

BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

Joint Application of Nevada Power Company d/b/a NV Energy and Sierra Pacific Power Company d/b/a NV Energy for approval of their joint 2025-2044 integrated resource plan, for the three year Action Plan period 2025-2027, and the Energy Supply Plan period of 2025-2027.

Docket No. 24-05____

VOLUME 5 OF 29

**NEVADA POWER COMPANY D/B/A NV ENERGY AND
SIERRA PACIFIC POWER COMPANY D/B/A NV ENERGY**

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SUMMARY

SECTION I – EXECUTIVE SUMMARY

Nevada Power Company (“Nevada Power”) and Sierra Pacific Power Company (“Sierra,” and together with Nevada Power, the “Companies” or “NV Energy”) are filing this joint Integrated Resource Plan (“2024 Joint IRP”). At the time the Companies filed its joint triennial IRP in 2021, energy markets in the western United States were experiencing significant stress from extreme and prolonged summer heatwaves, a trend that has continued in subsequent years. In August 2020, excessive heat events led the California Independent System Operator (“CAISO”) to implement rolling blackouts, which resulted in significant supply curtailments for the Companies. During a similar heat event in July 2021, the Companies experienced an Energy Emergency Alert (“EEA”) Level 3 event during near record-breaking temperatures in the region. A wildfire in southern Oregon simultaneously resulted in a loss of transmission capacity and once again, significant supply curtailments for the Companies. In September 2022, the first week of the month proved to be one of the most challenging periods on record for the western electrical grid. The intensity and duration of the September 2022 heat event qualifies it as one of the worst heatwaves to strike the western United States in the past 40 years. During this heatwave, six entities in the western United States issued some level of EEA, and market energy was severely limited as prices climbed to as high as \$1,900 per megawatt-hour (“MWh”). In light of these challenging events in recent years, resource adequacy remains a top priority for NV Energy.

The Companies continue to focus on delivering an affordable and reliable renewable energy future for Nevada with a balanced approach to decarbonization. The Renewable Portfolio Standard (“RPS”) continues to ramp up to a requirement of 50 percent renewable energy by 2030. The state also has a goal for an amount of zero carbon generation equal to sales in 2050. Furthermore, customers have been clear that they want more renewable energy and service options to meet their own sustainability goals. Finally, climate change is impacting the western energy markets, requiring the Companies and stakeholders to reevaluate established practices to ensure there is sufficient energy to meet peak energy demands.

KEY ELEMENTS OF NV ENERGY’S 2024 INTEGRATED RESOURCE PLAN

The 2024 Joint IRP adds 1,028 megawatts (“MW”) of new solar generating facilities, along with 1,028 MW of co located storage, and 411 MW of hydrogen capable natural gas combustion turbines at the North Valmy Generating Station, creating a balanced approach to providing affordable and reliable energy while addressing the clean energy goals of the state, the Companies, and their customers.

The plan also contains:

- An update on Greenlink Nevada transmission project costs;
- Details on the construction of transmission infrastructure needed to keep pace with Nevada’s rapid economic growth;
- Next steps on the Companies joining a Day Ahead Market and the Western Resource Adequacy Program (“WRAP”); and
- A roadmap to joining a Regional Transmission Organization (“RTO”).

To continue addressing these challenges and opportunities, the Companies have prepared this 2024 Joint IRP. The 2024 Joint IRP demonstrates how the Companies intend to address the state's clean energy goals and policies and meet the energy demands of their customers by balancing cost, reliability, and decarbonization goals. After analyzing several energy supply portfolios based on capacity needs, cost to customers, decarbonizing goals, societal cost, economic impact on the state and other factors, the Companies selected the Balanced Plan as their Preferred Plan. The Balanced Plan recommends the addition of three power purchase agreements for solar generating resources totaling more than 1,000 MW, each with co-located battery energy storage systems ("BESS"); two company-owned hydrogen-capable natural gas simple cycle combustion turbines; and transmission infrastructure necessitated by the new resources and to support growing customer demand. In addition, the evolution of the Companies' proposed demand side management plan to provide grid value with a new savings target and the growing maturity of the distributed resource plan and planning processes seek to create foundational strategies to enable flexible load and deploy cost-effective Non-Wires Alternatives to support the needs of the grid and our State, while providing savings to NV Energy customers.

The Balanced Plan uses the updated load forecast, addresses state and federal carbon policy and changes in fuel and purchase power prices, meets the system's planning reserve margin ("PRM"), meets or exceeds the RPS in every year, and advances the state's 2050 clean energy goal. The Companies' investment in renewable resources in the Balanced Plan pays off with meaningful gains to both the state economy and the environment. The Companies selected the Balanced Plan as it is closely aligned with Nevada's energy policies, delivers the resources its customers value, and represents a balance of cost to customers, reliability, and environmental benefits. NV Energy therefore asks that the Commission accept the Balanced Plan and authorize NV Energy to take all necessary steps in the Action Plan period to implement the plan.

1. The IRP process is a transparent public process designed to produce the best value plan for serving NV Energy's customers.

Nevada's IRP process is designed to optimize expenditures on energy efficiency programs and investments in electric system assets for the benefit of all Nevadans. The IRP process starts with a forecast of customer loads and assesses a range of options for meeting customers' energy needs over the next 20 years. These options include investments in energy efficiency, demand response, distributed resources, transmission, and capacity and energy resources. The Companies have performed economic analyses for both the 20-year planning period and a 26-year study period to demonstrate NV Energy's contribution to the state's 2050 clean energy goal. Broadly speaking, the investments identified above fall into three categories: a demand side plan (energy efficiency and demand response programs to reduce demand), a distributed resources plan (comprised of non-wire alternatives to meet distribution-level reliability concerns), and a supply side plan (comprised of renewable and conventional generation, storage, and transmission options to increase supply).

Resource planners use a variety of modeling tools to determine the long-run impact of alternative supply plans on the operation of the electric system, on costs to customers, on the state's economy, and on the environment. After performing these analyses, NV Energy assesses the results and designates a Preferred Plan and at least one alternative plan.

Supply-side planning must take into consideration multiple needs and should encompass a long-term view. Sound supply-side plans will advance several objectives, all while balancing the present worth of revenue requirements and societal costs, in meeting those objectives. This is especially relevant given the state's policy to:

1. "Encourage and accelerate the development of new renewable energy projects for the economic, health, and environmental benefits provided to the people of this State;
2. Become a leading producer and consumer of clean and renewable energy, with a goal of achieving by 2050 an amount of energy production from zero carbon dioxide emission resources that is equal to the total amount of electricity sold by providers of electric service in this State; and
3. Ensure that the benefits of the increased use of portfolio energy systems and energy efficiency measures are received by the residents of this State."¹

The filing of an IRP in Nevada provides an opportunity for public review of the Companies' analysis, strategies, and proposals. The Commission conducts a public process through which stakeholders – governmental agencies, large customers, small customers, non-governmental interest groups and any other interested party – review, test, and comment on the Companies' analytic rigor and decision-making. For this 2024 Joint IRP, the Companies held one consumer session and two pre-filing interested persons briefings. The Companies have conducted and are presenting through this filing numerous rate impact analyses covering the alternative supply plans, demand side plan, and transportation electrification plan. After a mandatory evidentiary hearing, the Commission may accept the recommended plan, reject the plan, or propose modifications to the plan. The goal of the Commission's process is to evaluate the impact of the proposed plan on customers, the state's economy, and the environment and approve a plan that provides the best value to customers.

2. The 2024 Joint IRP helps position Nevada for economic growth by addressing capacity and energy needs formed by dramatically growing demand.

Population trends point to continued growth in the western United States, and Nevada is no exception. From July 2022 to July 2023, the western United States experienced a population

¹ Senate Bill No. 358 (2019).

growth rate of 0.2 percent.² Nevada's population continues to grow at rates of 0.50 to 0.99 percent per year. In fact, Nevada has consistently ranked among the fastest growing states for more than a decade. The state is an especially enticing place for Californians to relocate due to Reno's proximity to California's Bay Area and Las Vegas's proximity to the Los Angeles metropolitan area. This population influx has led to significant growth in the residential, commercial, and industrial sectors in both the Las Vegas and Reno areas.

Southern Nevada's growth was recognized with the recent award of \$3 billion in federal funds for the construction of the Brightline West Las Vegas to Los Angeles rail project.³ The University of Nevada, Las Vegas ("UNLV") forecasts a Clark County population surge of 56,000 residents in 2026, which represents the greatest population increase for the County since 2016.⁴ Las Vegas continues to expand as it establishes itself as a major metropolitan hub with a vibrant economy, diversified industries, and a variety of entertainment options.

The Reno metropolitan area is likewise experiencing tremendous growth in business. This is exemplified in the growing interest in northern Nevada as a data center hot spot. With the continued innovation and adoption of cloud computing and artificial intelligence ("AI"), data centers have become one of the greatest single drivers of electricity demand in recent years. Data centers are the physical facilities that house the digital data required by users around the world and are a critical component of the modern economy. Their role in processing, storing, and managing data is essential for organizations to thrive in the digital age.

Data centers require not only substantial energy to power their large data capacities but also require significant cooling to achieve stable processing efficiency, which in turn accelerates air conditioning demand. According to the Department of Energy, data centers are one of the most energy-intensive types of building and consume 10 to 50 times the energy per floor space of a standard commercial office building.⁵ As of March 2023, the estimated energy demand from data centers in the United States stood at approximately 22 gigawatts ("GW"), and, based on development plans at that time, energy demand from data centers will increase to 33 GW in only a few years.⁶ A recent report from the International Energy Agency projected that U.S. data centers

²United States Census Bureau, "U.S. Population Trends Return to Pre-Pandemic Norms as More States Gain Population," December 2023, available at <https://www.census.gov/newsroom/press-releases/2023/population-trends-return-to-pre-pandemic-norms.html>.

³Las Vegas Review Journal, "Vegas-to-LA rail project lands \$3B in federal funds," December 2023, available at <https://www.reviewjournal.com/local/traffic/vegas-to-la-rail-project-lands-3b-in-federal-funds-2959581/>.

⁴University of Nevada, Las Vegas ("UNLV"), "2023-2080 Population Forecasts," May 2023, available at <https://cber.unlv.edu/wp-content/uploads/2023/05/2023-CBER-Population-Forecasts.pdf>.

⁵U.S. Department of Energy. [Energy.gov/Office of Energy Efficiency & Renewable Energy/Buildings/Data Centers and Servers](https://www.energy.gov/OfficeofEnergyEfficiency&RenewableEnergy/Buildings/DataCentersandServers).

⁶S&P Market Intelligence, "Datacenter Companies Continue Renewable Buying Spree, Surpassing 40 GW in U.S.," March 28, 2023.

will account for approximately six percent of the nation’s power use by 2026.⁷ Large cloud service providers, referred to as hyperscalers, can use as much energy as 80,000 households.⁸

According to Western Electricity Coordinating Council’s (“WECC”) 2023 assessment report, data center demand in the Western Interconnection is expected to increase by 16.8 percent over the next ten years, nearly double the 9.6 percent rate of growth forecast in WECC’s 2022 assessment report.⁹ Multiple providers have entered Nevada’s market to grow the supply needed to meet the unprecedented data center demand.

Data hubs, the state’s largest information technology industry sector, were identified as the fastest growing technology sector in the state over the past decade.¹⁰ Indeed, the number of data centers in Nevada has grown significantly with the construction of multiple new campuses in both the northern and southern parts of the state. More recently, in 2023, over 3,000 acres of industrial land in northern Nevada were purchased specifically for data center development.¹¹

Nevada entices new and returning data center providers for myriad reasons. Northern Nevada’s proximity to the long-haul fiber routes along Interstate 80, coupled with its geographic proximity to Silicon Valley, means that in terms of data transmission, the northern part of the state is a mere 3 milliseconds away from California’s Bay Area.¹² Data center developers are attracted by northern Nevada’s affordable land costs, while state tax incentives, a pro-business climate, and lack of a corporate income tax are additional drivers of growth in the state.

Data centers offer a welcome opportunity for sustained economic growth in Nevada that the state should embrace and plan for accordingly. This opportunity is enhanced by the Greenlink Nevada transmission project, which will provide greater transfer capabilities between Sierra and Nevada Power, unlock plentiful renewable energy resource zones, and increase prospects for market participation in the western United States. Considerable demand for project interconnections on Greenlink West and Greenlink North attest to the economic growth shaping the state and northern Nevada in particular. More detailed information is provided in the Transmission Section.

⁷ International Energy Agency. “Electricity 2024: Analysis and Forecast to 2026,” at 32.

⁸ McKinsey & Company, “Investing in the Rising Data Center Economy,” January 2023 at 3.

⁹ Western Electricity Coordinating Council. “2023 Western Assessment of Resource Adequacy,” at 11.

¹⁰ Nevada Governor’s Office of Economic Development. “Realizing Nevada’s Electric, Innovative, and Connected Future,” December 2023 at 4.

¹¹ Northern Nevada Business Weekly. “Voices: Driving forces behind Nevada’s e-commerce, industrial and logistics landscape: What to expect in 2024,” January 25, 2024.

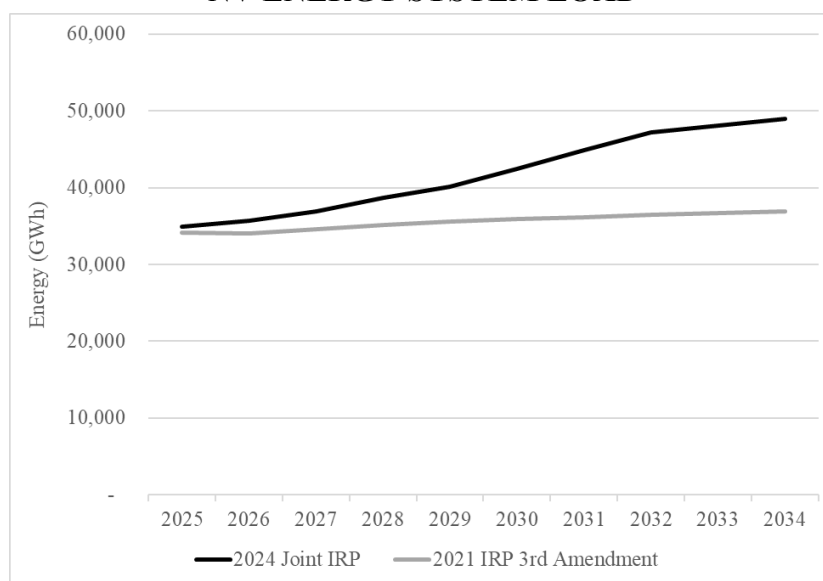
¹² Data Center Frontier. “Hyperscale-Driven U.S. Mountain West Data Center Markets Continue Building Up, and Big,” October 5, 2023.

Electrification of the transportation sector is another key contributor to electricity load growth.¹³ In the western United States, there are numerous initiatives to regulate and reduce the sale of internal combustion engines. As Nevada’s neighbors drive higher electricity demand through the electrification of transportation, Nevada is taking part in the transition, as well, and is now tied for 12th among the states in support of the transition to electric vehicles.¹⁴

The implementation of building electrification policies on the state and local levels also impacts load growth. WECC’s 2023 Western Assessment of Resource Adequacy report notes that adoption of full electrification could result in increases in load of as much as 75 percent in summer and 260 percent in winter.¹⁵ The overall trend of electrification and decarbonization signals a much brighter and electrified future.

Population growth, data center demand, transformation of the transportation industry, and electrification are leading to increased energy demand in Nevada. Figure S-1 below provides a comparison of the previously approved load forecast from the 2021 IRP 3rd Amendment with the proposed load forecast from this 2024 Joint IRP, illustrating considerable load growth in the state through 2034.

FIGURE S-1
NV ENERGY SYSTEM LOAD



¹³ North American Electric Reliability Corporation (“NERC”), “2023 Long-Term Reliability Assessment”, December 2023, available at https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2023.pdf.

¹⁴ *Id.*

¹⁵ Western Electricity Coordinating Council, “Western Assessment of Resource Adequacy,” November 2023, available at <https://www.wecc.org/Administrative/2023%20Western%20Assessment%20of%20Resource%20Adequacy.pdf>.

This increase in energy demand has led to a significant increase in capacity needs as well. This is apparent when evaluating the capacity position of the system with the updated load projections compared to existing and approved resources. Figure S-2 and Figure S-3 provide the existing capacity position and the capacity need, or open position, of the NV Energy System, respectively.

FIGURE S-2
NV ENERGY CAPACITY POSITION
EXISTING AND APPROVED RESOURCES

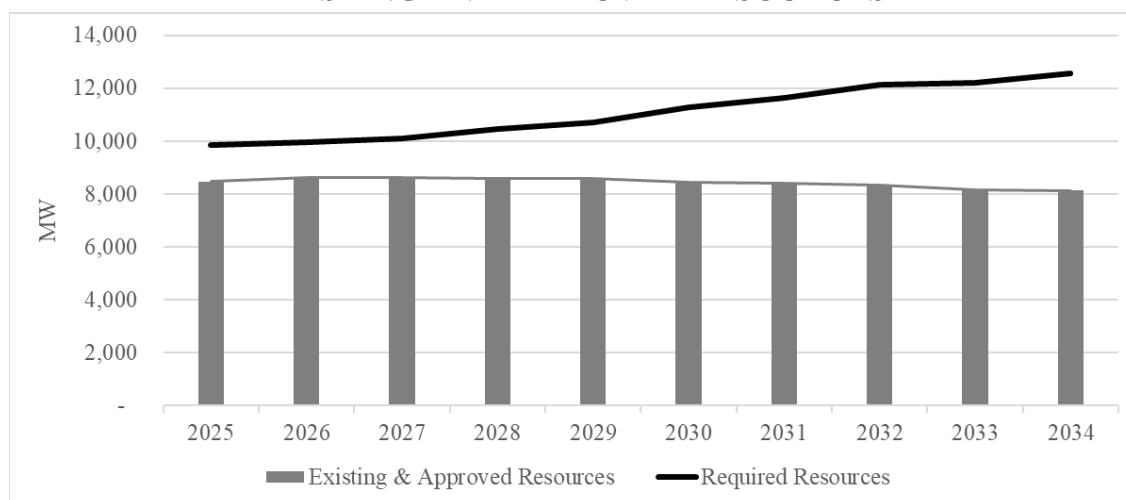
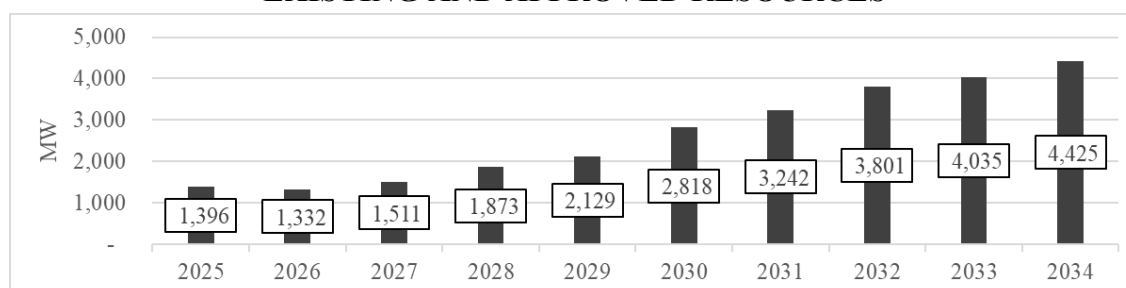


FIGURE S-3
NV ENERGY CAPACITY NEEDS
EXISTING AND APPROVED RESOURCES



The open position decreases slightly from 2025 to 2026, before increasing each year thereafter. The annual increase in the open position ranges from approximately 100 MW to 500 MW each year. The need for resources is evident in the large open positions shown. The Companies have developed a Preferred Plan that incorporates a balanced approach to address this need.

The Preferred Plan addresses the forecast load growth and also advances opportunity for further economic growth in Nevada by requesting approval of over 1,000 MW of paired solar and storage to meet future renewable energy and capacity needs, and over 400 MW of hydrogen-capable natural gas combustion turbines to address future capacity needs. Figures S-4 and S-5 illustrate the

capacity position and capacity need with the proposed resources in the Preferred Plan excluding future placeholders.

FIGURE S-4
PREFERRED PLAN CAPACITY POSITION
EXISTING, APPROVED, AND PROPOSED RESOURCES

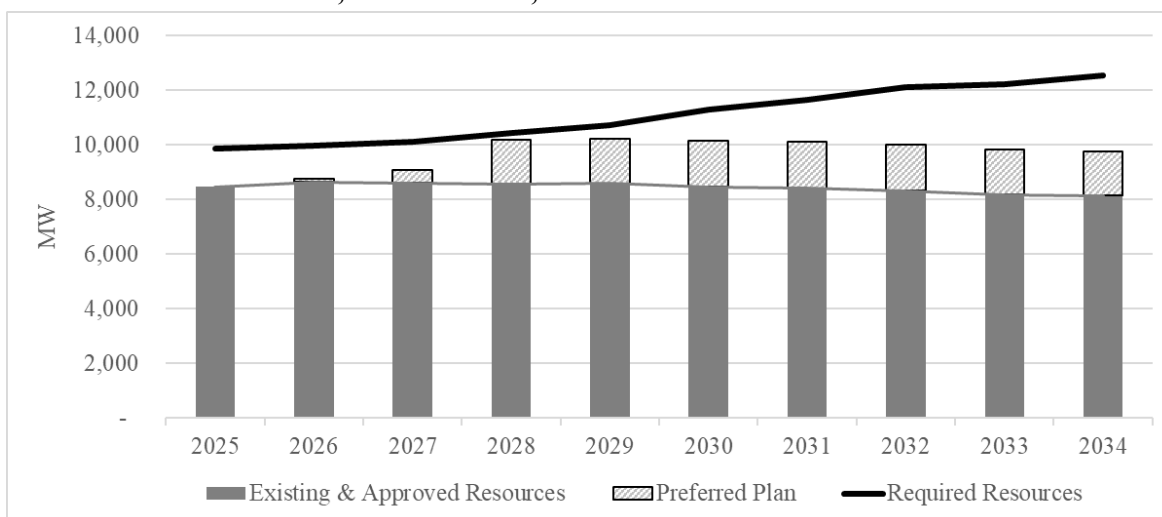
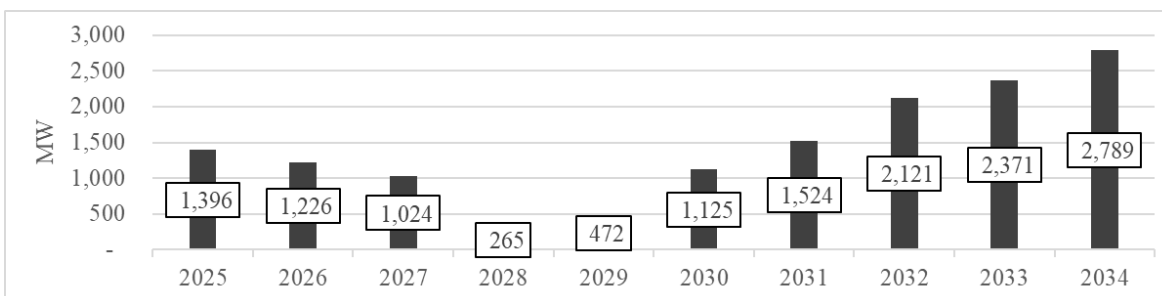


FIGURE S-5
PREFERRED PLAN REMAINING CAPACITY NEEDS



The Preferred Plan reduces the Companies' reliance on uncertain availability and deliverability of external markets, addresses RPS requirements, and prepares the Companies for participation in WRAP. However, as Figure S-4 shows, even with the approval of resources requested in the Preferred Plan, the open position will continue to grow after 2028 without additional future resources. This growing need makes clear that the resources requested in the Preferred Plan are paramount at this time. If the Companies are not proactive now in reducing the open position, any delay will only exacerbate efforts to address the ever-growing open position in the future.

- 3. The 2024 Joint IRP addresses continuing concerns about the availability and deliverability of regional market capacity and energy and simultaneously advances**

resource sufficiency as required for participation in WRAP, a future organized energy market or an RTO.

Concern regarding the availability and deliverability of regional market capacity and energy is not unique to NV Energy. Electric utilities across the Western Interconnection are sounding the alarm. Arizona Public Service Company recently described ongoing “tight capacity and energy market conditions” that necessitate a resource portfolio capable of meeting customers’ energy needs with only very limited assistance from neighboring utilities.¹⁶ PacifiCorp’s 2023 IRP states that reliance on markets and imports is becoming riskier due to changes in the western resource mix and the West’s greater reliance on variable resources.¹⁷ Portland General Electric similarly conceded that the uncertain availability of market capacity has challenged its efforts to assess how much power from the market it can depend on for resource adequacy in future years.¹⁸ Calling overreliance on an uncertain market a major risk for customers, Montana’s NorthWestern Energy contends that market conditions are now “increasingly risky in terms of customer affordability and reliability.”¹⁹

The WECC 2023 “Western Assessment of Resource Adequacy” finds that resource adequacy risks continue to grow and have increased considerably since the previous year’s assessment. WECC describes recent changes to the Western Interconnection as “faster, broader, and deeper than anything it has faced before” and warns that “it will take continued, concerted, and focused effort to maintain reliability.”²⁰ The annual report cites the increasing variability of resources as the greatest risk to resource adequacy in the Western Interconnection. Over the next decade, WECC entities intend to retire 27 GW of generation resources, mostly natural gas- and coal-powered resources. This represents a 50 percent increase over the 18 GW of resources retired over the previous 10 years.²¹ Variable resources, such as solar and wind, constitute approximately two-thirds of the resources WECC entities plan to add over the next ten years. Installed capacity is projected to increase by 95 GW through 2033, though energy from these added resources is projected to only increase by 15 GW.²² Significantly, variable resources cannot generate energy in response to changes in demand in the same way traditional resources can. This variability leads to risk by increasing uncertainty, and uncertainty adds to the difficulty in operating the system and, potentially, to overall cost. As variable generation is added to the system, the variability and risk of the system increases.

The North American Electric Reliability Corporation (“NERC”) also links increased variability to an increased risk to resource adequacy. NERC concludes that the WECC-NW assessment area, of

¹⁶ Arizona Public Service Company 2023 Integrated Resource Plan at 17.

¹⁷ PacifiCorp 2023 Integrated Resource Plan at 124.

¹⁸ Portland General Electric 2023 Integrated Resource Plan at 505.

¹⁹ NorthWestern Energy 2023 Integrated Resource Plan at 4.

²⁰ WECC, “Western Assessment of Resource Adequacy,” November 2023 at 3.

²¹ *Id.* at 6.

²² *Id.* at 20.

which Nevada is a part, is at risk of supply shortfalls in extreme conditions after 2024. While the region is projected to have sufficient capacity to meet forecasted peak demand, dispatchable generation falls as generators retire beginning in 2026. The resulting resource mix is more variable and as a result, subject to greater risk of supply shortfalls during extreme weather conditions.²³

Greenlink Nevada addresses some challenges associated with resource variability by improving interconnection between Sierra and Nevada Power and facilitating greater access to the regional diversity of renewable resources in the state. By providing greater transfer capabilities, Greenlink Nevada promotes significantly more optimized resource dispatch and thus increases affordability and reliability. For example, plentiful solar energy can be transferred from southern Nevada to northern Nevada. Similarly, geothermal energy from northern Nevada can be transferred south when needed. The flexibility afforded by Greenlink Nevada is of immense benefit and critically important as resource variability increasingly becomes the standard in the Western Interconnection.

The Companies have taken additional action to improve resource adequacy in the state by actively participating in the development of the WRAP. The WRAP's purpose is to deliver a region-wide approach for assessing and addressing resource adequacy and improving reliability for all participants. NV Energy has remained an active contributor to WRAP's development from its beginning through its current transitional period in which entities may elect to go binding or commit to meeting certain capacity requirements.

To participate in WRAP's binding period, the Companies will need to pass a forward showing requirement to demonstrate resource sufficiency. The Day-Ahead and Regional Transmission Organization Section provides greater detail on the forward showing requirement and the process associated with participation in WRAP's binding season. With issuance of the Commission's final order in the 2021 IRP Fifth Amendment proceeding, the Companies pushed the binding season to Winter 2027-2028, which is the final season in which a participant can elect to go binding. Therefore, the summer 2028 season will be the first financially binding summer season for the Companies' participation in WRAP.

Initial projections of the forward showing were created based on the Companies' existing and approved resources. According to this preliminary data, the largest monthly deficiency stands at more than 2,100 MW and occurs in the month of September 2028. With the proposed resources of the Preferred Plan, the deficiency shrinks to approximately 540 MW, which the Companies can reasonably acquire on a short-term basis. These initial projections demonstrate the need for continued capacity additions to ensure the Companies meet their forward showing obligations for participation in the WRAP.

²³ NERC, "2023 Long-Term Reliability Assessment," December 2023, at 9.

Senate Bill 448 (2021) acknowledges the potential for RTO participation to bring benefits to Nevada.²⁴ Currently, the Companies do not have a viable RTO option. However, the 2024 Joint IRP addresses important issues that will have to be satisfied prior to the Companies' participation in an RTO. In addition to the resource sufficiency obligations inherent in RTO membership, the Companies must have sufficient transmission interchange with a footprint of sufficient size and resource diversity to secure the potential benefits of an RTO's coordinated dispatch. The 2024 Joint IRP advances resource sufficiency by calling for varied resources to reduce the Companies' reliance on the regional market and points to the transmission projects and upgrades that will result in the interchange capabilities needed for the Companies to participate in a future RTO.

The Preferred Plan in this 2024 Joint IRP addresses resource adequacy by reducing reliance on the uncertain availability and deliverability of the western market and creates a foundation for successful participation in WRAP and future organized markets with a diversified mix of solar, storage, and firm dispatchable combustion turbines.

4. The 2024 Joint IRP advances the state's objectives toward a renewable energy future by pursuing a balanced approach to maintain affordability and reliability.

The Companies continue to advance towards an increasingly renewable energy future. This is highlighted by the historic achievement of powering the 2024 Super Bowl in Las Vegas with 100 percent renewable energy, an exciting first.²⁵ Since filing the 2021 IRP, more than 2,000 MW of renewable energy from solar and geothermal resources have achieved commercial operation. As reported in Docket No. 24-04017, NV Energy achieved 39.7 percent RPS in 2023, exceeding the RPS requirement of 29 percent. The RPS requirement climbs to 34 percent in 2024, 42 percent in 2027, and ultimately to 50 percent in 2030 and each year thereafter. Increased demand for renewable energy is also evident in large customers seeking greater renewable energy options through energy supply agreements and the Nevada Greenrider ("NGR") program. This 2024 Joint IRP takes into account RPS, customer demands, and the state's 2050 clean energy goal to develop a Preferred Plan designed for the future.

Nevada offers a diverse landscape for renewable energy with options for solar, geothermal, and wind resources across multiple regions of the state. Northern Nevada offers some of the most viable geothermal sites in the country, while southern Nevada boasts exceedingly high solar irradiance sites.²⁶ These rich-in-potential renewable energy pockets are largely located in the southwest and north central parts of the state where the Greenlink West and Greenlink North transmission projects will interconnect with them. The Greenlink West and Greenlink North

²⁴ Senate Bill 448 (2021) is codified at NRS 704.79881-704.789.

²⁵ CBS News, "Super Bowl 2024 to be powered by Nevada desert solar farm, marking a historic green milestone," February 2024, available at <https://www.cbsnews.com/news/super-bowl-2024-to-be-powered-by-nevada-desert-solar-farm/>.

²⁶ National Renewable Energy Laboratory ("NREL") available at <https://www.nrel.gov/gis/solar-resource-maps.html>

projects are anticipated to come online in 2027 and 2028, respectively, providing access to remote locations in Nevada with abundant renewable energy potential.

The renewable energy industry is rapidly evolving yet still faces supply chain disruptions, rising project financing costs associated with interest rate increases, and costly tariffs affecting key project components. In recent years, the Companies have witnessed several project cancellations resulting, in part, from a tightened supply chain affecting the renewable energy industry. NERC's 2024 Summer Reliability Assessment cites supply chain issues as an operational challenge for WECC's Northwest region and indicates that project delays and cancellations are a potential result.²⁷

In addition to supply chain disruptions, the renewable energy industry is now confronted by increased project financing and interest rate costs. In response to rising inflation, the Federal Reserve has raised interest rates, from 0.00 percent up to 5.25 percent to 5.50 percent.²⁸ As recently reported, a two-percentage point rise in the interest rate can increase the levelized cost of energy ("LCOE") by as much as 20 percent.²⁹ These mounting renewable energy project costs are evident in project cost estimates and power purchase agreement offerings.

The evolving tariff landscape poses increased risk to the renewable energy industry as well. On May 14, 2024, the U.S. announced a 50 percent tariff on solar cells manufactured in China.³⁰ The directive also includes a more than tripling of the tariff rates on lithium-ion batteries for electric vehicles and lithium batteries for other uses.³¹ Increased project costs and limited project availability will likely persist until the supply chain for renewable energy components becomes more independent of non-U.S.-based sources. The Companies are mitigating this risk by requesting Commission approval of three highly viable and vetted solar plus storage projects as power purchase agreements in this 2024 Joint IRP's Preferred Plan. Each of the power purchase agreements includes robust provisions to ensure deliverability of the projects, such as explicitly providing for the imposition of tariffs as being excluded from what constitutes force majeure.

The introduction of more variable energy resources onto the grid creates new challenges for system operation. This was recently highlighted by WECC:

²⁷ NERC, "2024 Summer Reliability Assessment," May 2024, available at https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA_2024.pdf.

²⁸ Federal Reserve Economic Data ("FRED"), "Federal Funds Effective Rate," available at <https://fred.stlouisfed.org/series/FEDFUNDS>.

²⁹ Reuters, "Higher interest rates pose risk to renewable sector, hurting energy transition, say analysts", April 2024, available at <https://www.reuters.com/sustainability/climate-energy/higher-interest-rates-pose-risk-renewable-sector-hurting-energy-transition-say-2024-04-18/>.

³⁰ The White House, "FACT SHEET: President Biden Takes Action to Protect American Workers and Businesses from China's Unfair Trade Practices", May 14, 2024, available at <https://www.whitehouse.gov/briefing-room/statements-releases/2024/05/14/fact-sheet-president-biden-takes-action-to-protect-american-workers-and-businesses-from-chinas-unfair-trade-practices/>.

³¹ *Id.*

Variability increases over the next 10 years across the interconnection and in all subregions except the NW-Northwest. This variability is driven primarily by the addition of non-dispatchable variable energy resources (VER), the retirement of dispatchable resources, and the increase in load uncertainty due to extreme weather events. Variability creates risk in the system because it increases uncertainty, which makes it more difficult to reliably plan and operate the system. By this measure, resource adequacy risk is increasing.³²

Net load is commonly known as the energy demand after variable energy resources, such as solar and wind, are removed from the system load. This is best depicted in what is called a duck curve. Figure S-6 shows the NV Energy duck curve on May 2, 2021, which was near the time that the 2021 IRP was filed, with approximately 1,000 MW of solar and wind generation.

FIGURE S-6
NV ENERGY DUCK CURVE ON MAY 2, 2021

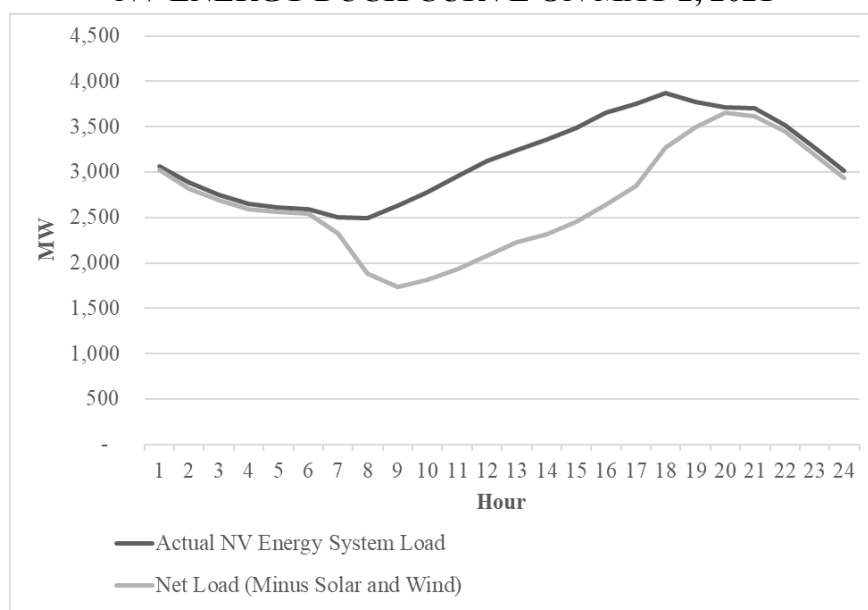
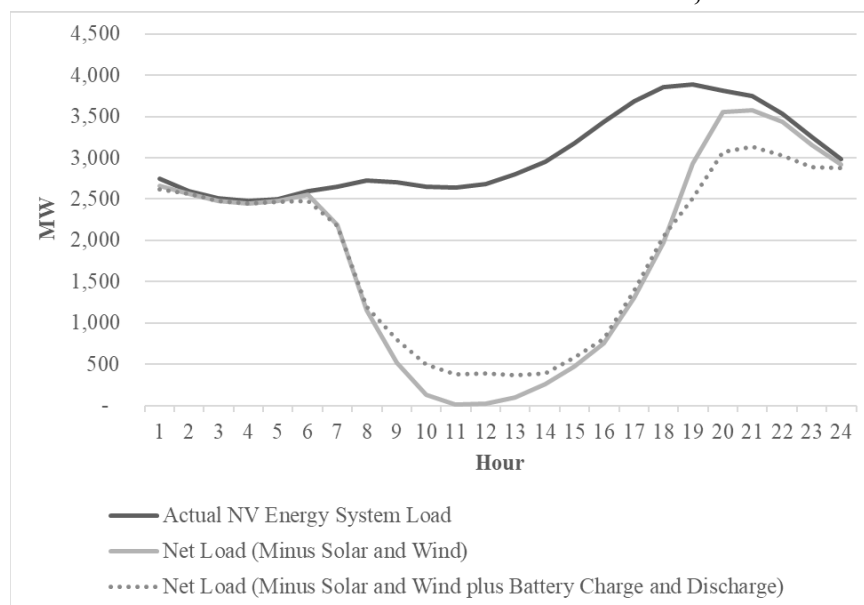


Figure S-7 shows the NV Energy duck curve on May 2, 2024, and illustrates the great change in system dynamics since the 2021 IRP was filed.

³²Western Electricity Coordinating Council (“WECC”), “Western Assessment of Resource Adequacy,” November 2023, available at <https://www.wecc.org/Administrative/2023%20Western%20Assessment%20of%20Resource%20Adequacy.pdf>.

FIGURE S-7
NV ENERGY DUCK CURVE ON MAY 2, 2024



On May 2, 2024, the net load fell nearly to zero during the middle of the day even as demand was rising. The charging and discharging of the BESS can be seen to mute the impact of the duck curve, absorbing excess energy in midday and delivering it during the evening net peak. BESS are a key resource addition to achieve a renewable energy future and to allow flexibility in system operation. However, as limited duration storage resources, batteries cannot replace the value of firm dispatchable resources, such as fast start combustion turbines, that economically provide energy at any time, not reliant on state of charge, for hours, days, or weeks as needed. To address capacity and energy needs most economically, a balance of renewable, storage, and firm dispatchable resources is a sound approach to a decarbonizing portfolio. The Preferred Plan in this 2024 Joint IRP offers this balanced approach with the request for two hydrogen-capable natural gas combustion turbines located at the North Valmy Generating Station, which also removes all must run requirements at Valmy as described further in the Transmission Section.

The Companies are not alone in this approach as multiple electric utilities in the Western Interconnection have recently cited the need for firm dispatchable generation, including natural gas-powered combustion turbines, in their respective IRP filings. In Arizona, Tucson Electric Power asserts that its 2023 IRP “highlights this need for a balanced portfolio approach” of renewable resources with a “continued reliance on firm capacity from natural gas resources.”³³ Colorado’s Xcel Energy similarly describes the Preferred Plan of its 2023 Colorado Clean Energy Plan as a “balanced mix of energy generation resources” that includes 630 MW of dispatchable natural-gas resources.³⁴ Arizona Public Service Company, in particular, devotes a significant

³³ Tucson Electric Power, “2023 Integrated Resource Plan,” at 12.

³⁴ Xcel Energy, “Colorado Clean Energy Plan Phase II Information Sheet. September 2023.

amount of its 2023 IRP to addressing its need for added natural gas generation. Citing the ability of natural gas generation to provide dispatchable, fast ramping flexibility to the grid and necessary peaking, evening and overnight load support, Arizona’s largest electric utility labels natural gas resources as “essential to a reliable, resilient and clean energy future.”³⁵

As outlined in Nevada Executive Order 2023-07,³⁶ the state’s “energy policy will be focused on developing and maintaining a robust, diverse energy supply portfolio and a balanced approach to electric and natural gas energy supply... that emphasizes affordability and reliability for consumers.” The state and the Companies are aligned in this approach of balancing the need for a renewable energy future with the need for an economic and reliable energy grid. The Companies’ Preferred Plan employs a balanced approach to decarbonizing, adding multiple solar/storage projects and a thermal project, resulting in the lowest Present Worth of Revenue Requirement (“PWRR”) of all plans studied across multiple time horizons while also addressing RPS compliance and customers’ clean energy goals.

5. Advancing demand side and distributed resource planning delivers benefits to the Nevada communities that NV Energy serves.

The Companies are evolving the Demand Side Management (“DSM”) Plan and Distributed Resources Plan (“DRP”) to ensure customer programs and investments provide incremental benefits through enabling flexible load to meet the growing constraints on the grid and economic growth of the State.

To advance demand side and distributed energy resource planning, NV Energy contracted third-party experts to develop a comprehensive distributed energy resource market potential study and bring on new tools to inform the development of NV Energy’s demand-side management portfolio and support other planning activities including the development of its IRP and DRP.

In addition to advanced demand side planning and tools, the Companies have modeled behind-the-meter dispatchable load customer programs as resources representing existing and new demand response programs within the demand side management plan and transportation electrification plan. The Companies are also proposing small-scale solar, both utility-owned and via power purchase agreements, and utility-owned battery energy storage systems as resources to support securing federal funding to advance various community solar efforts and serve as non-wires alternatives.

³⁵ Arizona Public Service Company, “2023 Integrated Resource Plan,” at 85.

³⁶ State of Nevada Executive Department, Executive Order 2023-07, March 21, 2023, available at https://lands.nv.gov/uploads/documents/Executive_Order_2023-007.pdf.

6. New suite of proposed customer offerings and maturing trials to unlock flexible load across demand side management, distributed resource plan and transportation electrification plan.

The presentation of a new savings target in the DSM Plan, the first Transportation Electrification Plan (“TEP”) within an integrated resource plan, and a maturing DRP allows for new customer offerings, and technology advancements, that create incremental value for all customers and the grid. These policy-directed customer programs support the reduction of peak demand and system constraints, enable electrification, and utilize excess renewable energy.

7. Conclusion

The Preferred Plan provides NV Energy’s customers the best value. NV Energy respectfully requests that the Commission accept and approve this comprehensive integrated plan to meet the state’s clean energy policies and goals and the energy demands and needs of the communities and customers NV Energy serves.

SECTION II – INTRODUCTION TO THE COMPANIES: NAC § 704.9215(2)(a)

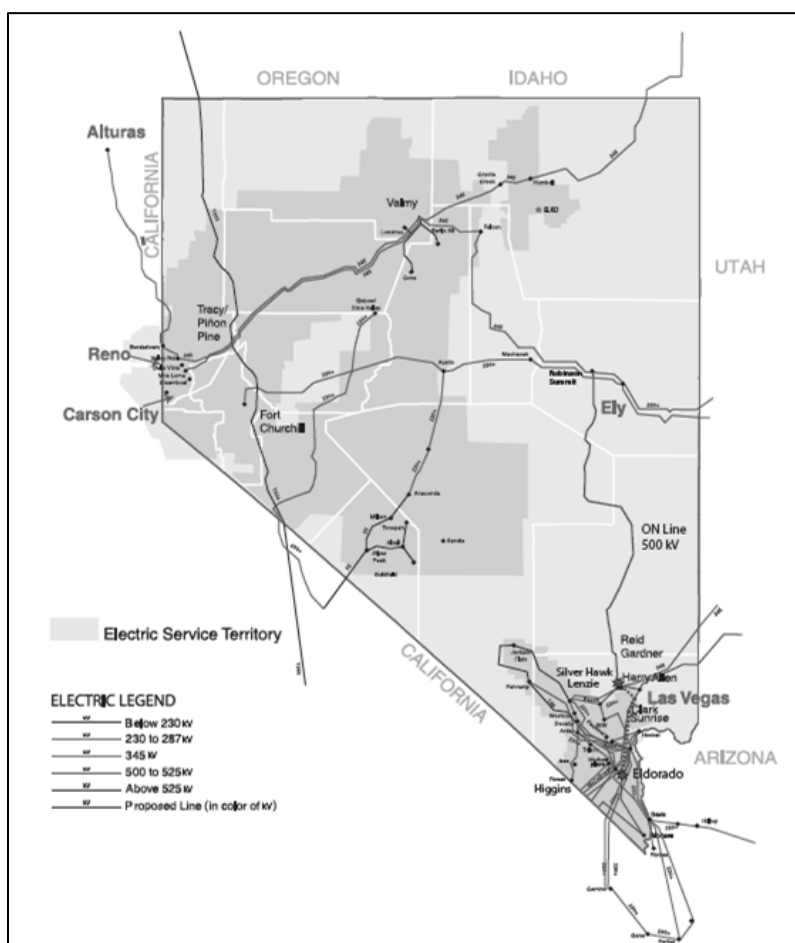
Nevada Power and Sierra Described. Nevada Power and Sierra are fully regulated “public utilities,” subject to the jurisdiction and oversight of the Commission and the Federal Energy Regulatory Commission (“FERC”). Jointly, Nevada Power and Sierra provide approximately 90 percent of Nevada’s electrical power. Nevada Power and Sierra provide all-in electric service to residential, commercial, and industrial customers in northern and southern Nevada at rates and under terms and conditions reviewed and approved by the Commission. Nevada Power and Sierra also provide distribution-only service to very large commercial customers that have received permission to procure their own energy through an alternative energy provider. Distribution-only service is provided to these large commercial customers at rates and under terms and conditions reviewed and approved by the Commission. Finally, Nevada Power and Sierra provide transmission service to customers who interconnect directly to the transmission system, or who use the transmission system to import or export energy into and out of Nevada. Transmission service is provided to transmission customers at rates and under terms and conditions reviewed and approved by the FERC.

The more than 2,600 employees of Nevada Power and Sierra support the generation, transmission, and distribution of electric energy to over 1.3 million bundled customers statewide, covering approximately 45,000 square miles. Together, Nevada Power and Sierra serve peak loads of 8,384 MW with capacity primarily sourced from a combination of more than 50 Nevada renewable resources, a small fleet of Nevada-based modern, clean-burning natural gas facilities,

and market purchases. Between 2005 and 2020, the Companies have been transitioning away from conventional generation and into renewable energy, reducing Nevada's carbon emissions from electric production by approximately 50 percent. The Companies have one remaining coal facility set to retire in 2025.

A map of Nevada Power's and Sierra's electric service territories, as well as the bulk transmission system that delivers energy into and out of Nevada is set forth below in Figure S-8.

FIGURE S-8
NV ENERGY SERVICE TERRITORIES



Resource Planning Described. The Companies are required by statute to submit a joint IRP every three years and present a Preferred Plan for meeting the long-term needs of customers. Like IRPs prepared in the past, this 2024 Joint IRP begins with projections of customers' load requirements and the resources the Companies have under contract or own, with which they can serve customers' load requirements. The Companies then prepared a long-term plan in which they lay out in detail their proposals for filling projected needs with programs that reduce energy consumption, and requests to build new renewable generation and transmission to access these new resources. As

mentioned above, the Companies' Preferred Plan in this 2024 Joint IRP proposes to meet the state's clean energy policies and goals, reduce energy consumption with investment in DSM programs, and to meet the shortfall between load and resources with 1,028 MW of solar photovoltaic ("PV") generation, 1,028 MW of battery storage, and 411 MW of hydrogen-capable natural gas combustion turbines.

IRP and Action Plan Period. This 2024 Joint IRP filing addresses the 20-year planning period with a study period of 26 years extending from 2025 to 2050. The Companies' Preferred Plan and Alternative Plans are formulated and compared to one another using advanced economic analysis techniques. This Joint IRP includes an "Action Plan," which details the steps that the Companies will take over the three-year period January 1, 2025, to December 31, 2027, to implement the Preferred Plan. The Action Plan filed with this 2024 Joint IRP, attached as Exhibit A to the Joint Application, includes a description of the costs, timeline, and planning activities for each recommended project. A more detailed description of each project is provided in detailed narratives that are included in the 2024 Joint IRP.

SECTION III - FORECAST OF GROWTH: NAC § 704.9215(2)(b)

Summary of Findings. Nevada Power's and Sierra's loads are forecasted to grow at 1.9 percent and 4.4 percent, respectively, over the 2025-2044 twenty-year period for this 2024 Joint IRP forecast. From 2023, the forecasted load growth presented in this forecast is fueled by industrial load growth in manufacturing, mining, production facilities, data centers and other energy intensive industries.

Residential customer counts have increased at an annual average growth of 1.7 percent over the last five years at Nevada Power and 1.6 percent at Sierra. Small commercial and industrial ("Small C&I") customers have grown at an average 1.1 percent rate at both Nevada Power and Sierra over the same period.

Over the last five years, Nevada Power's residential weather-adjusted sales grew 0.1 percent, while Sierra's residential sales grew at 1.2 percent per year on average. Small C&I weather adjusted sales showed an average annual increase of 0.3 percent at both Nevada Power and Sierra.

Residential sales are expected to continue to grow over the next 10 years, at an average annual rate of 1.7 percent at Nevada Power and 2.1 percent at Sierra that are driven by customer growth and incremental electric vehicles ("EV") usage are partially offset by declines in use-per-customer sales due to company-sponsored DSM and external energy efficiency initiatives and increasing rates of rooftop solar installations. After 2034, residential sales are expected to grow at an average annual rate of 1.8 percent at Nevada Power and 1.6 percent Sierra.

At Nevada Power, Large C&I sales have grown by 2.9 percent over the past five years and are expected to continue this trend over the next 10 years with an average growth rate of 2.0 percent, and 1.8 percent in later years. At Sierra, these Large C&I sales decreased on average 5.3 percent over the past five years due to the transfer of a large mining customer to distribution-only service (“DOS”) service in 2022. This trend is reversing as over the upcoming 10-year period (2025-2034) changes to sales in this group are expected to increase at an average rate of 10.9 percent, and 3.1 percent, thereafter, driven by the major projects in the Tahoe-Reno Industrial Center (“TRIC”) and Apex areas.

At Nevada Power, summer peak load is projected to increase from 6,311 MW in 2023 to 6,717 MW in 2027 and 7,613 MW in 2034, an average annual growth rate of 1.6 percent. At Sierra, the summer peak load is projected to increase from 1,825 MW in 2023 to 2,487 MW in 2027 and 3,801 MW in 2034, representing an average annual growth rate of 6.3 percent.

Basis for the Load Forecast. The load forecast for the 2024 Joint IRP was completed in October 2023 and covers calendar years 2025 through 2044 (“2024 Joint IRP Forecast”). The 2024 Joint IRP Forecast updates several inputs and includes incremental changes relative to the load forecast filed in Docket No. 22-09006, the Companies’ Third Amendment to the 2021 Joint IRP Forecast (“2021 IRPA 3rd Forecast”). The 2024 Joint IRP Forecast is updated using actual data through June 2023 for several inputs, including updates to the following important forecast inputs.

Population Growth. Both Companies’ residential and Small C&I customer forecasts are driven by population. The 2024 IRP Forecast is an extrapolation of historical population series using the annual growth rates. The forecast used a blended average of growth rates from multiple sources.

Figure S-9 shows the population forecasts for Nevada Power and Sierra from 2025 through 2044. For the 10-year period from 2025 through 2034, the Nevada Power Compound Annual Growth Rate (“CAGR”) used in the forecast is 0.9 percent. The Sierra CAGR used in the forecast for that time period is 0.6 percent.

FIGURE S-9
POPULATION FORECAST

Year	Population		
	NVE	Nevada Power	Sierra
2025	3,309,047	2,426,691	882,356
2026	3,351,046	2,461,402	889,644
2027	3,394,035	2,497,356	896,680
2028	3,432,554	2,529,378	903,176
2029	3,466,697	2,557,621	909,076
2030	3,497,290	2,582,511	914,778
2031	3,525,400	2,605,054	920,346
2032	3,551,843	2,625,978	925,865
2033	3,577,158	2,645,821	931,337
2034	3,602,081	2,665,348	936,733
2035	3,626,745	2,684,712	942,034
2036	3,651,305	2,704,101	947,204
2037	3,675,701	2,723,454	952,247
2038	3,699,999	2,742,803	957,196
2039	3,724,202	2,762,164	962,038
2040	3,748,263	2,781,496	966,767
2041	3,771,916	2,800,508	971,408
2042	3,795,072	2,819,064	976,008
2043	3,818,358	2,837,732	980,625
2044	3,841,789	2,856,524	985,265
CAGR			
2025-2027	0.8%	1.0%	0.5%
2025-2034	0.9%	0.9%	0.6%
2025-2044	0.7%	0.8%	0.6%

Employment and Output Trends. Population and real economic output drive the Small and Large C&I customer and sales forecasts. The state’s economic growth is estimated to continue at 2.0 percent for Nevada Power and 1.3 percent at Sierra during the 2025 to 2034 period.

Hotel/Motel Room Increasing. Historically, the resort and hotel/motel industry has been a significant driver of growth for Nevada Power. However, as several large casinos exited bundled service to DOS service, this indicator does not display as much of a direct correlation between the addition of hotel rooms and expansion of casino electric growth in Southern Nevada. Despite the exits, information is still provided for this filing, as the estimates do show an average annual growth rate of 2.0 percent in hotel room counts in Las Vegas over the 2025 to 2034 period.

Large customer assumptions. Large C&I industrial growth in the 2024 Joint IRP Forecast reflects the unprecedented load growth expected from 39 bundled-service projects considered for this forecast. These projects are located primarily within the Tahoe-Reno Industrial Center (“TRIC”) area at Sierra and the Apex area at Nevada Power. In total, these customers requested approximately 7,600 MW of capacity additions, with nearly 6,500 MW at Sierra and 1,180 MW

at Nevada Power. Twelve of these projects are bundled-service data centers with a high load factor that are requesting 5,900 MW of capacity by 2033. Consistent with past practice, these requests are scaled down in the retail load forecast, but still incorporate 13,288 gigawatt-hours of load growth over the next 10 years for this 2024 Joint IRP Forecast.

Normal Weather. Pursuant to NAC § 704.9281(1)(b), sales have been weather normalized for the 2024 Joint IRP Forecast. The Companies adjusted hourly sales using calculated daily normal values for each month, rather than annual values presented in the 2021 IRPA 3rd Forecast. Twenty years of trended historical values were ranked by month, and average temperatures for each within-month rank were used to provide trended normal temperatures during the forecast period. The daily average temperature is used to calculate Cooling Degree Days (“CDD”) and Heating Degree Days (“HDD”) measurements for use in the modelling process. CDDs and HDDs are simply the number of degrees that the average daily temperature is above (for CDD) or below (for HDD) a set threshold, with the threshold determined statistically for each customer class. Those days when the average daily temperature is greater than the threshold are considered days when customers will increase cooling usage, while those days under the threshold will show increases related to heating usage. Calendar HDDs and CDDs are generated by summing the daily degree-days over the calendar month. Weather normalization for the 2024 Joint IRP Forecast utilized the 20-year historical trended normal calculations over the 2003 through 2023 period.

Distribution-Only Service. Very large commercial customers authorized to procure their own energy receive “wires only” service from Nevada Power and Sierra and are termed DOS customers. Because they have elected to procure their own energy, DOS customers must be separately accounted for in the Companies’ load forecast. The 2024 Joint IRP Forecast has removed several large customers who have moved to DOS over the past few years in developing the forecast. Further, a large mine in Sierra’s territory began taking DOS service beginning in February 2022 that is no longer reflected in the ongoing sales of the Large C&I group at Sierra.

DSM and Demand Reduction. In this forecast update, the base forecast includes reductions based on the current 1.1 percent of weather-normalized sales statewide goal. These amounts are modified in the Companies’ Preferred Plan to incorporate the proposed DSM program savings detailed in the DSM Plan. Figure S-10 compares the DSM savings estimated in the 2024 Joint IRP Forecast compared to the level of DSM savings from the previous 2021 Third Amendment Forecast. The reductions underlying this updated forecast are lower for residential customers while higher for commercial customers over the period.

FIGURE S-10
NV ENERGY DSM SAVINGS COMPARISON

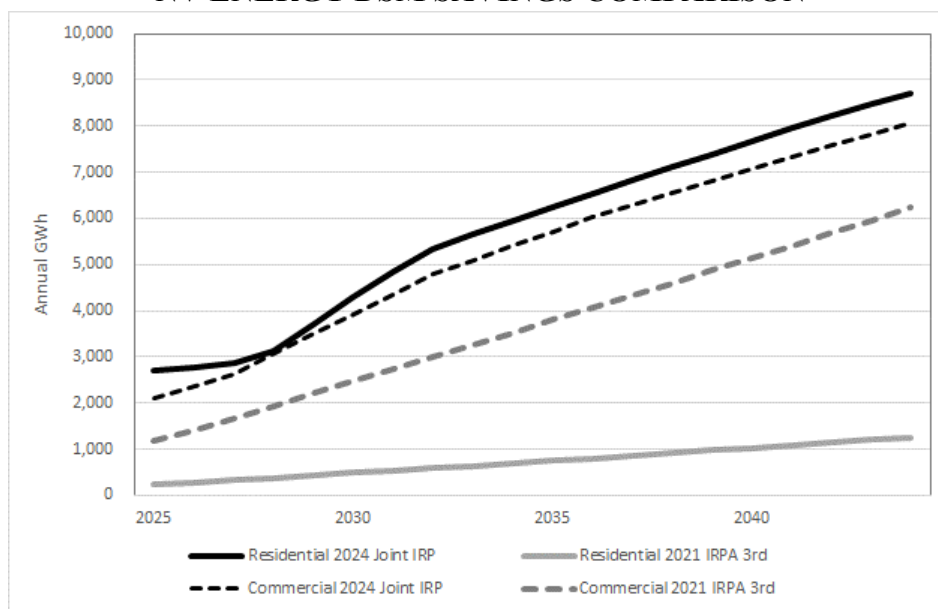


Figure S-11 summarizes the DSM savings by program for Nevada Power from years in the 2025-2044 range. Figure S-12 provides the same information for Sierra.

FIGURE S-11
NEVADA POWER DSM SAVINGS BY PROGRAM

	2025	2026	2027	2028	2029	2030	2035	2040	2044
Residential Portfolio									
CS1 Residential Manage	-	-	-	-	-	-	-	-	-
CS2 Residential Manage	20,001	20,001	20,001	18,628	17,349	16,160	11,333	7,954	5,997
CS2 Residential Build Since 2023	2,999	2,999	2,999	3,931	6,176	8,570	18,874	26,987	32,317
Direct Install & Deep Retrofits	8,776	13,776	18,776	23,890	27,842	30,709	34,282	38,422	41,943
Energy Assessments	13,000	13,000	13,000	13,148	13,445	13,773	15,547	17,430	18,799
Energy Education-kits	1,350	1,950	2,550	3,164	3,791	4,435	5,955	6,694	7,309
Home Energy Reports	10,000	10,000	10,000	10,228	10,456	10,733	12,092	13,590	14,625
Low Income	8,685	13,685	18,685	23,799	29,027	34,394	54,624	61,291	66,957
Residential Codes & New Construction	13,744	16,744	19,744	22,812	25,949	29,169	46,518	52,200	57,116
Residential Equipment & Plug Loads	20,355	30,355	41,355	52,606	64,108	75,488	86,921	97,537	106,493
Multi-Family and Manufactured Homes	3,000	6,000	9,000	12,068	15,205	18,425	26,774	30,072	32,835
Res Heat Pump & AC	11,000	23,000	36,000	49,297	62,889	76,843	152,022	236,199	274,391
Weatherization	4,000	9,000	15,000	21,137	27,410	33,850	53,549	60,143	65,670
New Res Program-1	4,000	9,000	15,000	21,137	27,410	33,850	53,549	60,143	65,670
New Res Program-2	4,000	9,000	15,000	21,137	27,410	33,850	53,549	60,143	65,670
Total Residential Portfolio	124,910	178,510	237,110	296,983	358,468	420,251	625,588	768,806	855,792
Commercial Portfolio									
CS1 Small Commercial Manage	-	-	-	-	-	-	-	-	-
CS1 to CS2 Conversion: Small Commercial	-	-	-	-	19	37	122	200	256
Commercial Before 2023 Manage	4,498	4,498	4,498	4,417	4,328	4,242	3,834	3,466	3,197
Commercial Build Since 2023	501	501	501	1,113	2,465	3,804	10,312	16,501	21,234
Business Energy Services	325,200	480,200	635,200	795,764	960,745	1,130,918	2,049,929	2,597,965	2,855,234
Schools Program	46,275	50,500	54,000	54,646	55,805	57,567	65,507	73,209	79,930
Small Commercial HVAC Tuneup/Midstream	10,000	20,000	30,000	40,359	51,003	61,982	70,270	78,741	86,007
Total Commercial Portfolio	386,474	555,699	724,199	896,299	1,074,365	1,258,550	2,199,974	2,770,083	3,045,858
Total Residential and Commercial	511,384	734,209	961,309	1,193,281	1,432,833	1,678,801	2,825,562	3,538,889	3,901,650

FIGURE S-12
SIERRA DSM SAVINGS BY PROGRAM

	2025	2026	2027	2028	2029	2030	2035	2040	2044
Residential Portfolio									
CS2 Residential Single Family Manage	2,200	2,200	2,200	2,156	2,113	2,071	1,872	1,692	1,561
CS2 Residential Single Family Build Since 2023	334	334	334	556	1,067	1,594	3,367	4,698	5,700
CS2 Residential Multi Family Total	16	16	16	23	40	56	135	209	265
Agricultural Irrigation	-	-	-	-	-	-	-	-	-
Direct Install	3,599	4,999	6,399	7,844	8,798	8,671	9,903	11,036	11,934
Energy Assessments	5,400	4,750	4,500	4,573	4,714	4,864	5,560	6,152	6,629
Energy Education -kits	668	868	1,068	1,274	1,487	1,707	2,234	2,522	2,735
Home Energy Reports	5,000	5,000	5,000	5,161	5,314	5,494	6,243	6,917	7,432
Low Income	4,190	7,590	11,090	14,703	18,423	22,269	35,591	40,164	43,487
Residential Codes & New Construction	815	1,065	1,315	1,573	1,839	2,114	3,607	5,266	6,148
Residential Equipment & Plug Loads	5,526	7,526	9,526	11,590	13,716	15,914	22,338	25,219	27,347
Multi-Family and Manufactured Homes	1,000	2,000	3,000	4,032	5,095	6,194	9,169	10,302	11,148
Res Heat Pump & AC	4,000	9,000	14,500	20,177	26,023	32,066	64,929	101,418	118,765
Weatherization	1,500	4,250	7,250	10,347	13,535	16,832	27,507	30,907	33,445
New Res Program-1	1,500	4,250	7,250	10,347	13,535	16,832	27,507	30,907	33,445
New Res Program-2	1,500	4,250	7,250	10,347	13,535	16,832	27,507	30,907	33,445
Total Residential Portfolio	17,842	17,686	17,823	17,675	17,762	18,489	18,462	18,653	18,633
Commercial Portfolio									
CS2 GS-1	460	460	460	574	655	736	1,118	1,472	1,736
CS2 GS-2	154	154	154	178	201	224	332	433	507
CS2 GS-3	86	86	86	128	138	155	280	403	499
Agricultural Irrigation	-	-	-	-	-	-	-	-	-
Business Energy Services	140,430	202,430	264,430	333,631	409,408	496,154	1,046,926	1,429,100	1,694,223
Schools Program	18,657	28,657	39,657	51,935	65,379	80,769	138,830	175,779	198,638
Small Commercial HVAC Tueneup/Midstream	4,000	8,000	12,000	16,465	21,353	22,950	35,534	41,716	47,237
Total Commercial Portfolio	80,596	71,376	72,971	75,743	77,417	83,174	82,416	82,095	82,047
Total Residential and Commercial	98,438	89,061	90,794	93,417	95,179	101,663	100,878	100,748	100,680

Solar PV Programs. The Companies are including a separate net energy metering (“NEM”) customer-owned generation forecast for rooftop solar customers in this filing. The 2021 IRPA 3rd Forecast included reductions in total system loads from incremental NEM generation, but reflected these load reductions at the system level, and not as specific sales reductions. Therefore, the growth in the number of NEM customers and sales followed the population growth rate. In this update, recent historical trends were used to forecast growth of NEM customers and sales. The movement from full requirement customers to partial requirement customers are now separately accounted for in the overall sales forecast. Projected incremental peak reductions of 25 MW at Nevada Power and 10 MW at Sierra by 2025 are based on the installed capacity of 942 MW and 71 MW for each respective company.

Energy storage behind the meter. Following the methodology from the 2021 IRPA 3rd Forecast, the Companies made no specific adjustments related to energy storage estimates to this 2024 Joint IRP Forecast. Until the Companies have sufficient data regarding the operating characteristics of behind-the meter storage (either stand-alone or coupled with solar PV), adjustments (either increases, decreases, and/or shifts in load) are difficult to model. The Companies expect storage impacts in future forecasts once there is sufficient hourly storage operating data available to demonstrate markedly different usage patterns of these customers from the larger NEM population.

Low, Base and High Scenarios. Consistent with prior practice (and Commission regulations), high and low load forecast scenarios were developed for the 2024 Joint IRP Forecast. The high and low load forecast scenarios are based on different assumptions of economic, demographic, hotel/motel room, NEM adoption, EV loads, and large customer growth than the base forecast.

704B Annual Limits. The 2024 Joint IRP Forecast includes the calculation of annual limits for both Nevada Power and Sierra large C&I customers who are eligible to choose to exit bundled service and purchase energy from a third-party provider pursuant to NRS Chapter 704B. In this proceeding, the annual limits proposed are 260,662 MWh at Nevada Power and 0 MWh at Sierra, due to current transmission system import capacity constraints.

Required Figures. The regulations governing resource planning require that certain figures are included in the IRP Summary. Figures S-13 and S-14 show the forecast of peak demand for each of the 20 years in the planning period, under the low, base, and high scenarios, with and without DSM, for Nevada Power and Sierra respectively, and summarizes the peak impacts by program. Figures S-15 and S-16 show the forecast of energy sales for each of the 20 years of planning period under the low, base, and high scenarios, both with and without DSM for Nevada Power and Sierra. Solar PV is not classified as DSM and is therefore included in both scenarios.

FIGURE S-13
NEVADA POWER LOW, BASE, AND HIGH PEAK DEMAND SCENARIOS
WITH AND WITHOUT DSM

Year	Peak Demand (MW) With DSM/EE			Peak Demand (MW) Without DSM/EE		
	Low	Base	High	Low	Base	High
2023	6,277	6,567	6,398	6,360	6,651	6,481
2024	6,324	6,490	6,568	6,417	6,584	6,662
2025	6,447	6,630	6,724	6,554	6,736	6,830
2026	6,411	6,631	6,745	6,601	6,821	6,935
2027	6,456	6,717	6,842	6,670	6,916	7,045
2028	6,566	6,864	7,010	6,816	7,115	7,264
2029	6,580	6,909	7,069	6,860	7,188	7,348
2030	6,789	7,117	7,295	7,111	7,439	7,617
2031	6,858	7,205	7,396	7,215	7,564	7,762
2032	6,941	7,365	7,578	7,297	7,730	7,948
2033	7,002	7,455	7,687	7,411	7,879	8,116
2034	7,108	7,613	7,865	7,521	8,033	8,292
2035	7,222	7,702	7,968	7,663	8,170	8,445
2036	7,411	7,857	8,139	7,933	8,379	8,661
2037	7,558	8,049	8,357	8,050	8,540	8,855
2038	7,658	8,156	8,487	8,164	8,671	9,014
2039	7,810	8,332	8,691	8,343	8,888	9,259
2040	7,997	8,566	8,960	8,533	9,102	9,504
2041	8,199	8,659	9,051	8,816	9,276	9,688
2042	8,362	8,878	9,318	8,991	9,488	9,941
2043	8,559	9,000	9,536	9,130	9,572	10,109
2044	8,684	9,110	9,667	9,270	9,696	10,273

FIGURE S-14
SIERRA LOW, BASE, AND HIGH PEAK DEMAND SCENARIOS
WITH AND WITHOUT DSM

Year	Peak Demand (MW) With DSM/DR			Peak Demand (MW) Without DSM/DR		
	Low	Base	High	Low	Base	High
2023	2,057	2,132	2,091	2,071	2,147	2,105
2024	2,102	2,186	2,205	2,126	2,210	2,229
2025	2,197	2,353	2,401	2,236	2,392	2,440
2026	2,153	2,374	2,487	2,208	2,427	2,548
2027	2,238	2,487	2,649	2,308	2,557	2,721
2028	2,310	2,647	2,878	2,395	2,733	2,968
2029	2,458	2,851	3,131	2,567	2,961	3,240
2030	2,607	3,072	3,431	2,735	3,198	3,558
2031	2,813	3,416	3,830	2,959	3,561	3,976
2032	2,899	3,564	4,051	3,067	3,722	4,226
2033	2,955	3,641	4,163	3,136	3,822	4,361
2034	3,071	3,801	4,369	3,272	3,997	4,566
2035	3,100	3,852	4,455	3,336	4,088	4,691
2036	3,143	3,891	4,519	3,382	4,130	4,758
2037	3,180	3,959	4,576	3,434	4,207	4,838
2038	3,216	4,053	4,698	3,482	4,308	4,959
2039	3,303	4,164	4,852	3,584	4,444	5,142
2040	3,500	4,362	5,110	3,789	4,652	5,399
2041	3,497	4,399	5,184	3,806	4,707	5,493
2042	3,658	4,595	5,390	3,990	4,930	5,725
2043	3,688	4,594	5,416	4,016	4,922	5,754
2044	3,789	4,734	5,594	4,107	5,042	5,907

FIGURE S-15
NEVADA POWER LOW, BASE, AND HIGH SALES SCENARIOS
WITH AND WITHOUT DSM

Year	Annual Usage (GWH)			Annual Usage (GWH)		
	With DSM/EE			With DSM/EE		
	Low	Base	High	Low	Base	High
2023	21,200	21,689	21,385	21,992	22,481	22,177
2024	21,494	22,250	22,201	22,381	23,137	23,088
2025	21,543	22,544	22,580	22,713	23,714	23,750
2026	21,694	22,933	23,038	23,152	24,391	24,496
2027	21,833	23,323	23,501	23,581	25,071	25,250
2028	22,044	23,816	24,101	24,086	25,858	26,143
2029	22,167	24,208	24,583	24,501	26,541	26,916
2030	22,380	24,724	25,205	25,004	27,347	27,828
2031	22,624	25,232	25,802	25,506	28,115	28,684
2032	22,929	25,816	26,482	26,076	28,964	29,629
2033	23,168	26,202	26,952	26,560	29,594	30,344
2034	23,476	26,658	27,501	27,108	30,291	31,133
2035	23,794	27,118	28,059	27,666	30,990	31,930
2036	24,182	27,636	28,687	28,303	31,757	32,808
2037	24,532	28,079	29,245	28,871	32,418	33,584
2038	25,102	28,726	30,018	29,538	33,162	34,454
2039	25,712	29,392	30,817	30,239	33,919	35,344
2040	26,507	30,212	31,784	31,137	34,843	36,414
2041	27,193	30,878	32,565	31,919	35,603	37,291
2042	27,961	31,609	33,406	32,780	36,427	38,224
2043	28,760	32,020	34,216	33,666	36,926	39,122
2044	29,620	32,753	35,050	34,623	37,756	40,053

FIGURE S-16
SIERRA LOW, BASE, AND HIGH SALES SCENARIOS
WITH AND WITHOUT DSM

Year	Annual Usage (GWH)			Annual Usage (GWH)		
	With DSM/EE			With DSM/EE		
	Low	Base	High	Low	Base	High
2023	10,158	10,844	10,340	10,227	10,913	10,409
2024	10,442	11,334	11,174	10,609	11,501	11,341
2025	11,090	12,346	12,483	11,350	12,607	12,743
2026	10,895	12,737	13,377	11,257	13,099	13,739
2027	11,476	13,627	14,515	11,942	14,093	14,981
2028	12,121	14,841	16,195	12,702	15,422	16,777
2029	12,909	15,934	17,518	13,613	16,638	18,223
2030	14,125	17,780	19,925	14,963	18,617	20,763
2031	15,312	19,647	22,371	16,296	20,632	23,355
2032	16,460	21,449	24,753	17,598	22,587	25,891
2033	16,727	21,880	25,358	18,014	23,167	26,645
2034	17,018	22,316	25,954	18,449	23,747	27,385
2035	17,369	22,831	26,658	18,947	24,408	28,235
2036	17,773	23,431	27,454	19,493	25,151	29,174
2037	18,198	24,009	28,215	19,998	25,810	30,016
2038	18,686	24,663	29,076	20,579	26,556	30,970
2039	19,195	25,347	29,976	21,184	27,336	31,965
2040	19,766	26,077	30,932	21,854	28,165	33,020
2041	20,314	26,760	31,852	22,498	28,944	34,036
2042	20,954	27,542	32,905	23,229	29,816	35,179
2043	21,624	28,360	33,995	23,982	30,718	36,353
2044	22,420	29,302	35,243	24,856	31,738	37,680

SECTION IV - DEMAND SIDE PLAN SUMMARY: NAC § 704.9215(2)(c)

The DSM Plan as part of the 2024 Joint IRP represents an evolution of the portfolio to provide grid value with a new savings target, with a comparison to the previous savings target of 1.1 percent of weather-normalized sales.

The proposed Grid Value Portfolio is NV Energy's preferred portfolio. It has higher net benefits for ratepayers, includes programs to serve all customers with an emphasis on income-qualified and historically underserved communities ("HUC"), and strikes the most appropriate balance among energy savings, demand reduction, resource adequacy, cost-effectiveness of those savings, customer rate impacts, and capability to provide enhanced locational net benefits for the distribution grid as explained in the DRP.

The incremental investment represented by the proposed DSM Plan has a non-energy benefit total resource cost ("NTRC") benefits-to-cost ratio of 1.96 and will bring a net benefit of \$413.6 million to the communities served by NV Energy. Figure S-17 below provides the proposed budget dollars and target energy savings for Nevada Power, Sierra, and the combined Companies. Additionally, in Figure S-18, NV Energy provides the projected Action Plan period NTRC cost-effectiveness ratios for each program presented in the proposed Grid Value Portfolio. NV Energy is requesting specific approval of the proposed budgets and energy savings for the DSM Plan for the Action Plan period.

FIGURE S-17

PROPOSED GRID VALUE PORTFOLIO BUDGETS, TARGETS, AND KEY METRICS

Description	2025	2026	2027	Action Plan Total
Nevada Power				
Budget (\$)	55,863,000	60,741,000	65,259,000	181,863,000
Retail Sales (kWh)	21,913,643,000	22,293,028,000	22,674,591,000	66,881,262,000
Energy Savings Target (kWh)	188,144,000	198,017,000	208,838,000	595,093,000
Cumulative Demand Reduction Target (kW)	197,250	222,098	250,028	250,028
% Energy Savings to Retail Sales	0.86%	0.89%	0.92%	0.89%
Net Benefits (\$)	97,184,896	114,483,878	135,328,095	346,996,869
NTRC	1.99	2.05	2.13	2.06
Lifecycle Source Energy Metric (kWh)	1,653,576,600	1,744,263,540	1,844,991,410	5,242,831,550
Sierra				
Budget (\$)	20,213,000	22,005,000	23,926,000	66,144,000
Retail Sales (kWh)	11,009,034,000	11,960,163,000	12,813,167,000	35,782,364,000
Energy Savings Target (kWh)	47,500,000	48,627,000	49,821,000	145,948,000
Cumulative Demand Reduction Target (kW)	36,405	43,293	51,201	130,900
% Energy Savings to Retail Sales	0.43%	0.41%	0.39%	0.41%
Net Benefits (\$)	16,583,908	21,553,834	28,417,131	66,554,873

NTRC	1.53	1.61	1.73	1.63
Lifecycle Source Energy Metric	450,965,250	460,433,710	470,279,660	1,659,130,680
NV Energy (Sierra and Nevada Power combined)				
Budget (\$)	76,076,000	82,746,000	89,185,000	248,007,000
Retail Sales (kWh)	32,922,677,000	34,253,191,000	35,487,758,000	102,663,626,000
Energy Savings Target (kWh)	235,644,000	246,644,000	258,659,000	741,041,000
Cumulative Demand Reduction Target (kW)	233,656	265,391	301,229	380,928
% Energy Savings to Retail Sales	0.72%	0.72%	0.73%	0.72%
Net Benefits (\$)	113,768,804	136,037,712	163,745,225	413,551,741
NTRC	1.88	1.94	2.03	1.96
Lifecycle Source Energy Metric	2,104,541,850	2,204,697,250	2,315,271,070	6,901,962,230

FIGURE S-18**2025-2027 DSM GRID VALUE PORTFOLIO PROPOSED NTRC RATIOS NV ENERGY**

	2025	2026	2027
Programs	NTRC Ratios		
Energy Education	N/A	N/A	N/A
Energy Reports	1.94	2.05	1.86
Program Development	N/A	N/A	N/A
Education Services Total	1.21	1.28	1.16
Home Energy Saver	0.48	0.47	0.45
Residential AC and Heat Pumps	0.43	0.43	0.42
Residential Codes and New Construction	0.72	0.72	0.72
Low Income	0.10	0.11	0.11
Energy Assessments and Direct Install	0.39	0.38	0.37
Income Qualified Multifamily	1.14	1.14	1.13
Residential Demand Response - Manage	3.83	3.90	4.02
Residential Demand Response - Build	2.62	2.55	2.56
Residential Services Total	2.16	2.24	2.36
Energy Smart Schools	0.97	0.97	0.94
Business Energy Services	1.36	1.35	1.34
Commercial Demand Response - Manage	4.42	4.45	4.63
Commercial Demand Response - Build	0.46	0.69	0.84
Non-Residential Services Total	1.38	1.38	1.40
NV Energy Total	1.88	1.94	2.03

Tables S-19 through S-22 represent the forecasted megawatt reductions for the proposed programs in the DSM Grid Value portfolio. Tables S-19 and S-20 are for the programs in Nevada Power's service territory, and Tables S-21 and S-22 are for the programs in Sierra's service territory.

FIGURE S-19
2025-2034 NEVADA POWER DSM GRID VALUE FORECASTED REDUCTIONS

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Programs	Forecasted Reductions (MW)									
Direct Install & Deep Retrofits	6.7	9.3	11.9	12.9	13.2	13.4	13.6	14.0	14.3	14.7
Energy Education	-	-	-	-	-	-	-	-	-	-
Home Energy Reports	4.0	4.0	4.0	4.1	4.2	4.3	4.4	4.6	4.7	4.8
Low Income	0.4	0.5	0.6	0.7	0.8	0.9	1.1	1.2	1.3	1.4
Residential Codes & New Construction	3.7	4.8	5.9	7.0	8.2	9.4	10.6	11.9	13.1	14.5
Home Energy Saver	8.5	10.9	13.3	15.7	15.9	14.6	14.9	15.2	15.6	15.9
Residential HVAC	2.0	4.0	6.1	8.1	10.3	12.4	12.6	12.9	13.2	13.5
Multi-Family and Manufactured Homes	0.1	0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.0	2.1
Business Energy Services	32.6	43.7	55.5	67.6	80.1	93.0	106.3	119.9	133.8	148.1
Schools Program	11.2	10.0	11.0	11.2	11.4	11.8	12.1	12.5	12.8	13.1

FIGURE S-20
2035-2044 NEVADA POWER DSM GRID VALUE FORECASTED REDUCTIONS

	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Programs	Forecasted Reductions (MW)									
Direct Install & Deep Retrofits	15.0	15.4	15.7	16.1	16.5	16.8	17.2	17.7	18.0	18.4
Energy Education	-	-	-	-	-	-	-	-	-	-
Home Energy Reports	4.9	5.0	5.1	5.2	5.3	5.5	5.6	5.7	5.8	5.9
Low Income	1.5	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.7
Residential Codes & New Construction	15.8	17.2	18.6	19.1	18.9	19.3	19.8	20.2	20.7	21.1
Home Energy Saver	16.3	16.7	17.1	17.5	17.9	18.3	18.7	19.2	19.6	20.0
Residential HVAC	13.9	14.2	14.5	14.9	15.2	15.6	15.9	16.3	16.6	17.0
Multi-Family and Manufactured Homes	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.6
Business Energy Services	162.6	177.5	188.0	186.3	191.6	196.8	201.7	206.5	211.4	216.3
Schools Program	13.4	13.7	14.0	14.3	14.6	15.0	15.3	15.6	16.0	16.3

FIGURE S-21
2025-2034 SIERRA DSM GRID VALUE FORECASTED REDUCTIONS

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Program	Forecasted Reductions									
Energy Assessments and Direct Install	0.7	0.8	1.0	1.1	1.2	1.3	0.9	1.0	1.0	1.0
Home Energy Reports	5.6	6.2	6.2	6.3	6.5	6.7	6.9	7.1	7.3	7.5
Low Income	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4
Residential Codes & New Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Home Energy Saver	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.4	2.6	2.7
Residential HVAC	0.3	0.5	0.8	1.0	1.3	1.6	1.9	2.2	2.2	2.3
Multi-Family and Manufactured Homes	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.8
Business Energy Services	10.0	12.2	14.4	16.8	19.5	22.6	26.1	29.9	33.9	38.0
Schools Program	1.7	2.0	2.4	2.8	3.0	2.5	2.7	3.0	3.3	3.6

FIGURE S-22
2035-2044 SIERRA DSM GRID VALUE FORECASTED REDUCTIONS (MW)

Program Name	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Program	Forecasted Reductions									
Energy Assessments and Direct Install	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3
Home Energy Reports	7.6	7.8	8.0	8.1	8.3	8.5	8.6	8.8	8.9	9.1
Low Income	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Residential Codes & New Construction	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Home Energy Saver	2.8	2.9	2.9	3.0	3.1	3.1	3.2	3.3	3.3	3.4
Residential HVAC	2.3	2.4	2.5	2.5	2.6	2.6	2.7	2.7	2.8	2.8
Multi-Family and Manufactured Homes	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.0
Business Energy Services	42.1	46.5	49.7	47.7	50.3	53.0	55.8	58.5	61.2	63.6
Schools Program	3.8	4.0	4.2	4.3	4.4	4.6	4.7	4.8	5.0	5.2

Pursuant to NAC § 704.9212(1)(b), NV Energy requests that the Commission review and accept an energy savings goal that proposes a combination of energy savings, in kilowatt-hours (“kWh”), and incremental demand reduction capacity, in kilowatts, during the Action Plan period. The proposed Grid Value portfolio implements a demand savings target reduction of 175 incremental new dispatchable MW with a kWh savings target of 0.7 percent of the forecasted weather normalized retail sales statewide for the three-year period.

Senate Bill 448 (2021) directs NV Energy to propose a portfolio that expends no less than 10 percent of its total expenditures on programs directed to low-income customers or those that reside

in historically underserved communities. In this Plan, NV Energy provides results for the 2023 Prior Year that satisfy this requirement and sets forth how this goal will be met during the 2025 through 2027 Action Plan period.

SECTION V - SUMMARY OF THE PREFERRED PLAN: NAC § 704.9215(2)(d)

NAC § 704.937(8) requires that “the utility shall identify its preferred plan and fully justify its choice by setting forth the criteria that influenced the utility’s choice.” NAC § 704.937(6) requires that “the utility shall consider for each alternative plan the mitigation of risk by means of (a) flexibility; (b) diversity; (c) reduced size of commitments; (d) choice of projects that can be completed in short periods; (e) displacement of fuel; (f) reliability; (g) selection of fuel and energy supply portfolios; and (h) financial instruments or electricity products.” NAC § 704.948 requires that “a utility shall analyze its decisions, taking into account its assessment of risk and identifying particular risks with respect to: (a) costs, (b) reliability, (c) finances, (d) the volatility of the price of purchased power and fuel, and (e) any other uncertainties the utility has identified.”

The Companies have selected the Balanced Plan as the Preferred Plan, and the Renewable Plan as the Alternate Plan. The Action Plan period resources in each plan are listed below.

Preferred Plan: Balanced Plan. This plan, which exceeds the RPS in every year, achieves the state’s 2050 clean energy goal and meets the PRM for each utility, includes:

- 1) Libra – a 700 MW PV system paired with 700 MW of battery storage. The project has an in-service date of December 2027.
- 2) Dry Lake East – a 200 MW PV system paired with 200 MW of battery storage. The project has an in-service date of December 2026.
- 3) Boulder Solar III – a 128 MW PV system paired with 128 MW of battery storage. The project has an in-service date of June 2027.
- 4) Valmy Simple-Cycle Plant – a 411 MW of hydrogen-capable natural gas combustion turbines at the North Valmy Generating Station with an in-service date of June 2028. The total cost of the Valmy Simple-Cycle Plant is approximately \$573 million (without AFUDC), including projected pipeline infrastructure interconnection costs. The plant is capable of being operated on hydrogen.
- 5) Transmission projects required to meet customers’ needs as presented in the Transmission Plan.

Alternate Plan: Renewable Plan. This plan, which exceeds the RPS in every year and meets the PRM for each utility, includes:

- 1) Libra – a 700 MW PV system paired with 700 MW of battery storage. The project has an in-service date of December 2027.
- 2) Dry Lake East – a 200 MW PV system paired with 200 MW of battery storage. The project has an in-service date of December 2026.
- 3) Boulder Solar III – a 128 MW PV system paired with 128 MW of battery storage. The project has an in-service date of June 2027.
- 4) Transmission projects required to meet customers’ needs as presented in the Transmission Plan.

NV Energy selected the Balanced Plan as its Preferred Plan and the Renewable Plan as its Alternate Plan. The Preferred Plan and Alternate Plan both reduce customer exposure to the price volatility of fossil fuels and the potential social cost of carbon through bolstering clean generation in the state with a combined 1,028 MW of solar PV and 1,028 MW of battery storage. The two plans are nearly the same in the present value of social cost of carbon, as explained further in the Economic Analysis Section. Over the 26-year study period from 2025 to 2050, the Preferred Plan is only \$64 million dollars higher present value of social cost of carbon over the Alternate Plan.

Figure S-23 shows the projected loads and resources (“L&R Tables”) under the Preferred Plan, assuming base load conditions. The Companies also developed high and low load sensitivities around the base load; the L&R Tables are presented in Technical Appendices.

FIGURE S-23
NV ENERGY PREFERRED PLAN LOADS AND RESOURCES TABLE

		NV Energy LOADS AND RESOURCES TABLE																			
		Balanced Plan																			
		2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
5	Gross Peak	8,840	8,993	9,173	9,522	9,833	10,409	10,797	11,275	11,383	11,701	11,847	12,291	12,563	12,691	12,988	13,397	13,762	13,867	14,294	14,436
6	DSM Energy Efficiency Savings	109	165	211	266	342	403	457	515	537	587	609	725	768	752	774	795	870	807	912	885
7	DR Energy Efficiency Savings	10	10	11	9	11	12	12	13	13	14	15	16	16	18	17	18	19	20	20	22
8	Private Generation	31	33	36	41	41	47	48	50	55	17	18	62	61	63	69	21	73	26	73	74
9	Forecast System Peak	8,690	8,785	8,916	9,206	9,439	9,948	10,278	10,698	10,778	11,084	11,205	11,488	11,718	11,858	12,128	12,563	12,800	13,015	13,290	13,454
10	Sales Obligations																				
11	NET System Peak	8,690	8,785	8,916	9,206	9,439	9,948	10,278	10,698	10,778	11,084	11,205	11,488	11,718	11,858	12,128	12,563	12,800	13,015	13,290	13,454
12	Planning Reserves (12.5%)	1,086	1,098	1,115	1,151	1,180	1,243	1,285	1,337	1,347	1,385	1,401	1,436	1,465	1,482	1,516	1,570	1,600	1,627	1,661	1,682
13	REQUIRED RESOURCES	9,776	9,883	10,031	10,357	10,619	11,191	11,563	12,035	12,125	12,469	12,605	12,924	13,183	13,340	13,644	14,134	14,400	14,642	14,951	15,136
14	OATT Reserves	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
15	AVAILABLE RESOURCES	8,380	8,657	9,007	10,092	10,365	10,576	10,998	11,491	11,657	11,953	12,961	12,982	13,089	13,174	13,082	13,499	13,757	13,983	14,287	14,433
16	OPEN Position	1,396	1,226	1,024	265	254	615	565	544	468	516	-	-	94	166	562	635	643	659	664	703
17	OPEN/(LONG) Position	1,396	1,226	1,024	265	254	615	565	544	468	516	(356)	(58)	94	166	562	635	643	659	664	703
19	Company	(All)																			
21	Sum of L&R MW																				
22		2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
23	Owned																				
24	NVE-Owned Coal Steamer	242	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	NVE-Owned Diesel Gen	5	5	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	NVE-Owned Gas.CC	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457	3,457
27	NVE-Owned Gas.CC-int	735	735	735	735	735	735	735	735	735	735	735	735	735	735	735	735	735	735	735	735
28	NVE-Owned Gas.CT	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,502	1,502	1,502	1,502	1,502	1,502	1,298	1,298	1,298
29	NVE-Owned Gas. Steamer	261	503	503	503	503	503	503	503	503	503	503	503	503	503	503	242	242	242	242	242
30	NVE-Owned Renewable.PV	40	42	98	93	94	80	75	78	70	70	67	63	63	65	62	62	57	55	55	53
31	NVE-Owned Storage.BESS-4	110	450	433	434	433	442	434	408	398	378	377	377	378	364	314	292	260	244	229	
32	NVE-Owned Storage.BESS-2	220	194	192	190	190	191	187	176	172	163	163	163	162	163	157	136	127	114	107	-
33	NVE-Owned Renewable.WH	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	-	-	-
34	NVE-Owned DR/DSM.ACLM	219	234	249	262	274	283	292	298	303	309	314	320	325	331	336	342	347	353	358	364
35	NVE-Owned DR/DSM.PV	-	-	4	5	5	4	4	4	3	3	3	3	3	3	3	3	2	2	2	2
36	NVE-Owned DR/DSM.BESS-2	-	52	117	175	226	278	322	333	353	364	386	407	428	448	447	401	387	352	334	318
37	Owned Total	6,842	7,225	7,346	7,412	7,470	7,526	7,562	7,545	7,547	7,535	7,559	7,535	7,560	7,590	7,310	7,199	7,148	6,868	6,832	6,505
38	Contracted																				
39	PPA-Contracted Diesel Gen	11	11	11	11	11	11	11	-	-	-	-	-	-	-	-	-	-	-	-	-
40	PPA-Contracted Renewable.CSP	15	16	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	PPA-Contracted Renewable.Geo	176	200	213	223	224	173	173	163	110	110	110	110	110	105	105	105	105	105	105	105
42	PPA-Contracted Renewable.Hydro	148	142	142	138	136	136	136	136	136	136	136	136	136	136	136	136	135	135	135	135
43	PPA-Contracted Renewable.LFG	15	15	15	15	15	15	15	15	-	-	-	-	-	-	-	-	-	-	-	-
44	PPA-Contracted Renewable.PV	630	632	523	475	475	388	356	364	331	329	313	293	288	261	241	243	227	227	228	220
45	PPA-Contracted Renewable.Wind	17	17	17	17	17	17	17	17	-	-	-	-	-	-	-	-	-	-	-	-
46	PPA-Contracted Storage.BESS-4	616	489	483	479	477	479	469	424	413	394	393	392	391	338	325	282	263	235	222	209
47	PPA-Contracted DR/DSM.PV	-	-	6	5	5	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3
48	Contracted Total	1,628	1,522	1,423	1,363	1,360	1,223	1,181	1,123	993	972	955	934	928	843	810	769	733	705	693	672
49	Proposed																				
50	NVE-Proposed.GAS.CT	-	-	-	379	379	379	379	379	379	379	379	379	379	379	379	379	379	379	379	379
51	2058 - Valmy CTs - North - SPPC	-	-	-	379	379	379	379	379	379	379	379	379	379	379	379	379	379	379	379	379
52	PPA-Proposed Renewable.PV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	2051 - *Dry Lake East PV Paired - South - NPC	-	-	31	31	31	27	26	26	24	24	23	21	22	22	21	21	20	20	20	19
54	2052 - *Boulder Solar III PV Paired - South - NPC	-	-	20	20	20	17	16	17	15	15	15	14	14	14	13	13	13	13	13	12
55	2052 - *Libra PV Paired - North - NPC	-	-	-	107	108	95	90	93	84	83	80	75	76	78	73	74	69	69	70	67
56	PPA-Proposed Storage.BESS-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	2046 - *Dry Lake East BESS Paired - South - NPC	-	-	169	169	169	173	170	160	156	148	148	148	148	149	143	124	115	103	97	92
58	2047 - *Boulder Solar III BESS Paired - South - NPC	-	-	108	108	108	111	109	102	100	95	95	95	94	95	91	79	74	66	62	59
59	2047 - *Libra BESS Paired - North - NPC	-	-	-	593	592	605	596	559	546	519	519	518	516	520	499	433	404	362	340	321
60	Proposed Total	-	-	328	1,407	1,407	1,407	1,386	1,336	1,304	1,263	1,259	1,250	1,249	1,257	1,219	1,124	1,074	1,012	981	949
61	Placeholders																				
62	NVE-Placeholders.Other.TBD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	NVE-Placeholders.Renewable.PV	-	-	-	-	-	-	26	26	72	96	85	87	88	84	84	80	80	80	77	
64	PPA-Placeholders.Renewable.GEO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	PPA-Placeholders.Renewable.PV	-	-	-	-	-	203	281	289	343	371	401	454	460	471	540	611	709	798	854	938
66	PPA-Placeholders.Renewable.WIND	-	-	-	-	218	218	218	435	510	547	547	576	660	771	800	800	800	800	800	800
67	PPA-Placeholders.Storage.PSH	-	-	-	-	-	-	-	-	-	-	980	980	980	980	980	980	980	980	980	980
68	PPA-Placeholders.Storage.BESS-4	-	-	-	-	-	89	264	267	276	444	444	444	442	446	644	1,341	1,689	2,263	2,623	3,096
69	NVE-Placeholders.Storage.BESS-4	-	-	-	-	-	-	170	560	702	815	814	814	813	818	785	681	634	567	534	506
70	Placeholders Total	-	-	-	-	218	510	959	1,577	1,903	2,273	3,278	3,353	3,442	3,574	3,833	4,497	4,892	5,488	5,871	6,397

The regulations governing integrated resource planning require that the Companies include in their triennial IRPs a 20-year plan to meet the transmission needs of native load customers³⁷ and service requests from third parties.³⁸ In order to meet increasing large customer needs, the transmission

³⁷ The term “Native Load Customer” comes from regulations established by the FERC creating and maintain their open access transmission

plan includes several new projects. Transmission projects driven by customers have controls in place at each phase, meant to reduce the risk to both the Companies and native load customers. These project controls include the customer providing security, construction deposits, reduction in service charges and customer's construction milestones.

The Companies are requesting Action Plan approval to begin network upgrades associated with transmission projects summarized in Figure S-24.

FIGURE S-24
TRANSMISSION PROJECTS LIST SUMMARY

Project Name	Voltage	Cost (\$ million)	In Service Date
Tolson Substation transformer #2 336 MVA 230/138 kV	230 kV and 138 kV	9.6	Mar-28
Reid Gardner – Harry Allen 230 kV line #3 & separation of #1 and #2 lines	230 kV	24.2	May-26
Lantern-Comstock 345 kV line	345 kV	105	Dec-29
Comstock Meadows transformer #2 280 MVA 345/120 kV	345 kV and 120 kV	13	May-27
West Tracy transformer #1 (second installed) 280 MVA 345/120 kV	345 kV and 120 kV	13	May-28
Machacek - two (2) - 230 kV line breakers	230 kV	14.8	Jun-27
Darling Substation - two (2) 37 MVA 230/12 kV	230 kV	43.5	Jun-28
Log Cabin Substation - 37 MVA 230/12 kV	230 kV	33.75	Jun-28
Spring Canyon Substation - Three (3) 37 MVA 230/12 kV	230 kV	49.6	Dec-26
Ft Churchill-Comstock Meadows 345 kV line #2 and Ft Churchill third and fourth 600 MVA 525/345 kV transformers	525 kV and 345 kV	(110.2 + 12.00 + 12.00) = 134.2	Dec-27
Mackay 345 kV switching station	345 kV	28	Dec-27
Gosling 345 kV switching station	345 kV	5	Apr-27
Ft Churchill –Veterans 525 kV line (siting and permitting only)	525 kV	14	May-31
Naniwa 345 kV (new) switching station	345 kV	26	Mar-27
Nighthawk 345/120 kV Substation	345 kV and 120 kV	67	Dec-28
Vaquero 345/120 kV Substation	345 kV and 120 kV	30	May-29
Viking 345 kV switching station	345 kV	55	May-29

Veterans 345/120 kV Substation	345 kV and 120 kV	40	May-30
Prospector 230 kV line terminal	230 kV	2.2	Dec-26
Valmy CTs 411 MW	345 kV	5.22	Jun-28
Dry Lake East II PV/BESS 200/200 MW	230 kV	4	Dec-26
Boulder Solar III and IV PV/BESS 128/128 MW	Use existing lead line	None	Jun-27
Libra PV/BESS 700/700 MW	345 kV	3.9	Dec-27
Corsac Geothermal 115 MW	345 kV	2	Jan-30

The Companies present for Commission review and continued approval an increased budget for the Greenlink project with this Joint Application. The Commission approved the Greenlink project in Docket Nos. 20-07023 and 21-06003. The Greenlink project is embedded in all four alternative plans. In recent years, the cost of transmission infrastructure construction has seen a notable increase based on inflation, supply chain constraints, and labor rate escalations. The Greenlink project has not been immune to that increase. In addition, finalization of the project routing and design, Bureau of Land Management stipulations on environmental risk mitigation, and further budget development based on detailed engineering has contributed to the increased project costs. The Companies’ analysis demonstrates that the Greenlink project continues to be the best option to serve the electric needs of the state, ensure NV Energy system reliability and resiliency, increase renewable energy production, and promote economic development.

SECTION VI – SUMMARY OF THE RENEWABLE ENERGY PLAN: NAC § 704.9215(2)(e)

Existing Fleet of Renewable Resources. Nevada is fortunate to have significant renewable resources throughout the state, including some of the greatest solar and geothermal generation potential in the country. The Companies have built a diverse and robust portfolio of renewable projects through both long-term power purchase agreements (“PPA”) and utility-owned renewable projects.

As of May 31, 2024, Nevada Power had approximately 2,724 MW of renewable generating resources providing renewable energy to meet the energy needs of its customers. In addition, Nevada Power and Sierra ended May 2024 with one solar photovoltaic project, Sierra Solar, under development. Sierra Solar is a 400-MW photovoltaic energy generation facility with a 400-MW BESS.

As of May 31, 2024, Sierra had approximately 1,086 MW of renewable generating resources providing renewable energy to meet the energy needs of its customers. In addition to the Sierra Solar photovoltaic project, Sierra ended May 2024 with two geothermal projects in various stages of development.

Figures S-25 and S-26 list the renewable energy resources under long-term contract with Nevada Power and Sierra.

FIGURE S-25
NEVADA POWER LONG-TERM PURCHASE POWER AGREEMENTS

Contract Name	Contract Type	Capacity (MW)	Commercial Operation Date	Termination Date
Renewable Purchase Agreements				
PPAs (Commercial)				
ACE Searchlight ^{QF}	Solar ^S	17.5	12/16/2014	12/31/2034
APEX Landfill ^{QF}	Methane	12.0	3/1/2012	12/31/2032
Boulder Solar ^{EWG}	Solar ^S	100.0	12/9/2016	12/31/2036
Colorado River Commission-Hoover	Hydro	237.6	10/1/2017	9/30/2067
Copper Mountain 5 ^{EWG}	Solar ^S	250.0	7/23/2021	12/31/2046
Desert Peak 2 ^{QF}	Geothermal	25.0	4/17/2007	12/31/2027
Eagle Shadow Mountain ^{EWG}	Solar ^S	300.0	5/10/2023	12/31/2048
FRV Spectrum ^{QF}	Solar ^S	30.0	9/23/2013	12/31/2038
Gemini Solar ^{EWG}	Solar ^{S,X=380 (3.7 hrs)}	690.0	3/25/2024	12/31/2049
Jersey Valley ^{QF}	Geothermal	22.5	8/30/2011	12/31/2031
McGinness Hills ^{QF}	Geothermal	96.0	6/20/2012	12/31/2032
Moapa (Arrow Canyon) Solar ^{EWG}	Solar ^{S,X=75 (5 hrs)}	200.0	12/8/2023	12/31/2048
Mountain View ^{EWG}	Solar ^S	20.0	1/5/2014	12/31/2039
Nevada Solar One (NPC) ^{QF}	Solar ^{T,X}	46.9	6/27/2007	12/31/2027
NGP Blue Mountain ^{QF}	Geothermal	49.5	11/20/2009	12/31/2029
RV Apex ^{QF}	Solar ^S	20.0	7/21/2012	12/31/2037
Salt Wells ^{QF}	Geothermal	23.6	9/18/2009	12/31/2029
Silver State ^{EWG}	Solar ^F	52.0	4/25/2012	12/31/2037
Spring Valley ^{EWG}	Wind	151.8	8/16/2012	12/31/2032
Stillwater Geothermal ^{1,QF}	Geothermal	47.2	10/10/2009	12/31/2029
Stillwater PV ^{1,QF}	Solar ^F	22.0	3/5/2012	12/31/2029
Switch Station 1 ^{EWG}	Solar ^S	100.0	8/8/2017	12/31/2037
Switch Station 2 (NPC) ^{EWG}	Solar ^S	0.0	10/11/2017	12/31/2037
Techren I ^{EWG}	Solar ^S	100.0	3/11/2019	12/31/2044
Techren III ^{QF}	Solar ^S	25.0	10/7/2020	12/31/2045
Techren V ^{EWG}	Solar ^S	50.0	12/31/2020	12/31/2045
Tuscarora ^{QF}	Geothermal	32.0	1/11/2012	12/31/2032
WM Renewable Energy-Lockwood ^{QF}	Methane	3.2	4/1/2012	12/31/2032
	Total	2723.8		
PC Purchase Agreements				
Sierra Pacific Power	Geothermal	2.3	10/30/2009	12/31/2028
Nellis I (Solar Star) ^{QF}	Solar	13.2	12/15/2007	12/31/2027
SunPower (LVVWD)	Solar	3.0	4/20/2006	12/31/2026
	Total	18.5		
PPAs (Pre-Commercial)²				
			Estimated COD	Termination Date
	Total	0.0		
Non-Renewable Purchase Agreements				
Nevada Cogeneration Associates #1 ³ (Summer Only after 4/30/2023)	Natural Gas	85.0	6/18/1992	9/30/2024
Renewable and Non-Renewable Sales				
Switch NGR (Switch Station 1)	NGR Agreement (Sale of PCs)	100.0	8/8/2017	12/31/2037
Switch NGR-NPC (Switch Station 2)	NGR Agreement (Sale of PCs)	0.0	10/11/2017	12/31/2037
Notes:				
1. The geothermal and solar facilities are combined into <u>one</u> PPA.				
2. NCA1 will have a two summer period extension (June-Sep) 2023 and 2024.				
3. NCA1 will have a two summer period extension (June-Sep) 2023 and 2024.				
QF=Qualifying Facility, EWG=Exempt Wholesale Generator, S=Single Axis Tracking, T=Solar Thermal (Tracking), F=Fixed Tilt, X=Storage				
*NPC also has a short term Power Confirmation with Tonopah Solar Energy for Crescent Dunes (110 MW) effective 12/21/2021 - 9/30/2024.				

FIGURE S-26
SIERRA'S LONG-TERM PURCHASE POWER AGREEMENTS

Contract Name	Contract Type	Capacity (MW)	Commercial Operation Date	Termination Date
Renewable Energy				
PPAs (Commercial)				
Battle Mountain ^{EWG}	Solar ^{S,X=24.2MW (4 hrs)}	101.0	6/23/2021	12/31/2046
Beowawe ^{QF}	Geothermal	17.7	4/21/2006	12/31/2024
Boulder Solar II ^{EWG}	Solar ^S	50.0	1/27/2017	12/31/2037
Burdette ^{QF}	Geothermal	26.0	2/28/2006	12/31/2026
Dodge Flat ^{EWG}	Solar ^{S,X=50MW (4 hrs)}	200.0	3/2/2022	12/31/2047
Fish Springs Ranch ^{EWG}	Solar ^{S,X=24.91MW (4 hrs)}	100.0	3/15/2022	12/31/2047
Galena 3 ^{QF}	Geothermal	26.5	2/21/2008	12/31/2028
Hooper ^{1,QF}	Hydro	0.75	6/23/2016	12/31/2040
Kingston ¹	Hydro	0.175	9/19/2011	12/31/2040
Mill Creek ¹	Hydro	0.037	9/1/2011	12/31/2040
Nevada Solar One (SPPC) ^{QF}	Solar ^{T,X}	22.1	6/27/2007	12/31/2027
North Valley ^{QF}	Geothermal	25	4/26/2023	12/31/2048
RO Ranch ^{1,2}	Hydro	0	3/15/2011	12/31/2040
Switch Station 2 (SPPC) ^{EWG}	Solar ^S	79.0	10/11/2017	12/31/2037
Techren II ^{EWG}	Solar ^S	200.0	10/4/2019	12/31/2044
Techren IV ^{QF}	Solar ^S	25.0	10/7/2020	12/31/2045
Turquoise ^{EWG}	Solar ^F	50.0	12/4/2020	12/31/2045
TCID New Lahontan ^{QF}	Hydro	4.0	6/12/1989	6/30/2025
TMWA Fleish	Hydro	2.4	5/16/2008	6/1/2028
TMWA Verdi	Hydro	2.4	5/15/2009	6/1/2029
TMWA Washoe	Hydro	2.5	7/25/2008	6/1/2028
USG San Emidio ^{QF}	Geothermal	11.75	5/25/2012	12/31/2037
	Total	946.3		
PC Purchase Agreement				
TMWRF	Methane	0.8	9/9/2005	12/12/2024
PPAs (Pre-Commercial)³				
			Estimated COD	Termination Date
North Valmy Eavor Loop	Geothermal	20.0	12/31/2026 ⁵	12/31/2051
Ormat Western Geothermal Portfolio⁶				
Beowawe ^{QF}	Geothermal	20.0	1/1/2025	12/31/2053
Galena 1 (Burdette) ^{QF}	Geothermal	15.0	2/1/2027	12/31/2053
Desert Peak 2 ^{QF}	Geothermal	10.0	2/1/2028	12/31/2053
Galena 3 ^{QF}	Geothermal	15.0	1/1/2029	12/31/2053
North Valley 2 ^{QF}	Geothermal	15.0	1/1/2026	12/31/2053
Lone Mountain ^{QF}	Geothermal	15.0	1/1/2026	12/31/2053
Gerlach ^{QF}	Geothermal	15.0	1/1/2028	12/31/2053
Pinto ^{QF}	Geothermal	15.0	1/1/2027	12/31/2053
	Total	140.0		
Non-Renewable Purchase Agreements				
Liberty (CalPeco) EBSA	Diesel	12.0	1/1/2011	12/31/2031
	Total	12.0		
Renewable & Non-Renewable Sales Agreements				
Liberty (CalPeco)	Full Requirements (Capacity/Energy/PCs)	See Note 4	12/30/2020	12/29/2025
NPC-SPPC	Sale of PCs (Geothermal)	2.3	10/30/2009	12/31/2028
Apple NGR (Fort Churchill Solar)	NGR Agreement (Sale of PCs)	19.5	8/5/2015	8/4/2040
Apple NGR (Boulder Solar II)	NGR Agreement (Sale of PCs)	50.0	1/27/2017	12/31/2037
Switch NGR-SPPC (Switch Station 2)	NGR Agreement (Sale of PCs)	79.0	10/11/2017	12/31/2037
Apple NGR (Techren II)	NGR Agreement (Sale of PCs)	200.0	10/4/2019	6/20/2044
Apple NGR (Turquoise)	NGR Agreement (Sale of PCs)	50.0	12/4/2020	4/30/2045
Notes:				
1. The illustrative termination date shown is subject to certain conditions, which may result in termination before or after December 31, 2040.				
2. RO Ranch Hydro facility is shut down indefinitely (the PPA is still active).				
3. Facilities are either under development or construction (the dates shown are expected dates).				
4. The current monthly contract demand ranges from approximately 70 MW (June) to 140 MW (December).				
5. Eavor has provided notification that the project is not commercially viable; therefore the Company has removed Eavor's projected PCs from the RPS compliance forecast. Phase One COD was expected 2026; Phase Four (Final) 2028.				
6. Portfolio consists of eight facilities under one Power Purchase Agreement				
QF=Qualifying Facility, EWG=Exempt Wholesale Generator, S=Single Axis Tracking, T=Solar Thermal (Tracking), F=Fixed Tilt, X=Storage				

RPS Compliance Outlooks. Nevada’s RPS is set forth at NRS § 704.7821 and is based on a percentage of the total amount of electricity sold to retail customers in Nevada. The RPS is currently set at 34 percent, meaning that not less than 34 percent of the energy Nevada Power and Sierra sell to their retail customers in Nevada must be generated, acquired, or served from qualified renewable systems and sources. The RPS increases to 42 percent in 2027, 50 percent in 2030 and for each calendar year thereafter.

Nevada Power and Sierra both exceeded the 2023 RPS requirement of 29 percent. Nevada Power ended 2023 with RPS compliance of 40.2 percent of retail sales, while Sierra ended 2023 with RPS compliance of 38.5 percent of retail sales.

Nevada Power RPS Compliance. Nevada Power’s RPS compliance outlook is cautious. The limited available land for development, multiyear project permitting timelines, and lack of available transmission capacity are key constraints in the renewable project pipeline. Nevada’s renewable project pipeline therefore carries some amount of inherent risk. To this end, Nevada Power will continue to explore all options, including continuing to issue renewable energy requests for proposals (“RFPs”), self-developing projects, conducting bilateral asset purchase and other transactions and exploring short-term purchase agreements that benefit customers, so that it can procure the renewable generating and storage resources needed to satisfy all credit and energy needs. In summary, with the approval of the proposed projects in this filing, Nevada Power should be positioned to meet all of its future credit commitments (RPS, NGR, and Energy Supply Agreements (“ESA”)) for the next five years.

Sierra RPS Compliance. Sierra’s RPS compliance outlook is uncertain. This is different from 2023’s outlook of positive for several reasons. First and primarily is projected load growth. Sierra’s current retail load outlook is significantly higher than that of the previous approved plan; Sierra’s forecasted retail sales are projected to increase significantly. Because the RPS credit requirement is tied directly to retail sales, this increases Sierra’s forecasted RPS credit requirement.

Second, like Nevada Power, Sierra was hit by a wave of canceled projects. The primary driver for the latest wave of cancelations was cost. Most of the canceled projects were negotiated pre-COVID, and the supply disruptions and related increases in component and labor costs made the projects too costly to move forward.

A third contributing factor is transmission constraints. Currently, there is limited ability to move energy to load in Sierra’s service territory in the near term, requiring completion of contingent facilities and significant additional transmission infrastructure to remedy. It is the combination of the three forces, that changed Sierra’s outlook from positive to uncertain.

NV Energy RPS Compliance. Nevada Power and Sierra will continue to closely monitor their RPS compliance outlooks, recognizing that there are many factors, some outside of the Companies’ control, which will ultimately determine whether the Companies will have sufficient PCs to satisfy their respective RPS obligations. The objective is to never be put into a reactive position in which the Companies must acquire a large number of PCs in a short time in order to maintain compliance. While the Companies are not requesting any projects for the purpose of meeting the state’s 2050 clean energy goal, they continue to target the proportionate share of this goal in its long-term planning.

Renewable Resource Additions. The Companies require additional PCs to meet their RPS compliance obligations in the near term. To this end, the Companies are seeking the approval of four PPAs; three of which will serve the Companies’ bundled retail load and contribute to RPS compliance. These three PPAs total 1,027.9 MW of renewable energy capacity with 4,111.6 MWh of paired battery storage. The Companies selected the PPAs through a robust RFP process to provide customer value at low and reasonable rates. These three projects appear in the Balanced Plan.

SECTION VII - SUMMARY OF ENERGY SUPPLY PLAN: NAC § 704.9215(f)

Pursuant to NAC § 704.9494, the Commission can determine that an Energy Supply Plan (“ESP”) is prudent if the following requirements are met:

- The ESP balances the objectives of minimizing the cost of supply, minimizing retail price volatility, and maximizing the reliability of supply over the term of the plan.
- The ESP optimizes the value of the overall supply portfolio of the utility for the benefit of its bundled retail customers.
- The ESP does not contain any feature or mechanism that the Commission finds would impair the restoration of the creditworthiness of the utility or would lead to a deterioration of the creditworthiness of the utility.

The 2024 ESP is based on a specially prepared short-term load forecast. The 2024 ESP includes a power procurement plan, a fuel procurement plan, and a risk management strategy, each of which was prepared to comply with the requirements of NAC § 704.9494.

Power Procurement/Sales Plan

- Accept and approve the power procurement plan, which includes the following elements:
 - The Companies propose to continue the four-season laddering strategy to fill the remaining open positions in 2025 and 2026 and begin filling the 2027 open position. This plan is consistent with the laddering strategy for closing the open power position, which was most recently approved in Docket No. 20-09002. The power procurement

- laddering strategy will be executed in coordination with the physical gas procurement plan.
- Efforts by the Companies to transact directly with counterparties as a supplement to the current request for proposal process to seek non-standard firm energy products in an effort to address short-term supply challenges during the early evening net demand peak period.
 - A commitment by the Companies to continuously monitor the portfolio and seek to make short-term and forward purchases when economic or needed to serve native load. Any proposed purchases of greater than three years in duration will be submitted to the Commission for approval in accordance with NAC §§ 704.9113 and 704.9512.
 - A strategy and plan to make purchases and sales to optimize the value of the overall supply portfolio for the benefit of retail customers.
 - An obligation on behalf of the Companies to monitor their renewable portfolios on a continuous basis to ensure that sufficient renewable energy and PCs are maintained to comply with RPS and undertake cost-effective opportunities to fill new needs that may arise. Current projections indicate that no additional purchases will be required during the ESP period to meet the RPS.
- Find, consistent with NAC § 704.9494(3), that the power procurement strategy is prudent.

Physical Gas Procurement Plan

- Accept and approve the Companies' plan to implement the four-season laddering strategy originally approved by the Commission in Docket No. 09-09001 to procure physical gas. Projected physical gas requirements procured through the laddering strategy will be procured with indexed products, subject to a cap on the premium, which can be exceeded with prior approval from the Risk Committee. Consistent with the Stipulation in Docket No. 09-09001, if the Companies exceed the premium cap, and the procured gas that exceeded the premium cap is not the least cost supply alternative, they will provide written notice to the Commission's Staff and the Bureau of Consumer Protection ("BCP").
- Find, consistent with NAC § 704.9494(3), that the physical gas procurement strategy is prudent.

Gas Transportation Plan

- Accept and approve the gas transportation plan, which includes the following elements: Approval to maintain the Companies' current natural gas transportation portfolios. For Nevada Power, this requires authority to maintain seven existing gas transportation contracts with Kern River Pipeline and three with Southwest Gas Corporation. At Sierra, this requires authority to maintain a total of 33 existing gas transportation and storage contracts with TC Energy – Alberta, TC Energy – Foothills, TC Energy Gas Transmission Northwest ("GTN"), TC Energy Tuscarora Gas Transmission Company ("Tuscarora"), Paiute Pipeline Company ("Paiute") and Northwest Pipeline LLC ("NWPL") pursuant to

rights of first refusal and evergreen rights. The total projected annual costs for firm transportation contracts at both Nevada Power and Sierra are approximately \$113.4 million.

- Find, consistent with NAC § 704.9494(3), that the gas transportation strategy is prudent.

Gas Hedging Plan

- Approval to continue the current hedging strategy and acquire no natural gas hedges covering the ESP Action Plan period. The Companies will continue to monitor the natural gas market fundamentals and recommend changes to the hedging strategy in a future ESP update or ESP amendment as necessary.
- The Companies will continue bi-annual workshops with Staff and BCP to review implementation of the approved no-hedge gas hedging strategy.
- An affirmative finding, consistent with NAC § 704.9494(3), that the Companies' gas hedging strategy is prudent.

Coal Supply Plan

- Acceptance and approval of a coal supply plan for Sierra. The coal supply plan considers current and projected coal unit operations and the level of uncertainty surrounding these operations, as well as market conditions. The coal supply plan proposes Sierra fill Valmy's coal requirements via spot market solicitations. The Companies intend to cease coal-burning operation of Valmy by December 31, 2025.
- An affirmative finding consistent with NAC § 704.9494(3) that the coal procurement strategy is prudent.

Risk Management Strategy

- Acceptance and approval of the Companies' risk management strategy and a finding that the strategy identifies risks inherent in procuring and obtaining a supply portfolio and establishes the means by which the utility plans to address and balance or hedge the identified risks related to cost, price volatility and reliability.
- An affirmative finding consistent with NAC § 704.9494(3) that the risk management strategy is prudent.

This 2024 ESP balances the objectives of minimizing the cost of supply, minimizing retail price volatility, and maximizing the reliability of supply over the term of the plan. Based on results of the PLEXOS production cost forecasting model, Figure S-27 shows the estimated cost-to-serve for the recommended unhedged scenario under base, high, and low fuel and purchased power pricing scenarios.

FIGURE S-27
ESTIMATED COST TO SERVE (IN \$000)

TOTAL FUEL AND PURCHASED POWER (F&PP) COSTS, EXCLUDING FIXED & VARIABLE OPERATIONS AND MAINTENANCE			
Year	Cost to Serve Assuming Low F&PP Prices (\$000)	Cost to Serve Assuming Base F&PP Prices (\$000)	Cost to Serve Assuming High F&PP Prices (\$000)
2025	\$1,653,885	\$1,861,926	\$2,128,976
2026	\$1,468,435	\$1,801,265	\$2,285,882
2007	\$1,338,810	\$1,695,805	\$2,261,870

The Companies also calculated the projected Base Tariff Energy Rates (“BTERs”) and Deferred Energy Accounting Adjustment (“DEAA”) rates for 2025-2027 under the low, base, and high fuel and purchased power price forecasts. The projected BTER and DEAA rates, along with estimated carrying charges, are presented in Technical Appendix GAS-2.

The expected cost-to-serve and BTER remain within a reasonable band under the Companies’ proposed procurement strategies. The ESP provides for the procurement of sufficient firm resources to ensure reliable service to retail customers.

The production cost, BTER, and DEAA calculations and analysis, show that this ESP balances the objectives of minimizing the cost of supply, minimizing retail price volatility, and maximizing the reliability of supply over the term of this plan.

This 2024 ESP optimizes the value of the overall supply portfolio of the utilities for the benefit of their bundled retail customers. The Companies will continue to monitor and adjust the power portfolio to identify and account for changes in load, cost, volatility, reliability, and other commercial or technical factors. Day-ahead, day-of, or month-ahead power purchases are expected to be made if there is an open position, or if system costs of decremental energy exceed the additional cost of market purchases. Similarly, day-ahead or day-of power sales are expected to be made as opportunities arise, including spot, fixed price, indexed agreements, or ancillary services products. The Companies also intend to continue to seek opportunities for forward sales of heat rate call options and/or other products through direct negotiations with counterparties or the issuance of reverse requests for proposals.

This 2024 ESP does not contain any feature or mechanism that would impair the restoration of the creditworthiness of the utilities or would lead to a deterioration of the creditworthiness of the utilities. Over the past several years, the Commission has implemented an ESP process and the Companies' credit has improved. Currently, the Companies are able to finance this ESP without impairing their creditworthiness, assuming timely recovery under the Commission's current rate recovery mechanisms.

SECTION VIII – SUMMARY OF DISTRIBUTED RESOURCES PLAN: NAC § 704.9215(2)(g)

NRS § 704.741(4) sets forth six elements that must be included in a DRP. Each of these requirements is addressed in NV Energy's DRP.

Locational Benefits and Costs of DERs. NV Energy's Locational Net Benefits Analysis ("LNBA") was performed using a PWRR analysis as a final component of the Non-Wires Alternative ("NWA") analysis within the Grid Needs Assessment ("GNA") process. The Companies quantified several benefits and costs associated with Distributed Energy Resources ("DERs"), including: 1) transmission upgrade capital deferral value, 2) distribution upgrade capital deferral value, 3) transmission upgrade operation, maintenance, administrative and general ("OMAG") expense deferral value, 4) distribution upgrade OMAG expense deferral value, 5) avoided energy value, 6) avoided generation capacity value, 7) avoided transmission and distribution losses value, and 8) energy arbitrage value.

Tariffs, Contracts, or Other Mechanisms for Cost-Effective DER Deployment. Non-wires DER solutions on the electric distribution system directed at addressing specific constraints and deferring traditional wired solutions are new to NV Energy, and to many other utilities. The Companies support a measured approach, but also advocate moving forward to vet these technologies in customer offerings to ensure that they provide their expected benefits, potentially facilitating customer bill savings, and do so safely and reliably under real-world conditions.

The DRP describes NV Energy's investigation into and plans to potentially pursue a first-of-its-kind hybrid remote microgrid solution on the Companies' electric distribution system in the Mt. Charleston area. The Companies are not seeking any Commission approval for this project in the DRP but may do so in a future filing. In addition, the DRP presents and requests \$300,000 to pursue an investigation into an NWA Tariffed on Bill Pilot. The DRP also presents and request approval of placeholder resources to secure federal funding for various solar initiatives, particularly from the Environmental Protection Agency Solar for All funding awarded to Nevada Clean Energy Fund.

Cost-Effective Coordination with Commission-approved Programs, Tariffs, and Incentives. NV Energy’s existing DSM and clean energy programs and related tariffs leverage several DER technologies, including: 1) energy efficiency (“EE”), 2) demand response (“DR”), 3) solar PV, 4) EVs, and 5) BESS. The integration of these programs has progressed with the DRP framework to provide benefits and lower cost for both NV Energy and its customers. Through geo-targeted deployment, these technologies support the locational benefits associated with mitigating certain forecasted constraints on the transmission and distribution systems. NV Energy performed its GNA, NWA analyses, and LNBA with these technologies embedded in the analyses of forecasted constraints on its electric transmission and distribution systems.

Systems and Incremental Investment to Integrate Cost-Effective DERs. In 2021, the Commission approved a centralized Distributed Energy Resource Management System (“DERMS”) to develop the foundational technology required to efficiently manage a growing set of DERs and to explore the set of grid services that DERs could provide.

NV Energy’s DERMS is being implemented in multiple releases from 2020 through 2027. The DRP narrative discusses the changes to the project plan since initial approval and the consequent effects of the project’s budget. The Companies are not seeking any additional approval from the Commission for this project in the DRP but may do so in the future.

NV Energy was selected by the Department of Energy (“DOE”) for award negotiations to develop a new set of grid services to be delivered from aggregated DERs in a distributed communications and control architecture (“DCA”). NV Energy negotiated a cooperative agreement with DOE for an award through July 2025. The Companies’ cost share is approximately \$2.76 million, which includes \$376,000 for NV Energy’s participation in the grant effort and \$2.4 million for a 1 MW/4 MWh BESS to support the NWA and field demonstration. The DRP narrative provides the project’s status, actual expenditures, updated budget, and variances. The Companies are not seeking any additional approval from the Commission for this project in the DRP.

NV Energy previously introduced its DER Analytics Toolset and Potential Study project (collectively, the “Project”).³⁹ NV Energy executed a contract with Integral Analytics (“IA”) in 2023 and IA subcontracted with E3 and Tierra Resource Consultants (“Tierra”) to perform the DER MPS aspects of the Project and assist in DSM program development and cost-effectiveness calculations.

DER Barriers and Solutions. NV Energy identified several potential barriers to the deployment of DERs related to 1) integration/interconnection with the distribution grid, 2) market limitations on the ability of DERs to deliver benefits, and 3) distribution system operational and infrastructure

³⁹ Technical Appendix DRP Update-4 in Docket No. 23-09002 provided the scope of work for the Project.

capability. The Companies determined how the DRP can help address these barriers and provide the status of each of these activities.

Transportation Electrification Plan (“TEP”). NV Energy’s first TEP was filed in Docket No. 22-09006. The 2024 TEP primarily focuses on setting the foundation to maximize grid benefits for all customers by shifting targeted EV charging loads to times that are most beneficial to the grid. The TEP also includes programs to accelerate the development of EV charging infrastructure for low-income customers in HUC.

The 2024 TEP covers programs and investments for the years 2025 to 2027, with a total budget of \$19,233,000. The Plan allows for the enrollment of 7,985 ports in NV Energy managed charging programs, extends NV Energy’s work to educate and engage customers and community-based organizations about the benefits of managed charging and transportation electrification generally, deploys new pilot programs, and seeks to maximize funding from federal and other sources to supplement NV Energy program spending. The development of the 2024 TEP was informed by continuing discussions with stakeholders through workshops, surveys, and ongoing feedback.

NAC § 704.9215(2)(g) requires a DRP summary to contain:

- 1) a summary of the methods and outcomes of the hosting capacity analysis described by paragraph (b) of subsection 3 of NAC § 704.9237; and
- 2) a summary of forecasted loads and the forecasted growth of DERs for the electric grid over a six-year period, at minimum, beginning with the year after the DRP is filed.

Hosting Capacity Analysis (“HCA”). The HCA studies performed by NV Energy utilize two distinct systems: 1) the commercially-available Synergi Electric (“Synergi”) electrical simulation software to model and analyze the Companies’ electric distribution systems, and 2) NV Energy’s Geographic Information System mapping system to provide the electrical connectivity models of the distribution systems from the substation transformer down to the primary node level that are used as the source for the connectivity models in Synergi.

Annually, the Companies perform a full-system HCA study process in first quarter of the year and monthly HCA updates the remainder of the year. The most recent full-system HCA study process was completed at the end of March 2024 and modeled existing and forecasted 2023 – 2031 conditions on the distribution system. In the DRP narrative, NV Energy provides detailed explanation of the above activities, the HCA analytical method and outcomes, and its monthly HCA update process satisfying the requirement for “real-time” data, with all the results and data publicly available via NV Energy’s DRP web portal.

Load and DER Forecasting. NV Energy has a rigorous process for forecasting electric load growth on its distribution feeders and medium-power substation transformers, which is

accomplished at the local level and then aggregated up to the substation level. No specific or new distribution facility load forecasts were produced for the DRP. Rather, “snapshots” of the load forecasts in April 2024 that are updated daily by NV Energy’s Distribution Planning department were used as the basis for the NWA analyses on the day each of those analyses were performed. The forecasts just prior to the full-system HCA study noted above were used in that study. Technical Appendix DRP-4 provides forecasted peak loads as of March 10, 2024, for 2024 to 2030 on NV Energy’s substation transformers and feeders, covering the required minimum six-year timeframe following the year of the filing of the DRP.

NV Energy contracted with IA to achieve the scope of work for its DER Analytics Toolset and Potential Study effort. While this effort is ongoing, IA’s subcontractor, E3, used its Forecasting Anywhere model to provide demand and energy forecast data for DER technologies on a census block group basis for selected years within a 20-year forecast period. As noted in the DRP narrative, only a very small portion of that data (EE, DR, and behind-the-meter solar PV demand (MW) data for 2034) was used thus far in the performance of the NWA analyses in the DRP, however, this represents a step forward in the goal of improving the accuracy of the NWA analyses. NV Energy plans to appropriately integrate the remaining data into its DRP analyses over the next year.

SECTION IX – A SUMMARY OF THE ACTIVITIES, ACQUISITIONS, AND COSTS INCLUDED IN THE ACTION PLAN OF THE UTILITY: NAC § 704.9215(2)(h)

The Companies seek Action Plan approval of several items, which, to implement the Preferred Plan, must be taken within the Action Plan period, January 1, 2025, through December 31, 2027. The Companies also seek Commission approval of actions as described in the ESP, which will be undertaken during the 2024 ESP period January 1, 2025, through December 31, 2027. The Action Plan, which is also an exhibit to the Application, is reproduced in its entirety at the end of this Summary Volume.

SECTION X – INTEGRATED EVALUATION: NAC § 704.9215(2)(i)

In selecting its Preferred and Alternate plans, the Companies have evaluated various factors that are set forth in the Commission’s regulations, including:

- The Present Worth Revenue Requirement for each alternative (see NAC § 704.937(3))
- The Present Worth of Societal Costs for each alternative (see NAC § 704.937(4))
- Whether the plan mitigates risk (see NAC § 704.937(6))
- Whether the plan provides adequate reliability (see NAC § 704.937(7)(a))
- Regulatory and financial constraints (see NAC § 704.937(7)(b))
- Whether the plan meets the RPS (see NAC § 704.937(7)(c))

- Whether the plan meets the requirements for environmental protection (see NAC § 704.937(7)(d))

In addition, NAC § 704.948 requires that “a utility shall analyze its decisions, taking into account its assessment of risk and identifying particular risks with respect to: (a) costs, (b) reliability, (c) finances, (d) the volatility of the price of purchased power and fuel, and (e) any other uncertainties the utility has identified.”

In accordance with NAC § 704.948(2), the Companies considered the relationship among the factors used in selecting the Preferred and Alternate Plans, including the relationship between mitigating risk, minimizing cost and volatility, and maximizing reliability. The Companies selected Preferred and Alternate plans that provide the best combination of attributes, without assigning specific weights to any particular factor. Utilizing the results of the long-term load forecast, the DSM Plan, the DRP and the Supply Side Plan, the Companies identified their resource requirements over the planning period. This analysis indicates that Nevada Power and Sierra need to add incremental supply side resources. The Companies developed four alternative plans for meeting its projected needs for incremental capacity and energy.

This 2024 Joint IRP demonstrates how the Companies intend to meet the state’s policies and meet the energy demands of their customers while keeping rates low. The Balanced Plan – the Preferred Plan – recommends the addition of three PPAs for solar generating resources totaling more than 1,000 MW, each with co-located BESS; a set of two company-owned hydrogen-capable natural gas simple cycle combustion turbines; and transmission infrastructure necessitated by the new resources and to support growing customer demand. In addition, the Companies’ Preferred Plan proposes energy efficiency and demand response programs to support a new energy savings goal that includes a combination of energy savings in kilowatt-hours and incremental demand reduction capacity, in kilowatts, during the Action Plan period. The Balanced Plan exceeds the current RPS in every year, achieves the state’s net-zero carbon dioxide emissions goal in 2050, and meets the planning reserve margin for each utility.