current Trends and Policy (CTP) and (2) High Economic Growth (HEG). The CTP future was analyzed for both the 2032 and 2040 study years, while the HEG future was only analyzed for the 2040 study year. Four portfolios were provided by PNM to be studied for each of the futures and study years mentioned above. The portfolio resource mixes are shown in Table 18, Table 19, and Table 20.

Table 18: 2032 Current Trends and Policy Portfolios

Resource Type	Installed Capacity (MW)			
	S1	S1+S2	S3	Kitchen Sink
Wind	658	658	658	1,058
CC	425	425	425	425
Solar	2,165	2,313	2,143	2,082
Battery	1,997	1,341	1,660	1,444
Geothermal	11	11	11	11
CT	275	275	275	275
Nuclear	288	288	288	288
DR	53	53	53	53
EE	259	225	229	227
LM6000	-	-	123	-
CAES	-	-	-	200
Pumped Hydro	-	300	-	-

Table 19: 2040 Current Trends and Policy Portfolios

Resource Type	Installed Capacity (MW)			
	S1	S1+S2	S3	Kitchen Sink
Wind	1,556	1,356	1,356	1,356
Solar	3,500	3,015	2,681	2,763
Battery	6,810	2,317	2,271	1,960
Geothermal	11	11	11	11
CT	-	-	126	126
Nuclear	288	288	288	288
DR	53	53	53	53
EE	304	250	262	248

LM6000	-	-	533	410
CAES	-	300	-	200
Pumped Hydro	-	300	-	-
Linear Generator	-	-	-	50

Table 20: 2040 High Economic Growth Portfolios

Resource Type	**Installed Capacity (MW)**			
	S1	S1+S2	S3	Kitchen Sink
Wind	1,556	1,556	1,556	1,556
Solar	7,626	7,897	5,331	4,941
Battery	11,624	3,885	4,064	3,291
Geothermal	11	11	11	11
CT	-	-	126	126
Nuclear	288	288	288	288
DR	53	53	53	53
EE	308	267	271	261
LM6000	-	-	697	82
CAES	-	300	-	300
Pumped Hydro	-	600	-	-
Linear generator	-	-	-	500

RESULTS

All four of the portfolios were simulated in SERVM for the scenarios described above. LOLE outputs from the SERVM simulations for each of the portfolio/scenario combinations are in Table 21. An additional analysis was done on 2040 CTP and 2040 HEG portfolios that were either too reliable or too unreliable assuming 0.1 LOLE as the target reliability metric. 4-HR storage was added or subtracted at varying levels, and the interpolated amount of the change in 4-HR storage needed for 0.1 LOLE was calculated. Generally, portfolios that contained 4-HR storage penetrations that were beyond the surface ELCCs developed needed corrections but portfolios that finished within the ELCC surface performed reasonably well. The results of this analysis are shown below in Table 22. Table 23 and Table 24 below show the weighted EUE and LOLH for the portfolios at 0.1 LOLE for the 2040 CTP scenario.

Table 21: IRP Portfolio LOLE Results

Scenario	**LOLE**			
	S1	S1+S2	S3	Kitchen Sink
2032 CTP	0.04	0.08	0.05	0.06
2040 CTP	0.02	0.27	0.12	0.09
2040 HEG	0.04	4.91	0.84	2.58

Table 22: 4-HR Storage Adjustments

Scenario	4-Hr Storage Needed for 0.1 LOLE (MW)			
	S1'	S1+S2'	S3'	Kitchen Sink'
2040 CTP	(2,997)	379		
2040 HEG		1,721	1,881	1,799

Table 23: IRP Portfolio EUE Results

Scenario	Weighted EUE			
	S1’	S1+S2’	S3	Kitchen Sink
2040 CTP	60	77	29	19

Table 24: IRP Portfolio LOLH Results

Scenario	LOLH			
	S1’	S1+S2’	S3	Kitchen Sink
2040 CTP	0.28	0.33	0.28	0.21

For the Kitchen Sink CTP portfolios, the distribution of EUE by month and hour of day is shown in Table 25 and Table 26. As the system moves from 2032 to 2040, the risk shifts more heavily to the winter periods.

Table 25: 2032 CTP Kitchen Sink EUE 12x24

2032 Kitchen Sink		Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Hour of Day	1						0%	1%	1%				
	2						0%	1%	0%				
	3						0%	1%	1%				0%
	4							2%	2%				0%
	5							4%	1%				1%
	6	0%						3%	1%				1%
	7	1%	0%					0%	0%				2%
	8	0%	0%										1%
	9												
	10												
	11												
	12												
	13												
	14												
	15												
	16												
	17												
	18							0%		1%			
	19						0%	1%	0%	3%			
	20						1%	6%	4%	4%			
	21						0%	6%	1%	4%			
	22						0%	9%	1%	3%			
	23						1%	10%	4%	2%			
	24						1%	8%	3%	1%			
Monthly Total		1%	0%	0%	0%	0%	5%	52%	18%	19%	0%	0%	5%

Table 26: 2040 CTP Kitchen Sink EUE 12x24

2040 Kitchen Sink		Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Hour of Day	1							1%	1%	0%			
	2	1%						1%	1%	0%			
	3	1%						1%	1%				0%
	4	1%						1%	0%				1%
	5	1%	0%					4%	1%				1%
	6	2%	1%					3%	2%				4%
	7	10%	3%					0%	0%				18%
	8	5%	2%										4%
	9												
	10												
	11												
	12												
	13												
	14												
	15												
	16												
	17								0%				
	18								0%	0%			
	19							0%	1%	1%			
	20							1%	0%	2%			
	21						0%	1%	0%	2%			
	22							2%	0%	2%			
	23							4%	1%	3%			
	24							5%	2%	2%			
Monthly Total		20%	7%	0%	0%	0%	0%	24%	10%	12%	0%	0%	27%

RESILIENCY ANALYSIS

FRAMEWORK

To understand how the different portfolios perform in extreme weather conditions, a resiliency analysis was conducted. This analysis was only done for the CTP future in the 2040 study year. Each of the portfolios, with 4-HR storage adjustments from Table 22 included, were simulated. To isolate the impact of extreme weather conditions on the portfolios, specific weather years were simulated instead of 42 years used in the base case. The 2020 weather year was selected for summer analysis, while the 2011 weather year was chosen for winter. These weather years were chosen due to the combination of poor renewable performance combined with high PNM load.

Each of the four portfolios were simulated with and without market assistance, for a total of 8 scenarios simulated for the summer weather year and the winter weather year. One hundred unit outage iterations were simulated for all islanded scenarios and 60 unit outage draws were simulated for market included cases. Week 34 (hours 5545-5712) of the 2020 summer and week 5 (hours 673-840) of the 2011 winter were analyzed in depth as representatives for summer and winter extreme weather. A final note on the analysis is that the Palo Verde resource was turned off in the "market-included" summer resiliency simulations to create a severe scenario that would be compatible across all portfolios.

SUMMER RESULTS

The S3 portfolio performed the best under the summer resiliency framework, followed closely by the Kitchen Sink portfolio. Both portfolios contain CT and LM6000 units that can provide firm capacity during periods when loads are high and renewable resources are performing poorly. The S1 and S1+S2 portfolios lack firm capacity provided by CT and LM6000 units and are short of the energy needed to charge storage units in preparation for high net load days. The S1+S2 portfolio performed worse than the S1 scenario, most likely due to lower solar and wind amounts built in that portfolio. Like the market scenarios, S1 and S1+S2 performed worse relative to the S3 and Kitchen Sink portfolios. The differences in EUE between the market and no market cases show that PNM neighbors offer significant assistance. Table 27 shows the EUE results of the summer resiliency analysis.

Table 27: 2040 CTP Summer Resiliency EUE

2020 Weather Year	**Weekly EUE**	
	Market	Island
S1'	454	274
S1+S2'	1,732	2,156
S3	74	19

Kitchen Sink	103	17

WINTER RESULTS

Table 28 shows the EUE results of the winter resiliency analysis. Like the summer resiliency results, S3 and Kitchen Sink portfolios performed the best in the winter resiliency framework due to having more firm resources. However, the Kitchen Sink portfolio performed the best in the winter opposed to the S3 portfolio performing the best in the summer. S1+S2 performs better than S1 when it has access to the market but performs worse in the island scenario. This is likely due to the fact the S1+S2 scenario has less renewable energy than S1 and is forced to rely more heavily on the market.

Table 28: 2040 CTP Winter Resiliency EUE

2011 Weather Year	Weekly EUE	
	Market	Island
S1	2,717	13,070
S1+S2	1,380	18,542
S3	980	5,390
Kitchen Sink	610	4,862

EUE COMPARISONS

A sensitivity was conducted to determine how much 4-HR storage would be needed to make the S1 portfolio equivalent to the Kitchen Sink portfolio under the resiliency framework in 2040. Multiple levels of incremental 4-HR storage were simulated on the S1 portfolio, and the additional 4-HR storage need was calculated. The results of this analysis are shown below in Table 29.

Table 29: S1 4-HR Addition Needed for Equivalent EUE Under Resiliency Framework

	Summer (MW)	Winter (MW)
Kitchen Sink	1,206	1,333

STAKEHOLDER REQUESTS

STORAGE SENSITIVITIES

Stakeholders made known concerns about the overstatement of the reliability value of BESS resources due to possible decline over time of round-trip efficiency as well as the amount of energy these resources can store. To address these concerns, sensitivities were performed on the S1 and Kitchen

Sink portfolios. For the 2032 CTP and 2040 CTP scenarios, the S1 and Kitchen Sink portfolios were simulated using the base case RTE (Round Trip Efficiency) (85%) and then two decreasing levels of RTE for all 4-HR BESS resources. Note that the 2040 CTP scenario used the S1' resource mix with 4-HR storage adjustment needed for 0.1 LOLE found in Table 22. The LOLE for the 2032 and 2040 RTE sensitivity results can be found in Figure 23, Figure 24, Figure 25, and Figure 26 below.

Figure 23: 2032 CTP S1 RTE Sensitivity LOLE

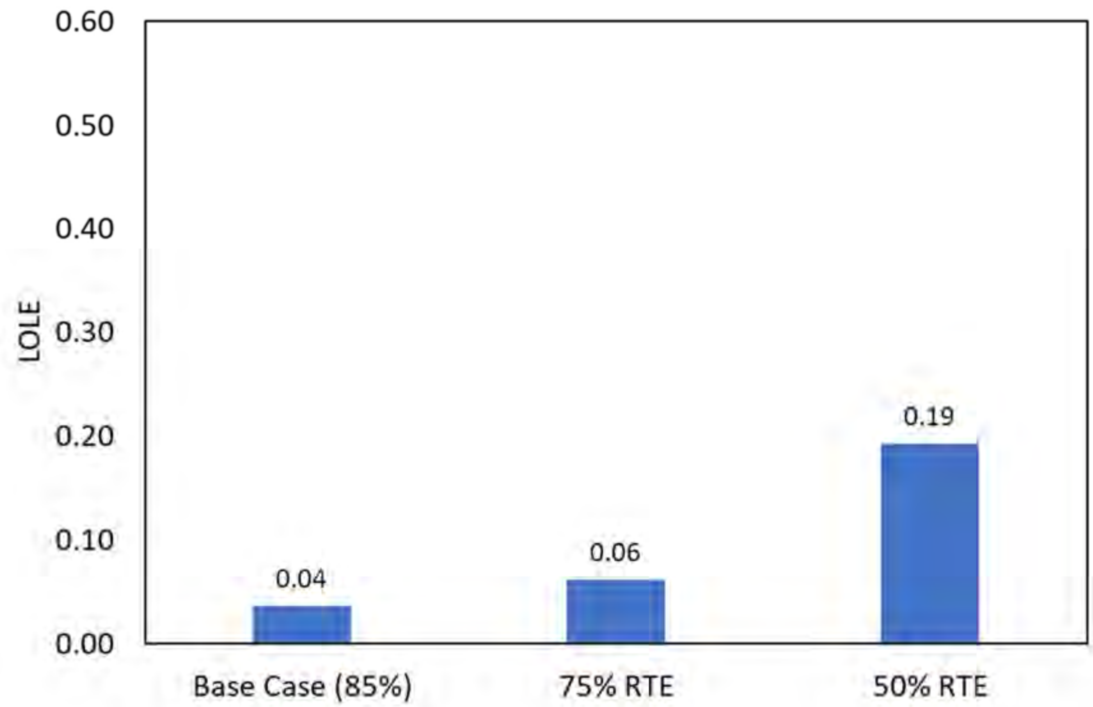


Figure 24: 2032 CTP Kitchen Sink RTE Sensitivity LOLE

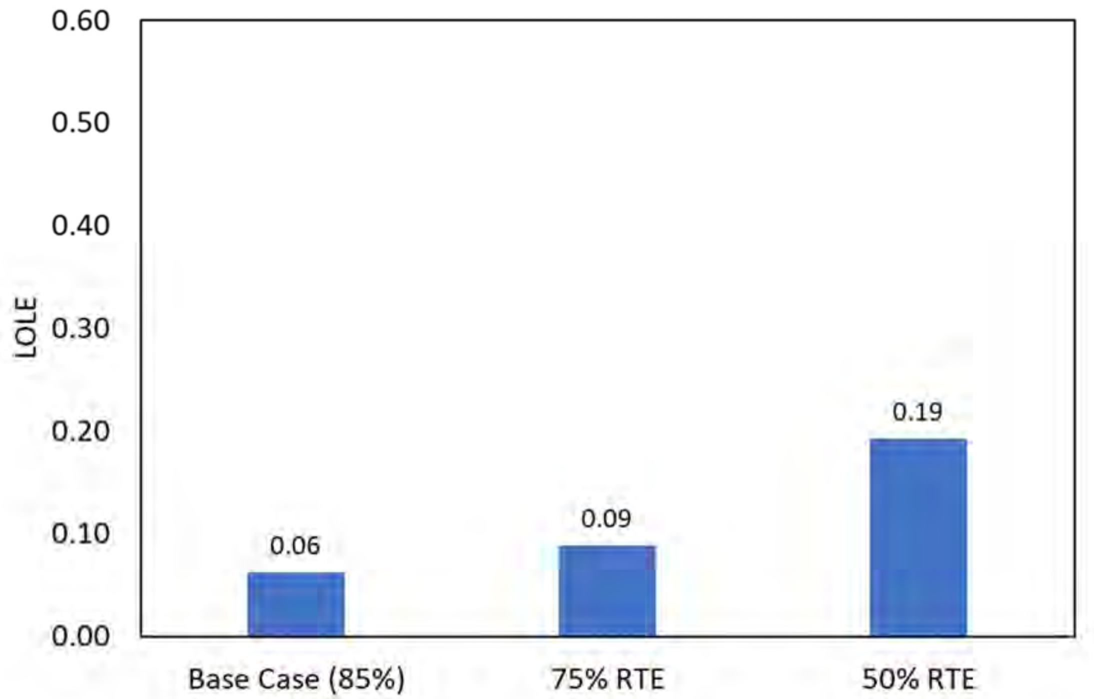


Figure 25: 2040 CTP S1' RTE Sensitivity LOLE

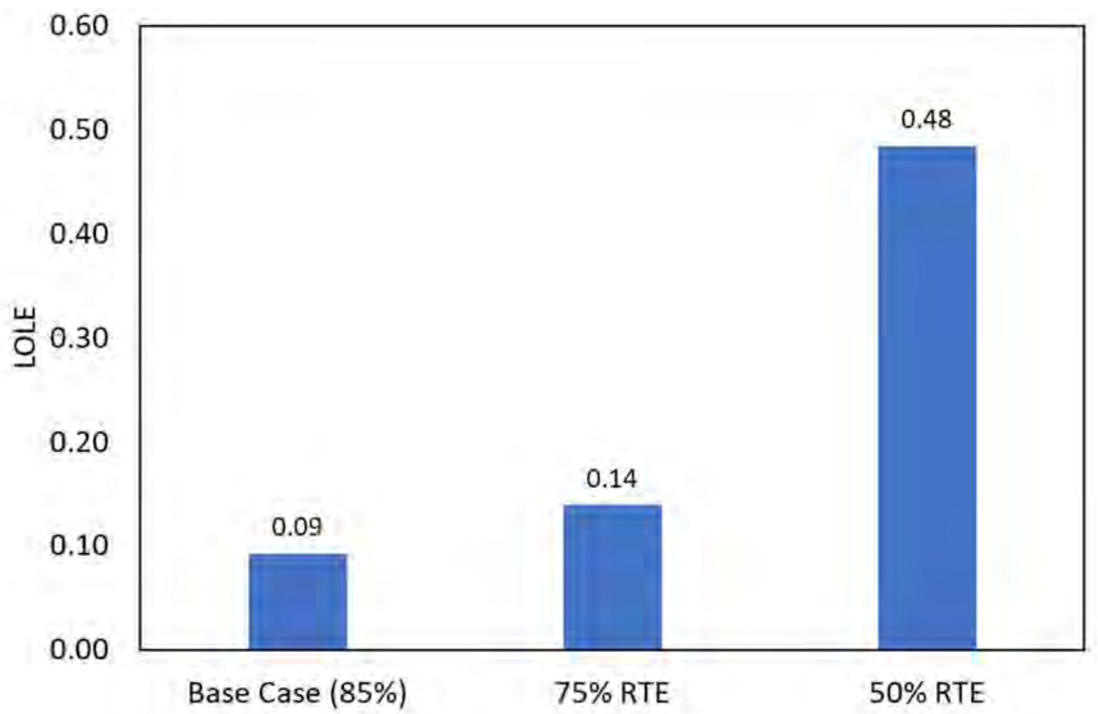
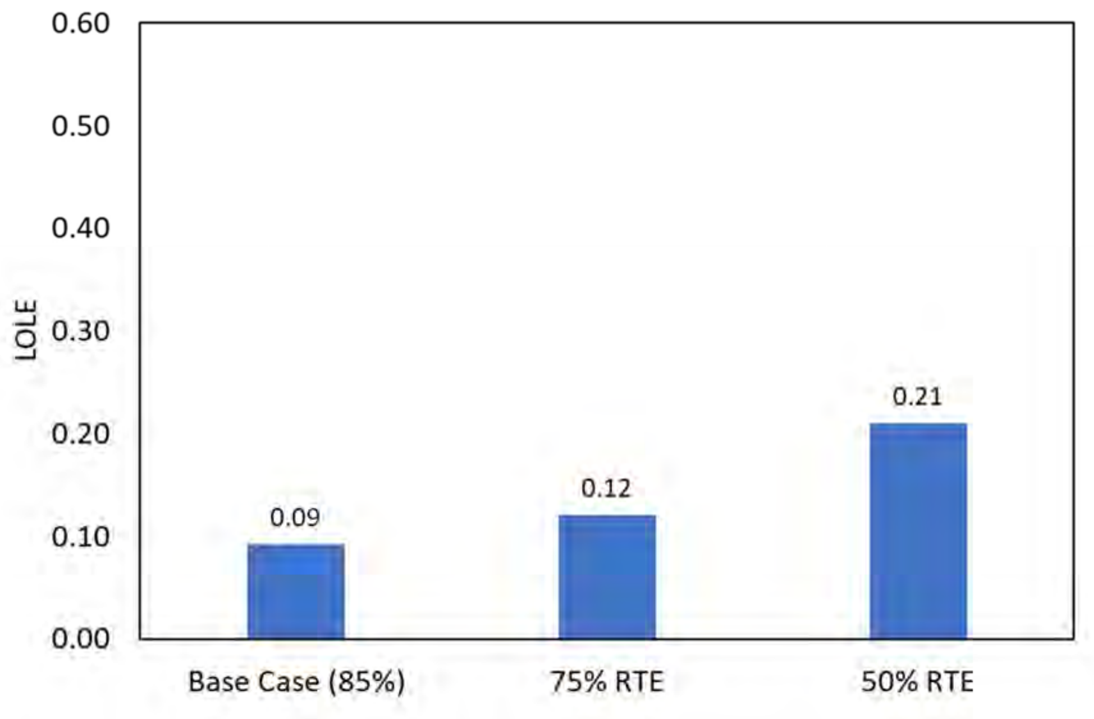


Figure 26: 2040 CTP Kitchen Sink RTE Sensitivity LOLE



The S1 and S1’ portfolios were affected more by the RTE reduction than the Kitchen Sink portfolios, which is as expected due to the lower penetration of 4-HR storage in the Kitchen Sink portfolios.

An additional sensitivity was performed that assumed a 15% and a 25% reduction in the duration of all 4-HR BESS units. For example, a 4-HR storage resource in the 15% reduction sensitivity was modeled as a 3.4-HR resource. The S1 (or S1’) and Kitchen Sink portfolios were simulated for 2032 CTP and 2040 CTP scenarios. The LOLE values for these scenarios are found below in Figure 27, Figure 28, Figure 29, and Figure 30.

Figure 27: 2032 CTP S1 Storage Reduction Sensitivity LOLE

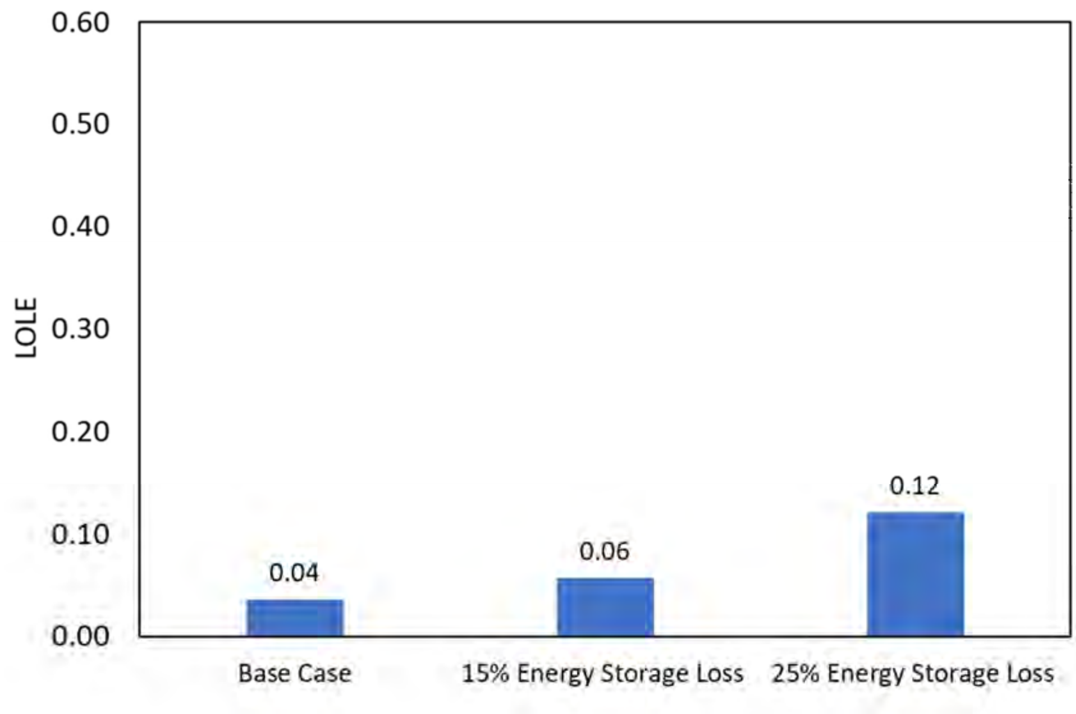


Figure 28: 2032 CTP Kitchen Sink Storage Reduction Sensitivity LOLE

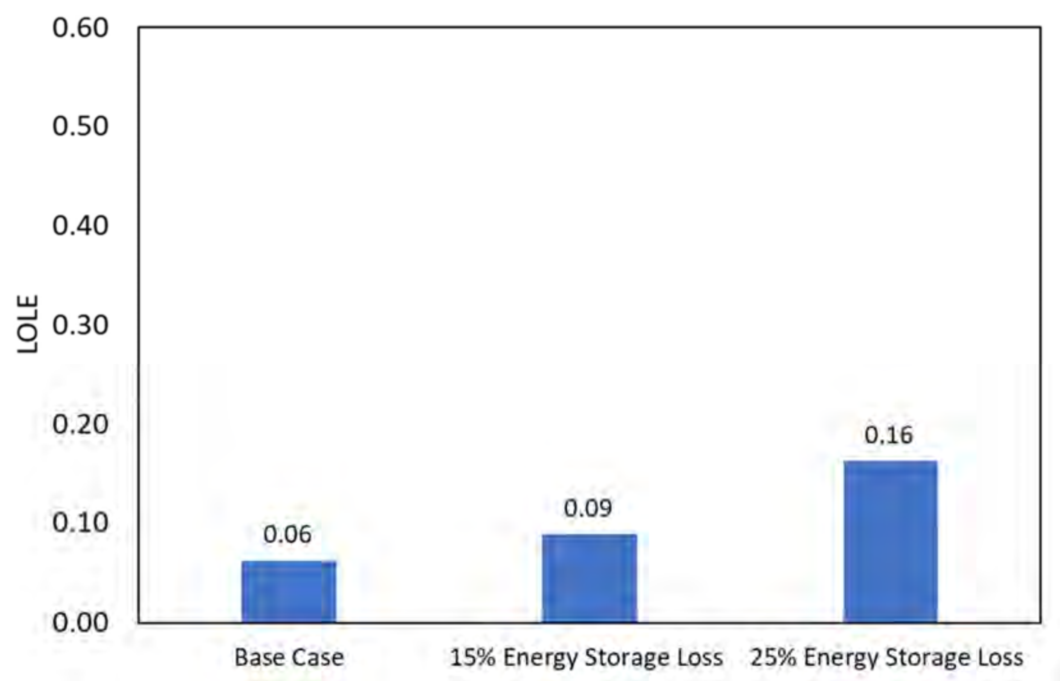


Figure 29: 2040 CTP S1' Storage Reduction Sensitivity LOLE

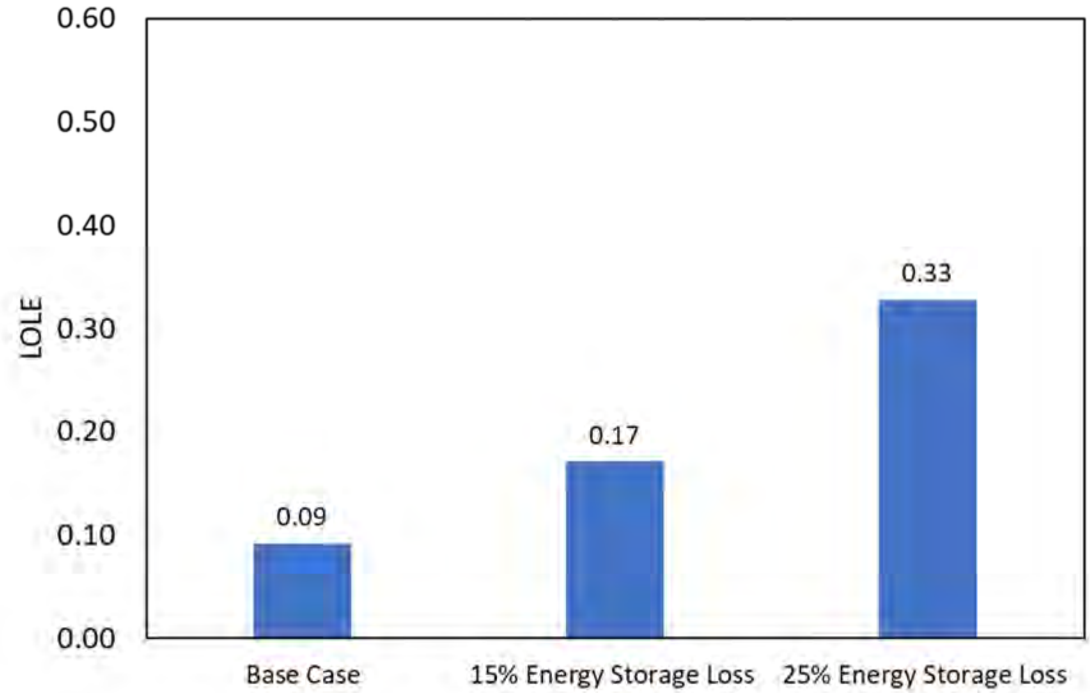
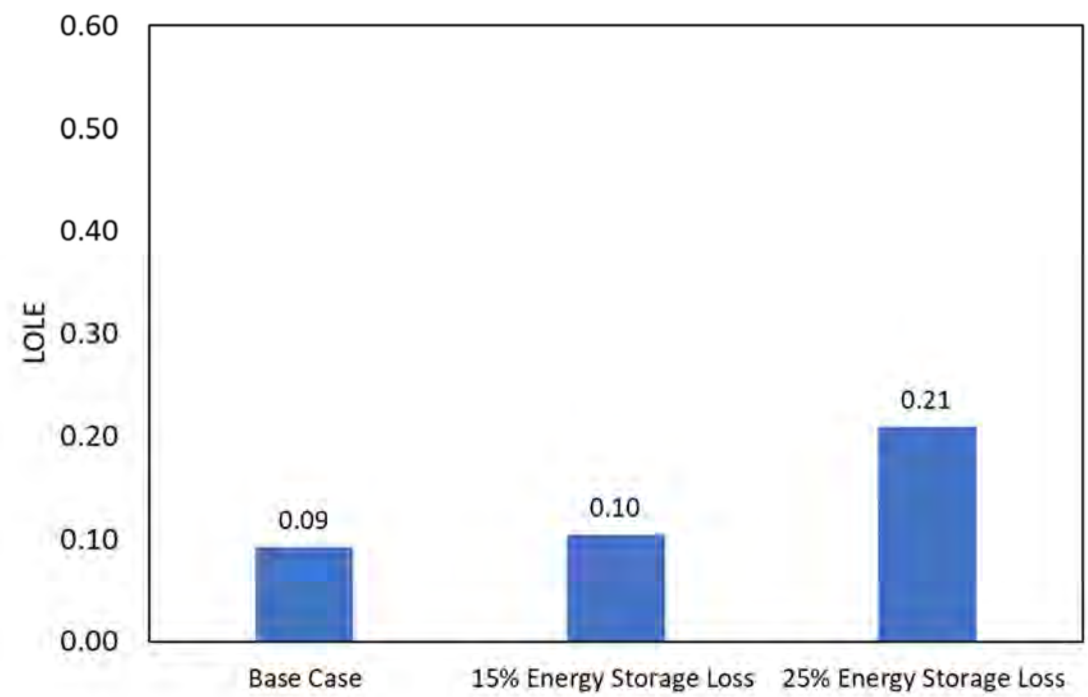


Figure 30: 2040 CTP Kitchen Sink Storage Reduction Sensitivity LOLE



Like the RTE sensitivity, the S1 and S1' portfolios were affected more by the storage reduction than the Kitchen Sink portfolios.

WEATHER YEAR WEIGHTING

A post-process analysis was done at the request of PNM stakeholders to isolate the impact that extreme weather years had on system LOLE. The results of the S1 portfolio's 2032 CTP and S1' portfolio's 2040 CTP scenarios were weighted according to three distinct criteria and broken into winter and summer portions. A "P10 Renewables" criterion factored in only the 5 weather years that had the lowest seasonal sum of renewable energy. A "P90 Net Load" criterion only factored in the 5 weather years that had the highest average net load for its top 20 highest seasonal hours. The third criterion was "P90 Gross Load" that selected the 5 weather years that had the highest average gross load for their top 20 hours. The results of this post process analysis are shown below in Figure 31 and Figure 32.

Figure 31: 2032 CTP S1 Base Case Weather Year Weighting

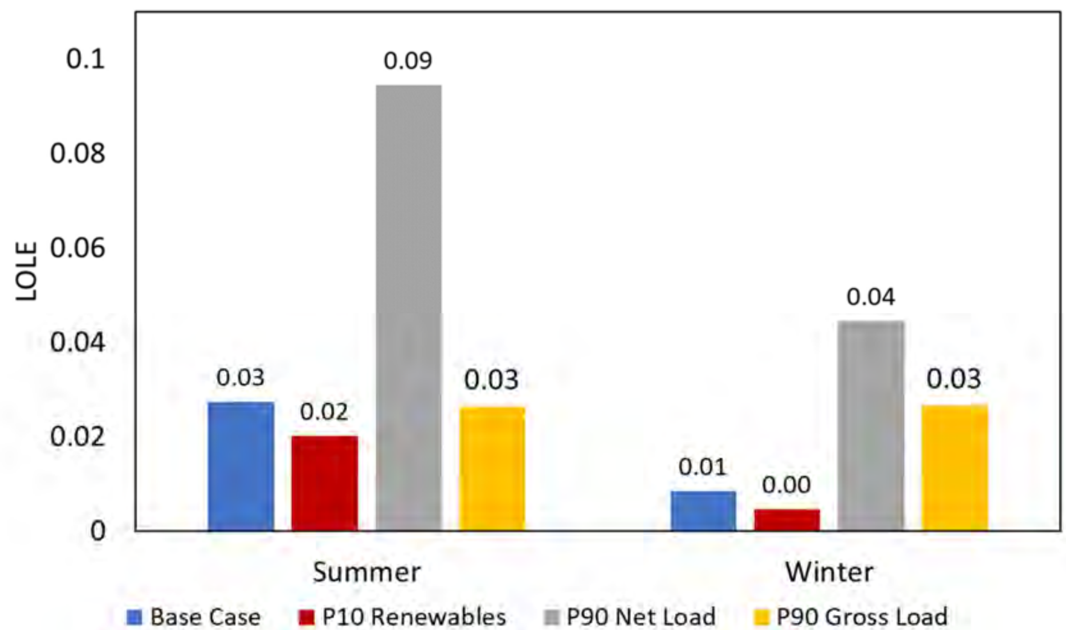
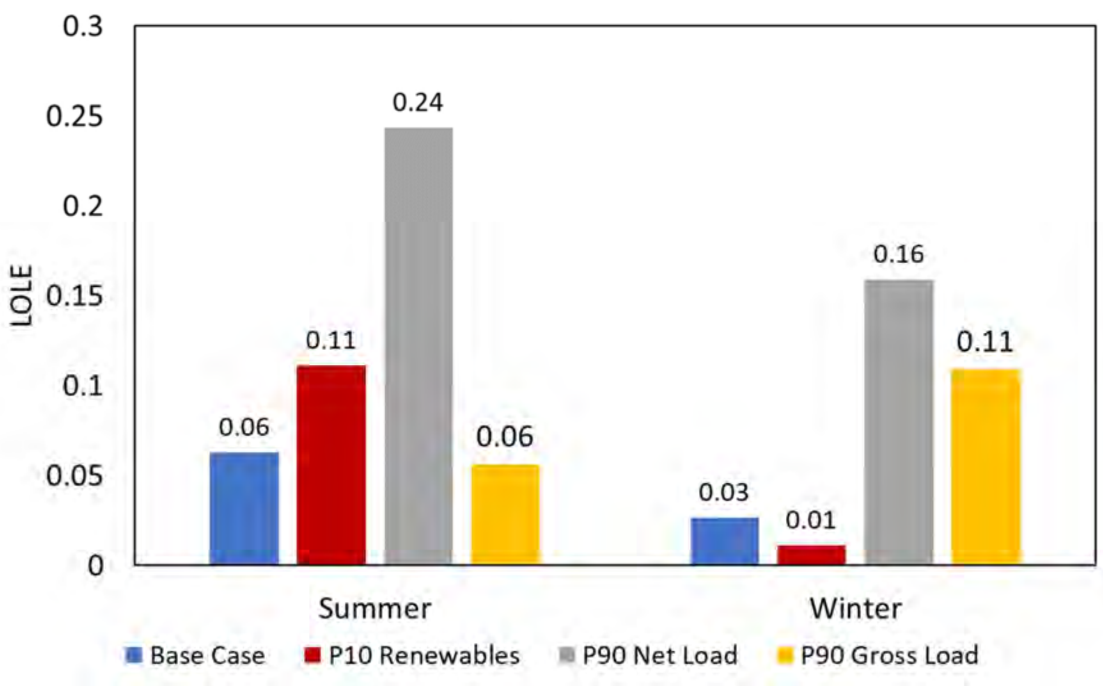


Figure 32: 2040 CTP S1' Base Case Weather Year Weighting



This analysis indicates that weather years with high net load values are more impactful on LOLE than poor renewable performance or high gross load values. It is also noteworthy that poor renewable performance is more impactful on LOLE in the summer compared to the winter.

WRAP MODELING

Considering the Western Resource Adequacy Program's (WRAP) creation and pending implementation, PNM stakeholders requested additional analysis on the load diversity for the PNM BA and its surrounding entities. Using our modeled load data, the average peak load for the 43 weather years for PNM and the entire system was calculated, these values are shown in Table 30 below. The "Total System" includes the regions shown in Figure 7. The PNM aggregate region averages 95% of peak load when the total system is peaking.

Table 30: System Load Diversity

Average Peak Load		
Total System	**PNM**	**PNM When System at Peak**
38,400	2,151	2,054

An additional analysis was conducted to determine the MW of perfect capacity needed for 0.1 LOLE using different market assumptions. Astrapé simulated the different market scenarios in SERVM and determined the perfect capacity needed if PNM was modeled without neighbors ("Island") and without the peak load constraints described in the Study Topology section of this document. Those scenario PRM values along with the base case ("Current Model") PRM value are found in Table 31.

Table 31: PNM BA PRM Requirements for Differing Market Assumptions

Market Parameters	Need (MW)	PRM
Island	410	21%
Current Model	295	16%
No Peak Load Constraints	28	3%

CORRELATED GAS OUTAGES

Stakeholders were interested in the effect that correlated outages applied on gas units during cold weather would have on the LOLE of expansion planning portfolios. A sensitivity was done on the 2032 CTP and 2040 CTP S3 and Kitchen Sink portfolios where incremental forced outage probability was applied to CT units during cold temperatures. When a cold weather outage occurred, a 3-hour time to repair for the unit was used. The scenarios were also simulated where the neighboring entities also had cold weather outages on CT units along with the PNM units. The results of these simulations are found in Table 32 and Table 33 below.

Table 32: S3 Correlated Gas Outage Sensitivity Winter LOLE

S3 Portfolio	Winter LOLE	
	2032	2040
Base Case	0.015	0.079
PNM Outages	0.034	0.099
Regional Outages	0.137	0.214

Table 33: Kitchen Sink Correlated Gas Outage Sensitivity Winter LOLE

Kitchen Sink Portfolio	Winter LOLE	
	2032	2040
Base Case	0.004	0.064
PNM Outages	0.018	0.086
Regional Outages	0.060	0.166

APPENDIX

Table 34: Seasons as Defined in SERVM

Season	Months Included

Winter	January, December
Spring	February, March, April
Summer	May, June, July, August, September
Autumn	October, November

Table 35: PNM Solar Profile Locations

Map #	City_State	Time Zone	Latitude	Longitude
1	Alamogordo_NM	-7	32.85	-105.98
2	Alamosa_NM	-7	35.09	-106.70
3	Albuquerque_NM	-7	35.05	-106.66
4	Carrizozo_NM	-7	33.65	-105.86
5	Carlsbad_NM	-7	32.41	-104.22
6	Cimarron_NM	-7	36.49	-105.06
7	Clayton_NM	-7	36.49	-103.34
8	Clovis_NM	-7	34.37	-103.18
9	Deming_NM	-7	32.21	-107.78
10	Farmington_NM	-7	36.77	-108.14
11	Gallup_NM	-7	35.61	-108.78
12	Holloman_NM	-7	32.65	-106.18
13	Las Cruces_NM	-7	32.29	-106.82
14	Las Vegas_NM	-7	35.61	-105.38
15	Lon_NM	-7	34.13	-105.14
16	Los Alamos_NM	-7	35.89	-106.34
17	Los Lunas_NM	-7	34.81	-106.78
18	Manzano_NM	-7	34.69	-106.34
19	Picacho_NM	-7	33.29	-105.18
20	Roswell_NM	-7	33.33	-104.54
21	Tecolote_NM	-7	34.01	-105.70
22	Truth or Consequences_NM	-7	33.09	-107.18
23	Tucumcari_NM	-7	35.25	-103.54

Table 36: Neighbor Solar Profile Locations

Map #	Profile Name	Time Zone	Latitude	Longitude
1	PSCO_1	-7	40.53	-105.74
2	PSCO_2	-7	38.29	-103.30
3	TRI-N_1	-7	37.29	-105.74

4	TRI-N_2	-7	36.69	-104.02
5	SPS_1	-6	35.85	-102.42
6	SPS_2	-7	34.57	-104.14
7	EPE_1	-7	31.61	-105.02
8	EPE_2	-7	32.13	-105.70
9	TRI-S_1	-7	32.41	-103.78
10	TRI-S_2	-7	32.29	-107.74
11	AZPS_1	-7	36.49	-113.22
12	AZPS_2	-7	35.85	-111.90
13	AZPS_3	-7	36.29	-109.70
14	AZPS_4	-7	34.65	-109.42
15	AZPS_5	-7	35.29	-114.22
16	AZPS_6	-7	34.65	-111.54
17	AZPS_7	-7	32.93	-109.70
18	AZPS_8	-7	32.33	-113.02
19	AZPS_9	-7	32.21	-111.22
20	AZPS_10	-7	31.45	-109.70

Table 37: Dense ELCC Matrix at 850MW 4-HR Storage

850MW 4-HR		Total Wind (MW)																				
		607	632	657	682	707	732	757	782	807	832	857	882	907	932	957	982	1,007	1,032	1,057	1,082	1,107
Total Solar (MW)	1,531	166	172	178	183	189	195	200	204	209	213	216	219	222	224	226	228	230	232	234	236	239
	1,631	169	175	180	186	191	196	201	206	210	214	217	220	223	225	228	230	233	235	238	240	243
	1,731	173	178	184	189	194	199	203	208	212	216	219	222	225	227	230	233	235	238	240	243	247
	1,831	176	181	186	192	196	201	206	210	214	217	221	224	227	229	232	235	238	240	243	246	249
	1,931	179	183	189	194	199	203	208	212	216	219	222	226	229	232	234	237	240	242	245	248	251
	2,031	182	186	191	196	201	205	210	214	218	221	224	227	231	234	236	239	242	245	248	250	253
	2,131	185	189	194	198	203	207	211	215	219	223	226	229	233	235	238	241	244	247	250	252	255
	2,231	187	191	196	200	205	209	213	217	221	224	228	231	234	237	240	243	246	249	252	253	255
	2,331	189	193	198	202	206	211	215	219	223	226	229	233	236	239	242	245	247	250	253	254	256
	2,431	191	194	199	203	208	212	216	220	224	227	231	234	237	240	243	246	249	251	254	255	256
	2,531	192	196	200	205	209	213	217	221	225	228	232	235	239	241	244	247	250	252	255	256	256
	2,631	193	197	201	206	210	214	218	222	226	230	233	236	240	242	245	248	250	253	256	256	256
	2,731	194	198	202	207	211	215	219	223	227	230	234	237	240	243	246	249	251	254	256	256	256
	2,831	194	198	203	207	212	216	220	224	228	231	234	237	241	244	246	249	251	254	256	256	256
	2,931	195	199	204	208	212	216	220	224	228	231	235	238	241	244	247	249	252	254	256	256	256
	3,031	195	200	204	209	213	217	221	225	228	232	235	238	241	244	247	250	252	254	256	256	256
	3,131	195	200	205	209	213	217	221	225	229	232	235	238	242	244	247	250	252	254	256	256	257
	3,231	196	200	205	209	214	218	221	225	229	232	235	238	242	245	247	250	252	254	256	257	257
	3,331	196	201	206	210	214	218	222	225	229	232	235	239	242	245	247	250	252	254	256	257	257
	3,431	197	201	206	210	214	218	222	225	229	232	236	239	242	245	248	250	252	254	256	257	257
	3,531	197	202	206	210	214	218	222	226	229	232	236	239	242	245	248	250	252	254	256	257	257

Table 38: Dense ELCC Matrix at 1,250MW 4-HR Storage

1,250MW 4-HR		Total Wind (MW)																				
		607	632	657	682	707	732	757	782	807	832	857	882	907	932	957	982	1,007	1,032	1,057	1,082	1,107
Total Solar (MW)	1,531	469	474	479	483	488	492	496	500	503	506	508	509	511	511	512	512	513	514	514	515	516
	1,631	477	482	487	492	496	500	504	508	511	514	516	518	520	522	523	524	526	527	528	530	532
	1,731	485	490	496	502	506	511	515	518	522	524	527	529	531	533	535	536	538	540	541	543	548
	1,831	493	498	504	510	515	519	523	526	530	533	535	538	540	542	544	546	548	550	551	554	559
	1,931	502	506	512	517	521	526	530	533	537	539	542	545	547	550	552	554	557	559	561	563	568
	2,031	509	513	519	524	528	532	536	540	543	546	549	552	555	557	560	563	566	568	571	573	577
	2,131	517	520	525	530	534	538	542	546	549	552	555	558	561	564	567	570	573	576	579	581	585
	2,231	523	526	531	535	539	543	547	551	554	557	560	563	567	570	573	576	580	582	586	587	591
	2,331	529	531	536	540	544	548	552	555	559	562	565	568	572	575	579	582	585	588	592	593	596
	2,431	533	535	539	543	547	551	555	558	562	565	569	572	576	579	583	586	589	592	596	597	599
	2,531	537	539	543	546	550	554	557	561	565	568	572	575	579	583	586	589	593	596	599	600	602
	2,631	540	542	546	549	553	556	560	564	568	571	575	578	582	586	589	593	596	599	602	603	604
	2,731	542	544	548	551	555	559	563	566	570	574	578	581	585	589	592	595	598	601	604	606	607
	2,831	543	546	550	553	557	561	565	568	572	576	580	583	587	590	594	597	600	602	605	607	608
	2,931	544	547	551	555	559	563	566	570	574	578	581	585	589	592	595	598	601	604	607	608	610
	3,031	545	549	553	556	560	564	568	572	576	579	583	587	590	594	597	600	603	605	608	610	611
	3,131	547	550	554	558	562	565	569	573	577	581	584	588	592	595	598	601	604	606	609	611	613
	3,231	548	551	555	559	563	567	570	574	578	582	586	589	593	596	599	602	605	607	610	612	615
	3,331	549	553	556	560	564	568	572	575	579	583	587	590	594	597	600	603	606	609	612	614	616
	3,431	551	554	557	561	565	568	572	576	580	584	587	591	594	597	600	604	607	610	613	615	618
	3,531	552	555	558	561	565	569	573	577	580	584	588	591	595	598	601	604	607	610	614	617	620

Table 39: Dense ELCC Matrix at 1,650MW 4-HR Storage

1,650MW 4-HR		Total Wind (MW)																				
		607	632	657	682	707	732	757	782	807	832	857	882	907	932	957	982	1,007	1,032	1,057	1,082	1,107
Total Solar (MW)	1,531	648	651	654	657	660	663	666	668	671	673	675	677	679	680	682	684	686	687	689	691	692
	1,631	671	675	679	683	686	690	693	696	699	702	704	707	709	711	713	715	717	719	721	723	726
	1,731	694	698	703	709	714	718	722	726	729	732	735	737	740	742	745	747	749	751	753	755	760
	1,831	716	720	726	732	736	741	745	748	752	755	758	761	763	766	769	771	774	775	777	780	785
	1,931	739	743	748	753	758	762	766	770	774	777	780	783	786	788	791	794	797	799	802	804	808
	2,031	761	764	769	774	779	783	787	791	795	798	801	804	807	810	813	816	819	822	825	827	831
	2,131	781	784	788	793	797	801	806	809	813	817	820	823	827	830	833	836	839	842	846	848	851
	2,231	799	801	805	810	814	818	822	826	830	833	836	839	843	846	849	852	856	859	863	865	868
	2,331	815	817	821	825	829	833	837	840	845	848	851	854	858	861	864	868	871	874	878	880	882
	2,431	828	830	833	837	840	844	847	851	855	858	861	864	868	872	875	878	881	884	889	890	891
	2,531	839	841	844	847	851	854	858	861	865	868	871	875	879	882	885	888	891	894	898	899	900
	2,631	847	850	853	856	860	863	867	870	874	877	881	884	887	890	893	896	899	902	906	907	907
	2,731	855	857	860	864	868	871	875	879	883	886	889	892	895	898	901	904	906	909	912	913	913
	2,831	858	861	865	869	873	877	880	884	888	891	894	897	900	903	905	908	910	912	914	915	916
	2,931	862	865	869	874	878	882	886	890	894	897	900	902	905	907	910	912	913	915	917	918	918
	3,031	866	869	874	879	883	887	891	895	899	902	905	907	910	912	914	915	917	918	920	921	921
	3,131	870	874	879	883	887	892	896	900	903	906	909	912	914	916	917	919	920	921	923	924	924
	3,231	874	878	882	887	891	896	900	904	907	911	913	915	918	919	920	922	923	924	926	927	927
	3,331	878	882	886	891	895	900	904	908	912	915	917	919	921	922	923	925	926	927	929	929	930
	3,431	883	886	890	895	899	903	907	910	913	916	918	920	922	923	924	926	927	928	930	931	932
	3,531	887	891	894	898	902	905	909	912	915	917	919	921	923	924	925	927	928	929	931	932	934

Table 40: Dense ELCC Matrix at 2,050MW 4-HR Storage

2,050MW 4-HR		Total Wind (MW)																				
		607	632	657	682	707	732	757	782	807	832	857	882	907	932	957	982	1,007	1,032	1,057	1,082	1,107
Total Solar (MW)	1,531	750	755	760	764	767	770	772	774	776	778	780	781	783	784	786	787	789	790	792	793	795
	1,631	794	799	803	807	810	813	816	818	820	822	824	825	827	828	830	831	833	834	836	837	839
	1,731	832	838	842	846	849	852	854	857	859	860	862	864	865	867	868	870	871	873	874	876	878
	1,831	867	872	876	880	883	886	888	890	892	894	896	897	899	900	902	903	905	906	908	910	911
	1,931	897	902	906	910	913	916	918	920	922	924	925	927	928	930	931	933	934	936	937	939	940
	2,031	924	929	933	936	940	942	944	946	948	950	951	953	954	956	957	958	960	961	963	964	966
	2,131	948	952	956	960	963	966	968	970	971	973	974	976	977	978	980	981	982	984	985	986	988
	2,231	969	973	977	981	984	986	988	990	992	993	995	996	997	999	1,000	1,001	1,002	1,003	1,005	1,006	1,007
	2,331	988	992	996	1,000	1,002	1,005	1,007	1,009	1,010	1,012	1,013	1,014	1,015	1,016	1,017	1,019	1,020	1,021	1,022	1,023	1,025
	2,431	1,004	1,009	1,013	1,016	1,019	1,021	1,023	1,025	1,026	1,028	1,029	1,030	1,031	1,032	1,033	1,034	1,035	1,037	1,038	1,039	1,040
	2,531	1,019	1,024	1,028	1,031	1,034	1,036	1,038	1,039	1,041	1,042	1,043	1,044	1,045	1,046	1,047	1,048	1,049	1,050	1,052	1,053	1,054
	2,631	1,033	1,037	1,041	1,044	1,047	1,049	1,051	1,052	1,054	1,055	1,056	1,057	1,058	1,059	1,060	1,061	1,062	1,063	1,064	1,065	1,066
	2,731	1,044	1,049	1,052	1,056	1,058	1,060	1,062	1,064	1,065	1,066	1,067	1,068	1,069	1,070	1,071	1,072	1,073	1,074	1,075	1,076	1,077
	2,831	1,055	1,059	1,063	1,066	1,068	1,070	1,072	1,074	1,075	1,076	1,077	1,078	1,079	1,080	1,081	1,082	1,083	1,083	1,084	1,086	1,087
	2,931	1,064	1,068	1,072	1,075	1,077	1,079	1,081	1,082	1,083	1,085	1,085	1,086	1,087	1,088	1,089	1,090	1,091	1,092	1,093	1,094	1,095
	3,031	1,071	1,075	1,079	1,082	1,084	1,086	1,088	1,089	1,090	1,091	1,092	1,093	1,094	1,095	1,096	1,097	1,098	1,099	1,100	1,101	1,102
	3,131	1,077	1,081	1,085	1,088	1,090	1,092	1,093	1,095	1,096	1,097	1,098	1,098	1,099	1,100	1,101	1,102	1,103	1,104	1,105	1,106	1,107
	3,231	1,082	1,086	1,089	1,092	1,094	1,095	1,097	1,098	1,099	1,100	1,101	1,102	1,103	1,104	1,104	1,105	1,106	1,108	1,109	1,110	1,111
	3,331	1,085	1,088	1,091	1,094	1,096	1,097	1,099	1,100	1,101	1,102	1,102	1,103	1,104	1,105	1,106	1,107	1,108	1,109	1,110	1,111	1,113
	3,431	1,085	1,089	1,091	1,094	1,096	1,097	1,099	1,100	1,101	1,102	1,102	1,103	1,104	1,105	1,106	1,107	1,108	1,109	1,110	1,111	1,113
	3,531	1,085	1,089	1,091	1,094	1,096	1,097	1,099	1,100	1,101	1,102	1,102	1,103	1,104	1,105	1,106	1,107	1,108	1,109	1,110	1,111	1,113

Table 41: Dense ELCC Matrix at 2,450MW 4-HR Storage

2,450MW 4-HR		Total Wind (MW)																				
		607	632	657	682	707	732	757	782	807	832	857	882	907	932	957	982	1,007	1,032	1,057	1,082	1,107
Total Solar (MW)	1,531	834	837	840	843	846	849	851	854	857	860	862	865	868	870	873	875	877	879	881	882	884
	1,631	878	882	885	888	890	893	896	898	901	904	906	909	911	914	916	918	920	922	924	925	926
	1,731	918	921	924	927	929	932	935	937	940	942	945	947	949	952	954	956	958	959	961	962	963
	1,831	952	955	958	961	964	966	969	971	973	976	978	980	983	985	987	989	990	992	993	994	994
	1,931	983	986	989	991	994	996	999	1,001	1,003	1,005	1,007	1,010	1,012	1,014	1,016	1,017	1,019	1,020	1,021	1,022	1,022
	2,031	1,010	1,013	1,015	1,018	1,020	1,023	1,025	1,027	1,029	1,031	1,033	1,035	1,037	1,039	1,041	1,042	1,044	1,045	1,046	1,046	1,046
	2,131	1,033	1,036	1,039	1,041	1,044	1,046	1,048	1,050	1,052	1,054	1,056	1,058	1,060	1,062	1,063	1,064	1,066	1,067	1,067	1,068	1,068
	2,231	1,055	1,057	1,060	1,062	1,065	1,067	1,069	1,071	1,073	1,075	1,077	1,078	1,080	1,081	1,083	1,084	1,085	1,086	1,087	1,087	1,087
	2,331	1,074	1,076	1,079	1,081	1,083	1,085	1,087	1,089	1,091	1,093	1,095	1,096	1,098	1,099	1,101	1,102	1,103	1,104	1,104	1,104	1,104
	2,431	1,091	1,093	1,096	1,098	1,100	1,102	1,104	1,106	1,108	1,110	1,111	1,113	1,114	1,116	1,117	1,118	1,119	1,119	1,120	1,120	1,120
	2,531	1,106	1,109	1,111	1,113	1,116	1,117	1,119	1,121	1,123	1,124	1,126	1,127	1,129	1,130	1,131	1,132	1,133	1,134	1,134	1,134	1,134
	2,631	1,120	1,123	1,125	1,127	1,129	1,131	1,133	1,135	1,136	1,138	1,139	1,141	1,142	1,143	1,145	1,145	1,146	1,147	1,147	1,147	1,147
	2,731	1,133	1,135	1,138	1,140	1,142	1,144	1,145	1,147	1,149	1,150	1,152	1,153	1,154	1,156	1,157	1,157	1,158	1,159	1,159	1,159	1,159
	2,831	1,144	1,147	1,149	1,151	1,153	1,155	1,156	1,158	1,160	1,161	1,163	1,164	1,165	1,166	1,167	1,168	1,169	1,169	1,169	1,169	1,169
	2,931	1,154	1,156	1,159	1,161	1,163	1,164	1,166	1,168	1,169	1,171	1,172	1,174	1,175	1,176	1,177	1,178	1,178	1,179	1,179	1,179	1,179
	3,031	1,162	1,165	1,167	1,169	1,171	1,173	1,174	1,176	1,178	1,179	1,180	1,182	1,183	1,184	1,185	1,186	1,187	1,187	1,187	1,187	1,187
	3,131	1,169	1,171	1,174	1,176	1,178	1,179	1,181	1,183	1,184	1,186	1,187	1,188	1,190	1,191	1,192	1,193	1,193	1,194	1,194	1,194	1,194
	3,231	1,174	1,176	1,178	1,180	1,182	1,184	1,186	1,187	1,189	1,190	1,192	1,193	1,194	1,196	1,197	1,198	1,198	1,199	1,199	1,199	1,199
	3,331	1,177	1,179	1,181	1,183	1,185	1,187	1,188	1,190	1,191	1,193	1,194	1,196	1,197	1,198	1,199	1,200	1,201	1,201	1,202	1,202	1,202
	3,431	1,177	1,179	1,181	1,183	1,185	1,187	1,188	1,190	1,191	1,193	1,194	1,196	1,197	1,198	1,199	1,200	1,201	1,202	1,202	1,202	1,202
	3,531	1,177	1,179	1,181	1,183	1,185	1,187	1,188	1,190	1,191	1,193	1,194	1,196	1,197	1,198	1,199	1,200	1,201	1,202	1,202	1,202	1,202

Appendix N. Resilience Study

In addition to the Resource Adequacy study, this IRP uses a resilience framework to calculate select portfolio's resilience performance in a loss-of-load-probability modeling context. This analysis, completed by E3 and Astrape Consulting, is summarized in the attached report.

Resiliency in Planning for PNM

A report on considering extreme weather events in planning

June 2022

Energy+Environmental Economics

ASTRAPÉ CONSULTING
innovation in electric system planning

Project Team

This report was produced in a collaboration between Energy and Environmental Economics, Inc. (E3) and Astrapé Consulting and sponsored by the Public Service Company of New Mexico (PNM). While PNM provided input and perspectives regarding the study scope and analysis, all decisions regarding the analysis were made by E3 and Astrapé. Thus, this report solely reflects the research, analysis, and conclusions of the E3 and Astrapé study authors.

E3 is a leading economic consultancy focused on the clean energy transition. E3's analysis of clean energy issues and the electric power sector is utilized extensively by utilities, regulators, developers, and government agencies in leading-edge jurisdictions such as California, New York, Southwest, and Hawaii. E3 has offices in Boston, New York, San Francisco, Calgary, and Raleigh.

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Astrapé Consulting provides expertise in generation and transmission planning and is the exclusive licensor of the SERVM model. Astrapé has provided electric system planning services and resource adequacy studies for many of the largest utilities and regulators in the US, Europe, and Asia. SERVM is the premier electric system risk model used for resource adequacy studies, capacity planning assessments, energy-limited resource analyses, renewable integration studies and more. Astrapé's consultants have decades of experience in a range of electric system planning functions.

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Table of Contents

Table of Figures

Table of Tables

Abbreviations

AZPS	Arizona Public Service Company
EFOR	Equivalent Forced Outage Rate
ELCC	Effective Load Carrying Capability
ERCOT	Electric Reliability Council of Texas
ESIG	Energy Systems Integration Group
FCPP NNC	Four Corners Power Plant No New Combustion replacement
FCPP TN1	Four Corners Power Plant Technology Neutral replacement 1
FCPP TN2	Four Corners Power Plant Technology Neutral replacement 2
FCPP TN3	Four Corners Power Plant Technology Neutral replacement 3
GADS	Generating Availability Data System
GHG	Green House Gases
HILF	High Impact Low Frequency
IRP	Integrated Resource Planning
LOLE	Loss Of Load Expectation
PRM	Planning Reserve Margin
PV NNC	Palo Verde No New Combustion replacement
PVNGS	Palo Verde Nuclear Generating Station
RA	Resource Adequacy
RFP	Request For Proposals
SERVM	Strategic Energy and Risk Valuation Model
SME	Subject Matter Experts
TECO	Tampa Electric Company
TVA	Tennessee Valley Authority
UCAP	Unforced Capacity
VRE	Variable Renewable Energy

Executive Summary

Resource Adequacy planning ensures that adequate capacity is available to meet a utility's peak demand. This is especially important as electric grids throughout the US face changing demand patterns and increasing penetrations of variable energy. On the other hand, Resource Resilience, which is the focus of this study, focuses on ensuring the electric grid is prepared for and is able to minimize disruption during an extreme weather event.

Extreme weather events are expected to increase both in frequency and magnitude in the future. In the last decade, PNM experienced such occurrences at least three times – during ice storms in 2011 and 2021, and in the 2020 Western heat wave. These recent experiences have put the focus on resilience of the state's electric grid -- its ability to prepare for, withstand, respond to, and ultimately recover quickly from loss of function after a severe weather event. A crucial component of ensuring a resilient grid is to procure the correct types and quantities of resources that will enable it to avoid or minimize the impact of widespread blackouts. Procurement of resources is primarily driven by the needs identified in the IRP process, which identifies a cost-effective portfolio of resources to meet projected electricity demand over the next twenty years. Until now, data, modeling, and mathematical limitations have limited consideration of extreme weather events in PNM's modeling process. This report aims to fill the gap by clarifying what resilience in planning means for PNM and its relationship to traditional resource adequacy planning. Additionally, this report seeks to understand characteristics of resources that would help PNM withstand and possibly avoid the worst impacts of extreme events. Ultimately, the long-term intent of this report is to ensure PNM's procurement meets not only PNM's resource adequacy requirements, but also its resilience needs.

The analysis conducted in this study to understand the impacts of extreme weather on portfolio performance consisted of several steps. First, after consultation with PNM SMEs and after examining PNM's historical operations data, two types of extreme events were determined to pose the greatest threat – ice storms and heat waves. Sensitivities were then crafted where these events were parameterized using indicators like increased loads, renewable energy availability, weather-induced generator outages, and tighter market conditions. Simultaneously, a set of portfolios based on Four Corners Coal Plant replacement resources were assembled to be tested. A 'Base Case' portfolio was also tested that models the system as it exists today that retains Four Corners in the portfolio. To differentiate the performance of these portfolios in extreme weather and non-extreme conditions, the portfolios were all designed to meet the same resource adequacy standard of 0.2 LOLE.[1] The portfolios were then tested using the production costing software, SERVM (the same tool used in and holding many of the same assumptions as the 2020 PNM IRP). For each portfolio in each sensitivity, pre-determined resilience metrics such as average MWh lost, duration of the outage, probability of an outage were calculated.

Key findings from the study that provide insight into portfolio performance in extreme weather and how this might inform future resource procurements are found below.

[1] Expected load loss of 0.2 days per year (this is a measure of frequency)

- ***PNM's Resource Adequacy planning practices work as expected and allow PNM to maintain reliability under most summer conditions.*** PNM's resource planning framework is designed to meet a loss of load expectation (LOLE) standard of 0.2 days per year.[2] This standard allows for some probability of reliability events – typically in the summer peak – but also ensures that their occurrence is rare. The modeling in this study confirms that the RA process works as intended, illustrating that PNM's resource portfolios are able to meet loads reliably under most – but not all – summer conditions. In extreme circumstances – for instance, if summer loads reach 1-in-20 year levels, or if summer temperatures force large amounts of PNM generation or transmission to be offline -- PNM might experience loss of load events.

- ***PNM's system is designed for a summer peak but may still be vulnerable to extreme events in winter.*** PNM's system is designed to meet an RA standard that is based on summer peak. This study finds that in ice storms, if multiple generators are forced offline (as happened in PNM in 2011 and in Texas in 2021) either due to transmission failure or generator malfunction – or if the region as a whole experiences significant loss of generating capability – PNM may experience loss of load. These types of events are outside the envelope of PNM's traditional resource adequacy planning but do present a reliability risk to customers.

- ***Different resource portfolios that meet the same LOLE planning standard have varying performance during extreme events.*** All tested portfolios met the same LOLE standard of 0.2 days per year. This study shows that although the portfolios are all designed using the same resource adequacy standard, their performance varies widely in extreme weather simulations. In other words, the likelihood that an extreme event might result in an outage – and the size of its impact – may vary under different portfolios.

- ***Stress testing candidate portfolios for resilience can help identify differences in their performance.*** In the long-term, portfolios should be designed (and corresponding modeling frameworks developed) that successfully address both resource adequacy and resilience concerns. In the short-term, cost-effective candidate portfolios from the resource adequacy IRP process should be tested for resilience. The insights from such stress testing should be used to inform capacity investments that PNM makes.

- ***Weatherization of all generation resources to allow for performance under extreme conditions is an important resilience consideration.*** In the winter events studied, winterization measures for natural gas generators are demonstrated to have a large impact on the size, frequency, and duration of loss of load events. PNM has already invested in winterization of its own generation assets and has added criteria to PPAs to ensure wider temperature operating requirements. Similar to winter, engineering and operational measures to ensure resources are available under extreme summer temperatures – including natural gas and energy storage – can reduce the risk of loss of load events due to coincidence of high loads and widespread unit outages.

[2] PNM plans to move to a 0.1 LOLE standard in the next IRP cycle.

- ***Firm generation resources reduce the severity of extreme event impacts in both summer and winter.*** During severe weather events, firm resources – resources that are not energy-limited, help reduce both magnitude and duration of load outages and generally reduce the instantaneous power lost (peak MW). While winterization is one way to firm resources up, the operating characteristics of resources must also be considered. Firm resources need not be conventional fuel based, but instead could include hydrogen-fueled generators or long-duration storage.

- ***During ice storms, broader southwest dynamics will have significant impact on PNM's ability to avoid outages under winter extreme events.*** Historically, PNM has relied on neighbors' support during regional extreme winter weather. The notion of reliance on the external market for support during winter conditions is also built into PNM's resource adequacy planning practices, which allow for significant levels of imports in the winter season. This dynamic means that PNM's ability to maintain reliability under regional-scale extreme events may depend not only on the characteristics of its own loads and resources but on dynamics in the broader footprint of the Southwest region. Further, although not examined in this study, this points to the importance of PNM's transmission infrastructure (and the need to examine its vulnerability) during ice storms.

- ***As PNM increases its energy storage portfolio, its operational limits and utilization should be understood and considered in resource adequacy modeling.*** Conservative battery operations, where load shed is prioritized over economic arbitrage, helps mitigate the duration of outages during extreme operational stress. These considerations should be adequately reflected in resource adequacy modeling in addition to informing operator training and designing battery protocols.

PNM has committed to achieving a carbon-emissions free portfolio by 2040. It also has intermediate emission reduction goals to meet along the way. PNM's path to decarbonization should also adequately consider resilience in extreme weather situations along with other resource adequacy factors. This study demonstrates the effect of several factors on portfolio performance in extreme weather and is meant to lay the foundation necessary to quantify the impacts of extreme weather and support procurement considerations as the utility transitions to a carbon-emission free future.

1 Introduction

1.1 Study motivation

The state of New Mexico has been at the forefront of the renewable transition in the United States, especially in the southwest. The Energy Transition Act of 2019 (Senate Bill 489) set ambitious targets of 50% RPS and 100% carbon-free electricity by 2030 and 2045 respectively for the state.[3] As a requirement of and in support of this law, the Public Service Company of New Mexico (PNM) has established a goal of 100% carbon emission-free electricity for its customers by 2040.

Ensuring reliable electric service for end users is a cornerstone of electric sector planning in the developed world. The traditional definition of reliability as used in the planning community is closely linked to an expectation of lost load or the maximum number of hours PNM can afford to lose power over a period. In most places across the US, this Loss of Load Expectation (LOLE) standard is set to 0.1 or 0.2 days per year. PNM currently uses a 0.2 LOLE standard for its resource planning analyses.[4] This is reflected in the 2020 IRP report. While PNM uses this LOLE standard to ensure enough capacity is built to meet load under reasonably predictable conditions, High Intensity Low Frequency (HILF) or extreme weather events such as ice storms or heatwaves are still not fully considered in the planning paradigm due to data and modeling limitations.

HILF events are expected to increase in both frequency and magnitude in the future. PNM's own operational experience bears this out – in the past 10 years, PNM has experienced extreme events at least 3 times: the 2011 ice storm, 2020 heat wave, and 2021 ice storm. Simultaneously, PNM's conventional fleet of coal and gas-fired units is being replaced by Variable Renewable Energy (VRE) resources to meet Green House Gases ("GHG") goals. This can compound the problem of keeping lights on during severe weather events. For example, solar production might plummet during an ice storm.

The goal of this work then is to set the resilience context for planning in PNM, explore and characterize potential extreme weather events that affect PNM's territory, and understand PNM's resource mix's resilience to and performance under these conditions. Broadly, the goal of this study is to act as the foundation for bridging the gap between PNM's IRP process and planning for extreme conditions.

1.2 Report contents

The remainder of the report is organized as follows: Section 2 provides background and study context, including the historical motivation for PNM to look at resilience. It also defines resilience in the context of this study and gives an overview of the study setup. Section 3 provides an overview of the modeling approach, the software used, sensitivities that were simulated, and key assumptions utilized in the

[3] Not all RPS and Emissions requirements under the Energy Transition Act are enumerated.

[4] PNM plans to move to a 0.1 LOLE standard in the next IRP cycle.

analysis. Section 4 presents and discusses results from the modeling analysis and Section 5 is the conclusions section. In it, the implications of the results of the modeling in this study are discussed including limitations of this study and possible next steps.

2 Background and Context

One of the requests expressed by stakeholders leading up to the 2020 IRP was a desire to study a "climate change future." The IRP process was being conducted in the backdrop of California's rolling blackouts in Summer 2020 and many stakeholders noted concerns about the impact of extreme weather events such as long and geographically widespread heat waves on PNM's service territory. While PNM shares these concerns, such risks were not studied quantitatively in the IRP process due to limitations in the modeling framework – in particular, the lack of ability to adequately represent extreme weather events. Section 1.3 of the IRP acknowledged these limitations and committed to "developing methods to incorporate these considerations into future modeling." This study seeks to establish the foundation necessary to supplement PNM's IRP process with insights from extreme weather impacts on PNM's system and aims to understand generators' performance during such events.

HILF events are of particular concern to PNM as its system was operationally stressed at least three times in the last 10 years (2011, 2020, and 2021). Below is a brief overview of each of these events. The following is by no means meant to be a comprehensive review of these events. Rather, it is meant to illustrate the complex interactions between variables such as weather, load, market support, and outages. It is also meant to highlight the critical interdependency between the gas network and the electric grid, especially in winter.

February 2011 Freeze-Off

In the first week of February 2011, extreme cold weather in southern New Mexico and far west Texas resulted in a series of localized outages and natural gas curtailments affecting a total of 4.4 million people in the Southwest region. Several days of sub-freezing temperatures led to widespread wellhead freeze-offs in the Permian Basin, which left some communities in New Mexico without any gas for up to 6 days[5].

Gas supply curtailment induced low gas pressure, which in turn tripped several circuit breakers within PNM. To reduce gas usage, PNM attempted to switch from natural gas to distillate fuel oil at its Rio Bravo[6] combustion turbine.[7] The prolonged cold weather also caused failures of electric transmission infrastructures - a static wire, stretched by the extremely cold weather, snapped, and fell on one of the phases of the line, interrupting service to a town in Clayton for roughly two hours[8]. Additionally, PNM was forced to implement a localized outages in southern New Mexico as a transmission line locked out due to a failed conductor clamp. This led to the overload of a Tri-State transmission line and localized curtailment. In total, over the course of the event, a little over 21,000 PNM customers were affected.

February 2021 Cold Snap

More recently, a record-breaking cold snap hit much of the central United States during early to mid-February 2021. The cold snap was centered over Texas and the Electric Reliability Council of Texas (ERCOT)

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[5] Microsoft Word - RISA cold snap report 9-7-11 v10.docx (nerc.com) (starting from p14)
[6] In 2011, this unit was called "Delta Person".
[7] A faulty valve prevented this attempted changeover.
[8] Report on outages and curtailments during the Southwest cold weather event (ferc.gov)

territory suffered a major power crisis, as millions throughout the state were left without power for up to six days.[9] PNM's utility services mostly continued as normal: power facilities were winterized post-2011 and well prepared for the cold weather; shifting natural gas supply away from Permian Basin and predominantly toward the San Juan Basin prevented customers from losing service due to supply disruptions in Texas.[10] PNM was also able to switch from gas to oil at its dual-fuel resource facilities to mitigate gas purchases.[11] PNM still experienced some pockets of disruption, for example, in the Valencia and Las Vegas counties where about 6,000-7,000 customers were without power at one point due to distribution system outages.[12]

August 2020 Western Heat Wave

In August 2020, a widespread heat wave caused a surge of electric demand across the Western Interconnection. While the most extreme effects of this event were in California, where the California Independent System Operator implemented rolling blackouts for the first time since the 2001 Energy Crisis, utilities throughout the West experienced a tightness of supply, and Energy Emergency Alerts were widespread.

Between August 14-17, when conditions in the rest of the West were extreme, PNM operators were able to balance the system without relying on the market for support. However, towards the end of August 17, PNM experienced a large thermal generator outage. Over the subsequent several days, PNM's remaining resources were stretched to their limits; during PNM's net peak periods, Western bilateral markets were illiquid, and PNM were unable to procure additional supplies from the wholesale market despite offering high prices (see Figure 1).[13]

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[9] Busby, J. W., Baker, K., Bazilian, M. D., Gilbert, A. Q., Grubert, E., Rai, V., ... & Webber, M. E. (2021). Cascading risks: Understanding the 2021 winter blackout in Texas. Energy Research & Social Science, 77, 102106.

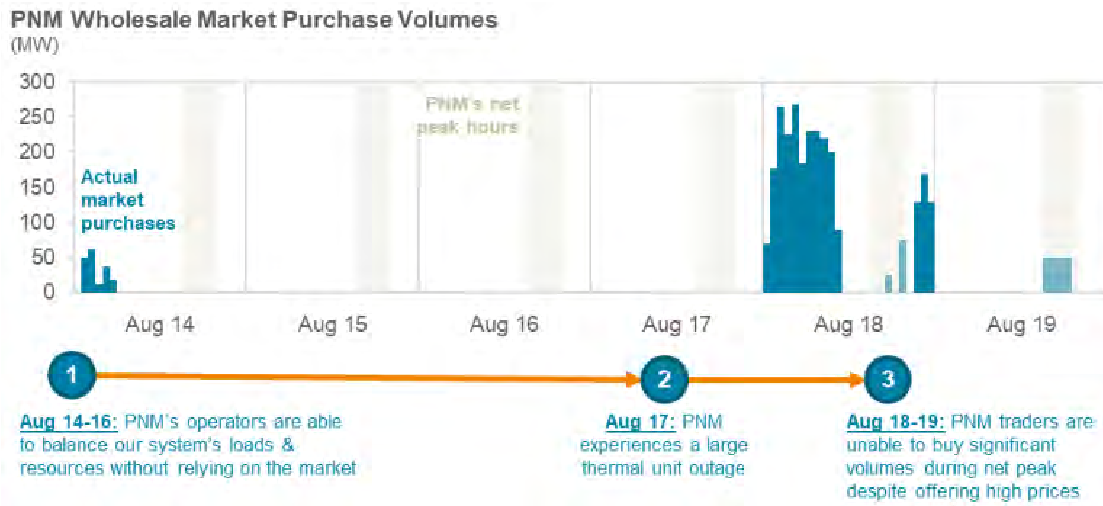
[10] San Juan Basin played key role in preventing outages in New Mexico (daily-times.com)

[11] Southwest Regulators Hear From Utilities in Aftermath of Texas Catastrophe | Southwest | newsdata.com

[12] https://www.koat.com/article/winter-storm-causes-power-outages-in-multiple-counties/35504077

[13] PNM-2020-IRP-FULL-PLAN-NEW-COVER.pdf (pnmforwardtogether.com)

Figure 1: PNM's hourly wholesale market purchases during the August 2020 heatwave[14]



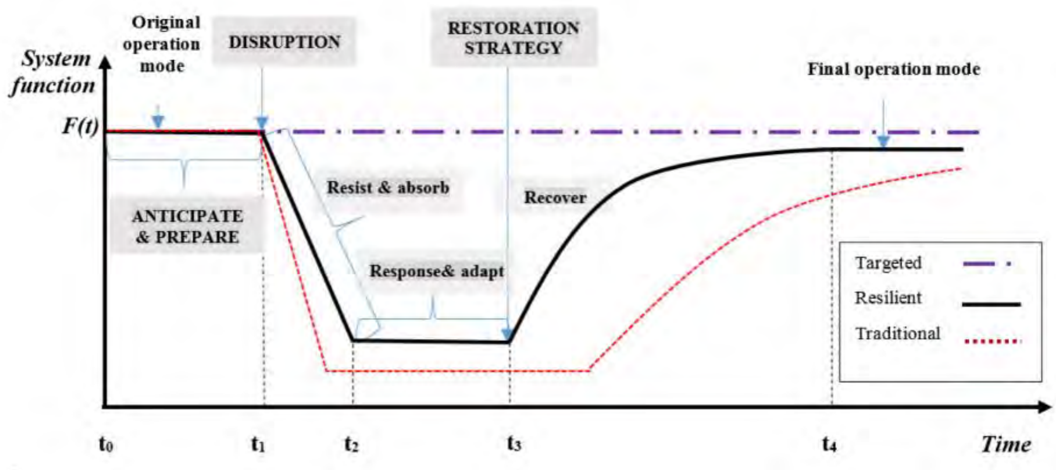
It is clear from the overviews above that over the past decade, in extreme weather situations, PNM's system was operationally stressed. Generators and transmission lines experienced weather-induced outages, gas supply was constrained, and loads were high. In 2011, the utility experienced both forced and rotating blackouts. Post-2011 and winterization, while PNM was able to avoid widespread blackouts, in some cases, the system came perilously close to experiencing one (such as in 2021 and 2020). Anecdotally, PNM states that there were many near-misses, and the affected customers number would have been even higher if during these extreme events, more infrastructure had failed. Having a framework to characterize and simulate extreme events will help in understanding generator performance in extreme weather. This will in turn inform the types, amounts, and operational characteristics of generators needed to withstand such events.

2.1 What is grid resilience and its meaning in this study?

There is no single definition of grid resilience that has widely adopted by the industry. Multiple agencies and research institutes have defined resilience in the context of policy proposals and research projects. FERC, for example, defines it as the "*the ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event."* NARUC too defines resilience as *"Robustness and recovery characteristics of utility infrastructure and operations, which avoid or minimize interruptions of service during an extraordinary and hazardous event."* Across most definitions, the focus is generally on a system's ability to withstand, reduce the impact, and rapidly recover from disruptive events.

[14] Reproduced from Page 49 of PNM IRP

Figure 2: Illustrative performance of a resilient grid[15]



Resilience is seen as evaluating a system's performance under different phases of a disruption that includes "prepare", "absorb", "adapt", and "recover", referred to as the "resilience trapezoid" in some reports.[15] The second commonality across most definitions is that resilience is typically evaluated against *specific* HILF events. The resilience characteristics needed to withstand an ice storm are very different than one required to withstand an earthquake.

2.1.1 Grid resilience in this study

A disruptive event could impact different components of an electricity grid. The resilience of a power system includes resilience of its generation supply, transmission and distribution infrastructures, and system communications. Different components of the grid might be prone to a specific set of resiliency threats and require different adaptation measures. For example, extreme weather events and natural disasters could affect generators. Adaptation and mitigation measures for generators in such situations include generator hardening, fuel supply hardening, resource overbuilds, or investing in distributed resources. Adapting the transmission and distribution system to such events, on the other hand, include line hardening, network redundancy, or underground builds, etc. Although resilience is usually discussed with a focus on extreme weather events, there are other threats the grid might face such as cyber-threats. A different set of investments in generators and transmission infrastructure are required to mitigate and manage such risks. More generally, resilience-focused actions and investments can be thought of being part of a matrix with specific identified threats (cyber, hurricanes, earthquakes, ice-storms) being one axis and the other being the targeted grid infrastructure component (generators, transmission, distribution, software). While resilience is an umbrella term that is used for the entire gamut of threat-component actions and investments, implementation studies such as this one generally focus only on one cell of this matrix. This study deals only with generator (or supply) resilience in the context of two identified threats to the PNM system – ice storms and heat waves (see section 3.4 on how these were chosen).

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[15] Bie, Zhaohong, et al. "Battling the extreme: A study on the power system resilience." Proceedings of the IEEE 105.7 (2017): 1253-1266.

Resilience studies conducted by other utilities in the U.S. also have a narrow focus. For example, Tampa Electric Company (TECO) submitted a ten-year storm protection plan to the Florida Public Service Commission in April 2020 following the requirement set by the Florida legislature.[16] The plan focused specifically on transmission and distribution resilience and laid out a comprehensive framework to assess potential risks and impacts from storms and evaluate mitigation measures. Tennessee Valley Authority's (TVA) resilience study was a more expansive and focused on Transmission infrastructure and a wide variety of threats were evaluated systematically – from Cyber-attacks to Severe flooding.[17]

As mentioned above, in this study, the focus is only generator resilience. T&D resilience is equally important in the context of extreme events. But given the time and scope of this study and its eventual goal of informing the broader IRP process, the immediate focus is only on supply resilience.[18]

2.1.2 Resilience, Reliability, and Resource Adequacy

To further understand what resilience means in this study, it is important to characterize it with respect to other terms used in this space – Reliability and Resource Adequacy. Differentiating Resilience from Resource Adequacy (which is the primary focus of the IRP process) and understanding how together, they help make PNM's system more reliable will define the scope for supply resilience.

[16] https://www.burnsmcd.com/insightsnews/1898/case-studies/making-case-for-utility-infrastructure-hardening
[17] Clayton Clem, *Approaches to Resiliency at TVA*
[18] In the rest of the report, the term 'resilience' refers to supply resilience.

Figure 3: Relationship between Reliability, Resource Adequacy, and Resilience

Distribution System Reliability

Ensure distribution systems are planned to enable delivery of electricity to loads even under severe contingency conditions

Transmission System Reliability

Ensure transmission systems can deliver electricity from generators to distribution systems under steady state and dynamic contingency conditions

Resource Adequacy

Ensure sufficient generation resources are available to meet load with an acceptable level of reliability across a broad range of load conditions while accounting for generator outages , weather impacts on loads & resources, and other constraints on generator availability

Operational Reliability

Maintain system reliability in real-time operations by balancing loads with generation while maintaining sufficient operating reserves to meet flexibility needs and respond to contingencies

Resilience

Anticipate, respond to, and recover from extreme unexpected events and systemic shocks to any and allparts of the electricity system, including extreme weather events and cyber threats

‘Reliability’ is usually considered to be an umbrella term under which Resource Adequacy and Resilience are two components (See Figure 3). The other components of reliability are defined as Transmission Stability, Distribution reliability, and Operational reliability.

As efforts to define what it means to plan for a resilient supply of electricity continue, it will be critical to clarify the differences between utilities’ traditional efforts to plan for resource adequacy and emerging efforts to improve resilience. NERC defines resource adequacy as “the ability of the electric system to supply the aggregate electrical demand and energy requirements of the end-use customers at all times*, taking into account scheduled and reasonably expected unscheduled outages of system elements”* (emphasis added). Planners have relied on a range of methods and tools to plan for resource adequacy, but most approaches – like the ones used by PNM – are built upon a foundation of probabilistic analysis that relies on mathematical techniques to measure the likelihood of potential supply shortfalls based on known probabilities of extreme weather events, generator outages, and variable resource production patterns.

This definition of resource adequacy focuses on meeting customer loads under “reasonably expected” outages of system elements – and yet, instances when outages and conditions have clearly exceeded “reasonable expectation” have led to some of the most notable and impactful reliability events in recent memory. Most recently, during Winter Storm Uri in 2021, widespread unplanned outages due to extreme cold temperatures and cascading failures of gas supply infrastructure left millions in Texas without power for days; at points, the amount of expected capacity unavailable due to unplanned outages reached 34,000 MW, nearly half the system's all time winter peak.[19] Four years earlier, Hurricane Maria destroyed generation, transmission, and distribution electric infrastructure across the island of Puerto Rico, leaving millions without power for months; restoration of electric service for some required nearly a year.[20] The risks posed by these HILF events – which are difficult to account for directly in resource adequacy because of their complexity and their uncertainty – underscore the importance of complementary efforts to consider possibilities beyond the bounds of "reasonable expectation." Such extreme events are the focus of the emerging field of "resilience."

Simply put, resource adequacy takes into consideration system operation under "normal" conditions including reasonable assumptions around load uncertainty, generator failures, and weather variability. Resilience on the other hand deals with "abnormal" conditions – extreme weather events or hard-to-predict cyber and human attacks on the system. In this study, as mentioned above, the focus is only on the impact of extreme weather events on PNM generators.

2.2 Study setup

An easy way to visualize this study's setup is to consider Figure 4. This is a schematic that shows that severe weather conditions or related conditions are relatively rare compared to the body of "normal" events. Borrowing terminology from Gholami et al., 2018,[21] the weather conditions that make up this distribution can be thought of as falling into three categories as indicated in the schematic:

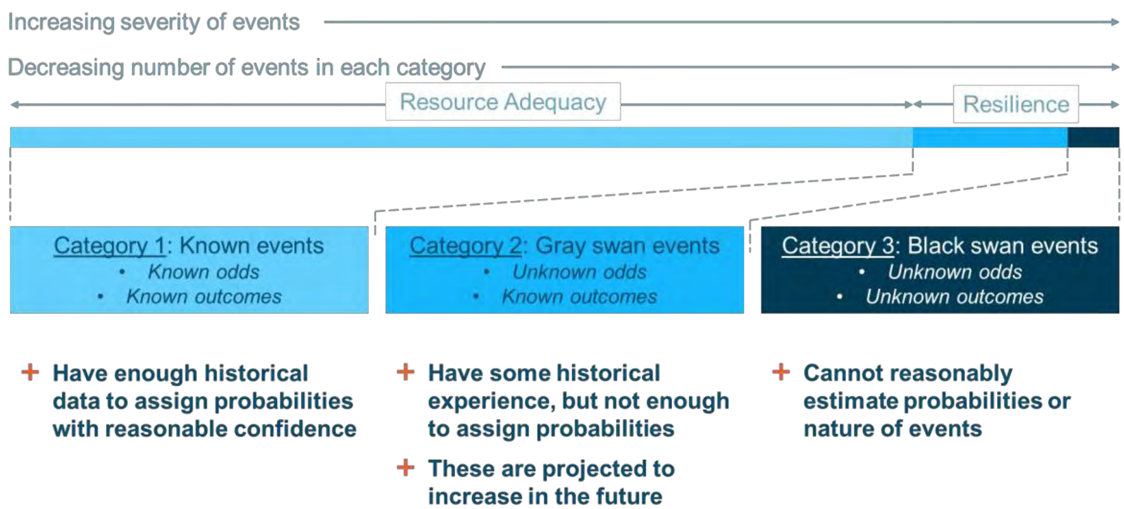
1. **Known events:** Conditions for enough historic data is available that it is possible to reasonably estimate the odds of these conditions occurring. There is also enough historic data of grid performance during these conditions that these can be considered "normal" operating conditions. These are already directly captured in Resource Adequacy studies such as that completed in PNM's IRP process.
2. **Gray swan events:** The second category are weather conditions whose nature can be predicted based on some indications or occurrences from the past or future projections, but the data is too sparse to reasonably estimate their odds. In this study, these are referred to as gray swan events.
3. **Black swan events:** The third category are the black swan conditions which by definition cannot be predicted. These are conditions that for which neither odds nor nature can be predicted.

[19] https://www.ferc.gov/media/february-2021-cold-weather-outages-texas-and-south-central-united-states-ferc-nerc-and

[20] Robles, Frances. "Puerto Rico Spent 11 Months Turning the Power Back On. They Finally Got to Her." *New York Times*. https://www.nytimes.com/2018/08/14/us/puerto-rico-electricity-power.html

[21] Gholami A, Shekari T, Amirioun MH, Aminifar F, Amini MH, Sargolzaei A. *Toward a Consensus on the Definition and Taxonomy of Power System Resilience*. IEEE Access. 2018;6:32035-32053. doi:10.1109/ACCESS.2018.2845378

Figure 4: The three categories of events faced by power systems

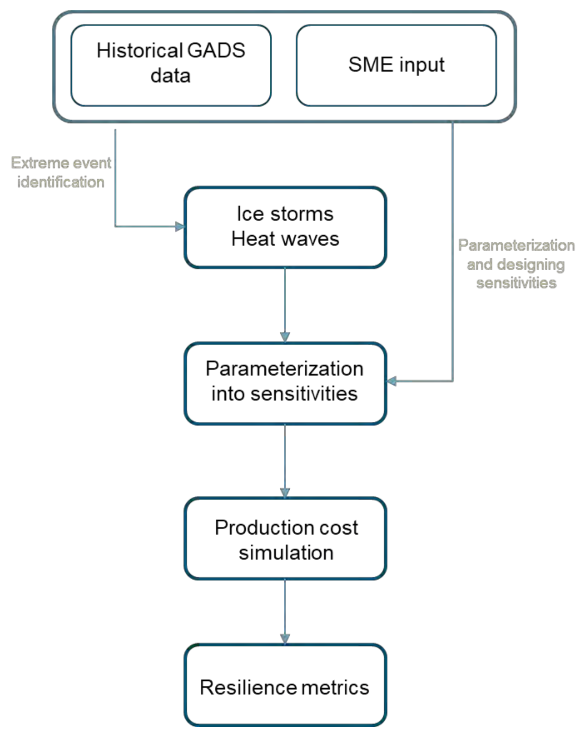


Building on the foundation of PNM's existing resource adequacy analysis developed in its IRP, this study's objective is to investigate a range of the Gray swan events in category 2. Category 1 events are already being analyzed and included in decision-making (along-with some estimates of category 2) in the IRP. This study aims to formalize the process of studying category 2 events with the long-term goal of informing the IRP process with learnings from future resilience/gray swan events studies.

3 Modeling and Sensitivity Analysis Approach

The previous section already established that estimating reliable odds for gray swan events is not possible (if it were possible, these conditions should be incorporated directly into resource adequacy analysis in the planning process). In the absence of robust data to characterize probabilities of these events in a manner that would allow them to be incorporated into traditional statistical assessments of resource adequacy, event-based sensitivity analysis to assess performance provides a complementary view as to how different portfolios might perform under specific extreme events. An overview of its implementation in this study is shown in Figure 5.

Figure 5: Schematic of analysis approach



- First, an identification exercise was carried out to detail the type and nature of extreme events of greatest concern to PNM based on the specific geography and meteorology of the state of New Mexico. For PNM, this was determined to be ice storms and heat waves; each of these events serves as the basis for a "case study" in this analysis.
- Next, these events were parameterized into simulation sensitivities. For example, ice storms were defined by different levels of extreme temperatures, increased loads, weather-correlated generator outages, and reduced external market support.
- Multiple sensitivities of ice storms and heat waves were put together after consultation with the PNM team. The sparsity of historical data on gray swan events meant this exercise was necessarily informed by inputs from both historical data and PNM subject matter experts.
- Multiple PNM resource portfolios were designed for analysis, all of which met the same LOLE standard of 0.2 days per year. Consequently, any differences in portfolio performance across

sensitivities can be attributed to differences in portfolios' performance during the extreme event being simulated.

- The identified sensitivities were then simulated using production cost simulation software, SERVM, and from simulation results, pre-determined resilience metrics were calculated for all portfolios.

The following sections describe the above steps in greater detail and present the tested portfolios and other study assumptions.

3.1 Modeling methodology and connection to PNM 2020 IRP

In the 2020 IRP, PNM used SERVM (Strategic Energy and Risk Valuation Model), a production cost and loss of load probability model, as the basis for its resource adequacy planning. Using an approach consistent with industry best practices and followed by many utilities, PNM used an annual loss-of-load-probability modeling framework to assess and characterize its resource adequacy needs. Specifically, SERVM was used to develop two key inputs into the IRP planning process:

- The planning reserve margin requirement for the PNM system needed to meet an LOLE standard of 0.2 days per year; and
- The effective load carrying capability (ELCC) of renewables, demand response, and storage resources, which measures their contribution towards that PRM requirement.

Additionally, PNM also used SERVM to validate that the portfolios produced by its long-term capacity expansion model (EnCompass) met or exceeded the desired standard for resource adequacy (an LOLE of 0.2 days per year).

This study uses the same model and datasets to study the aforementioned questions relating to resiliency, but the use of the model is necessarily different given the scope of the questions. Whereas the analysis conducted in the IRP focused on characterizing the probability of insufficient supply based on known probability distributions for load, renewable availability, generator outages, and storage dispatch, this study uses SERVM to examine specific case studies of extreme events to assess their impact. Each case study represents a plausible extreme weather event lasting up to one week in duration. To understand the possible range of different outcomes in each event, stochastics and sensitivities are applied in each case study:

- Each week-long case study is simulated multiple times using a Monte Carlo approach to capture the impact of the randomness of unit forced outages;
- Key assumptions in each case study are varied under sensitivities to explore their impacts.

The resulting output from these simulations is a realization of thousands of possible reliability outcomes under a specific extreme event that allow this study to characterize the potential distribution of risks.

3.2 Measured metrics

Currently, there is no widely agreed upon standard for measuring resilience of a system. For this study, the following metrics were measured and used to quantify portfolio performance during HILF events:

- Probability of shedding load
- Expected Value of MWh shed (MWh)
- Expected Value of worst hour of shedding (MW)
- Number of unique hours where loss of load was observed to occur (Hours)

Probability of load shed is the fraction of iterations that see any load shed. Generator outages were modeled as stochastic in each iteration (while hewing to an annual outage distribution) and each iteration is different in the type and amount of outage it samples. So, for the same portfolio, one simulation run might see no loss of load during the critical week while another run might experience loss of load. This is because in some cases, the system will be able to withstand the magnitude and nature of the specific randomly drawn generator outages while in others, even after accounting for imports, load shed might be necessary. Expected Value of MWh shed is the average of the load shed over the critical week across all Monte Carlo runs. And the expected value of worst hour of shedding is the average of the peak MW shed in each run. Lastly, the number of unique hours where loss of load was observed is the count of distinct hours within each sensitivity where load was shed.[22]

3.3 Generation portfolios

This study analyzes four different generation portfolios. The four portfolios reflect different combinations of resources that could meet PNM's 2025 needs. Below, the Base Portfolio is described first, and then alternative portfolios are presented. The alternative portfolios contain the same resources as the Base Portfolio except for Four Corner Power Plant (FCPP). Each alternative portfolio explores a replacement of FCPP. SERVM was used to assess the reliability of the portfolios and adjustments were made to ensure all portfolios met the 0.2 LOLE standard.

3.3.1 Base portfolio

The Base Portfolio that represents the PNM's 2025 mix is based on a Palo Verde Replacement portfolio where a portion of the Palo Verde Nuclear Generating Station (PVNGS) is replaced with 190 MW of 4 hour battery-paired-solar, 100 MW of standalone 2 hour batteries, and 450 MW of solar units. This portfolio was selected by the Encompass capacity expansion tool using ELCCs developed from SERVM while targeting a 18% UCAP Reserve Margin target.

Conventional thermal resources owned by the company and controlled via Purchase Power Agreements were modeled consistent with the 2025 study year. These resources were economically committed and dispatched to load on a 5-minute basis respecting all unit constraints including startup times, ramp rates, minimum up times, minimum down times, and shutdown times. All thermal resources were allowed to serve regulation (if AGC capable), spinning, and load following reserves as long as the minimum capacity level is less than the maximum capacity.

[22] These distinct hours could be contiguous or not. This metric gives the combined duration of all outages in the critical week. In the rest of the report, this is referred to simply as duration or length of the outage.

The PNM system resource mix as studied is provided in Table 1.

Table 1: Tested resources characteristics

Type	Capacity (MW)	EFOR (%)
Solar PV	1,523	0
Wind	607	0
Combined Cycle	425	4
Combustion Turbine	416	3
Solar-Battery Hybrid	300	1
Steam Turbine Coal	200	20
Geothermal	12	24
Nuclear	298	2
Demand Response	48	0
Steam Turbine Gas	146	3

The modeled Equivalent Forced Outage Rates were based on historical performance or expected future performance provided by PNM. Unlike typical production cost models, SERVM does not use an Equivalent Forced Outage Rate (EFOR) for each unit as an input. Instead, historical (GADS) data events are used to create an outage probability distribution for each unit and SERVM randomly draws from this distribution for each unit to simulate outages.[23]

3.3.2 Alternative portfolios

To gain insight into how different types of resources would perform under severe weather stress, alternative portfolios were tested and compared to the base case. The alternative portfolios considered various replacements of the Four Corners Power Plant (shown earlier in this report as 200 MW of "Steam Turbine Coal"). The replacement portfolios were selected based on either a technology neutral or no new combustion strategy and were tested in SERVM to meet a 0.2 summer LOLE reliability standard.[24] Any differences between portfolios' performance in this study is inferred to be due to resiliency differences between each, as well as events specific to the 2011 and 2020 weather events.

The alternative portfolios tested are summarized in Table 1. PV NNC is the base case (Palo Verde No New Combustion replacement). One of the FCPP units is assumed to be on maintenance in winter. The second portfolio is PV NNC Change which is the Base Portfolio except both FCPP units are available to PNM. FCPP NNC, TN1, TN2, and TN3 are sensitivities in which the 200 MW Four Corners plant is replaced. The FCPP NNC (No New Combustion replacement) replaces FCPP with a mix of Solar, Stand-alone batteries (4hr), and Paired batteries (2hr). TN1-3 replace FCPP with Technology Neutral. FCPP TN1 uses a combination of

[23] Units without historical data use data from similar units. See appendix for more details on outage modeling

[24] The portfolios were tested in the same environment as the IRP and PV replacement studies (i.e., all weather years were used)

new gas, wind, and batteries. TN2 is a combination of new gas, solar, and batteries and TN3 consists of all new gas. Another modeling assumption was that all new gas resources were assumed to be aeroderivative turbines with winterization.

Table 2: Portfolio mixes tested in 2025.

	Sensitivity-Specific Resources (MW)					
Resource	**PV NNC (Base)**	**PV NNC Change (Only in winter)**	**FCPP NNC**	**FCPP TN1**	**FCPP TN2**	**FCPP TN3 (Gas Only)**
Palo Verde	288	-	-	-	-	-
Demand Response	48	-	-	-	-	-
Geothermal	11	-	-	-	-	-
Four Corners	200 (summer)/100 (winter)[25]	+100 (only in winter)	-200	-200	-200	-200
Gas	987	-	-	+39	+39	+152
Wind	607	-	-	+180	-	-
Solar	1523	-	+96	-	+96	-
Batteries (4hr)	490	-	+108	+90	+108	-
Batteries (2hr)	100	-	+48	-	-	-

In the Ice storm case study, Four Corners Unit 4 (100 MW) was modeled as being on maintenance. This refers to the weather-normal maintenance modeling performed (maintenance is scheduled during normal weather). For the Ice storm assessment an additional portfolio was created where both Four Corners units were available, subject to random forced outages. This portfolio is referred to as 'PV NNC Change'.

3.4 Extreme event identification and simulated sensitivities

Plausible extreme events for analysis were identified based on a survey of historic events and in consultation with SMEs from the PNM IRP team. The framework took into consideration PNM's operational and weather conditions to determine the extreme events to be simulated. Broadly, this study

[25] An additional 100 MW is assumed to be on maintenance in winter. The PV NNC Change portfolio assumes the full 200 MW is available to PNM.

examines two case studies – an extreme winter case study and an extreme summer case study. This was based on PNM's historical experiences of facing extreme summer and winter events, for example, the 2020 heat wave and 2021 ice storm. Multiple sensitivities were simulated for a critical week within each case study (Ice storm case study and Heat wave case study) where sensitivities were defined by a combination of different levels of weather conditions, levels of market support, and generator outages. Each category (Ice storm or Heat wave) starts with a base case followed by sensitivities reflecting increasing stress on PNM. The parameters and assumptions used in each category are discussed in the upcoming sections.

3.4.1 Parameters for summer extreme event: Heat wave

The Summer 2020 heat wave gave way to sustained temperatures across the western interconnect for several days. During this event, PNM observed decreased market depth for imports. This year was selected as a starting point to define potential heat waves PNM could face in the future. This was deemed appropriate given the severity and recentness of the event.

Given the event occurred only a year prior to this analysis, actual loads and renewable performance was directly utilized for this analysis. Generator outages were simulated as random Monte Carlo draws to reflect uncertainty surrounding them. Random forced outages were modeled to capture the risk of a generator having failed (even if it didn't necessarily fail during the actual event). This provides a wider distribution of outcomes to understand the impact of this uncertainty on results. For neighbor assistance, the assumptions and constraints used in the IRP were enforced.[26] These constraints were initially informed by the summer 2020 events, and simulating neighbors allows for the full interaction of PNM with neighboring entities for commitment and dispatch decisions. Table 3 summarizes data and assumptions used to define the heat wave in the simulations.

Table 3: Summary of variable values for Heat wave case study

Input	Summer
Weather Year	2020
Solar Data	Actual Capacity Factor
Wind Data	Actual Capacity Factor
Load Data	Actual
Generator Outages	Monte Carlo
Planned Outages	Weather-Normal
Neighbor Assistance	IRP Assumptions

3.4.1.1 Heat wave case study

In addition to simulating each portfolio in the base case, several sensitivities were identified, and the portfolios were cross tested across all of them. These sensitivities focus on several themes of heightening

[26] 200-300 MW during high load conditions, and 50 MW cap during net demand periods
[27] Actual capacity factors were applied to the installed capacity of the modeled portfolio

risk conditions to PNM and neighboring areas. The theme of each sensitivity, as well as a description are in Table 4.

Table 4: Heat wave case study sensitivities

Season	Sensitivity	Description
Summer	Base	Base case heat wave
	Island	PNM is simulated as an island (no neighbors, imports, and exports = 0)
	1 in 20	PNM's peak load is consistent with a 1 in 20 load forecast
	G1	The largest battery contingency occurs for the week (150 MW)
	G2	The two largest battery contingencies occur for the week (150 MW + 150 MW = 300 MW)
	G2 + 1 in 20	Sensitivity G2 + Sensitivity 1 in 20

One of the most significant aspects of the changes in the region's projected portfolio of resources as represented by the IRP portfolios is the dramatic increase on battery storage over the analysis horizon. Recent technological advances and continued cost reductions provide cause for optimism, and yet: the projected quantities of installed capacity of battery storage – 590 MW by 2025 and 1535-2306 MW[28] by 2040 – are profoundly large for a technology that is, as yet, largely untested at grid scale. In these early years, unexpected events may result in extended outages as utilities and regulators seek to understand the cause of performance failure. Such has been the case for APS' McMicken facility, where, after a 2019 fire, APS took the plant offline during an extended root cause assessment;[29] as well as for the 300 MW Vistra Energy Storage Phase I facility at Moss Landing, which overheated during high summer temperatures in 2021 and the 100 MW Moss Landing Phase 2, which has also been forced offline due to a sprinkler event.[30] Both units had not returned to service as of the publication of this report. More recently, a 10 MW battery unit, installed in 2019, inside a Salt River Project (SRP) substation caught fire.[31,32]

These types of events naturally raise questions of how reliably storage facilities will be available to supply the grid when it needs power most – and what the resulting impacts on overall resource adequacy and

[28] Technology Neutral and No New Combustion 2040 portfolios from PNM IRP.
[29] https://www.aps.com/-/media/APS/APSCOM-PDFs/About/Our-Company/Newsroom/McMickenFinalTechnicalReport.ashx?la=en&hash=50335FB5098D9858BFD276C40FA54FCE
[30] https://www.ksbw.com/article/second-battery-malfunction-in-less-than-6-months-reported-at-moss-landing-power-plant/39083568#
[31] https://www.12news.com/article/news/local/valley/incident-srp-battery-storage-facility-chandler-arizona/75-45b96a5e-14b5-4799-b777-e1195e24199f
[32] https://pv-magazine-usa.com/2022/04/26/battery-fire-at-salt-river-project-in-arizona/

resilience may be if they cannot. A number of uncertainties – particularly acute in the early years of new technology commercialization – may impact the effectiveness of energy storage as a capacity resource:

- **Outage rates:** one of the uncertainties associated with battery storage performance is the relative risk of experiencing plant outages; while manufacturer specifications indicate a low risk of plant outages, newly commercialized technologies can often experience unexpected outages for multiple reasons.
- **Performance under extreme heat:** the extreme summer temperatures of the Southwest create a difficult operating environment for electrochemical processes. In addition to potentially contributing to increased risk of outages, high temperatures could lead to degradation of output.
- **Dispatch uncertainties:** the dispatch of energy storage in the "Base Case" is an idealized representation of storage intended to maximize the economic arbitrage opportunities; however, real-world operations of energy storage may deviate from this ideal dispatch. A missed opportunity to charge or a discharge that precedes the timing in which it is most needed could inherently limit the effectiveness of storage.

Because there is little empirical data to inform precise estimates of these impacts, this study explores a broad range of sensitivities that vary both the outage rates and the amount of duration available from battery storage devices. The impacts of these uncertainties on resilience is tested by adjusting specific storage-related inputs:

(1) In the Heat wave case study, three sensitivities simulate combinations of forced outages of two large storage units and extremely high loads at the same time.
(2) In the Ice storm case study, one sensitivity simulates conservative battery operations. This is to understand system impacts in a winter extreme event of operating batteries for capacity rather than economic arbitrage.

As has occurred for other new technologies in their early stages of commercialization, experience and a longer operational history should help mitigate the risks surrounding these uncertainties. As engineering and construction firms, plant operators, and maintenance crews gain experience and build collective knowledge of how to manage grid-scale storage assets effectively, potential high outage rates in initial years of implementation are likely to decrease over time. What this means is that the questions around performance and the risk of outages are most uncertain in the next five years while the industry achieves its initial phase of commercial development.

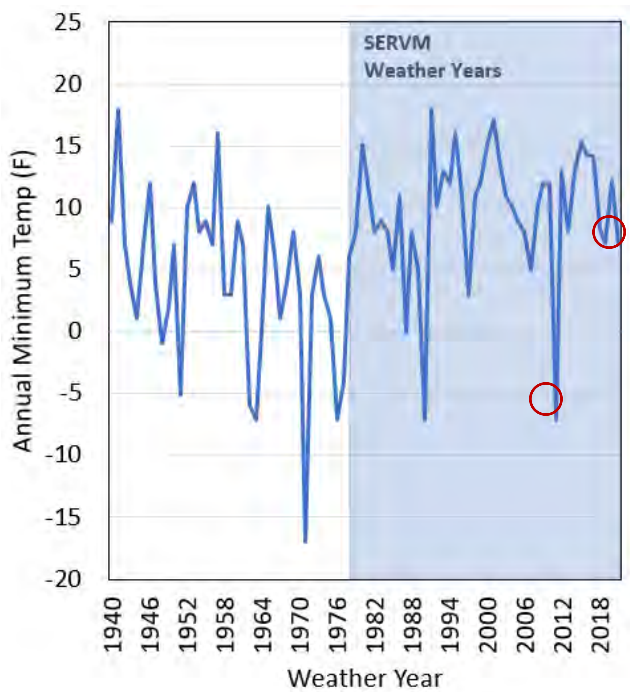
3.4.2 Parameters for winter extreme event: Ice storm

There were several candidate ice storms to use as a starting point for the winter analysis. One possibility was to perform a similar assessment to summer and assess and analyze the most recent event - the 2021 cold snap. Alternatively, synthetic data could be created for the 2011 cold weather event, and this could be utilized.[33] It was determined to use the 2011 data as, for PNM, this event was a much more severe

[33] It is worth noting that colder events have occurred than the 2011 event (see 1971). However, these data were not readily available for modeling purposes (Synthetic data was created back to 1980), and climate change could reduce the confidence in the likelihood of older weather years

weather event than 2021. The difference in severity between the two weather years is visualized in Figure 6: 2021 experienced a minimum temperature of 7 degrees, while 2011 saw temperatures down to -7. Though 2021 could have been simulated with more recent data, the risk of additional outages and load response caused by the colder temperatures was explored by simulating the more severe 2011 event.

Figure 6: Weather years and minimum temperatures. Compare minimum temperatures in 2011 and 2021 for PNM.



Similar methodologies to Heat wave simulations were used to model Ice storm generator outages and planned. The difference is that for the Ice storm case study, synthetic wind, renewable, and load data was used instead of actual data based on data availability as well as reasonableness of inputs (for example, customer use patterns have changed resulting in different demand shapes and loads have grown considerably). Table 5 summarizes the assumptions used for both case studies.

Table 5: Assumptions for both Heat wave and Ice storm case studies

Input	Heat wave	Ice storm
Weather Year	2020	2011
Solar Data	Actual Capacity Factor	Synthetic
Wind Data	Actual Capacity Factor	Synthetic
Load Data	Actual	Synthetic
Generator Outages	Monte Carlo	Monte Carlo
Planned Outages	Weather-Normal	Weather-Normal
Neighbor Assistance	IRP Assumptions	IRP Assumptions

[34] Actual capacity factors were applied to the installed capacity of the modeled portfolio
[35] Synthetic refers to the weather year modeling as described previously

3.4.2.1 Ice storm case study

For the Ice storm case study, a similar process was followed as for the Heat wave. 2011 weather conditions were used as the starting point for analysis (reflected as the base case). Other sensitivities reflect a progressively increasing risk to PNM. A description of all sensitivities in the Ice storm case study is provided in Table 6. The risk factors investigated through these sensitivities are further discussed below.

Table 6: Ice storm case study sensitivities

Ice storm Sensitivity #	Sensitivity Name	Description
1	Base	Base cold snap sensitivity
2	Island	PNM is simulated as an island (no neighbors, imports, or exports)
3	Island, Conservative Battery Operation	Island sensitivity, but batteries are operated as capacity only resources (no energy arbitrage).
4	Localized Plant Outages	2020 Ice storm ERCOT level of forced outages simulated for PNM. PNM is connected to neighbors
5	Regional Plant Outages	PNM and neighboring entities experience ERCOT level of outages
6	Outages + Island	ERCOT level of forced outages simulated for PNM. No support available from neighboring markets
7	Island + PNM South Generation Out	PNM loses access to south region generation for the week (simulating a major transmission fault, or fuel supply issues). For a loss of 500 MW of generation

Natural Gas Unit Outage Risks

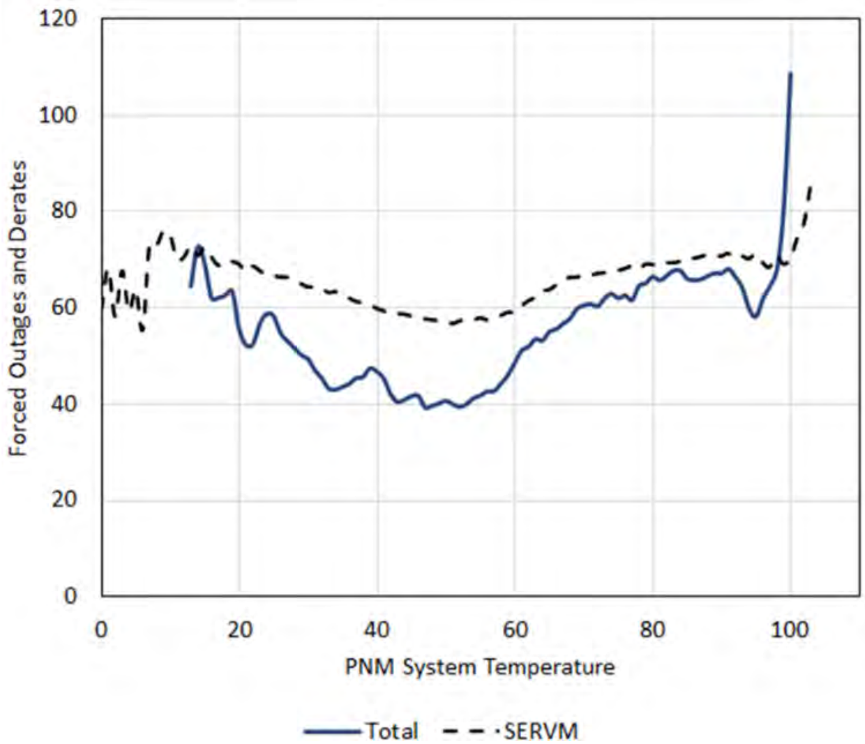
One of the key risks investigated through sensitivity analysis of the Ice Storm case study is the impact of natural gas generator outages. A growing body of literature has highlighted the potential impact of correlated outages of natural gas generators on system reliability, a risk that may be present due to either the increased likelihood of generators to fail under extreme weather conditions or the chance that natural gas supplies may not be available for delivery to plants when needed. The blackouts experienced in Texas during 2021 Winter Storm Uri, which have been attributed to the systemic failure of natural gas supply, delivery, and generation infrastructure in the state, provide a stark real-world example of this risk.[36]

SERVM uses Monte Carlo simulation to model plant outages and derates. As part of the process of developing case studies for this analysis, historical outage data gathered from GADS was compared against outages simulated in SERVM under a range of temperatures. Monte Carlo samples are drawn from a historical seasonal distribution to ensure seasonal outage patterns are captured. Figure 7 shows a comparison of simulated and actual historical outages in PNM, illustrating that the frequency and

[36] PNM's winterization efforts post-2011 have addressed this risk as mentioned on Page 8.

likelihood of outages modeled for natural gas plants under extreme temperature conditions (i.e., at very low and very high temperatures) aligns well with the historical record.

Figure 7: Simulated (SERVM) vs PNM historic outages



Due to limited availability and data quality, historical GADS data was not useful for analysis of correlated outages among PNM's natural gas generators. Nevertheless, this is a known risk[37] and this study examines the potential impacts of a higher level of natural gas generator outages as an upper bound on risk. For Ice storm sensitivities 3-6, depending on the sensitivity in question, simulations assume either PNM or PNM and its neighbors experience 2021 "ERCOT levels" of forced outages.[38] This is meant to represent the phenomenon where generators have an increased probability of experiencing a forced outage event as temperature decreases. For the Ice storm case study, a potential outage curve as a function of temperature was developed based on historic events. This hypothetical curve for PNM is shown below.

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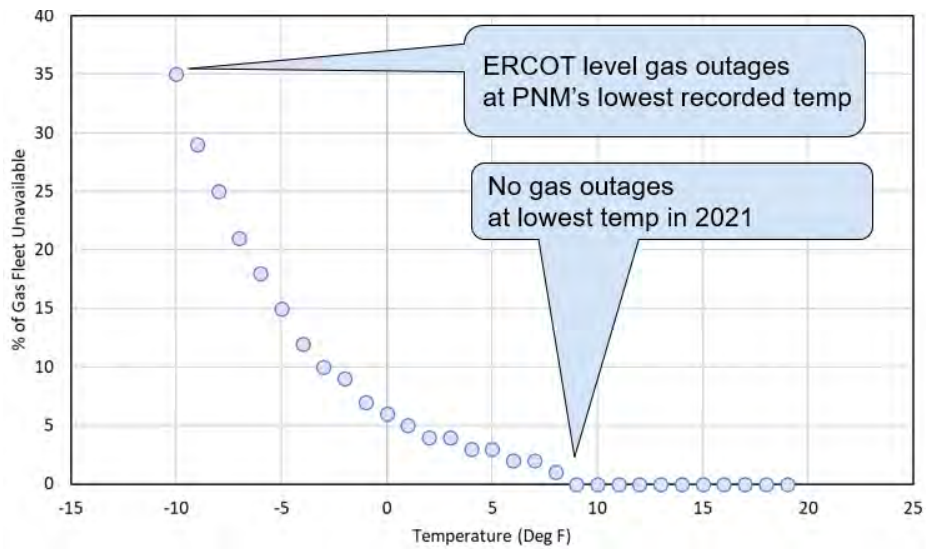
[37] Such a risk clearly existed in 2011 when several PNM generators were forced out either due to cold weather induced issues or lack of available gas. PNM's winterization efforts post-2011 have addressed this risk.

[38] Although ERCOT and PNM have very different regulatory market designs, this study uses ERCOT outages to derive a hypothetical gas unavailability curve with temperature. These are extreme events and very little geography specific data is available and this study uses the limited data available. This is not meant to represent actual correlations between PNM gas outages and temperatures.

Figure 8: Hypothetical gas unavailability based on ERCOT 2021 outages

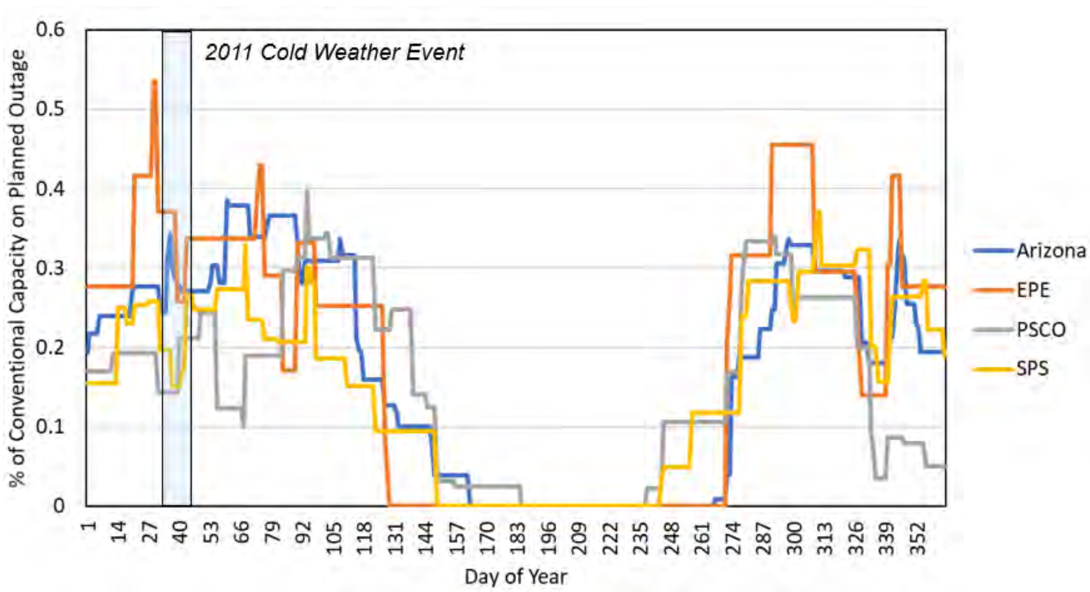


The curve in Figure 8 is meant to reflect hypothetical PNM outages. Since this study aims to consider conditions representative of an ice storm centered over PNM, it is assumed that neighbors would face this phenomenon too, but to a lesser degree. To reflect this, in sensitivities where PNM's neighbors experience cold weather-correlated forced outages, they experience half the outages that PNM does.

Market Assistance Risks

Additionally, neighboring entities for the "Southwest Outages" sensitivity were assumed to have planned maintenance which could not be recalled for the event. A 15% planned + maintenance outage rate was assumed and scheduled to minimize maintenance during high load days. This creates the time series of maintenance events shown in Figure 9.

Figure 9: Maintenance events in southwest outages sensitivities



3.4.3 A note on PNM's ability to import from neighbors

PNM has roughly 800 MW of transmission connectivity to Arizona Public Service Company (AZPS) but the ability to deliver to the load centers is dependent upon several complicating factors based on real-time operations of the system. PNM also has transmission connectivity with other neighboring regions as well, albeit with less transfer capability (e.g., EPE, Tri State, SPS). This means, technically it can import large amounts of power from its neighbors. Historically, in summer, actual imports were quite limited (averaging 50 MW during high net peak loads) as this is also the time when the entire region needs power. For example, during the 2020 heat wave, PNM found it difficult to procure power even when they offered high prices. In contrast, winter-time imports were relatively unconstrained due to the lack of an event that simultaneously stressed both PNM an its neighbors. For example, during the Feb 2021 ice storm, PNM was able to rely on west-wide imports because there was excess power available west-wide and importantly, there was no transmission outage on PNM's connections to its neighbors. To isolate PNM's system performance under extreme conditions, in some sensitivities PNM was simulated as an island i.e., it has zero ability to import from neighbors. In such sensitivities, if the results show lost load within PNM, it does not mean that load will necessarily have to be shed. Rather, this is meant to demonstrate the level of PNM's dependance on its neighbors after fully utilizing its own resources. If actual market support ends up being less than the "load shed" in a particular island sensitivity, then PNM will actually have to shed load.

4 Sensitivity Analysis Results

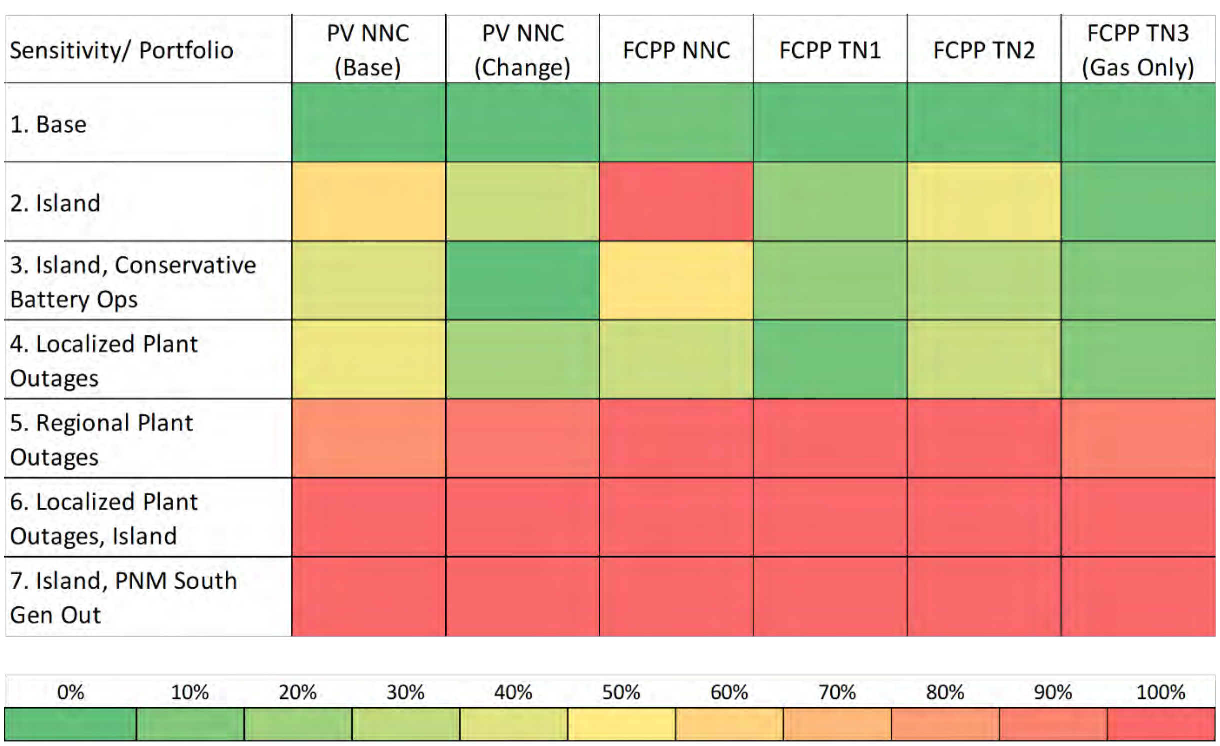
In Section 3, the modeling framework used, the portfolios tested, and the data and assumptions for each case study was presented. In this section, the metrics used in this study to measure portfolio performance during resilience events are presented followed by modeling results for all the sensitivities simulated.

4.1 Ice storm case study results

All metrics used to measure and compare portfolio performances during an ice storm are presented in this section. Figure 10 shows the probability of load shed during the event as a heat map where red indicates 80-100% chance of load shedding. Table 7-11 show the expected MWh lost, expected peak MW shed, and number of load shed hours (duration of load shed).

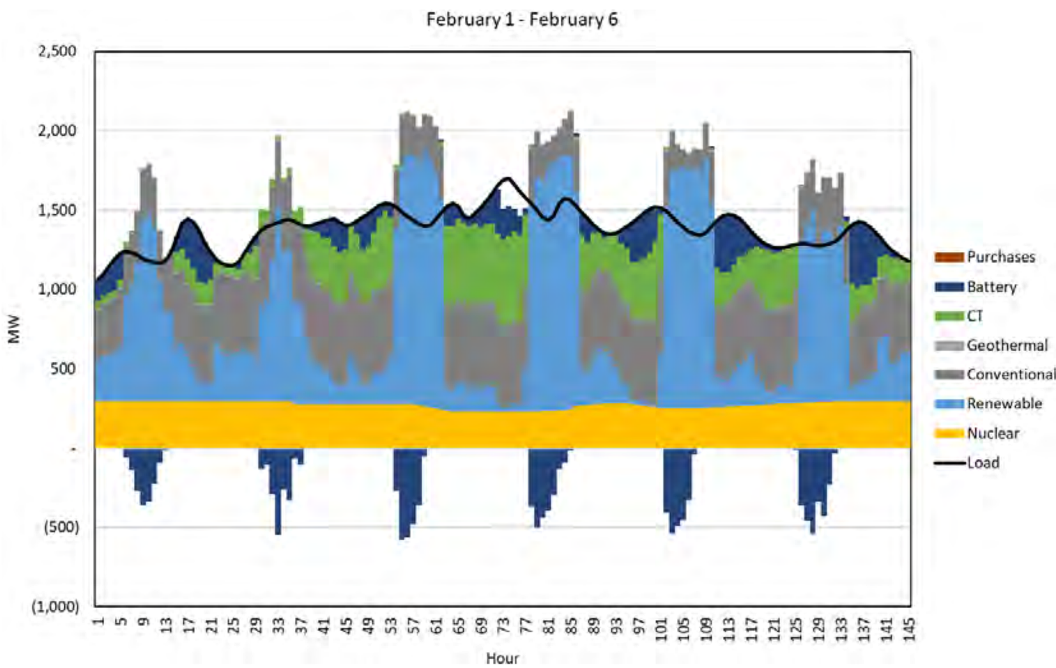
Figure 10 shows that in the base case i.e., in a situation where temperatures are low in PNM, but PNM has ample access to its neighbors and experiences no extraordinary unforeseen generator outages, the odds of blackouts are very low. A critical factor is market support – in Island mode, the odds of blackouts in PNM greatly increase. Weather-correlated generator outages in PNM, those affecting PNM's neighbors, and losing market support either due to transmission faults (which are to be expected in ice storms) are all factors that compound with each other to drastically increase the chances of lost load. If PNM's neighbors too experience generator outages during the Ice storm, PNM will most certainly face blackouts as well.

Figure 10: Probability of load shed during ice storm



'Base', 'Island', and' Island with Conservative Battery Operations'. The results show that PNM will be able to get through an ice storm in the base case if it can rely on its neighbors for imports (i.e., in the base case, when temperatures are low, but there are no weather-correlated generator outages in PNM or across the southwest). Comparing results in Table 7 for the base sensitivity and the Island case, depending on the portfolio being tested, the Island case shows 181-702 MWh of lost load if PNM is unable to import power during the storm (See Figure 11). The implication here is not that PNM will inevitably have to shed load during an ice storm; rather, it demonstrates the level of market support required after PNM uses all its internal resources fully.[39]

Figure 11: Island Sensitivity dispatch plot during critical week



The next sensitivity, Island with conservative battery operations, from Tables 9, 10, and 11 shows that the impact of islanding can be lessened to a degree by conservative battery operations (compare Island to Island with conservative battery ops). Notably, just operating existing batteries conservatively[40] ensures that PNM's system is better able to withstand the event when measured using a variety of metrics – the probability of load shed is lower, the peak MW shed is generally lower, and the duration of loss of load is also shorter.

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[39] In this study, for winter, PNM's import capability is limited by each neighbor interface (990 MW total).

[40] See Section 4.1.1 for an explanation of conservative battery operations.

Table 7: Average lost load for tested portfolios across Ice storm case study

Sensitivity	Study Assumptions			Average Load Shed (MWh)					
	PNM as an Island	Cold Weather Outages	Battery Economic Arbitrage	PV NNC (Base)	FCPP NNC	FCPP TN1	FCPP TN2	FCPP TN3 (Gas Only)	PV NNC (Change)
Base	No	No	Yes	-	6	-	-	-	-
Island	Yes	No	Yes	461	702	310	494	176	181
Island, Conservative Battery Ops	Yes	No	No	342	412	213	452	103	127
PNM outages	No	Yes	Yes	18	20	3	15	4	11
Southwest Outages	No	Yes	Yes	385	812	572	674	218	196
Outages + Island	Yes	Yes	Yes	4,345	6,227	4,701	5,156	3,218	3,260
Island + PNM South Gen Out	Yes	Yes	Yes	21,253	26,157	17,284	22,958	15,400	15,111

'PNM outages' and 'Southwest outages'. The 'PNM outages' sensitivity shows that if PNM experiences cold weather correlated generator outages (as detailed in Section 0), similar to ERCOT during the 2021 winter, some load is shed, but mostly it can reply on neighbors to minimize lost load. However, when both PNM and neighbors experience cold weather correlated outages ('Southwest outages'), although PNM can import from its neighbors, because supply conditions are tight across the southwest, lost load becomes worse in PNM. Figure 12 shows an example of dispatch within PNM during such conditions (FCPP NNC portfolio) – note that owing to reduced firm generation within PNM and tight conditions across the southwest, despite relying on purchases from the external market, PNM sheds load.

Figure 12: Southwest outages scenario with FCPP NNC portfolio.

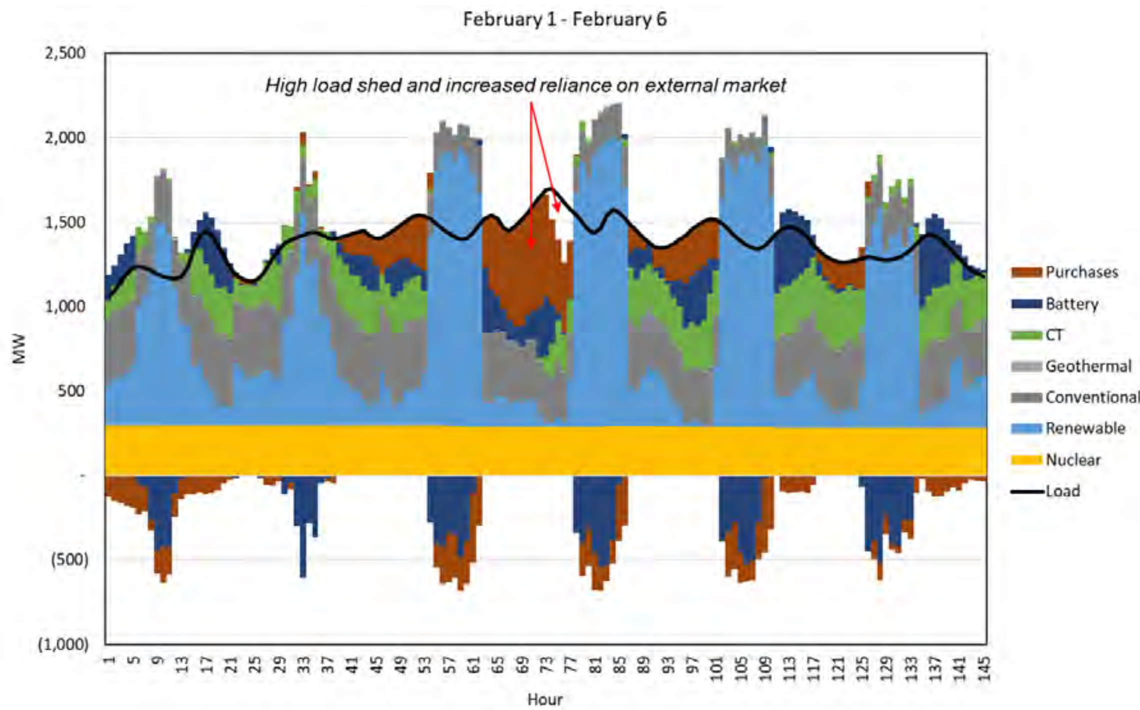


Table 8: Peak MW shed across Ice storm sensitivities

Sensitivity	Study Assumptions			Maximum Load Shed (MW)					
	PNM as an Island	Cold Weather Outages	Battery Economic Arbitrage	PV NNC (Base)	FCPP NNC	FCPP TN1	FCPP TN2	FCPP TN3 (Gas Only)	PV NNC (Change)
Base	No	No	Yes	-	28	-	-	-	
Island	Yes	No	Yes	513	606	530	565	315	335
Island, Conservative Battery Ops	Yes	No	No	517	596	521	550	379	379
PNM outages	No	Yes	Yes	31	79	26	44	33	81
Southwest Outages	No	Yes	Yes	83	140	116	121	78	81
Outages + Island	Yes	Yes	Yes	942	1,164	1,151	1,050	845	889
Island + PNM South Gen Out	Yes	Yes	Yes	959	1,063	936	1,020	911	922

'Outages+Island'. The situation is further worsened if PNM is completely cut off from its neighbors while facing weather-related forced outages. Again, this sensitivity is only meant to showcase PNM's potential dependence on its neighbors. The load shed dramatically increases by at least two orders of magnitude (compared to the 'PNM outages' case') if PNM's access to its neighbors is cut off. This points to the joint impact of weather-correlated outages and limited market support.

'Island+PNM South Gen Out'. On top of facing heightened gas outages and no market support, this sensitivity assumes that 500 MW of generation in PNM-South is lost. This is meant to be a proxy for either a major transmission fault or fuel-supply issues during the ice storm. As expected, this sensitivity sees the worst performance mainly due to a significant portion of PNM's generation being out.

Table 9: Duration of outage

Sensitivity	Study Assumptions			Duration of Outage (hrs)					
	PNM as an Island	Cold Weather Outages	Battery Economic Arbitrage	PV NNC (Base)	FCPP NNC	FCPP TN1	FCPP TN2	FCPP TN3 (Gas Only)	PV NNC (Change)
Base	No	No	Yes	-	2	-	-	-	-
Island	Yes	No	Yes	14	21	7	17	6	7
Island, Conservative Battery Ops	Yes	No	No	8	11	7	10	5	5
PNM outages	No	Yes	Yes	5	4	1	5	1	4
Southwest Outages	No	Yes	Yes	9	8	8	8	6	5
Outages + Island	Yes	Yes	Yes	33	35	31	32	24	23
Island + PNM South Gen Out	Yes	Yes	Yes	78	79	58	74	63	72

Winterization and conservative battery operations help mitigate the impacts of the ice storm. The only difference between the 'Island' and 'Outages+Island' sensitivities is whether PNM's own generators are winterized or not. Comparing results from these sensitivities, during resilience events, winterization helps reduce load shed by an order of magnitude. Furthermore, the odds of having a blackout are reduced with winterization. A similar mitigation pattern, albeit to a smaller degree, can be observed with operating batteries conservatively i.e., being dispatched only to avoid load shed. Winterization and conservative battery operations are actions that are portfolio agnostic i.e., irrespective of what portfolio is tested, these actions deliver benefits.

Portfolio comparison. To understand differences in portfolio performance, columns in Tables 9, 10, and 11 should be compared. Figure 13 demonstrates key insights from portfolio comparisons in an easy-to-understand format. To create these portfolio-bubbles, results for each portfolio from all Ice storm sensitivities were sized according to expected MW shed in the most binding hour.[41]

[41] See Appendix for the exact weights used. It should be noted that this is just one way of assigning weights to sensitivities. They can be weighed differently.

Figure 13: Ice storm simulation results. Sensitivity metrics were weighted using an inversely proportional scale.

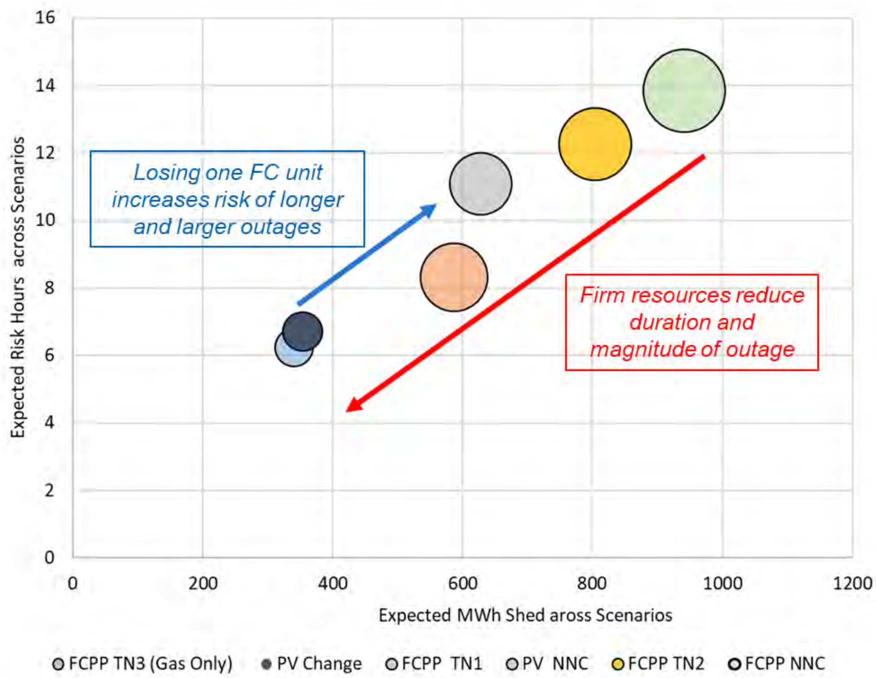
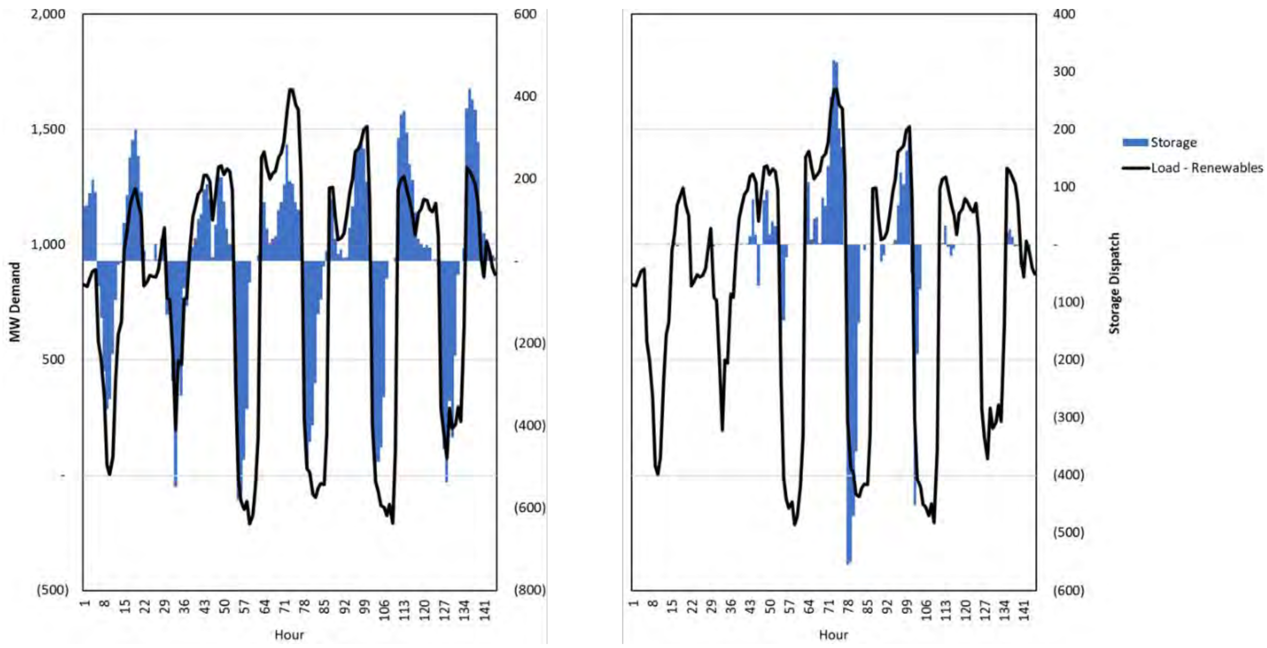


Figure 13 shows three metrics in the same chart, expected MWh shed across the sensitivities (on x-axis), duration of outage (y-axis) and worst MW shed (bubble size). Portfolio-bubbles that score well on all three metrics are those that are closer to the left bottom of the chart and are relatively small. Figure 13 shows that firm resources reduce both the duration and magnitude of the outage. Similarly, when one of the Four Corners unit is forced to go on maintenance, the duration and magnitude of outages increase. A portfolio that includes 39 MW of additional gas (FCPP TN2) instead of 48 MW of 2hour batteries (FCPP NNC) performs better when measured on these metrics. The system is severely energy constrained during resilience events and even if short-duration batteries are used in capacity mode, they are less reliable than firm generation such as gas. The general inference is that firm generation (whether it is gas-based, hydrogen-based, or long-duration storage) will help PNM weather ice storms better.

4.1.1 Conservative battery operation

The 'Island and Conservative Battery Operations' sensitivity showed that storage, operated conservatively, helps in reducing the total load shed, duration of the outage, and generally reduces the peak MW shed. In conservative operation mode, production cost savings from storage (through daily cycling) are sacrificed for enhanced reliability value. In this mode, storage will only discharge to avoid load shed. Figure 14 shows battery operations in the same dispatch week in economic arbitrage mode (regular) and capacity mode (conservative). On days 1 and 2, in the regular mode, the battery charges and discharges reacting to prices – charging when there is an excess of renewables and discharging when energy prices are higher. Conversely, in conservative operation mode, storage does not discharge at all on days 1 and 2, but on days 3-5, it discharges to mostly meet peak net demand and these are the days with the most extreme weather conditions and load is being shed.

Figure 14: Battery cycling in regular mode (left) driven by economic arbitrage opportunities and conservative mode (right). Note that the second axes are of different scales in both charts



4.2 Heat wave case study results

This section summarizes the performance of portfolios under different heat wave sensitivities that were examined. Table 10 shows the expected MWh of load shed under each pre-defined event across 25 simulations. Table 11 shows the expected value of worst-hour load shed in MW across 25 simulations and

Table 12 shows the total number of hours in which loss of load was observed.

The modeling generally indicates that PNM is better positioned to withstand a heat wave than an ice storm. In both the base and Island sensitivities, PNM sees no load shed for any tested portfolio. This is not surprising as all portfolios were designed to meet 0.2 LOLE in the RA planning, and this confirms that portfolio performs as expected. Furthermore, it is no surprise that the island case behaves similarly to the base case as only 50 MW of maximum market support was allowed in the Heat wave case study (as opposed to the Ice storm case study, which did not limit market depth). Simply put, the portfolios behave as expected in these two sensitivities.

When load was increased to a 1-in-20 year load, the model reports shedding anywhere between 37 – 162 MWh depending on the sensitivity. A similar effect was observed (loss of load of 18 – 196 MWh) when simulating outage of the largest storage facility (G1 sensitivity, loss of 150 MW). As expected, the loss of the largest two storage units (G2 sensitivity, 300 MW total lost) results in even more load shed. The worst simulated case here combines the loss of the two largest storage units with the 1-in-20 year load which results in shed load in the range of 540-989 MWh. Peak MW shed and duration of the outage also follow similar overall patterns: outages become worse when very high loads occur simultaneously with the loss of one, or two large generating units. Figure 15 shows an example of lost load in summer in the 'G2+1-in-20' year load scenario. Although not shown in the report, dispatch is similar across the tested portfolios for this scenario. Loss of large generators combined with high loads leads to lost load in the evenings. Even after fully discharging, the remaining storage falls short of meeting evening loads.

Table 10: Average load lost across Heat wave case study

Sensitivity	MWh				
	PV NNC	FCPP NNC	FCPP TN1	FCPP TN2	FCPP TN3 (Gas Only)
Base	~0	*Not Assessed*			
Island	~0	*Not Assessed*			
1 in 20	74	162	45	50	37
G1	81	196	141	82	18
G2	198	408	316	298	210
G2 + 1 in 20	720	989	786	804	540

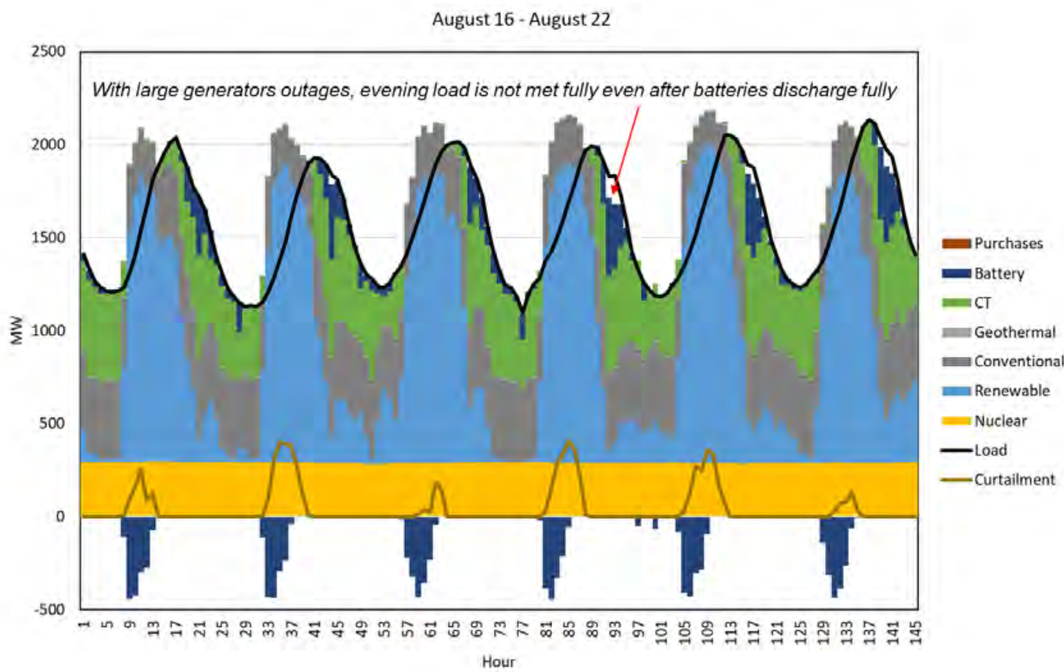
Table 11: Peak MW load lost across Heat wave sensitivities

Sensitivity	MW				
	PV NNC	FCPP NNC	FCPP TN1	FCPP TN2	FCPP TN3 (Gas Only)
Base	~0	*Not Assessed*			
Island	~0	*Not Assessed*			
1 in 20	29	28	13	27	13
G1	23	31	34	18	14
G2	64	63	76	70	54
G2 + 1 in 20	151	160	164	137	118

Table 12: Duration of the load outage

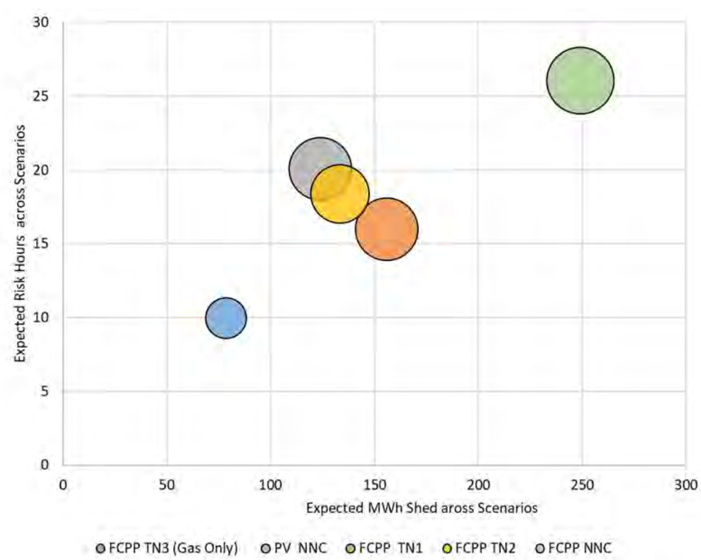
Sensitivity	Hours				
	PV NNC	FCPP NNC	FCPP TN1	FCPP TN2	FCPP TN3 (Gas Only)
Base	~0	*Not Assessed*			
Island	~0	*Not Assessed*			
1 in 20	19	20	9	12	9
G1	19	24	17	21	6
G2	21	41	28	27	18
G2 + 1 in 20	37	49	31	26	25

Figure 15: G2+1 in 20 scenario dispatch with FCPP NNC portfolio



Portfolio comparison. Similar to Ice storm case study, the performance of the portfolios was aggregated across sensitivities to produce a simple representation of the performance of a specific portfolio in the three metrics. Figure 16 below shows the aggregated results. In this chart, each dot represents a portfolio. The horizontal axis shows the expected load shed in MWh across sensitivities, and the vertical axis shows the expected hours with load shed across sensitivities. The size of the dots shows the expected worst load shed in MW across sensitivities.

Figure 16: Heat wave simulation results. Sensitivity metrics were weighted using an inversely proportional scale.



Similar to winter, during heat waves too, firm resources improve the generators' performance. The more firm resources there are in the system, the less load shed (measured in all three metrics) there will be during extreme summer events like an unexpected load spike during heat waves or loss of battery storage due to high temperatures. Figure 16 shows that PNM's system has the least load shed on average with the FCPP TN3 portfolio, and has highest load shed on average with the FPCC NNC portfolio. The performance of the PV NNC portfolio, the FCPP TN1, and the FCPP TN2 portfolio lie in between with limited amount of coal or gas resources in the resource mix. This is an indication that energy-limited resources like battery may provide limited support during heat waves and that thermal resources have more flexibility and can provide better support to the system during summer weather events when fuel supply is not interrupted. This may also indicate the length of storage pursued in these portfolios may meet LOLE standards but may expose PNM to increased risk of larger MWh shed events. Longer duration storage would likely mitigate the severity of such extreme events.

5 Conclusions and Next Steps

New Mexico is pursuing ambitious emission reduction goals and the electric sector is poised to play a key role. PNM has committed to play its part by setting itself a goal of emission-free electricity by 2040. The IRP process through its focus on Resource Adequacy ensures that the cost-effective capacity investments are being made that reduce emissions adequately while maintaining a reliable grid. Still, one of the limitations of the RA modeling is that extreme weather events cannot be adequately represented. The core of the problem is that while extreme weather events are predicted to increase, there is still very little or no data to assign probabilities to specific types of extreme events. This study takes first steps to address this problem by presenting a framework that contextualizes extreme weather event resilience with resource adequacy. This framework recognizes that resource adequacy and resilience are related but different.

The first step was to understand and characterize extreme weather events of interest to PNM. Based on discussions with PNM SMEs, and mining historical weather and load data, two types of events were decided – ice storms and heat waves. PNM's recent experiences with the 2011, 2021 ice storms and the 2020 heat wave supports this. Next, several hypothetical sensitivities of these events were parameterized. Working with PNM SMEs and based on historical weather and operational data, this was done by combining different levels of variables such as temperature, loads, outages, and market support. In parallel, a suite of portfolios based on a hypothetical Four Corners replacement were assembled to be tested, to evaluate their performance during extreme weather events.

The following conclusions, drawn from the analysis conducted in this study, provide insight into the nature, and mix of resources necessary to mitigate the impact of extreme weather events on PNM system:

+ ***PNM's Resource Adequacy planning practices work as expected and allow PNM to maintain reliability under most summer conditions.*** PNM's resource planning framework is designed to meet a loss of load expectation (LOLE) standard of 0.2 days per year.[42] This standard allows for some probability of reliability events – typically in the summer peak – but also ensures that their occurrence is rare. The modeling in this study confirms that the RA process works as intended, illustrating that PNM's resource portfolios are able to meet loads reliably under most – but not all – summer conditions. In extreme circumstances – for instance, if summer loads reach 1-in-20 year levels, or if summer temperatures force large amounts of PNM generation or transmission to be offline -- PNM might experience loss of load events.

+ ***PNM's system is designed for a summer peak but may still be vulnerable to extreme events in winter.*** PNM's system is designed to meet an RA standard that is based on summer peak. This study finds that in ice storms, if multiple generators are forced offline (as happened in PNM in 2011 and in Texas in 2021) either due to transmission failure or generator malfunction – or if the region as a whole experiences significant loss of generating capability – PNM may experience loss

[42] PNM plans to move to a 0.1 LOLE standard in the next IRP cycle.

of load. These types of events are outside the envelope of PNM's traditional resource adequacy planning but do present a reliability risk to customers.

- ***Different resource portfolios that meet the same LOLE planning standard have varying performance during extreme events.*** All tested portfolios met the same LOLE standard of 0.2 days per year. This study shows that although the portfolios are all designed using the same resource adequacy standard, their performance varies widely in extreme weather simulations. In other words, the likelihood that an extreme event might result in an outage – and the size of its impact – may vary under different portfolios.

- ***Stress testing candidate portfolios for resilience can help identify differences in their performance.*** In the long-term, portfolios should be designed (and corresponding modeling frameworks developed) that successfully address both resource adequacy and resilience concerns. In the short-term, cost-effective candidate portfolios from the resource adequacy IRP process should be tested for resilience. The insights from such stress testing should be used to inform capacity investments that PNM makes.

- ***Weatherization of all generation resources to allow for performance under extreme conditions is an important resilience consideration.*** In the winter events studied, winterization measures for natural gas generators are demonstrated to have a large impact on the size, frequency, and duration of loss of load events. PNM has already invested in winterization of its own generation assets and has added criteria to PPAs to ensure wider temperature operating requirements. Similar to winter, engineering and operational measures to ensure resources are available under extreme summer temperatures – including natural gas and energy storage – can reduce the risk of loss of load events due to coincidence of high loads and widespread unit outages.

- ***Firm generation resources reduce the severity of extreme event impacts in both summer and winter.*** During severe weather events, firm resources – resources that are not energy-limited, help reduce both magnitude and duration of load outages and generally reduce the instantaneous power lost (peak MW). While winterization is one way to firm resources up, the operating characteristics of resources must also be considered. Firm resources need not be conventional fuel based, but instead could include hydrogen-fueled generators or long-duration storage.

- ***During ice storms, broader southwest dynamics will have significant impact on PNM's ability to avoid outages under winter extreme events.*** Historically, PNM has relied on neighbors' support during regional extreme winter weather. The notion of reliance on the external market for support during winter conditions is also built into PNM's resource adequacy planning practices, which allow for significant levels of imports in the winter season. This dynamic means that PNM's ability to maintain reliability under regional-scale extreme events may depend not only on the characteristics of its own loads and resources but on dynamics in the broader footprint of the Southwest region. Further, although not examined in this study, this points to the importance of PNM's transmission infrastructure (and the need to examine its vulnerability) during ice storms.

+ ***As PNM increases its energy storage portfolio, its operational limits and utilization should be understood and considered in resource adequacy modeling.*** Conservative battery operations, where load shed is prioritized over economic arbitrage, helps mitigate the duration of outages during extreme operational stress. These considerations should be adequately reflected in resource adequacy modeling in addition to informing operator training and designing battery protocols.

5.1 Next steps

There are many questions this study raises that need to be explored in further studies and through stakeholder engagement. PNM, whose portfolio was historically mainly firm fossil generation is on track to meet its clean energy goals by incorporating more renewable variable generation into its portfolio. PNM's IRP process ensures that the resulting portfolio always meets the RA standard of 0.2 LOLE. In other words, replacing fossil-generation with renewables is being done in a manner in which grid reliability, as defined by the RA standard, is always maintained. The RA standard in turn is tied to system peak load (in summer) and this study shows that indeed, all portfolios designed to meet the RA standard perform as expected when PNM's load reaches 1-in-10 year levels.[43] They key difference though is that during extreme HILF weather events, both in winter and summer, portfolios with more firm generation generally perform better than their counterparts with less firm generation, even though all of them meet the same reliability standard.

5.1.1 Is a LOLE standard adequate for PNM?

The analysis in this study shows that PNM's current RA standard of 0.2 LOLE is not enough to withstand extreme summer or winter events. Follow-up studies can focus on asking if PNM should explore alternate or complementary standards to the RA standard.[44].

Since the nature of extreme events is different for different geographic areas, any metric that considers portfolio response during extreme events should be tailored to the specific threats PNM might face. For example, in an ice storm, since the duration of the outage is most important, a complementary metric designed around the number of hours of load shed seems appropriate. Designing such a metric also addresses the complication that the Value of Lost Load (VOLL) increases with every passing hour during an extreme weather event.

It should be noted that it is not necessary to have new metrics; metrics such as Unserved Energy or duration of outage can be merged with the resource adequacy LOLE standard. Defining metrics that are tailored to PNM's unique geography, weather conditions, and portfolio will ensure that portfolios are designed to fill in the gap between portfolio planning and performance.

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[43] See results from Summer base case.

[44] PNM's move to 0.1 LOLE in the next IRP cycle will ensure that more capacity is built, and the summer metrics measured in this study are likely to improve.

5.1.1.1 Testing IRP candidate portfolios against HILF events

In the short term, while the question of expanding or appending planning metrics is being answered, an immediate next step would be to test candidate portfolios from the IRP or other PNM modeling and procurement processes against PNM-specific extreme events such as the ones this study considers. This will ensure that prior to procurement, PNM possesses at least a qualitative understanding of how each of the candidate portfolios might perform during summer or winter extreme events. Once the question of appropriate planning metrics for PNM has been clarified and adopted, the new standard(s) can be used to determine PNM's investments.

5.1.2 What is the role of firm generation during extreme events?

This study also highlights the importance of firm generation's role during extreme events. The analysis in this study indicates that firm, dispatchable, and weatherized generation is one way to cost-effectively meet resilience challenges. But answers to questions about the type of firm generation, the capacity required, and the operational constraints they are likely to face during extreme events will inform procurement decision-making. For example, consider Figure 17 and Figure 18. Figure 17 shows the FCPP NNC portfolio[45] performance during the winter critical week. Compare this figure with Figure 18, which shows the PV NNC portfolio (where Four Corners continues to operate). This comparison shows that having more firm generation in the mix results in reduced load shed and reliance on purchases even though that firm generation is subject to correlated outages due to extreme weather.

[45] In this portfolio, Four Corners is replaced with a combination of solar, 2-hr, and 4-hr batteries

Figure 17: Portfolio comparison: FCPP NNC during winter extreme event

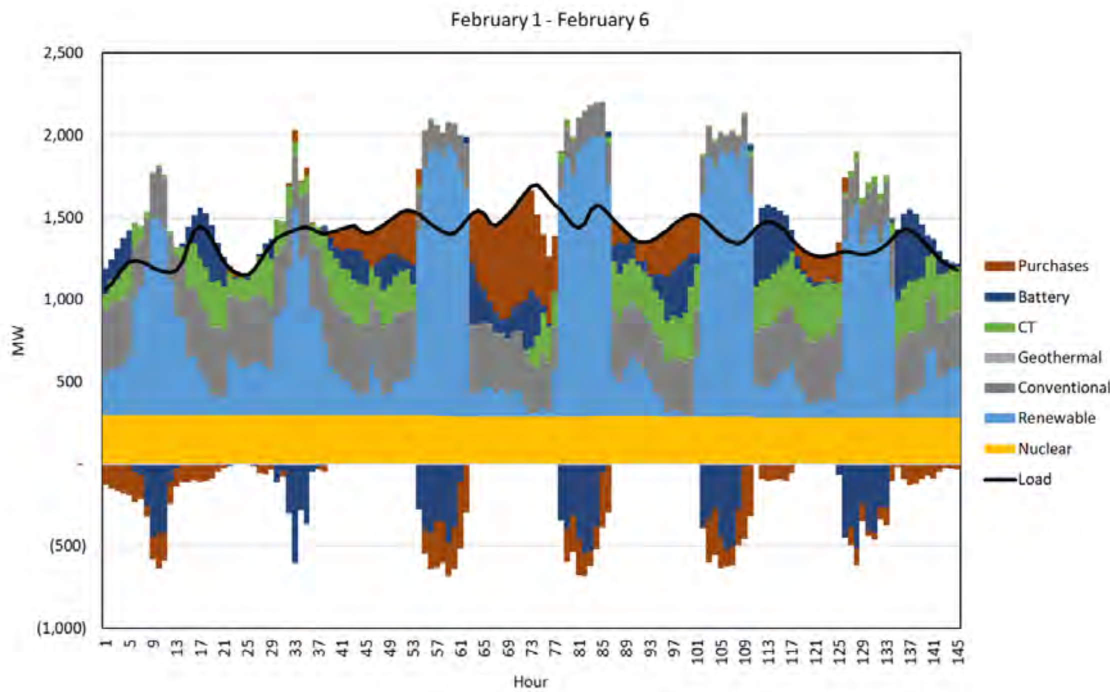
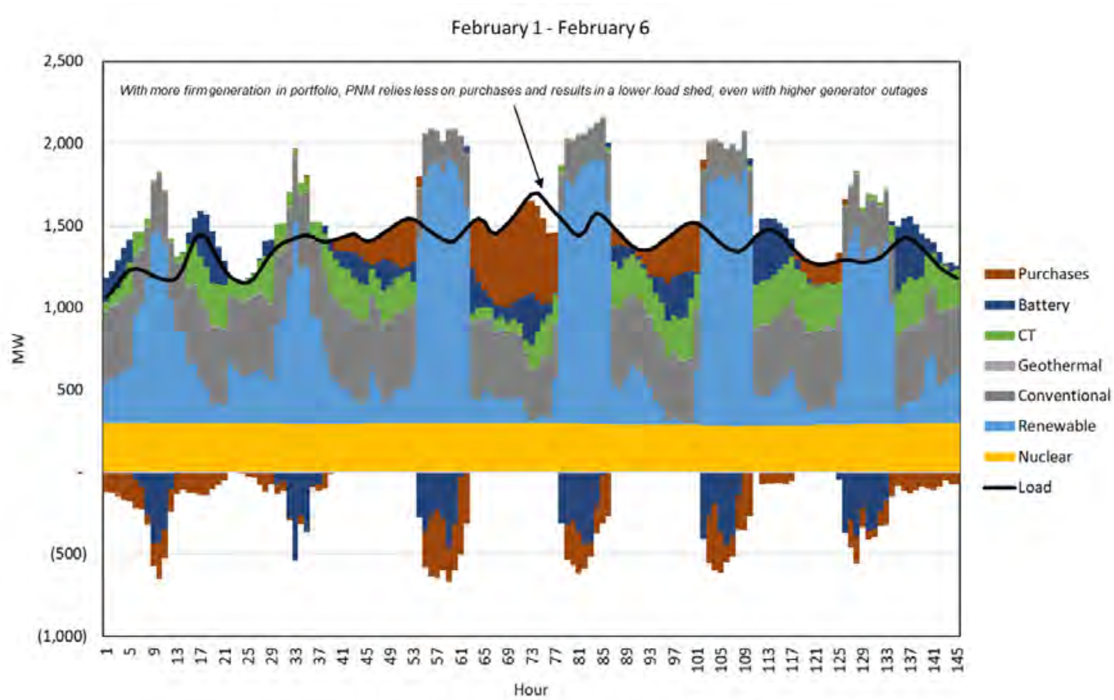


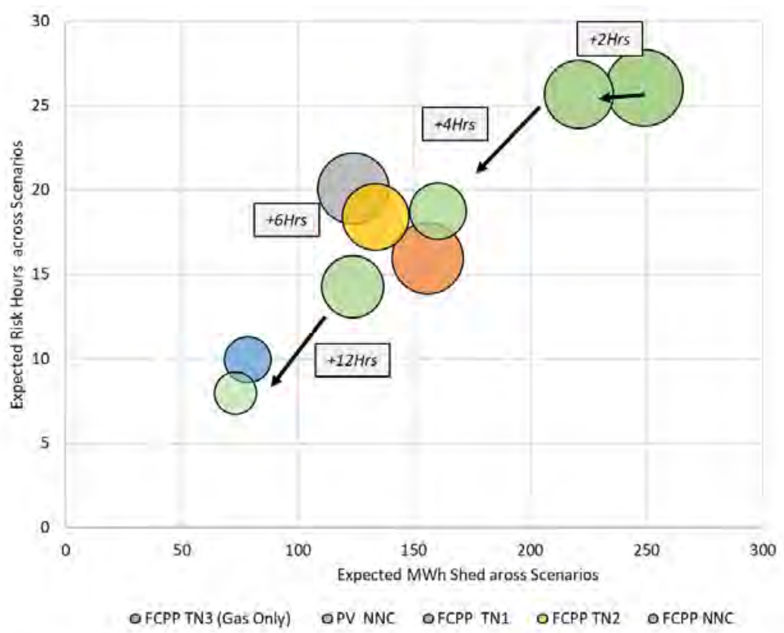
Figure 18: Portfolio comparison: PV NNC during winter extreme event



In fact, firm generation need not be restricted to conventional generators alone. It could include gas generators with or without CCS, hydrogen or other zero-carbon fuels burned in CTs/CCGTs, advanced nuclear or long-duration storage. In the comparison example shown above, if the short-duration storage in the FCPP NNC portfolio is replaced by longer duration storage, its performance in extreme events becomes similar to portfolios with more firm generation.[46] This is shown in Figure 19, where increasing the duration of the 2-hour and 4-hour batteries in the FCPP NNC portfolio first by 2 hours each (making them 4-hr and 6-hr batteries respectively) improves all three metrics measured. This improvement continues as storage duration is progressively increased until the batteries are of 14-hours and 16-hours duration, at which point, the new portfolio's (with longer duration storage) performance becomes similar to the 'FCPP TN3 (gas only)' portfolio.

Figure 19 shows that long-duration generation can serve as one alternative to gas generation with comparable performance under extreme events. Additionally, it supports the argument made in Section 5.1.1 about the need for PNM to explore LOLE standard alternatives. Standards such as LOLE, that are driven by peak load alone will not incentivize investment in long-duration storage. Rather, a multi-hour need for energy, which is very likely to be the constraining factor during extreme events, must be captured in standards. Exploring the nature of firm generation that PNM needs and its relationship to planning standards is a topic of further study.

Figure 19: Increasing storage duration results in similar performance under Summer extreme events



Next, consider Figure 20, which shows operations during the winter critical week when PNM is treated as an island (winter sensitivity #2), and Figure 21, which shows the same situation but with batteries operating conservatively to minimize load shed (winter sensitivity #2). Batteries are usually thought of as a way to firm variable generation up, but these figures show that their duration and operational

[46] As measured by the three resilience metrics used in this study – Magnitude of load shed, Duration of load outage, and Peak MW shed.

characteristics are critical factors to consider while drafting procurement contracts. As shown in Figure 19, longer duration batteries improve grid resilience.

Figure 20: Winter ice storm. PNM as an island case.

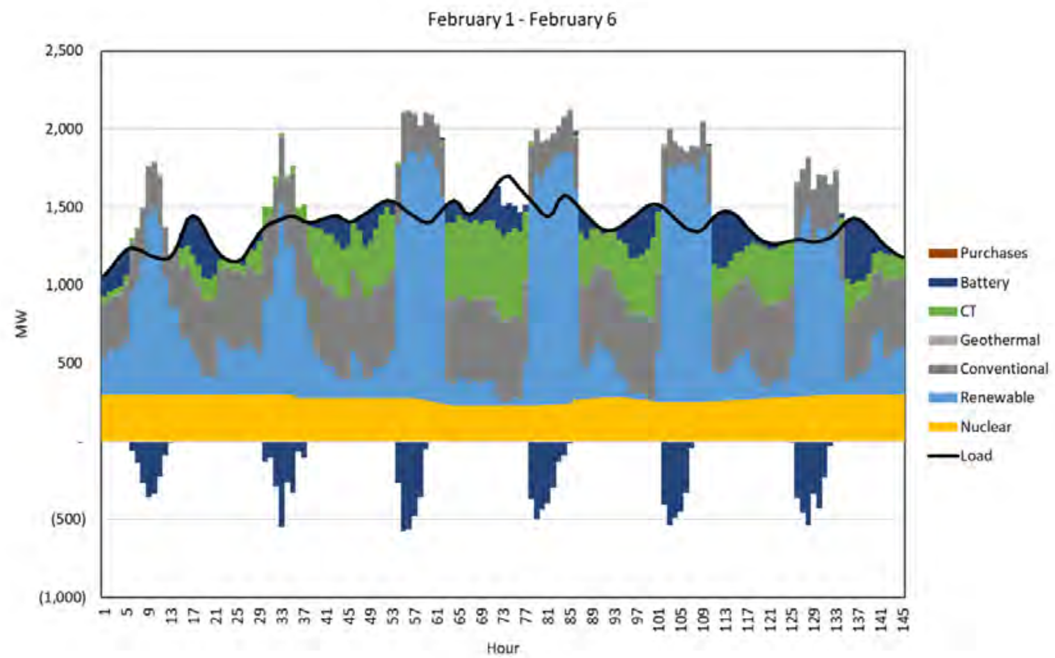
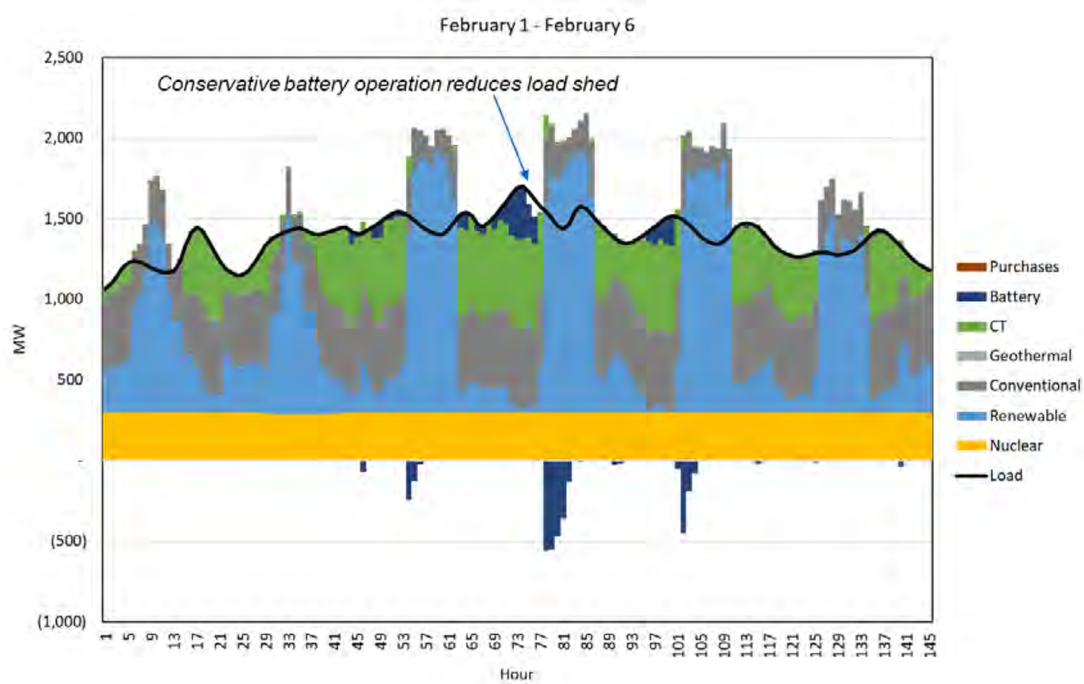


Figure 21: Winter ice storm. PNM as an island and batteries operated conservatively.



These figures show some of the challenges that PNM must confront during critical weeks of extreme weather. Next steps for this study should therefore explore the role of firm generation in PNM - specific firm resources options available to PNM, their quantities, and their operational characteristics whether they are hydrogen-based or long-duration storage, and their procurement process. It should also address questions related to emissions from firm resources during extreme events in the context of PNM's clean energy goals, and their costs.

5.1.3 What are the local or distribution-level impacts of severe weather events and their associated mitigation strategies?

In this study, the impact of severe weather events on PNM's system was examined through the narrow lens of high-level variables, for example, PNM-wide load or imports. This methodology was necessarily dictated by the study goal of supplementing and supporting the resource adequacy IRP process. But the question of resilience extends beyond just the questions of the type of resources to procure at the aggregate-PNM level. Local PNM transmission and distribution constraints, their vulnerabilities under severe weather-induced stress, or associated mitigation strategies, have not been examined. This is a subject of future research.

5.1.4 What are the response, adaptation, and recovery mechanisms, after loss of system function due to extreme weather?

Insights from this study about portfolio performance under severe stress will aid in procuring the appropriate type and quantity of resources that make the system resilient and capable of better withstanding extreme events. Once the ice storm or heat wave is underway though, PNM will face several operational challenges to minimize impact on customers. This study does not address these challenges or the operational changes and investments necessary to mitigate them. The resilience trapezoid in Figure 1 categorizes such efforts into two phases - 'Response & Adapt' and 'Recovery' – and this is a subject of future study at PNM. This study addresses only the first two phases of the trapezoid in Figure 1 – 'Anticipate and Prepare', and 'Resist and Absorb'.

6 Appendix

Weightings used to combine sensitivities to make Figure 13 and Figure 16. Given the large range of outcomes across sensitivities, metrics were weighted using an inverse proportional scaling (such that the extreme, low likelihood sensitivities did not dominate the weightings).

Table 13: Ice storm weights used

Sensitivity	Weighting		
	Included in Weighting	MWh Shed	% Weighting
Base	No	0	0%
Island	Yes	461	27%
Island, Conservative Battery Ops	Yes	342	37%
PNM outages	No	18	0%
Southwest Outages	Yes	385	33%
Outages + Island	Yes	4,345	3%
Island + PNM South Gen Out	Yes	21,253	1%

Table 14: Heat wave weights used

Sensitivity	Weighting		
	Included in Weighting	MWh Shed	% Weighting
Base	No	~0	0%
Island	No	~0	0%
1 in 20	Yes	74	42%
G1	Yes	81	38%
G2	Yes	198	16%
G2 + 1 in 20	Yes	720	4%

The formula used to calculate the weights of the sensitivities is:

$$Weighting_{Scenario} = \frac{\frac{1}{MWh_{Scenario}}}{\sum_{Scenario=1}^{\infty}\left(\frac{1}{MWh_{Scenario}}\right)}$$