

**BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA**

Application of NEVADA POWER COMPANY d/b/a NV Energy and SIERRA PACIFIC POWER COMPANY d/b/a NV Energy, seeking approval to add 1,001 MW of renewable power purchase agreements and 100 MW of energy storage capacity, among other items, as part of their joint 2019-2038 integrated resource plan, for the three year Action Plan period 2019-2021, and the Energy Supply Plan period 2019-2021

Docket No. 18-06\_\_\_\_

**VOLUME 4 OF 18**

**SUMMARY**

**DESCRIPTION**

**PAGE NUMBER**

**SUMMARY**

**2**

## **SUMMARY**

## SECTION I – EXECUTIVE SUMMARY

NV Energy is filing this first joint Integrated Resource Plan (the “2018 Joint IRP”) at a time of tremendous uncertainty. Yet the 2018 Joint IRP sets forth a real and achievable plan to reliably deliver *more clean energy* and services to our customers at *low prices*. The Joint 2018 IRP covers a 20-year planning horizon – 2019 through 2038. The 2018 Joint IRP demonstrates how NV Energy is equipped to navigate the substantial near-term risks and uncertainties inherent in today’s energy environment. At the same time, the filing shows the public and regulators sound decision-making that is good for customers, our community, our environment, and the state of Nevada.

Our customers – residential, commercial and industrial – have been clear that they want us to serve them with more renewable energy without impacting the costs they pay. We are listening and this plan delivers. This 2018 Joint IRP demonstrates just how we intend to maintain the pace of economic growth in both northern and southern Nevada, rely more on renewable energy, and keep rates low. The 2018 Joint IRP meets growth, invests in energy efficiency programs, shrinks our exposure to natural gas prices by delivering more low-cost renewable energy to our customers, and accelerates Nevada’s transition to a cleaner energy future.

After analyzing several energy supply portfolios based on price, societal cost, economic development benefits and reliability metrics, we selected the Low Carbon Case as the “Preferred Plan.” The Low Carbon Case recommends the addition of more than a gigawatt of new solar photovoltaic (“PV”) resources, three battery storage systems, and transmission network upgrades between 2019 and 2021 (the “Action Plan period”). The Low Carbon Case creates approximately \$2.175 billion of investment in progressive, clean energy resources located in Clark, Humboldt and Washoe counties. The Low Carbon Case also advances the retirement of coal-fired generation located in northern Nevada in a responsible and prudent manner. The Low Carbon Case provides a low-cost, least-risk, and flexible blueprint for meeting customer energy needs. We therefore are asking that the Public Utilities Commission of Nevada (“Commission”) accept the Low Carbon Case and authorize our company to take all necessary steps the Action Plan period to implement the Low Carbon Case, if voters do not approve Question 3 in November.

### KEY ELEMENTS OF NV ENERGY’S 2018 INTEGRATED RESOURCE PLAN

The 2018 Joint IRP adds 1,001 megawatts of new, solar generating facilities, transforming our supply portfolio and reducing carbon emissions. The plan contains:

- Six projects located in Clark, Humboldt and Washoe counties
- A specific plan to invest more than \$2.175 billion in Nevada’s growing clean energy economy
- Investments in Nevada’s transmission system to integrate renewable energy and continue grid resilience plans
- A responsible approach to transforming NV Energy’s energy supply portfolio in a structured and orderly manner
- A supply plan that reduces the present value of total customer costs by \$29 to \$155 million over 30 years

The filing provides a concrete roadmap for NV Energy to deliver the services that our customers want and value at low prices. By 2023, renewable energy will constitute 32 percent of our supply portfolio.

***1. The IRP process is a transparent public process designed to produce the lowest-cost, least-risk 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 whole – that is, for all Nevadans. The IRP process starts with a forecast of customer loads and assesses a range of alternatives, including investments in energy efficiency, demand response, transmission, and energy supply to identify options for meeting customers’ energy needs over the next 20 years. Broadly speaking, these investments fall into two categories: a demand side plan (energy efficiency and demand response programs to reduce demand) and a supply side plan (comprised of generation and transmission alternatives to increase supply). Resource planners use a variety of modeling tools to determine the long-run impact of these alternative cases on the operation of the electric system, on electricity prices, on the State’s economy, and on the environment. After performing that analysis, NV Energy assesses the results and designates a Preferred Plan and at least one alternative plan.

The filing of an IRP in Nevada does not spell the end of 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. After a mandatory evidentiary hearing, the Commission has the power to 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 2018 Joint IRP will deliver more clean energy and services to customers at low prices***

NV Energy anticipates increases in both sales and demand, driven in large part by the State’s growing economy. The 2018 Joint IRP looks first to energy efficiency and demand response programs to meet the growing volumetric energy and demand needs of customers.

***A. The demand side management plan produces energy savings that exceed the 1.1 percent of retail sales target established by policymakers and deliver \$296 million of benefits to the Nevada communities that NV Energy serves***

NV Energy’s proposal increases expenditures on demand side management (“DSM”) programs, and makes DSM programs accessible to more customers. In total, NV Energy proposes to spend \$197 million on energy efficiency and demand response programs during the Action Plan period. Importantly, the DSM programs already satisfy draft regulations establishing a savings target for DSM programs of 1.1 percent of retail sales.

Investment in DSM programs benefit customers in several respects. First, they reduce the total cost of delivering electricity in the long-term. Second, they provide environmental benefits by reducing the consumption of and, therefore, the need to produce electricity. Third, energy efficiency programs provide direct and indirect economic benefits to the communities we serve. Fourth, energy efficiency programs provide direct bill savings to customers who participate in the

programs. Overall, NV Energy estimates that this DSM plan produces \$296 million of net benefits to the communities the Companies serve.

### ***B. The Low Carbon Case and alternative plans***

NV Energy evaluated a wide-range of supply side investments and alternatives to increase the supply of electricity. The Companies' primary analysis considered four alternative cases to pursue in a long-term planning scenario:

- **All Market Case:** This case adds two new solar PV projects, the 200 MW Dodge Flats project and the 101 MW Cypress Creek projects located in Washoe and Humboldt counties. These projects are added for the purpose of facilitating Sierra's compliance with Nevada's renewable portfolio standard ("RPS"). Outside of these supply additions, the All Market Case relies on short-term wholesale power purchases during the Action Plan Period to meet demand.
- **Renewable Case:** This case adds four additional new solar PV projects for a total of six new solar projects. Those four additional projects are: NextEra's Fish Springs Ranch 100 MW solar project; 8minutenergy's 300 MW project at the Eagle Shadow Mountain Solar Farm; Sempra's 250 MW Copper Mountain Solar 5, and the 50 MW Techren V project. The case also adds battery storage systems directly tied to the Dodge Flats, Fish Springs and Crescent Valley solar projects, consisting of a 50 MW/200 MWh battery, a 25 MW/100 MWh battery, and a 25 MW/100 MWh battery, respectively.
- **Low Carbon Case:** This case contains the same six solar projects as the Renewable Case. The Low Carbon Case also proposes the retirement of North Valmy Unit 1 in December 2021, subject to specific criterion that are designed to ensure economic and reliable operations following that retirement.
- **Development Case:** This case contains the same six solar projects as the Renewable Case as well as the retirement of North Valmy Unit 1 in 2021. It adds two additional solar PV projects for an additional 299 MWs, both owned and operated by NV Energy, under an alternative ratemaking paradigm.

NV Energy selected the Low Carbon Case as its Preferred Plan and the similar Renewable Case as the alternative plan. The Renewable Case has less impact on customers. With respect to the impact on the State's economy, both cases involve an estimated \$2.175 billion progressive investment in Nevada, provide an estimated 1,785 construction jobs and approximately 76 long-term jobs. Turning to the impact on the environment, the Low Carbon Case reduces the carbon intensity of NV Energy's generation fleet. NV Energy selected the Low Carbon Case based the fact that the case is more closely aligned with Nevada's energy policy and delivers the services our customers value.

As explained below, NV Energy analyzed an additional case in a short-term planning scenario in which Ballot Question 3 passes.

### ***3. Doubles renewable energy by 2023***

NV Energy has been in the renewable energy business since the mid-1980s, and we are proud of our clean energy record. Today, we serve our customers with 46 geothermal, solar, wind, hydro, biomass and other renewable energy projects located throughout the state, and five more are under contract and in various stages of construction and development. As a result, Nevada is now ranked second nationwide in geothermal production and fifth in solar production. In 2016, geothermal resources fueled more than 44 percent of Nevada’s renewably sourced electricity generation and nearly 10 percent of Nevada’s total net electricity generation, a larger share than in any other state. Moreover, for eight years in a row NV Energy has exceeded Nevada’s RPS requirement, which currently stands at 20 percent. In 2017, we achieved a statewide record of 23.8 percent. Further, Nevada’s renewable generation incentive program, administered by NV Energy, has financially supported more than 20,000 private rooftop solar installations at homes, schools, civic buildings, nonprofits and businesses.

Not surprisingly, Nevada is a leader when it comes to reducing carbon emissions within the electric industry generally, and, more specifically, when it comes to carbon emissions from coal-fired generating facilities. Between 2005 and 2015, Nevada reduced carbon emissions from the electric industry by 44 percent. According to the U.S. Energy Information Administration, our state had an 85 percent reduction in carbon emissions from coal in the electric sector over that same period.

The 2018 Joint IRP builds on that track record. If approved, the 1,001 megawatts of new solar projects in the Low Carbon Case will more than double renewable energy production by 2023 and nearly double renewable capacity. The estimated \$2.175 billion investment will bring jobs, both construction and permanent, to Nevada. Our development partners have signed work site agreements, ensuring that skilled Nevadans have the opportunity to perform their tradecraft. The Low Carbon Case results in only 0.5 percent of the energy we produce coming from coal units, while 32 percent will come from renewable energy.

This 2018 Joint IRP shows exactly how NV Energy will implement our commitment to double renewable energy by 2023, which we will achieve through focused leadership and strong partnership with our stakeholders, including community leaders, environmental groups, renewable energy companies, organized labor, and other non-governmental organizations, as well as our regulators and the Nevada legislature.

### ***4. The 2018 IRP is a specific commitment to low electric prices and expand the energy efficiency choices available to customers***

NV Energy has an equally strong record of keeping customer costs low. Our average customer rates have decreased by 15 percent since 2009 – and they have decreased the second most of any U.S. utility since 2014, when we were acquired by Berkshire Hathaway Energy. Moreover, Nevada’s average retail rate for all customers is 45.5 percent lower than rates in California, 8.8 percent lower than the other Western Mountain states, and 17.1 percent lower than the national average.

The Low Carbon Case reduces the overall cost of electricity in contrast to the All Market and Development Cases. The alternative plan, the Renewable Case, is the lowest cost case analyzed by NV Energy. In the 10-year planning horizon, the Low Carbon Cases reduces cost by \$35 million (present value) compared to the All Market Case and \$52 million compared to the Development case. Over the 20-year horizon, the present value of the savings grows to \$113 million and \$53 million respectively. In the 30-year horizon, the present value of the savings compared to the All Market Case grow to \$155 million, while the present value of the savings compared to Development Case decline to \$29 million.

In summary, the Low Carbon Case reduces exposure to natural gas prices and reduces electricity cost compared to two of the alternatives we analyzed. In light of the environmental benefits and carbon reductions, and the nexus between the Low Carbon Case and Nevada’s energy policy, NV Energy concluded that the Low Carbon Case presents the best value for customers.

***5. The 2018 Joint IRP is consistent with Nevada’s energy policy, providing progressive solutions to meet the State’s energy needs***

In 2013, the Nevada Legislature provided for the orderly and structured retirement of coal-fired generation serving southern Nevada and the replacement of that generation capacity. NV Energy implemented that legislation faithfully, and in a cost effective manner. By the end of 2019, NV Energy will retire or eliminate its ownership interest in all of the coal-fired generation serving southern Nevada. NV Energy replaced the coal-fired generation with three clean solar generating facilities and cost-effective acquisitions of existing gas-fired generation. This 2018 Joint IRP continues this legacy, providing a blueprint for the orderly and structured early retirement of North Valmy Unit 1, four years ahead of schedule in 2021. The plan is a responsible one, recognizing the critical services that generation located outside Winnemucca, Nevada provides to the northern Nevada bulk electric system and the role the North Valmy Generating Station plays in serving the Carlin Trend and the economies of Humboldt, Pershing, Churchill, Lander, Eureka and Elko counties. The 2018 Joint IRP bolsters generation in this part of the State with a 101 megawatt solar facility, coupled with a 25 megawatt battery storage system located in Humboldt County.

We also plan to follow an all-of-the-above strategy to replace North Valmy Unit 1 and, eventually, North Valmy Unit 2. We will issue another request for renewable energy proposals and battery storage systems in the third or fourth quarter of 2018, as well as investigate options for extending natural gas to North Valmy to leverage the existing infrastructure and minimize the cost of delivering more energy to the State’s growing economy. The goal of course is to continue the transitioning of the Companies’ energy supply portfolio, reduce costs, and reduce risk.

Nevada’s 2017 Legislature continued this progression, reinforcing Nevada’s position as a national leader on clean energy. The Legislature passed bills to promote energy efficiency, energy storage, net energy metering, and electric vehicles, as well as to establish the Nevada State Infrastructure Bank and the Nevada Clean Energy Fund. It also passed legislation providing direct guidance to NV Energy regarding the contents and priorities of this integrated resource plan. Senate Bills 65 and 146 direct our two utilities – Reno-based Sierra and Las Vegas-based Nevada Power – to submit a joint IRP, and they set forth in detail the range of issues to be covered by the plan, including a forecast of future electricity demand; resources to meet that demand; a continued focus

on demand side resources, including our energy efficiency programs; designation of renewable energy zones and transmission lines to serve them in order to meet Nevada’s renewable portfolio standard; reliability of the distribution system; a distributed resources plan; and other issues. In addition, Senate Bill 65 specifically directs NV Energy to give preference to measures that provide the greatest environmental and economic benefits to Nevadans, the greatest opportunity to create in-state jobs, diversify energy portfolios and reduce fuel and carbon-price risk, and help to position Nevada to lead the nation as a producer and consumer of clean and renewable energy consistent with established energy policy. We believe this 2018 Joint IRP generally and, more specifically, the Low Carbon Case (the Preferred Plan) as well as the Renewable Case (the Alternative Plan), meet – and further – these requirements.

Much like the electric industry in general, energy policy is not stagnant. A measure could be placed on the November 2018 ballot that would increase Nevada’s RPS. The Nevada Legislature will meet again in 2019. If the past is, in any respect, a prelude to the future, the 2019 session will involve a number of key energy matters. We are confident in the foundational strategy upon which the 2018 Joint IRP is built, and that the sound decision-making reflected in the filing provides the resources and flexibility to respond positively to policy directives.

It is clear that customers and policy makers want NV Energy and all participants in the energy industry to produce electricity with sustainable resources, while reducing the costs and the environmental impacts associated with the production of electricity. NV Energy is committed to delivering the services that customers value as set forth in this 2018 Joint IRP.

We also are committed to working with the Commission, the Nevada Legislature, stakeholders and, most importantly, our customers, to explore new policies that deliver progressive solutions. Our track record with large customers demonstrates that we can deliver progressive policy solutions that advance individual sustainability goals. Today, these programs are not available to all customers. As we continue to develop programs and policies that complement the State’s energy policy, we are committed to development that bring the benefits of renewable energy resources, including distributed resources and community solar, to all Nevadans and, in particular, underserved and disadvantaged communities. These programs and solutions will provide more options for customers, including the opportunity to have 100 percent of their energy come from clean renewable resources.

***6. The Joint IRP investments in transmission assets to integrate new renewable energy projects and continues existing grid resilience initiatives***

New generation requires new investments in transmission in order to deliver clean energy to customers. The 2018 Joint IRP proposes approximately \$20 million of investment to bring the output of new solar PV facilities to customers. In addition, the plan proposes to expand grid improvement efforts by upgrading 230 kilovolt-transmission facilities at a cost of \$720 thousand. In addition, previously approved grid improvement expenditures of approximately \$40 million and \$15 million of grid resilience investment will continue. These projects are all designed to improve reliability and security for customers, ensuring that the grid delivers the services customers expect when customers need those services.

***7. The Low Carbon Case transforms NV Energy's supply portfolio through progressive investments that benefit the State's economy and environment***

We make the 2018 Joint IRP at a pivotal point; Nevada's electric industry is changing rapidly. Twenty years ago, in 1998, Nevada Power and Sierra proposed to merge their utility businesses. At the same time, Nevada was deregulating its retail energy market and wanted both utilities to exit the energy supply business, divest their generation assets, and auction off their power purchase agreements. The proposed merger facilitated the dismantling of both vertically integrated electric utilities, and so was approved by regulators. In early 2001, suffering in the throes of the Western energy crisis, Nevada abandoned its deregulation experiment, but the partial consolidation of Nevada Power and Sierra remained in place.

Today, Nevadans are once again considering the merits of deregulating the retail energy market, causing Nevada's two largest electric utilities to exit the business of generating electricity, forcing the divestiture of generation plants and seeking ways to extract Nevada Power and Sierra from long-term contracts with renewable energy providers. As was the case in 1998, deregulation is being proposed at a time when Nevada's local economies are growing—mining is strong, construction cranes are once again in the sky above Las Vegas, and outside Reno high tech companies are locating and expanding server farms, clean manufacturing and other energy-intensive facilities. Consequently both Nevada Power and Sierra are facing large “short” positions. They need to either acquire new sources of energy (by building or contracting for supply) or rely on the spot market to meet new load. In 2019, the Companies' projected open planning position is 625 MW.

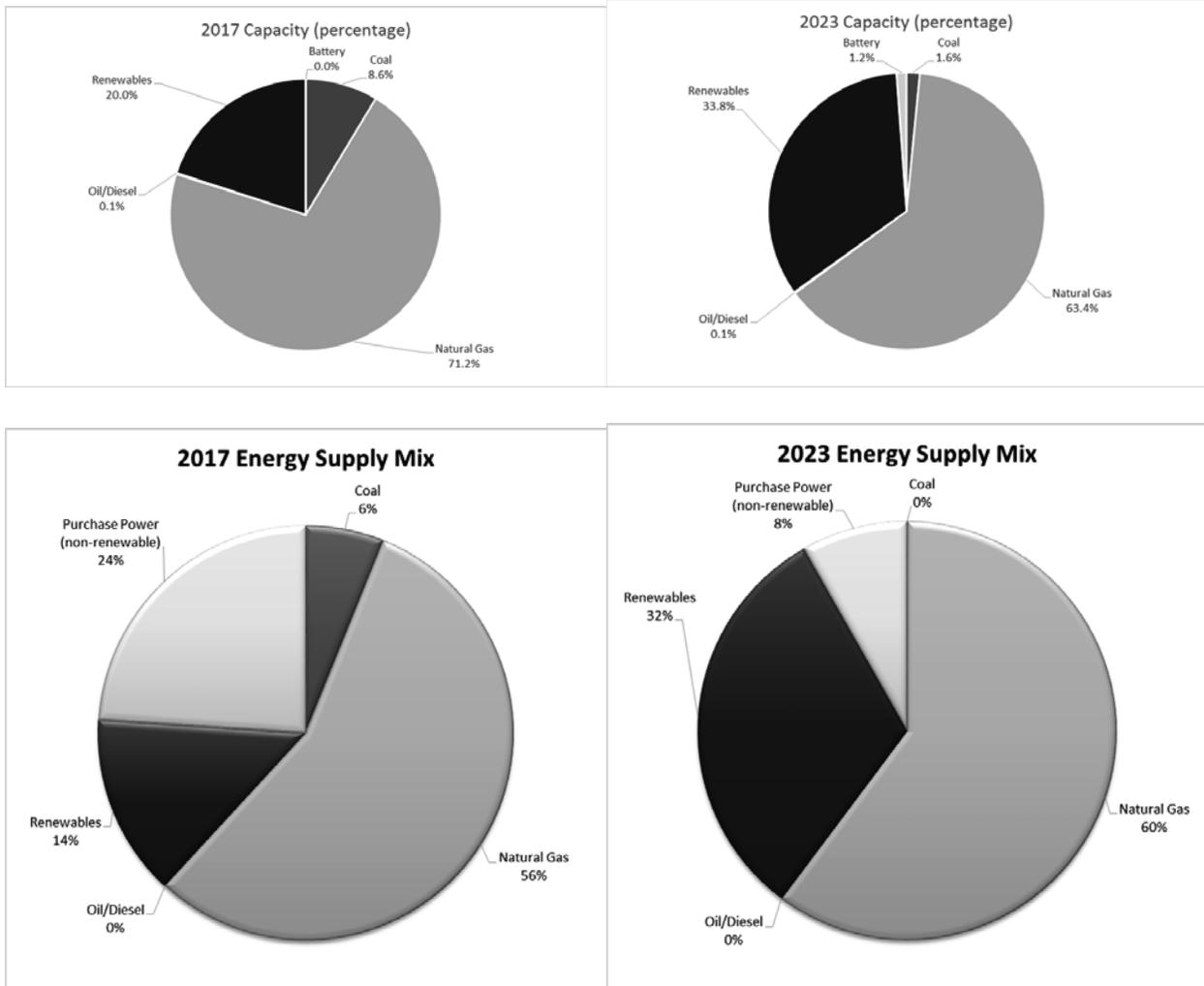
In 2018, we offer customers more choices in the form of customer programs (*e.g.*, payment plan options and digital services), energy efficiency programs, value-added services (*e.g.*, green tariff programs and renewable energy) at lower prices than we did a decade ago. The regulatory and reliability planning paradigm, however, is evolving quickly. Customers have new resources available today that simply did not exist a decade ago. More large commercial and industrial customers are seeking direct access to wholesale power markets than a decade ago. The centralized planning role that we have played under the supervision of the Commission for decades has served Nevada well: it has added renewable energy, reduced carbon emissions, and provided some of the most reliable energy services at prices that are well below the national average.

Yet, the centralized planning function that has made Nevada's energy grid both affordable and reliable is splintering. The decisions to add resources to the power grid now rest with thousands of decision makers. Large, sophisticated commercial customers plan for their own energy supply needs in a vacuum, making it difficult to integrate and optimize planning for all Nevadans. While these changes complicate the planning process, this 2018 Joint IRP requests Commission approval of a concrete plan that will transform our energy supply portfolio, doubling renewable energy by 2023 and reducing the total cost of delivering energy to our customers.

Through this 2018 Joint IRP, we request approval of the Low Carbon Case (which invests more than \$2.175 billion in clean energy resources and provides for the retirement of additional coal-fired generation in 2021 in a responsible, prudent and cost-effective manner) should Question 3 fail at the ballot in November 2018. If Question 3 passes, we request approval of a limited, RPS

compliance only plan that meets the needs of Nevadans through 2023, but does not add the robust combination of renewable and progressive resources included in the Low Carbon Case.<sup>1</sup>

If the Commission approves the Low Carbon Case, and NV Energy continues to provide energy services to customers, the following charts demonstrate the transformative nature of the 2018 Joint IRP. Both capacity and production charts include hydroelectric production in the renewable energy category.



## 8. Conclusion

The Low Carbon Case provides NV Energy’s customers the best value. The plan is a low-cost, least-risk approach to delivering the services that customers have requested. We respectfully request that the Commission accept and approve comprehensive integrated plan that the

<sup>1</sup> The RPS Compliance Only Case adds only enough new renewable resources to meet the Companies’ RPS requirements through 2023. It features the assignment of the lowest cost of the six renewable PPAs, the 300 MW 8minutenergy PPA with Nevada Power, to Sierra. With this PPA, Sierra will be able to maintain compliance with Nevada’s RPS beyond December 31, 2021.

Companies recommend for first reducing the demand for energy and then meeting the energy needs of the communities that NV Energy serves.

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

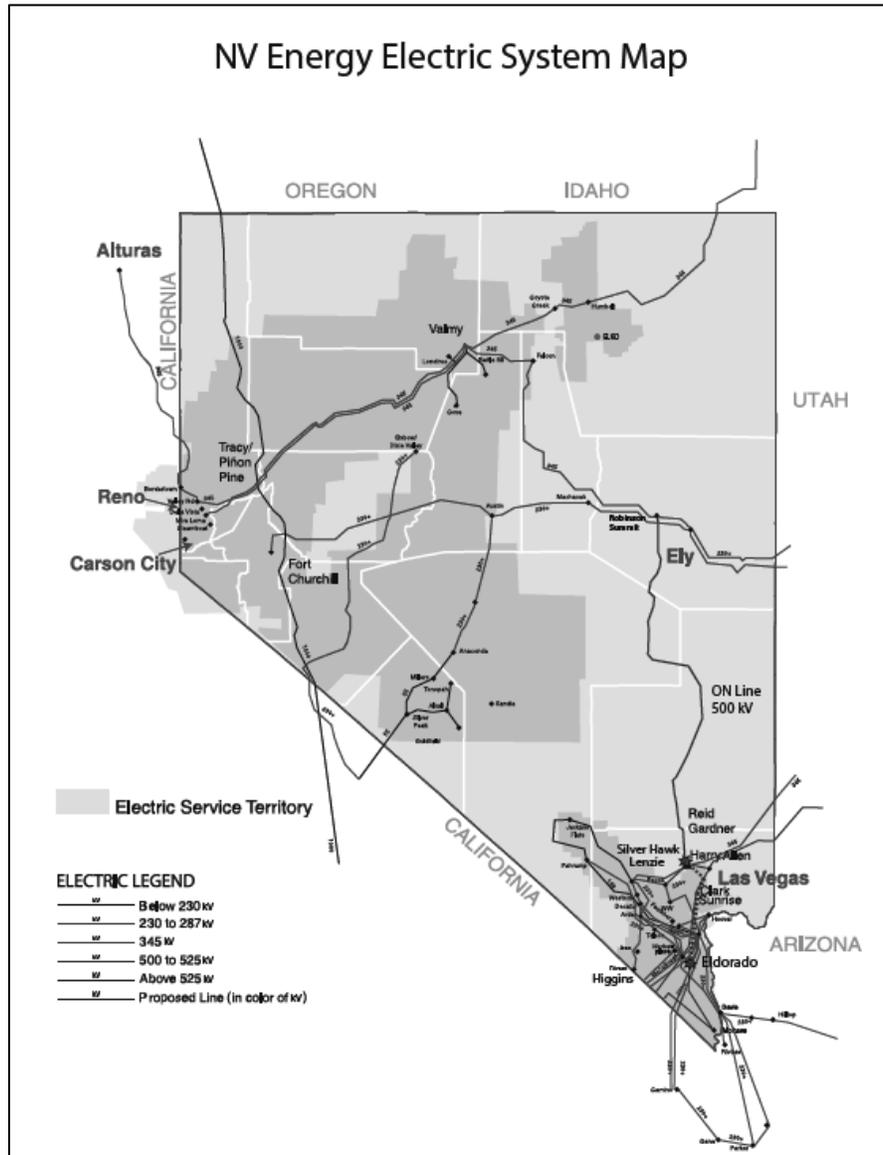
*Nevada Power and Sierra Described.* Nevada Power and Sierra are fully regulated “public utilities,” subject to the jurisdiction and oversight of the Commission and the Federal Energy Regulatory Commission (“FERC”). Nevada Power and Sierra provide all-in electric service to residential, commercial and 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 wires-only service to very large commercial customers (*e.g.*, Switch, Caesars, Wynn, and the MGM) who have received permission to procure their own energy. Wires-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 2,500 employees of Nevada Power and Sierra generate, transmit and distribute electric energy to over 1.2 million bundled customers statewide, through electric distribution and transmission systems covering nearly 46,000 square miles. Together, Nevada Power and Sierra serve peak loads of 7,753 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 2015, the Companies have transitioned away from coal and into renewable energy, reducing Nevada’s carbon emissions from electric production by 44%.

Residential, commercial and industrial customers have been clear that they want Nevada Power and Sierra to serve them with more renewable energy without impacting the costs they pay. Nevada Power and Sierra have listened, as is demonstrated by their strategic plan to double their renewable energy resources by 2023, without increasing bundled rates. This 2018 Joint IRP builds on the Companies’ prior track record of increasing their renewable portfolios and shrinking the share of their portfolios that utilize non-renewable resources. If approved, the Companies’ Preferred Plan will result in only 0.5 percent of the energy Nevada Power and Sierra deliver to bundled customers coming from coal units, while 32% percent will come from renewable energy—without putting upward pressure on all-in rates.

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-1.

**FIGURE S-1  
NV ENERGY SERVICE TERRITORIES**



**Resource Planning Described.** Beginning in 1983, the Legislature gave the Commission oversight authority over the long-term planning for energy resources. Every three years, Nevada Power and Sierra formulate and present a Preferred Plan for meeting the long-term needs of customers. Until 2018, Sierra and Nevada Power prepared separate plans that they filed in staggered years. In 2017, the Nevada Legislature modified the resource planning statutes to require the filing by June 1, 2018 of a Joint IRP. Like the separate IRPs prepared in the past, this 2018 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 (demand-side management or “DSM”), contracts for the purchase of new energy resources, and requests to build generation and/or transmission. As mentioned above, the Companies’ Preferred Plan in this 2018 Joint IRP proposes to first of all

reduce energy consumption with a record level of investment in DSM programs, and to meet the shortfall between load and resources with 1,001 MW of solar photovoltaic (“PV”) generation and battery storage.

***IRP and Action Plan Period.*** This 2018 Joint IRP filing addresses the 20-year planning period 2019 to 2038. 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, 2019 to December 31, 2021 to implement the Preferred Plan. The Action Plan filed with this 2018 Joint IRP 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 2018 Joint IRP.

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

***Summary of Findings.*** Nevada Power’s and Sierra’s respective service territories have experienced decent sales growth over the last five years, fueled at Nevada Power by retail growth, and at Sierra by mining, the Tesla Gigafactory, data centers and other energy intensive industries. Nevada Power residential customer counts have increased at an annual average growth of 1.6 percent over the last five years while small commercial and industrial (“Small C&I”) customers have grown at a 1 percent rate. At Sierra, residential customers grew on average 1.1 percent and Small C&I customers at 0.5 percent over the same time period.

Nevada Power’s residential weather-adjusted sales grew 0.8 percent. Sierra’s residential sales grew at 1 percent per year on average over the last five years, despite headwinds from energy efficiency initiatives. Small C&I weather adjusted sales increased 0.6 percent at Nevada Power and 0.5 percent at Sierra for the same time period.

Residential sales are expected to continue to grow over the next 10 years, but at a slow rate as customer additions are partially offset by declines in use-per-customer due to Company-sponsored DSM and external energy efficiency initiatives (*e.g.*, changes in the LED light bulb standard that take effect in 2020). Residential sales over the next 10 years are expected to grow at an average annual rate of 0.5 percent at Nevada Power and only 0.1 percent at Sierra. Small C&I sales are projected to grow an average of 0.8 percent annually between 2019 and 2029 for Nevada Power and 0.3 percent for Sierra.

At Nevada Power, Large C&I sales have declined over the past five years due to decisions by four large customers to procure their own energy and to take only wires service from Nevada Power. This trend continues in 2018 with the transition of another large customer from all-in to wires only service. Over the 10-year period 2019 through 2029, sales in this class are expected to increase at 0.6 percent on average. Sierra expects solid growth over in Large C&I sales through 2022. However, the forecast reflects the transition of a large mining customer from all-in to wires service in 2023.

At Nevada Power weather adjusted summer peak load is projected to increase from 5,541 MW in 2019 to 5,962 MW in 2029, a 10-year annual growth rate of 0.7 percent. At Sierra, the weather-adjusted summer peak load is projected to decline from 1,712 MW in 2019 to 1,689 MW in 2029. The decline is due to the forecasted transition of one large mining customer from all-in to wires service in 2023.

***Basis for the Load Forecast.*** The 2018 IRP load forecast (“2018 IRP Forecast”) database was updated with actual data through December 2017. The 2018 IRP Forecast was completed in March 2018 and covers calendar years 2019 through 2038. The 2018 IRP Forecast updates a number of inputs from prior load forecasts. The 2018 IRP Forecast includes updates to the following important forecast inputs.

***Population Growth.*** Both Companies’ residential and Small C&I customer forecasts are driven by population. Sources for population history include the State Demographer and I.H.S. Global Insight (“GI”). Nevada Power models include a Clark County population forecast based on the historical population prepared by the State Demographer. The 2018 IRP Forecast is an extrapolation of historical population series using the annual growth rates obtained from the June 2017 release of the University of Nevada, Las Vegas’ Center for Business and Economic Research’s long-term forecast. Sierra’s models use northern Nevada’s population history and forecast, which is Nevada minus Clark County’s population. The forecast used a blended average of the GI and State Demographer growth rates, as the State Demographer forecasted growth was inconsistent with recent historical residential customer growth.

Figure S-2 shows the population forecasts for Nevada Power and Sierra from 2019 through 2038. For the 10-year period from 2019 through 2029, the Nevada Power Compound Annual Growth Rate (“CAGR”) used in the forecast is 1.2 percent. The Sierra CAGR used in the forecast for that time period is 0.7 percent.

**FIGURE S-2  
POPULATION FORECAST**

Year	Population	
	NPC (1)	SPPC (2)
2018	2,235,782	813,192
2019	2,277,745	822,026
2020	2,317,757	829,696
2021	2,355,817	836,774
2022	2,389,973	842,959
2023	2,423,154	848,728
2024	2,453,407	854,044
2025	2,480,732	858,808
2026	2,506,105	863,129
2027	2,528,551	867,245
2028	2,550,021	871,375
2029	2,569,539	875,524
2030	2,587,105	879,693
2031	2,603,695	883,882
2032	2,618,333	888,090
2033	2,631,996	892,319
2034	2,643,707	896,568
2035	2,655,418	900,837
2036	2,665,177	905,127
2037	2,673,960	909,437
2038	2,681,767	913,767

CAGR		
19-29	1.2%	0.6%
19-38	0.9%	0.6%

- (1) Clark County.
- (2) Northern Nevada population defined as Nevada population less Clark County population.

**Employment and Output Trends.** Real output drives the Small and Large C&I customer and sales forecasts. Strong real output growth of 4.9 percent has occurred in Clark County over the last four years. Sierra has experienced a more modest 2.3 percent annual growth over the last four years. Nevada Power is expected to experience an average of 2.4 percent real output growth over the next 10 years while Sierra growth over the same time period is 1.7 percent.

**Hotel/Motel Room Increasing.** Historically, the resort and hotel/motel industry has been a significant driver of growth in Nevada Power’s service territory. However, beginning in 2011, no major hotel/casino properties have been constructed as the industry moved to property renovations.

The Resort's World's 3,000 room property is the only new hotel included in the 2018 IRP Forecast. Very slow growth is assumed for the forecast absent the Resorts World opening.

**Large customer assumptions.** For Nevada Power, incremental additional load has been added to the forecast for new Resorts World hotel in 2020. Sierra experienced solid mine load growth from 2010 through 2014 before stabilizing as metals prices declined. In addition, significant load is projected in the Tri-Center Industrial development park east of Reno, where distribution facilities capable of adding more than 1,000 GWh of load by 2023 have been requested.

**Normal Weather.** The regulations governing integrated resource planning require that forecasts of peak demand and energy consumption account for "normal" weather conditions. The 2018 IRP Forecast is based on a weather normalized peak demand and energy consumption based on historical and forecasted normal monthly heating degree days ("HDDs") and cooling degree days ("CDDs"). Normal weather concepts include monthly HDDs and CDDs, and peak day temperatures. Weather normalization for the 2018 IRP Forecast utilized the twenty year historical period January 1998 through December 2017.

**Distribution-Only Service.** Very large commercial customers who have received permission from the Commission to procure their own energy receive "wires only" service from Nevada Power and Sierra. Wires only service is also termed "distribution-only service" or "DOS." DOS is provided to eligible customers through a DOS tariff. Because they have elected to procure their own energy, DOS customers must be separately accounted for in the Companies' load forecast. The 2018 IRP Forecast accounts for Caesars' Sierra territory properties moving to DOS as assumed in January 2018 and Caesars' Nevada Power properties moving to DOS in February 2018. The majority of Caesars' premises in Nevada Power's service territory transitioned to DOS in February 2018 as assumed in the forecast, however, a few premises transitioned in March 2018. In addition, the Peppermill's energy use in Sierra's service territory was removed from the 2018 IRP Forecast beginning in April 2018, as were Newmont Mining's loads in June 2023. In addition, both existing and new customers have expressed an interest in procuring their own energy and taking wires only or DOS service from Nevada Power and Sierra.

**DSM and Demand Reduction.** The incremental annual reductions in load attributed to DSM in the 2018 IRP Forecast are based on the 2018 DSM plan filed as a part of this 2018 Joint IRP. These forecasted reductions are based on the 1 percent of sales statewide goal being discussed prior to March 2018 in comments and workshops under Docket No. 17-08023. Figure S-3 compares the DSM savings estimated in the 2018 IRP Forecast compared to the level of DSM savings from period periods. The reductions underlying the 2018 IRP Forecast are significantly more than those included in 2017 for Sierra and Nevada Power.

**FIGURE S-3  
DSM SAVINGS COMPARISON**

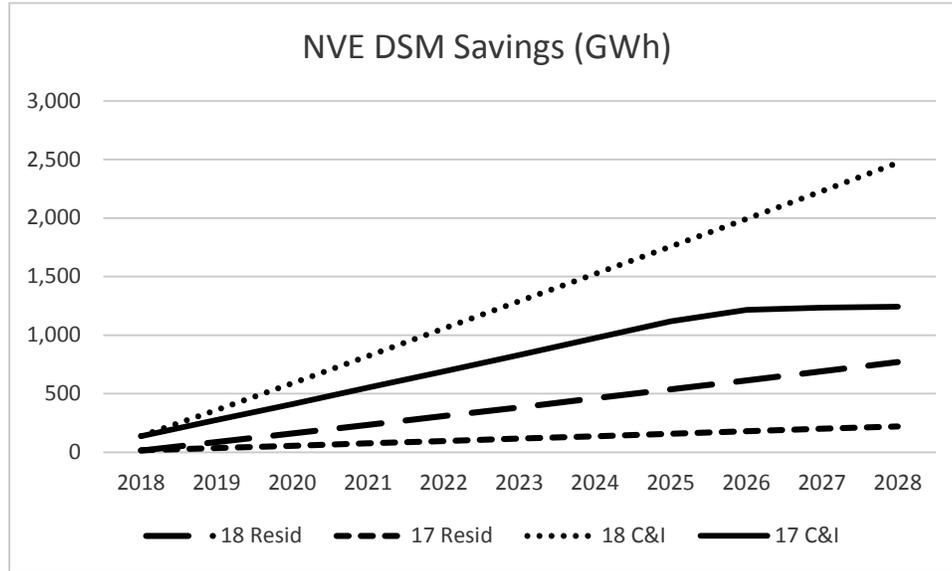


Figure S-4 shows the reductions to peak associated with Company-funded DSM programs over the planning horizon.

**FIGURE S-4  
DSM PEAK MW REDUCTIONS BY PROGRAM**

NEVADA POWER																					
Program	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Residential AC	5	43	79	117	155	193	231	271	311	349	390	429	469	510	549	590	630	671	712	753	794
Residential Direct Install	0	4	9	13	17	22	26	31	35	40	44	49	54	58	63	68	72	77	82	86	91
Commercial Program	12	25	39	53	66	80	93	107	121	135	149	164	178	192	207	221	236	250	265	280	296
Demand Response	275	296	321	331	342	358	367	370	369	365	381	382	384	387	375	379	393	394	395	392	387
<b>Total MW</b>	<b>292</b>	<b>368</b>	<b>448</b>	<b>514</b>	<b>580</b>	<b>653</b>	<b>717</b>	<b>779</b>	<b>836</b>	<b>888</b>	<b>964</b>	<b>1,023</b>	<b>1,085</b>	<b>1,147</b>	<b>1,194</b>	<b>1,258</b>	<b>1,331</b>	<b>1,392</b>	<b>1,454</b>	<b>1,511</b>	<b>1,568</b>

SIERRA																					
Program	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Residential Direct Install	0.0	2.0	4.0	6.0	8.0	10.0	11.0	13.0	15.0	17.0	19.0	21.0	23.0	25.0	27.0	29.0	31.0	34.0	36.0	38.0	40.0
Commercial Program	5.0	12.0	19.0	26.0	34.0	41.0	48.0	55.0	61.0	68.0	75.0	81.0	88.0	95.0	102.0	109.0	116.0	122.0	129.0	136.0	143.0
Demand Response	17	25	34	39	47	48	51	51	54	57	62	57	61	61	60	61	63	59	61	60	60
<b>Total MW</b>	<b>22.0</b>	<b>39.0</b>	<b>57.0</b>	<b>71.0</b>	<b>89.0</b>	<b>99.0</b>	<b>110.0</b>	<b>119.0</b>	<b>130.0</b>	<b>142.0</b>	<b>156.0</b>	<b>159.0</b>	<b>172.0</b>	<b>181.0</b>	<b>189.0</b>	<b>199.0</b>	<b>210.0</b>	<b>215.0</b>	<b>226.0</b>	<b>234.0</b>	<b>243.0</b>

All values include losses.

Footnote1: Hourly DSM estimate at 5 pm on the peak day as calculated for the IRP Load Forecast.

Footnote2: The DR is the installed capacity in July of the referenced year. The DR includes Ecofactor and Ecobee reductions at the peak.

**Solar PV Programs.** Reductions in system demand and energy requirements reflect solar PV energy production that is used by customers at their premise. Forecasted solar PV penetration is based on recent installation counts and system sizes at both Nevada power and Sierra. The 2018 IRP Forecast assumptions are consistent with the Commission’s order in Docket No. 17-07026 and Assembly Bill 405 (“AB 405”) (2017 Legislature) passed by the Nevada Legislature. The total (incremental from 2017) Nevada Power residential solar PV impact at the summer peak is expected to be about 105 MW by 2029, and 4 MW at Sierra. Additional solar PV for Small and Large C&I customers, most of which is not covered under AB 405, amounts to about 33 MW at Nevada Power and 24 MW at Sierra.

***Energy storage behind the meter.*** No assumption for energy storage was made in the 2018 IRP Forecast due to lack of data on the operating characteristics of storage, either stand-alone or coupled with solar PV. Storage will be included in future forecasts as storage operating data is collected from meters installed on all new storage devices to measure the impact of the device on customer usage and system operations.

***Low, Base and High Scenarios.*** Consistent with prior practice (and Commission regulations), high and low load forecast scenarios were developed for the 2018 IRP Forecast. The high and low load forecast scenarios are based on different assumptions of economic, demographic, hotel/motel room and large customer growth than the base forecast. The assumptions for demand response, electric vehicles, and net metering were not varied in these forecasts. The DSM assumptions were consistent with the expected 1 percent goal so both the high and low forecasts have different DSM than the base forecast.

***Required Figures.*** The regulations governing resource planning require that certain figures be included in the IRP Summary. Figures S-5 and S-6 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. Figures S-7 and S-8 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, so is included in the without DSM numbers. Figure S-6 is a summary of the DSM peak MW impacts by program.

**FIGURE S-5  
NEVADA POWER 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
2018	5,498	5,517	5,526	5,722	5,740	5,767
2019	5,491	5,541	5,581	5,775	5,825	5,939
2020	5,523	5,589	5,679	5,875	5,942	6,161
2021	5,551	5,633	5,749	5,963	6,048	6,352
2022	5,551	5,652	5,790	6,022	6,126	6,510
2023	5,572	5,697	5,856	6,110	6,240	6,704
2024	5,608	5,756	5,933	6,202	6,357	6,899
2025	5,626	5,795	5,988	6,281	6,458	7,078
2026	5,646	5,835	6,043	6,352	6,552	7,249
2027	5,671	5,882	6,104	6,435	6,659	7,433
2028	5,683	5,919	6,158	6,512	6,764	7,619
2029	5,700	5,962	6,220	6,591	6,873	7,808
2030	5,728	6,016	6,292	6,668	6,978	7,997
2031	5,750	6,064	6,360	6,747	7,086	8,190
2032	5,770	6,110	6,427	6,819	7,187	8,378
2033	5,795	6,162	6,502	6,899	7,299	8,578
2034	5,794	6,190	6,553	6,967	7,401	8,772
2035	5,804	6,233	6,617	7,036	7,506	8,966
2036	5,827	6,287	6,694	7,106	7,612	9,163
2037	5,833	6,322	6,752	7,164	7,704	9,348
2038	5,851	6,368	6,822	7,240	7,814	9,550

Includes the effects of solar PV

**FIGURE S-6  
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
2018	1,684	1,701	1,701	1,711	1,724	1,727
2019	1,673	1,712	1,733	1,718	1,752	1,777
2020	1,677	1,739	1,785	1,737	1,797	1,846
2021	1,678	1,767	1,854	1,755	1,840	1,933
2022	1,683	1,787	1,948	1,772	1,878	2,043
2023	1,555	1,666	1,872	1,655	1,767	1,980
2024	1,552	1,669	1,880	1,663	1,781	2,000
2025	1,549	1,672	1,885	1,670	1,793	2,018
2026	1,546	1,675	1,890	1,677	1,807	2,037
2027	1,545	1,676	1,894	1,686	1,821	2,056
2028	1,547	1,679	1,906	1,697	1,838	2,078
2029	1,548	1,689	1,914	1,708	1,852	2,099
2030	1,551	1,693	1,924	1,718	1,868	2,120
2031	1,554	1,701	1,934	1,730	1,885	2,142
2032	1,557	1,709	1,946	1,741	1,901	2,165
2033	1,559	1,714	1,958	1,752	1,917	2,187
2034	1,563	1,721	1,971	1,764	1,935	2,212
2035	1,566	1,732	1,983	1,774	1,951	2,234
2036	1,570	1,741	1,999	1,787	1,970	2,262
2037	1,574	1,749	2,011	1,798	1,986	2,285
2038	1,575	1,755	2,024	1,808	2,002	2,307

Includes the effects of solar PV  
All values are Nevada Only.

**FIGURE S-7  
NEVADA POWER LOW, BASE, AND HIGH SALES SCENARIOS  
WITH AND WITHOUT DSM**

Year	SALES (GWH) WITH DSM			SALES (GWH) WITHOUT DSM/DR		
	LOW	BASE	HIGH	LOW	BASE	HIGH
2018	19,943	20,018	20,063	20,102	20,179	20,222
2019	19,933	20,115	20,259	20,321	20,115	20,651
2020	20,021	20,251	20,555	20,641	20,251	21,184
2021	20,183	20,460	20,910	21,037	20,460	21,781
2022	20,203	20,538	21,060	21,291	20,538	22,173
2023	20,282	20,687	21,280	21,603	20,687	22,638
2024	20,378	20,855	21,508	21,935	20,855	23,113
2025	20,407	20,947	21,650	22,198	20,947	23,504
2026	20,446	21,049	21,799	22,472	21,049	23,901
2027	20,484	21,150	21,948	22,745	21,150	24,301
2028	20,543	21,282	22,135	23,040	21,282	24,742
2029	20,568	21,384	22,292	23,301	21,384	25,154
2030	20,575	21,464	22,431	23,544	21,464	25,549
2031	20,588	21,552	22,578	23,794	21,552	25,955
2032	20,625	21,660	22,753	24,067	21,660	26,390
2033	20,621	21,731	22,896	24,299	21,731	26,796
2034	20,624	21,819	23,055	24,539	21,819	27,218
2035	20,631	21,916	23,221	24,783	21,916	27,650
2036	20,665	22,041	23,419	25,054	22,041	28,116
2037	20,657	22,116	23,565	25,283	22,116	28,531
2038	20,677	22,214	23,742	25,540	22,214	28,980

Includes the effects of solar PV

**FIGURE S-8  
SIERRA LOW, BASE, AND HIGH SALES SCENARIOS  
WITH AND WITHOUT DSM**

Year	SALES (GWH) WITH DSM			SALES (GWH) WITHOUT DSM/DR		
	LOW	BASE	HIGH	LOW	BASE	HIGH
2018	8,722	8,807	8,826	8,765	8,857	8,869
2019	8,802	9,042	9,128	8,914	9,164	9,243
2020	8,897	9,295	9,553	9,080	9,492	9,745
2021	8,996	9,557	10,158	9,250	9,831	10,431
2022	9,066	9,777	10,947	9,392	10,129	11,306
2023	8,427	9,167	10,642	8,820	9,592	11,086
2024	7,944	8,705	10,200	8,399	9,199	10,725
2025	7,922	8,702	10,215	8,441	9,267	10,821
2026	7,914	8,713	10,242	8,496	9,348	10,931
2027	7,908	8,726	10,273	8,553	9,432	11,044
2028	7,915	8,751	10,316	8,624	9,529	11,170
2029	7,909	8,759	10,341	8,681	9,608	11,278
2030	7,907	8,771	10,371	8,744	9,693	11,392
2031	7,907	8,786	10,404	8,807	9,779	11,509
2032	7,920	8,815	10,453	8,884	9,880	11,642
2033	7,915	8,826	10,487	8,942	9,963	11,760
2034	7,919	8,849	10,532	9,009	10,059	11,890
2035	7,926	8,874	10,579	9,079	10,156	12,021
2036	7,943	8,911	10,640	9,160	10,266	12,167
2037	7,942	8,927	10,678	9,222	10,356	12,291
2038	7,951	8,955	10,730	9,295	10,457	12,430

Includes the effects of solar PV  
All values are Nevada Only.

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

The DSM portion of the 2018 Joint IRP represents an expansion of program activity over prior plans, and meets the proposed (though not yet approved) statewide energy savings target of 1.1 percent on average over the three-year Action Plan period. Consistent with Senate Bill 150 and Assembly Bill 223 (2017 Nevada Legislature), the Companies are proposing additional programs to:

- Increase annual energy savings to achieve on a joint basis an average of 1.1 percent of the weather normalized retail sales statewide over the three-year Action Plan period;
- Add measures and programs totaling at least 5 percent of the total annual expenditures that are directed towards low income customers; and
- Achieve plan-level cost-effectiveness.

The incremental investment represented by the proposed DSM Plan has a total resource cost (“TRC”) benefits-to-cost ratio of 2.15 and will bring a net benefit of \$296 million to the communities served by the Companies. The Companies also present a modified TRC that considers non-energy benefits. The non-energy benefits TRC (“NTRC”) ratio for the DSM Plan is 2.42. Figure S-9 shows budget dollars and target energy savings for Nevada Power, Sierra, and the combined companies. The Companies are requesting specific acceptance of the budgets and energy savings for the DSM Plans for the Action Plan period

**FIGURE S-9  
Budgets to Reach Statewide Targets**

<b>Nevada Power Company</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Budget	\$49,800,000	\$50,200,000	\$50,600,000
Retail Sales (kWh)	20,272,610,000	20,487,236,000	20,780,182,000
1.1% Target (kWh)	222,998,710	225,359,596	228,582,002
Energy Savings Target (kWh)	266,879,500	258,421,300	260,498,100
<b>% Energy Savings to Retail Sales</b>	<b>1.32%</b>	<b>1.26%</b>	<b>1.25%</b>
<b>Sierra Pacific Power Company</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Budget	\$14,800,000	\$15,500,000	\$16,100,000
Retail Sales (kWh)	9,071,001,000	9,338,156,000	9,613,733,000
1.1% Target (kWh)	99,781,011	102,719,716	105,751,063
Energy Savings Target (kWh)	79,530,500	81,697,000	85,963,400
<b>% Energy Savings to Retail Sales</b>	<b>0.88%</b>	<b>0.87%</b>	<b>0.89%</b>
<b>NV Energy Statewide</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Budget	\$64,600,000	\$65,700,000	\$66,700,000
Retail Sales (kWh)	29,343,611,000	29,825,392,000	30,393,915,000
1.1% Target (kWh)	322,779,721	328,079,312	334,333,065
Energy Savings Target (kWh)	346,410,000	340,118,300	346,461,500
<b>% Energy Savings to Retail Sales</b>	<b>1.18%</b>	<b>1.14%</b>	<b>1.14%</b>

The Companies are proposing to deliver targeted savings by continuing their implementation strategies, which integrate energy efficiency and demand response programs by customer segment. Programs have been bundled into the following offerings: 1) Home Services; 2) Business Services; and 3) Outreach and Product Development. Budgets, savings, and cost-effectiveness have been presented at the program level to provide the same level of transparency as in prior year filings.

Pursuant to NAC § 704.9524(4)(b), the Companies also request that the Commission review and approve the monitoring and verification reports for program year 2017 provided in Technical Appendix DSM-1 through DSM-22.

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

NAC § 704.937(7) 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 Low Carbon case as the Preferred Plan, and the Renewable Case as the Alternative Plan. The Action Plan period resources in each case are listed below.

***Preferred Plan: Low Carbon Intensity plan:*** This is a variation of the renewable plan, and includes the conditional retirement of North Valmy Unit 1 on December 31, 2021.

- Sierra PPAs
  - NextEra – Dodge Flat Solar (200 MW) with battery energy storage (50 MW/200 MWh)
  - NextEra – Fish Springs Ranch (100 MW) with battery energy storage (25 MW/100 MWh)
  - Cypress Creek – Battle Mountain Solar (101 MW) with battery energy storage (25 MW/100 MWh)
- Nevada Power PPAs
  - 8minutenergy – Eagle Shadow Mountain Solar Farm (300 MW)
  - Sempra – Copper Mountain 5 (250 MW)
  - 174 Power Global – Techren V (50 MW)

***Alternative Plan: Renewable Case:*** This case satisfies Sierra’s RPS compliance obligation, and adds additional low-cost renewable power purchase agreements to meet both Companies supply needs.

- Sierra PPAs
  - NextEra – Dodge Flat Solar (200 MW) with battery energy storage (50 MW/200 MWh)
  - NextEra – Fish Springs Ranch (100 MW) with battery energy storage (25 MW/100 MWh)
  - Cypress Creek – Battle Mountain Solar (101 MW) with battery energy storage (25 MW/100 MWh)
- Nevada Power PPAs
  - 8minutenergy – Eagle Shadow Mountain Solar Farm (300 MW)
  - Sempra – Copper Mountain 5 (250 MW)
  - 174 Power Global – Techren V (50 MW)

The substantive difference between the two Cases is whether North Valmy Unit 1 is retired early. The Preferred Plan assumes that North Valmy Unit 1 retires at the end of 2021, and the Alternative Plan assumes that North Valmy Units 1 and 2 retire at the end of 2025. The Preferred Plan does not yield the lowest absolute present worth of revenue requirement (“PWRR”) -- the Alternative Plan results in the lowest PWRR) it is a low-cost plan that, like the Alternative Plan, reduces customer exposure to the price volatility of fossil fuels. With respect to the impact on the State’s

economy, both cases will create an estimated \$2.175 billion investment in Nevada’s clean economy, an estimated 1,785 construction jobs and approximately 76 long-term jobs. Turning to the impact on the environment, as compared to the Alternative Plan, the early retirement of North Valmy Unit 1 assumed in the Low Carbon Case minimizes the impact of NV Energy’s operations on the State, national and global environment. NV Energy selected the Low Carbon Case based the fact that the case is more closely aligned with Nevada’s energy policy and delivers the services our customers value and the potential costs of carbon, while providing significant economic and environmental benefits to Nevada. Selection of the Low Carbon plan advances NV Energy’s commitment to reduce reliance on fossil fuel resources while meeting the electricity needs of Nevada customers in a safe, reliable, and cost effective manner.

Figure S-10 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-10  
NV Energy Loads**

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Gross Peak	7,596	7,786	7,955	8,100	8,110	8,251	8,368	8,483	8,617	8,732	8,858	8,985	9,114	9,252	9,380	9,492	9,619	9,754	9,870	10,009
DSM	86	150	214	281	346	411	478	543	611	678	745	813	881	950	1,018	1,087	1,156	1,226	1,296	1,366
Net Metering	68	91	109	125	141	152	155	160	166	172	176	181	185	192	196	200	206	213	216	221
Demand Response	225	242	262	277	280	284	288	290	302	305	307	303	303	311	310	314	314	308	309	319
<b>NET System Peak</b>	<b>7,217</b>	<b>7,303</b>	<b>7,370</b>	<b>7,417</b>	<b>7,343</b>	<b>7,404</b>	<b>7,447</b>	<b>7,490</b>	<b>7,538</b>	<b>7,577</b>	<b>7,630</b>	<b>7,688</b>	<b>7,745</b>	<b>7,799</b>	<b>7,856</b>	<b>7,891</b>	<b>7,943</b>	<b>8,007</b>	<b>8,049</b>	<b>8,103</b>
Planning Reserves (13%)	938	949	958	944	931	939	944	949	955	960	966	973	980	987	994	999	1,005	1,013	1,018	1,025
<b>REQUIRED RESOURCES</b>	<b>8,155</b>	<b>8,252</b>	<b>8,328</b>	<b>8,361</b>	<b>8,274</b>	<b>8,343</b>	<b>8,391</b>	<b>8,439</b>	<b>8,493</b>	<b>8,537</b>	<b>8,596</b>	<b>8,661</b>	<b>8,725</b>	<b>8,786</b>	<b>8,850</b>	<b>8,890</b>	<b>8,948</b>	<b>9,020</b>	<b>9,067</b>	<b>9,128</b>
<b>AVAILABLE RESOURCES</b>	<b>7,315</b>	<b>7,060</b>	<b>7,168</b>	<b>7,170</b>	<b>7,459</b>	<b>7,459</b>	<b>7,459</b>	<b>7,577</b>	<b>7,567</b>	<b>7,520</b>	<b>7,544</b>	<b>7,387</b>	<b>7,353</b>	<b>7,431</b>	<b>7,411</b>	<b>7,578</b>	<b>7,798</b>	<b>7,461</b>	<b>7,294</b>	<b>7,242</b>
OPEN Position	840	1,192	1,160	1,191	815	884	932	862	926	1,017	1,052	1,274	1,372	1,355	1,439	1,312	1,150	1,559	1,773	1,886
Company	(All)																			
<b>Row Labels</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>
<b>existing</b>																				
NVE.existing.Coal	516	261	261	134	134	134	134	-	-	-	-	-	-	-	-	-	-	-	-	-
NVE.existing.Gas	5,475	5,475	5,475	5,475	5,475	5,475	5,475	5,475	5,475	5,475	5,141	5,093	5,039	4,725	4,725	4,510	4,163	4,091	4,019	4,019
PPA.existing.Conventional	710	710	710	620	271	271	271	271	271	271	271	271	271	259	259	259	259	259	259	259
NVE.existing.Renewable.PV	5	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
PPA.existing.Renewable.PV	270	270	303	228	228	228	228	228	228	228	228	178	178	178	178	178	174	174	154	94
PPA.existing.Renewable.GEO	173	173	172	168	156	156	156	143	133	118	108	67	67	63	7	7	7	7	7	7
NVE.existing.Renewable.WH	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
PPA.existing.Renewable.LFG	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	-	-	-	-	-
PPA.existing.Renewable.CSP	128	128	128	128	128	128	128	128	128	100	100	100	100	100	100	100	100	100	100	100
PPA.existing.Renewable.WIND	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	-	-	-	-	-
PPA.existing.Renewable.HYDRO	9	9	9	9	9	9	9	9	9	5	3	3	3	3	3	3	3	3	3	3
<b>existing Total</b>	<b>7,315</b>	<b>7,060</b>	<b>7,092</b>	<b>6,795</b>	<b>6,434</b>	<b>6,434</b>	<b>6,434</b>	<b>6,287</b>	<b>6,277</b>	<b>6,230</b>	<b>5,884</b>	<b>5,744</b>	<b>5,690</b>	<b>5,360</b>	<b>5,280</b>	<b>5,065</b>	<b>4,714</b>	<b>4,642</b>	<b>4,550</b>	<b>4,483</b>
<b>placeholder</b>																				
PPA.placeholder.renewable.PV	-	-	-	25	75	75	75	75	75	75	88	120	165	215	275	275	275	275	275	290
PPA.placeholder.renewable.GO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	21	21
PPA.placeholder.Gas	-	-	-	-	600	600	600	865	865	865	865	865	865	865	865	865	865	865	600	600
NVE.placeholder.Gas	-	-	-	-	-	-	-	-	-	-	358	358	358	716	716	1,098	1,648	1,648	1,648	1,648
<b>placeholder Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25</b>	<b>675</b>	<b>675</b>	<b>675</b>	<b>940</b>	<b>940</b>	<b>940</b>	<b>1,311</b>	<b>1,343</b>	<b>1,388</b>	<b>1,796</b>	<b>1,856</b>	<b>2,238</b>	<b>2,809</b>	<b>2,544</b>	<b>2,544</b>	<b>2,559</b>
<b>proposed</b>																				
PPA.proposed.Renewable.PV	-	-	50	250	250	250	250	250	250	250	250	200	200	200	200	200	200	200	200	200
PPA.proposed.Renewable.BESS	-	-	25	100	100	100	100	100	100	100	100	100	100	75	75	75	75	75	75	-
<b>proposed Total</b>	<b>-</b>	<b>-</b>	<b>75</b>	<b>350</b>	<b>300</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>200</b>	<b>200</b>							

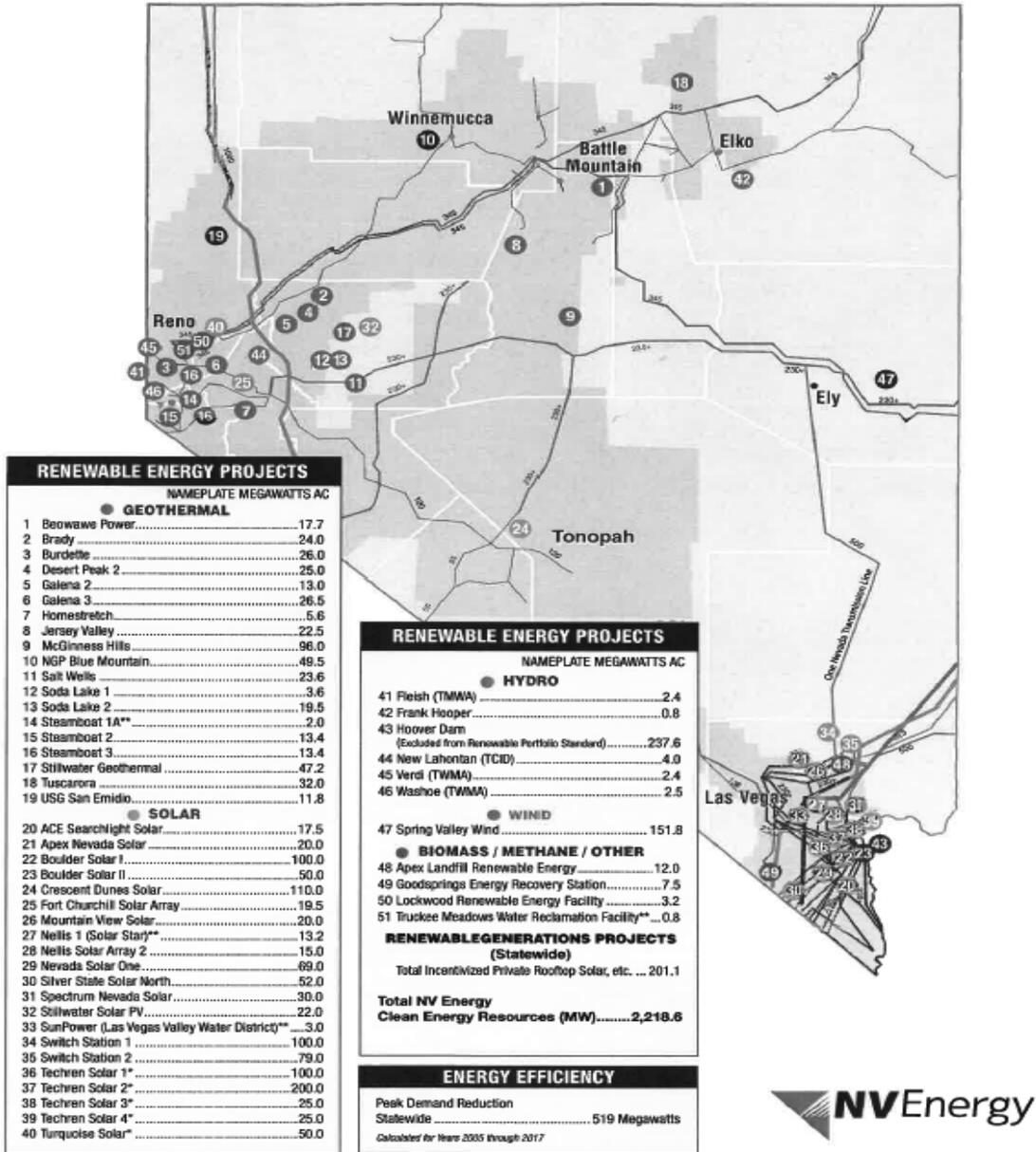
**SECTION VI – SUMMARY OF THE RENEWABLE ENERGY PLAN: NAC § 704.9215(2)(e)**

*Existing Fleet of Renewable Resources.* Nevada is fortunate to have significant and varying renewable resources, including some of the most abundant solar and geothermal potential in the nation. Through a combination of long-term purchased power agreements (“PPAs”) and company-owned facilities, the Companies have built a diverse and robust portfolio of renewable projects.

As of June 1, 2018, Nevada Power had approximately 1,017 MW (nameplate, ac) of renewable generating resources operating and delivering renewable energy to meet the energy needs of its customers. Two additional projects, the 100 MW Techren Solar I (nameplate ac), and 25 MW Techren Solar III (nameplate ac) solar PV facilities are under contract and in the development pipeline. As of June 1, 2018, Sierra had approximately 344 MW (nameplate ac) of renewable generating resources operating and delivering renewable energy to meet the energy needs of its customers. Two additional Commission-approved resources, Techren's 200 MW Solar II project (nameplate ac) and Techren's 25 MW Solar IV project (nameplate ac), are under contract in the development pipeline. Techren Solar II is expected to declare commercial operation in July 2019, and Techren Solar IV is expected to declare commercial operation in late Q3 2020.

Figure S-11 below is a map showing the location of all 51 of the renewable energy projects that currently make up Nevada Power's and Sierra's renewable energy portfolios. Figures S-12 and S-13 list the renewable energy resources under long-term contract with Nevada Power and Sierra. These tables show not only the counter-party names, source, capacity, commercial operation date and termination date, but also the anticipated remaining cost of each agreement.

# FIGURE S-11 RENEWABLE ENERGY PROJECTS OWNED OR UNDER CONTRACT NV Energy's Clean Energy Commitment



\* Pending regulatory approval, in development or under construction.  
\*\* Portfolio credits only



Updated 03-07-2018

**FIGURE S-12**  
**NEVADA POWER LONG-TERM PURCHASE POWER AGREEMENTS**

Contract Name	Contract Type	Capacity (MW)	Commercial		Anticipated Remaining Cost
			Operation Date	Termination Date	
<b>Renewable Purchase Agreements</b>					
<b>PPAs (Commercial)</b>					
ACE Searchlight <sup>QF</sup>	Solar <sup>S</sup>	17.5	12/16/2014	12/31/2034	\$ 117,047,000
APEX Landfill <sup>QF</sup>	Methane	12.0	3/1/2012	12/31/2032	\$ 80,248,000
Boulder Solar I <sup>EWG</sup>	Solar <sup>S</sup>	100.00	12/9/2016	12/31/2036	\$ 233,562,000
Colorado River Commission-Hoover <sup>(RPS Excluded)</sup>	Hydro	237.6	10/1/2017	9/30/2067	\$ 876,337,000
Desert Peak 2 <sup>QF</sup>	Geothermal	25.0	4/17/2007	12/31/2027	\$ 45,585,000
FRV Spectrum <sup>QF</sup>	Solar <sup>S</sup>	30.0	9/23/2013	12/31/2038	\$ 193,736,000
Galena 2 <sup>QF</sup>	Geothermal	13.0	5/2/2007	12/31/2027	\$ 24,616,000
Jersey Valley <sup>QF</sup>	Geothermal	22.5	8/30/2011	12/31/2031	\$ 70,645,000
McGinness Hills <sup>QF</sup>	Geothermal	96.0	6/20/2012	12/31/2032	\$ 878,921,000
Mountain View <sup>EWG</sup>	Solar <sup>S</sup>	20.0	1/5/2014	12/31/2039	\$ 149,838,000
Nevada Solar One (NPC) <sup>QF</sup>	Solar <sup>T</sup>	46.9	6/27/2007	12/31/2027	\$ 150,123,000
NGP Blue Mountain <sup>QF</sup>	Geothermal	49.5	11/20/2009	12/31/2029	\$ 248,033,000
RV Apex <sup>QF</sup>	Solar <sup>S</sup>	20.0	7/21/2012	12/31/2037	\$ 157,356,000
Salt Wells <sup>QF</sup>	Geothermal	23.6	9/18/2009	12/31/2029	\$ 83,443,000
Silver State <sup>EWG</sup>	Solar <sup>F</sup>	52.0	4/25/2012	12/31/2037	\$ 364,841,000
Spring Valley <sup>EWG</sup>	Wind	151.8	8/16/2012	12/31/2032	\$ 541,239,000
Stillwater Geothermal <sup>1,QF</sup>	Geothermal	47.2	10/10/2009	12/31/2029	\$ 132,784,000
Stillwater PV <sup>1,QF</sup>	Solar <sup>F</sup>	22.0	3/5/2012	12/31/2029	\$ 55,941,000
Switch Station 1 <sup>EWG</sup>	Solar <sup>S</sup>	100.00	8/8/2017	12/31/2037	\$ 296,959,000
Tonopah Crescent Dunes <sup>EWG</sup>	Solar <sup>T</sup>	110.0	11/9/2015	12/31/2040	\$ 1,189,466,000
Tuscarora <sup>QF</sup>	Geothermal	32.0	1/11/2012	12/31/2032	\$ 197,303,000
WM Renewable Energy-Lockwood <sup>QF</sup>	Methane	3.2	4/1/2012	12/31/2032	\$ 31,803,000
		1231.8			
<b>PC Purchase Agreements</b>					
NPC-SPPC	Geothermal	2.3	10/30/2009	12/31/2028	\$ 5,397,000
Nellis I (Solar Star)	Solar	13.2	12/15/2007	12/31/2027	\$ 59,750,000
SunPower (LVVWD)	Solar	3.0	4/20/2006	12/31/2026	\$ 8,744,000
		18.5			
<b>PPAs (Pre-Commercial)<sup>2</sup></b>					
Techren I <sup>EWG</sup>	Solar <sup>S</sup>	100.0	1/1/2019	12/31/2043	\$ 299,153,000
Techren III <sup>QF</sup>	Solar <sup>S</sup>	25.0	9/1/2020	12/31/2045	\$ 57,021,000
		125.00			
<b>Non-Renewable Purchase Agreements</b>					
Nevada Cogeneration Associates #1 <sup>QF</sup>	Natural Gas	85.0	6/18/1992	4/30/2023	\$ 306,906,000
Nevada Cogeneration Associates #2 <sup>QF</sup>	Natural Gas	85.0	2/1/1993	4/30/2023	\$ 232,225,000
Saguaro Power Company <sup>QF</sup>	Natural Gas	90.0	10/17/1991	4/30/2022	\$ 201,865,000
		260.0			
<b>Renewable and Non-Renewable Sales Agreements</b>					
City of Las Vegas NGR (Boulder Solar I)	NGR Agreement (Sale of PCs)	See Note 3	12/9/2016	12/31/2019	-
Switch NGR (Switch Station 1)	NGR Agreement (Sale of PCs)	100.0	8/8/2017	12/31/2037	-
Notes:					
1. The geothermal and solar facilities are combined into <u>one</u> PPA.					
2. Facilities are either under development or construction (the dates shown are expected dates).					
3. NPC shall sell 43,200 kPCs for three years .					
QF=Qualifying Facility, EWG=Exempt Wholesale Generator, S=Single Axis Tracking, T=Solar Thermal (Tracking), F=Fixed Tilt					

**FIGURE S-13**  
**SIERRA'S LONG-TERM PURCHASE POWER AGREEMENTS**

Contract Name	Contract Type	Capacity (MW)	Commercial	Termination Date	Anticipated Remaining Cost
			Operation Date		
<b>Renewable Energy</b>					
<b>PPAs (Commercial)</b>					
Beowawe <sup>QF</sup>	Geothermal	17.7	4/21/2006	12/31/2025	\$ 47,186,000
Boulder Solar II <sup>EWG</sup>	Solar <sup>S</sup>	50.0	1/27/2017	12/31/2037	\$ 137,754,000
Brady <sup>QF</sup>	Geothermal	24.0	7/30/1992	7/29/2022	\$ 16,295,000
Burdette <sup>QF</sup>	Geothermal	26.0	2/28/2006	12/31/2026	\$ 71,379,000
Galena 3 <sup>QF</sup>	Geothermal	26.5	2/21/2008	12/31/2028	\$ 99,698,000
Hooper <sup>1,QF</sup>	Hydro	0.75	6/23/2016	12/31/2040	\$ 1,374,000
Kingston <sup>1</sup>	Hydro	0.175	9/19/2011	12/31/2040	\$ 256,000
Mill Creek <sup>1</sup>	Hydro	0.037	9/1/2011	12/31/2040	\$ 5,000
Nevada Solar One (SPPC) <sup>QF</sup>	Solar <sup>T</sup>	22.1	6/27/2007	12/31/2027	\$ 70,613,000
RO Ranch <sup>1,2</sup>	Hydro	0	3/15/2011	12/31/2040	\$ -
Soda Lake II <sup>QF</sup>	Geothermal	19.5	8/4/1991	8/4/2021	\$ 6,537,000
Steamboat 2 <sup>QF</sup>	Geothermal	13.4	12/13/1992	12/12/2022	\$ 19,838,000
Steamboat 3 <sup>QF</sup>	Geothermal	13.4	12/19/1992	12/18/2022	\$ 21,454,000
Switch Station 2 (SPPC) <sup>EWG</sup>	Solar <sup>S</sup>	79.0	10/11/2017	12/31/2037	\$ 209,459,000
TCID New Lahontan <sup>QF</sup>	Hydro	4.0	6/12/1989	6/11/2039	\$ 8,569,000
TMWA Fleish	Hydro	2.4	5/16/2008	6/1/2028	\$ 7,580,000
TMWA Verdi	Hydro	2.4	5/15/2009	6/1/2029	\$ 7,461,000
TMWA Washoe	Hydro	2.5	7/25/2008	6/1/2028	\$ 5,319,000
USG San Emidio <sup>QF</sup>	Geothermal	11.75	5/25/2012	12/31/2037	\$ 146,676,000
		315.6			
<b>Leased Units</b>					
Fort Churchill Solar	Solar <sup>S</sup>	19.5	8/5/2015	8/4/2040	\$ 69,000,000
<b>PC Purchase Agreement</b>					
TMWRF	Methane	0.8	9/9/2005	12/12/2024	\$ 230,000
<b>PPAs (Pre-Commercial)<sup>3</sup></b>					
Techren II <sup>EWG</sup>	Solar <sup>S</sup>	200.0	7/1/2019	12/31/2044	\$ 567,165,000
Techren IV <sup>QF</sup>	Solar <sup>S</sup>	25.0	9/1/2020	12/31/2045	\$ 57,009,000
Turquoise	Solar <sup>F</sup>	50.0	11/1/2020	12/31/2045	\$ 107,487,000
		275.00			
<b>Non-Renewable Purchase Agreements</b>					
Newmont Nevada Energy Investment	Coal	179.0	6/1/2008	5/31/2023	\$ 40,815,000
Liberty (CalPeco) EBSA	Diesel	12.0	1/1/2011	12/31/2031	\$ 17,232,000
		191.0			
<b>Renewable &amp; Non-Renewable Sales Agreements</b>					
Liberty (CalPeco)	Full Requirements (Capacity/Energy/PCs)	See Note 4	1/1/2016	4/30/2019	-
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) <sup>3</sup>	NGR Agreement (Sale of PCs)	200.0	7/1/2019	12/31/2044	-
Apple NGR (Turquoise) <sup>3</sup>	NGR Agreement (Sale of PCs)	50.0	11/1/2020	12/31/2045	-
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).					
QF=Qualifying Facility, EWG=Exempt Wholesale Generator, S=Single Axis Tracking, T=Solar Thermal (Tracking), F=Fixed Tilt					

**RPS Compliance Outlooks.** Compliance with Nevada’s RPS is mandated by statute, and planning to comply with the RPS requires a significant planning effort. 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 currently is set at 20 percent, meaning that not less than 20 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 22 percent in 2020, before increasing to 25 percent in 2025. The RPS relies on a Portfolio Credit or “PC” system, and contains a solar “carve out” that requires that a minimum of 6 percent of the overall PC requirement be met with PCs from solar resources. The RPS has also been amended to phase out PCs from demand side measures (including demand response programs), and authorizes PCs for station usage from only geothermal power plants.

Nevada Power and Sierra both exceeded their respective 2017 RPS requirements, as well as the 2017 solar requirements. Nevada Power ended 2017 with RPS compliance of 23.1 percent of retail sales, with 44.5 percent of those PCs sourced from solar thermal and PV. Sierra ended 2017 with RPS compliance of 25.5 percent of retail sales, with 31.0 percent of those PCs sourced from solar thermal and PV.

**Nevada Power RPS Compliance.** The compliance outlook for Nevada Power can best be summarized as positive, but there are risks that could shift Nevada Power’s compliance outlook to tenuous. The primary reason for this caution is the Crescent Dunes facility. Since declaring commercial operation in late 2015, Crescent Dunes has experience frequent and prolonged outages. The current outlook for Crescent Dunes reduces the expected amount of energy from this plant by 75 percent in 2019, 50 percent in 2020, and 25 percent in 2021. Nevada Power does not have enough PC reserves or sufficient new renewable capacity in the pipeline to overcome lasting, multi-year PC shortfalls from Crescent Dunes. Nevada Power is positioned to meet its future PC commitments (RPS compliance, Nevada GreenEnergy Rider (“NGR”) agreements, Sierra PC-pool repayments, and NRS Chapter 704B obligations). However, experience has shown that renewable projects, both operating and pipeline, can be unpredictable. Even if Crescent Dunes is able to resolve all of its operating issues, issues may arise with other renewable resources, or attrition of projects may impact compliance.

Nevada Power is seeking the approval of three PPAs totaling approximately 600 MW in this 2018 Joint IRP.<sup>2</sup> This additional renewable capacity will not only address potential performance uncertainty associated with Crescent Dunes, it also allows Nevada Power to take advantage of current favorable renewable pricing for the benefit its customers. Approval of these agreements will safeguard Nevada Power’s ability to meet its future RPS obligations under current law, and positions it to achieve its goal of going above and beyond the RPS by making renewable energy a significant component of its energy supply strategy. If approved, the three PPAs will also allow Nevada Power be ahead of the curve when it comes to realigning its generating portfolio in anticipation of potential increases to the current RPS requirement.

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<sup>2</sup> IRP Renewable Case, Eagle Shadow Mountain Solar (300 MW), Copper Mountain 5 (250 MW) and Techren V (50 MW)

**Sierra RPS Compliance.** The compliance outlook for Sierra is less certain. Sierra’s current renewable portfolio simply does not generate enough PCs to sustain its future RPS compliance. This is due to expiring long-term contracts for which replacement contracts have not been secured. Sierra can manage this situation in the short term by drawing down on PCs banked from prior years and by utilizing PC repayments from Nevada Power. However, by 2021, the credit bank will be drawn down to near zero (27,000 kPCs), and Nevada Power will have fully repaid its credit obligation to Sierra. To address the impending PC shortfall, Sierra is seeking the approval of approximately 401 MW of new renewable generation in this filing.<sup>3</sup> This new generation is projected to declare commercial operation in mid-to-late 2021, which will ensure Sierra’s compliance with the RPS.

Similar to Nevada Power, the 401 MW is more than what is required for Sierra to maintain RPS compliance. However, approval of the three PPAs not only safeguards Sierra’s ability to meet its future RPS obligations under current law, it also positions Sierra to achieve its objective of going above and beyond the RPS by making renewable energy a significant component of its energy delivery strategy. The additional renewable generation also allows Sierra to get ahead of the curve when it comes to realigning its generating portfolio in anticipation of potential increases to the current RPS requirement.

**NV Energy RPS Compliance.** Nevada Power and Sierra will continue to closely monitor their RPS compliance outlook recognizing that there are a myriad of factors, many outside of the Companies’ control, which ultimately determine whether the Companies will have a sufficient number of PCs to satisfy their RPS credit obligations. The objective is to never be put into a reactive position where the Companies must acquire a large number of PCs in a short time frame in order to maintain compliance.

**Renewable Resource Additions.** The Companies have clearly articulated their goal of doubling their renewable generating portfolio by 2023. From this perspective, they view Nevada’s RPS as a floor, rather than a ceiling, especially where renewable energy products compete strongly on price. As a result of the 2018 Renewable RFP, a competitive solicitation process that began in early 2018 and concluded with this 2018 Joint IRP filing, the Companies negotiated six renewable PPAs with five renewable developers for 1,001 MW of solar PV resource, plus 100 MW of battery storage. All six PPAs appear in the Preferred Plan.

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

Pursuant to NAC § 704.9061, an “Energy Supply Plan” (“ESP”) means a plan that:

1. Establishes the parameters of an energy supply portfolio for a utility for the three-year period covered by its Action Plan and which balances the objectives of:
  - a) Minimizing the cost of supply;

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<sup>3</sup> IRP Renewable Case, Dodge Flat Solar (200 MW), Fish Springs Ranch Solar (100 MW) and Battle Mountain Solar (101 MW)

- b) Minimizing retail price volatility; and
  - c) Maximizing the reliability of energy supply over the term of the energy supply plan; and
2. Is composed of a purchased power procurement plan, fuel procurement plan and risk management strategy.

Pursuant to NAC § 704.9494, the Commission can determine that the 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 2018 ESP is based on a specially prepared short-term load forecast. The 2018 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 Plan.** Based on the 2018 ESP load forecast (“2018 ESP Forecast”), both Companies have open power positions in summer 2019, 2020 and 2021. Open positions in the spring or fall period of each year are “maintenance-driven,” rather than “load-driven,” and occur during lower system load conditions when wholesale power market supplies are generally available. The Companies propose to close their respective 2019 summer open positions and a portion of the 2020 summer open positions with firm products prior to summer 2019. Thereafter, the Companies propose to implement a four-season laddering strategy to close the remaining 2020 and 2021 open power positions with physical power and/or capacity acquired through a competitive bidding process. 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.

Additionally, the Companies monitor the portfolio seasonally, monthly, weekly, daily, and hourly, and when economic, seek to make short-term and forward sales of resources not expected to be needed to serve native load. This practice will be continued over the 2018 ESP period.

The Companies anticipate meeting its RPS credit obligations throughout the 2018 ESP planning period. This 2018 ESP incorporates the current regulations governing the Companies’ ability to use PCs to meet the RPS and the calculation of the PCs. The plan also contemplates that Nevada Power will continue repaying its outstanding credit obligation to the joint pool for the benefit of Sierra.

For more detail on purchased power procurement plan, see Section 4 of the 2018 ESP.

**Fuel Procurement Plan.** The fuel procurement plan is made up of four components: (1) a physical gas procurement plan, (2) a gas transportation plan, (3) a gas hedging plan and (4) a coal procurement plan.

**Physical Gas Procurement Plan.** The Companies will continue to employ a four-season laddering strategy for physical gas purchases, through which 25 percent of projected monthly gas requirements per season are procured, subject to the availability of conforming bids and the willingness of suppliers to accept reasonable commercial terms. The Companies will continue to solicit physical gas supplies sourced from geographically diverse gas supply basins.

**Gas Transportation Plan.** The Companies are seeking approval to maintain their current natural gas transportation portfolios. At Sierra, 26 transportation and storage contracts expire in 2019 and 2020. Sierra will rely on rights of first refusal and annual evergreen rights under its contracts and pipeline tariffs to keep existing gas transport capacity rights in place.

**Gas Hedging Plan.** The Companies are proposing to continue the current approved hedging strategy and acquire no natural gas hedging products during the 2018 ESP 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.

**Coal Procurement Plan.** Nevada Power's coal fleet will be fully retired as of January 1, 2019. Therefore, Nevada Power will no longer procure coal or coal transportation. The coal requirements for Sierra's North Valmy station are greatly reduced since Valmy has been utilized only as a seasonal resource. Accordingly, Valmy's coal requirements will be filled via spot market solicitations through RFPs transmitted to a list of qualified suppliers. In order to minimize the total cost of Valmy's coal supply, the Companies will not issue an RFP for a long-term coal supply contract.

**Risk Management Strategy.** The Companies' risk management strategy includes:

- Detailed corporate governance and risk control policies and procedures;
- Compliance with approved supply plans;
- Reduced reliance on volatile wholesale markets;
- Use of competitive procurement processes;
- Gas hedging strategies; and
- Market monitoring.

**Risk Control** measures the Companies' energy portfolios against specific criteria, including transaction approval limits, test period mark-to-base, value at risk, and credit risk limits. Specific measurements are compared to the approved exposure notification thresholds. Reports are prepared to identify, track and report compliance with the Companies' risk policies.

**Credit Risk** is managed by reviewing potential transactions with counterparties to make sure they comply with credit limits. All potential transactions are reviewed to determine the credit ratings, policy limits based on credit ratings, the current mark-to-market exposure of all current transactions, and whether the potential credit exposure calculations are within the company policy limits.

**Three Prudence Findings.** The ESP regulations require the Commission to make three findings regarding the Companies’ 2018 ESP. These three findings, as well as a summary of the evidence presented in support of these findings, follows.

**Finding One: 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 the plan.** Based on results of production cost analysis, the estimated cost-to-serve for the recommended unhedged scenario under base, high, and low fuel and purchased power pricing scenarios is set forth in Figure S-14.

**FIGURE S-14  
ESTIMATED COST TO SERVE (IN \$000)\***

TOTAL FUEL AND PURCHASED POWER (F&PP) COSTS, EXCLUDING FIXED & VARIABLE OPERATIONS AND MAINT (UNHEDGED)			
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)
2019	\$902,613	\$1,058,457	\$1,294,605
2020	\$981,908	\$1,122,204	\$1,333,363
2021	\$1,040,580	\$1,223,146	\$1,502,727

Residential, commercial and industrial customers have been clear that they want Nevada Power and Sierra to serve them with more renewable energy without impacting the costs they pay. Nevada Power and Sierra have listened, as is demonstrated by their strategic plan to double their renewable energy resources by 2023, without increasing bundled rates. The 2018 Joint IRP and 2018 ESP demonstrates just how Nevada Power and Sierra intend to meet the pace of economic growth in both northern and southern Nevada, rely more on renewable energy, and keep rates low. The overarching goal of the 2018 Joint IRP and 2018 ESP is to meet growth and shrink customers’ exposure to natural gas prices by delivering more low-cost renewable energy to customers. If approved, the 2018 Joint IRP and 2018 ESP will further accelerate Nevada’s transition to a cleaner energy future, using new long-term commitments with committed and capable renewable companies to support over a gigawatt of new Nevada-based renewable energy resources, shoring up the Companies’ transmission infrastructure, and increasing investment in energy efficiency programs.

The Companies also calculated the projected Base Tariff Energy Rates (“BTERs”) and Deferred Energy Accounting Adjustment (“DEAA”) rates for 2019-2021 under the low, base, and high fuel and purchased power price forecasts.

The expected cost-to-serve and BTERs remain within a reasonable band under the Company's proposed procurement strategies. The 2018 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 2018 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.

***Finding Two: This ESP optimizes the value of the overall supply portfolio of the utility for the benefit of its bundled retail customers.*** The Companies will continue to monitor and adjust the power portfolio in order 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, as specified in the Energy Risk Management and Control Policy. 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 RFPs, as specified in the Forward Sales Procedures Manual.

***Finding Three: This ESP does not contain any feature or mechanism that would impair the restoration of the creditworthiness of the utility or would lead to a deterioration of the creditworthiness of the utility.*** 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 2018 ESP without impairing its creditworthiness, assuming flexibility to manage its capital structure and timely recovery under the Commission's current rate recovery mechanisms.

## **SECTION VIII – A SUMMARY OF THE ACTIVITIES, ACQUISITIONS, AND COSTS INCLUDED IN THE ACTION PLAN OF THE UTILITY: NAC § 704.9215(2)(g)**

The Companies seek Action Plan approval of a number of items, which in order to implement the Preferred Plan, must be taken within the Action Plan period January 1, 2019 through December 31, 2021. The Companies also seek Commission approval of actions as described in the Energy Supply Plan, which will be undertaken during the 2018 ESP period January 1, 2019 through December 31, 2021. The Action Plan, which is also an exhibit to the Application, is reproduced in its entirety and the end of this Summary Volume.

## **SECTION IX – INTEGRATED EVALUATION: NAC § 704.9215(2)(h)**

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 § 704.9357(3))
- The Present Worth of Societal Costs for each alternative (see NAC § 704.9357(4))

- Whether the plan mitigates risk (see NAC § 704.9357(5))
- Whether the plan provides adequate reliability (see NAC § 704.9357(6)(a))
- Regulatory and financial constraints (see NAC § 704.9357(6)(b))
- Whether the plan meets the RPS (see NAC § 704.9357(6)(c))
- Whether the plan meets the requirements for environmental protection (see NAC § 704.9357(6)(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 and the renewable energy 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 five alternative plans for meeting its projected needs for incremental capacity and energy.

This 2018 Joint IRP is clearly consistent with the Companies’ strategic plan to double renewable energy resources by 2023 without increasing bundled rates. The 2018 Joint IRP offers a concrete plan to meet the pace of economic growth in both northern and southern Nevada while relying more on renewable energy, and keeping bundled retail rates low. The overarching goal of this 2018 Joint IRP is to meet growth and shrink customers’ exposure to natural gas prices by delivering more low-cost renewable energy to customers. If approved, the 2018 Joint IRP will further accelerate Nevada’s transition to a cleaner energy future, putting into action long-term commitments with respected and capable renewable companies that support \$2.175 *billion* of investment in over a gigawatt of progressive, clean energy resources located in Clark, Humboldt and Washoe counties.

## APPENDIX A TO SUMMARY VOLUME

### ACTION PLAN

Nevada Power Company d/b/a NV Energy  
Sierra Pacific Power Company d/b/a NV Energy

2018 Joint Integrated Resource Plan  
Docket No. 18-06\_\_\_\_\_

**Action Plan Period January 1, 2019 to December 31, 2021**

### SECTION I

#### INTRODUCTION — NAC § 704.9489(1)(a)

Nevada Power Company (“Nevada Power”) and Sierra Pacific Power Company (“Sierra” and together with Nevada Power the “Companies” or “NV Energy”) are filing this first joint integrated resource plan (“2018 Joint IRP”). Senate Bill 146 from the 2017 Legislature required the Companies to file a joint plan for both utilities on or before June 1, 2018. The 2018 Joint IRP is guided by the Companies’ six core principles: customer service, employee commitment, environmental respect, regulatory integrity, operational excellence, and financial strength. In addition, the 2018 Joint IRP furthers the Companies’ strategic plan to double their use of renewable energy while maintaining, and not increasing, their bundled retail rates. In determining their Preferred Plan and preparing its Action Plan, the Companies developed four long-term primary expansion cases for meeting customers’ demands,<sup>1</sup> and tested them to determine how each performed across the range of potential load, purchased power price, fuel price and carbon cost scenarios. Assuming that Question 3 is not successful in the November 2018 election, the Companies have selected as their Preferred Plan the Low Carbon Case, the centerpiece of which is:

- 1) The expansion of the Companies’ demand side management (“DSM”) programs to deliver statewide energy savings of at least 1.1 percent of the weather normalized retail sales over the Action Plan period.
- 2) The addition of 1,001 MW of renewable energy sourced from six new solar photovoltaic (“PV”) purchased power agreements (“PPAs”) and three new co-located battery storage projects; and

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<sup>1</sup> A fifth case was constructed for the purposes of short-term planning. This case was only evaluated over five years and is the Companies’ preferred plan in the event voters approve Question 3 in November 2018.

- 3) The early retirement of the North Valmy Unit 1, by December 31, 2021, provided that certain specified conditions are met.

A complete list of all Action Plan items follows in Section II.

Residential, commercial and industrial customers have been clear that they want Nevada Power and Sierra to serve them with more renewable energy without impacting the costs they pay. Nevada Power and Sierra have listened, as is demonstrated by their strategic plan to double their renewable energy resources by 2023, without increasing bundled rates. This 2018 Joint IRP demonstrates just how the Companies intend to meet the pace of economic growth in both northern and southern Nevada, rely more on renewable energy, and keep rates low. The overarching goal of this 2018 Joint IRP is to meet growth and shrink customers' exposure to natural gas prices by delivering more low-cost renewable energy to customers. If approved, the 2018 Joint IRP will further accelerate Nevada's transition to a cleaner energy future, using new long-term commitments with committed and capable renewable companies to add over a gigawatt of new Nevada-based renewable energy resources, shoring up the Companies' transmission infrastructure, and increasing investment in energy efficiency programs.

## **SECTION II**

### **ACTION PLAN ITEMS — NAC § 704.9489(1)(b)**

#### ***LOAD FORECAST – IRP & ESP***

- Approval of the long-term base load forecast presented in the Load Forecast and Market Fundamentals volume of this filing as being the most accurate information upon which to base long-term planning decisions through the Action Plan period.
- Approval of the three-year base load forecast presented in the 2018 Energy Supply Plan (“2018 ESP”) as being the most accurate information upon which to base near-term planning decisions through the Action Plan period.

#### ***FUEL AND PURCHASED POWER PRICE FORECASTS – IRP & ESP***

- Approval of the base long-term fuel and purchased power forecasts presented in FPP-1 as presenting the best and most accurate information upon which to base long-term planning decisions through the Action Plan period.
- Approval of the base three-year fuel and purchased power forecast presented in the 2018 ESP as presenting the best and most accurate information upon which to base near-term planning decisions through the Action Plan period.

***GENERATION – IRP***

- Approval of the Companies’ Preferred Plan, which does not include the acquisition or construction by the Companies of new generation resources.
- Assuming that Ballot Question 3 is not successful in the November 2018 election, approval of the early (December 31, 2021) retirement of Valmy Unit 1, conditioned on the following:
  1. The PPAs for the output of the three new northern Nevada renewable energy projects and stationary storage projects included in Low Carbon Case must be approved by the Commission and then must demonstrate sufficient development progress to ensure commercial operation before June 2022.
  2. NV Energy must have adequate capacity to serve customer load, which will be determined using, at a minimum,<sup>2</sup> the following metrics:
    - a. “Loss of Load Probability.” For any given hour, an increase in the LOLP by more than 100% would trigger the reevaluation of the North Valmy Unit 1 retirement.
    - b. “Expected Unserved Energy.” Any megawatt-hour increase in expected unserved energy under the North Valmy Unit 1 retirement scenario would trigger a reevaluation of the retirement.
    - c. “Loss of Load Expectation.” This metric does not exceed the one day in 10 year criterion.
  3. Conditions in the western energy markets must be such that NV Energy has sufficient access to economic energy and capacity to mitigate the cost pressure and reduction in flexibility associated with having power available from North Valmy Unit 1. While the present worth revenue requirement difference between the Low Carbon and Renewable Cases is relatively small, the Companies will monitor the production cost impact of any North Valmy Unit 1 retirement on retail rates and reevaluate the retirement decision if the retirement of North Valmy Unit 1 increases Base Tariff Energy Rates by more than \$0.00250 per kilowatt-hour versus the non-retirement scenario.
  4. Transmission area load of 2,800 MW will trigger a re-evaluation and, possibly, delay of the retirement of North Valmy Unit 1.
  5. Approval of the request, made consistent with the tracking and accounting systems put in place at the Companies’ other retired generating facilities, the costs of decommissioning the North Valmy Generating Station, including those incurred to isolate and make safe North Valmy Unit 1, will be tracked and placed into a regulatory

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<sup>2</sup> Because real-time system reliability is paramount, additional analysis similar to that developed by the CAISO may be used by NV Energy to assess real-time reliability risk.

- asset, and a carrying charge equal to Sierra's currently approved cost of capital would be applied. Upon completion of decommissioning, the balance in the regulatory asset will be placed into rate base. Sierra will apply in a future proceeding to collect the balance over an appropriate amortization period.
6. Approval of the request, also made consistent with the tracking accounting treatment authorized in prior dockets, upon its retirement, the undepreciated book value of North Valmy Unit 1 will be placed into a regulatory asset where it would not earn a carrying charge. Instead, until it is included in Sierra's revenue requirement, Sierra will amortize the regulatory asset balance using the depreciation rate for North Valmy Unit 1 at the time of its retirement. When the balance in the regulatory asset is included in revenue requirement, it will be placed into rate base. Sierra will apply in a future proceeding to collect the balance over an appropriate amortization period.
- Approval of the changes in the retirement dates of company-owned generating facilities as recommended in analysis completed pursuant to the Life Span Analysis Process;
  - Approval the Companies' request to deviate from the requirements of NAC § 704.9496 and to instead establish the Companies' long-term avoided cost rates in a single step, using the pricing from the highest cost 50 MW bid selected in the recent 2018 Renewable RFP (the Techren Solar V project, described below) to cap the Companies' administratively determined long-term avoided cost. This long-term avoided cost rate would be made available for up to 50 MW (nameplate, AC) of renewable resource for contracts up to 25 years, provided that, if Ballot Question 3 is successful in November 2018, the contract term would not extent beyond 2023.

### ***RENEWABLES – IRP***

- Assuming that Ballot Question 3 is not successful in the November 2018 election, approval of 1,001 MW of renewable PPAs, which will be provided from six new solar PV projects, three of which located in Sierra's service territory, and three of which are located in Nevada Power's service territory. As is described below, battery storage capacity is being co-located at the three projects located in Sierra's service territory. Each PPA is described briefly below:
  1. Sierra's PPA with NextEra's **Dodge Flat Solar**, LLC for 200 MW (nameplate, AC) of solar PV generation, with an additional 50 MW of capacity from a co-located battery storage system. The expected Commercial Operation Date ("COD") is December 1, 2021.
  2. Sierra's PPA with NextEra's **Fish Springs Ranch Solar**, LLC for 100 MW (nameplate, AC) solar PV generation, with an additional 25 MW of capacity from a co-located battery storage system. The expected COD is December 1, 2021.

3. Sierra's PPA with Cypress Creek Renewables' **Battle Mountain Solar SP**, LLC for 101 MW (nameplate, AC) solar PV generation, with an associated 25 MW of capacity from a co-located battery storage system. The expected COD is June 1, 2021.
  4. Nevada Power's PPA with 8minutenergy's 325MK 8ME, LLC for 300 MW (nameplate, AC) of solar PV generation from the **Eagle Shadow Mountain Solar Farm**, with an expected COD of December 31, 2021.
  5. Nevada Power's PPA with Sempra's **Copper Mountain Solar 5**, LLC for 250 MW (nameplate, AC) of solar PV generation, with an expected COD of December 31, 2021.
  6. Nevada Power's PPA with 174 Power Global's **Techren Solar V**, LLC for 50 MW (nameplate, AC) of solar PV generation, with an expected COD of December 31, 2020.
- Assuming that Ballot Question 3 is successful in the November 2018 election, approval of the lowest cost PPA among the six listed above, which is Nevada Power's PPA with 8minutenergy's 325MK 8ME, LLC, as well as the assignment of the PPA to Sierra. With this PPA, Sierra will be able to maintain compliance with Nevada's Renewable Portfolio Standard ("RPS") beyond December 31, 2021.

#### ***TRANSMISSION — IRP***

- Assuming that Ballot Question 3 is not successful in the November 2018 election, approval to construct the facilities necessary to interconnect the six renewable energy projects identified above to the Companies' transmission system. Network upgrades will be necessary to complete the interconnection of four of the six projects. The costs of these network upgrades, which while secured by the project developers but which will eventually be reflected in cost of service are:
  - Dodge Flat Solar \$12.565 million,
  - Fish Springs Ranch \$2.38 million,
  - Eagle Shadow Mountain Solar Farm \$550,000, and
  - Copper Mountain 5 \$7.44 million.
- Assuming that Ballot Question 3 is successful in the November 2018 election, approval to construct the facilities necessary to interconnect the lowest cost of the six renewable energy projects identified above, the 8minutenergy Eagle Shadow Mountain Solar Farm, to the Companies' transmission system. Network upgrades costing \$550,000 will be expended to complete this project.
- Approval to reconductor a 1.45 mile segment of Arden to McDonald 230 kV transmission line. This upgrade project is necessary to mitigate a potential North American Reliability Corporation TPL-001-4 violation identified as a result of the previously approved McDonald 230/138 kV Substation upgrade project, and is budgeted to cost of \$720,000.

- Approval to continue the Companies' involvement and membership in WestConnect. The Action Plan budget to continue membership is \$225,000 annually in 2019, 2020, and 2021 for a total of \$675,000.

#### ***DEMAND SIDE PROGRAMS — IRP***

- The Companies request approval of the DSM Plans as part of the Companies' Action Plan. The Companies are requesting specific acceptance of the budgets and energy savings for the DSM Plans for the 2019-2021 Action Plan period: Nevada Power \$49.8 million, \$50.2 million, and \$50.6 million in 2019, 2020, and 2021 respectively; Sierra \$14.8 million, \$15.5 million, and 16.1 million in 2019, 2020, and 2021 respectively; and NV Energy combined \$64.6 million, \$65.7 million, and 66.7 million in 2019, 2020, and 2021 respectively.
- The Companies also requests that the Commission review and approve the Measurement and Verification reports for program year 2017 provided in Technical Appendix DSM-5 through DSM-20 for the DSM programs delivered in the 2017 program year.

#### ***2018 JOINT ENERGY SUPPLY PLAN — ESP***

- ***Power Procurement Plan.*** The Companies request approval of their joint Power Procurement Plan, which contains the following elements:
  1. The Companies will close their respective 2019 summer open positions and a portion of the 2020 summer open positions with firm products prior to summer 2019. Thereafter, implement a four-season laddering strategy to close the remaining 2020 and 2021 open power positions with physical power and/or capacity acquired through a competitive bidding process. 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.
  2. The Companies will monitor the portfolio seasonally, monthly, weekly, daily, and hourly, and when economic, seek to make short-term and forward sales of resources not expected to be needed to serve native load. This practice will be continued over the 2018 ESP period.
  3. The Companies anticipate meeting its RPS credit obligations throughout the 2018 ESP planning period, with Nevada Power continuing to repay its outstanding credit obligation to the joint pool for the benefit of Sierra.
- ***Fuel Procurement Plan.*** The Companies request approval of their joint Fuel Procurement Plan, which contains a (1) a physical gas procurement plan, (2) a gas transportation plan, (3) a gas hedging plan and (4) a coal procurement plan.
  1. **Physical Gas Supply.** The Companies will continue to employ a four-season laddering strategy for physical gas purchases, through which 25 percent of projected monthly gas

- requirements per season are procured, subject to the availability of conforming bids and the willingness of suppliers to accept reasonable commercial terms. The Companies will continue to solicit physical gas supplies sourced from geographically diverse gas supply basins.
2. **Gas Transportation.** The Companies are seeking approval to maintain their current natural gas transportation portfolios. At Sierra, 26 transportation and storage contracts expire in 2019 and 2020. Sierra will rely on rights of first refusal and annual evergreen rights under its contracts and pipeline tariffs to keep existing gas transport capacity rights in place.
  3. **Gas Hedging Plan.** The Companies are proposing to continue the current approved hedging strategy and acquire no natural gas hedging products during the 2018 ESP 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.
  4. **Coal Procurement Plan.** Valmy's coal requirements will be filled via spot market solicitations through RFPs transmitted to a list of qualified suppliers. In order to minimize the total cost of Valmy's coal supply, the Companies will not issue an RFP for a long-term coal supply contract.
- **Risk Management Strategy.** The Companies have established a strategy that 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.
  - **Prudence Findings.** The 2018 ESP regulations require the Commission to make four findings regarding the Companies' 2018 ESP. The Companies request that consistent with regulation, the Commission make the following three findings regarding their 2018 ESP:
    - **Finding One:** 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 the plan.
    - **Finding Two:** This ESP optimizes the value of the overall supply portfolio of the utility for the benefit of its bundled retail customers.
    - **Finding Three:** This ESP does not contain any feature or mechanism that would impair the restoration of the creditworthiness of the utility or would lead to a deterioration of the creditworthiness of the utility.
    - **Finding Four:** consistent with NAC § 704.9494(3), the Companies' power procurement plan, fuel procurement plan and risk management strategies are prudent.

- ***Quarterly Hedging Workshops.*** An affirmative finding that the Companies have satisfied the Commission directive from the Commission’s Order approving the modified stipulation in Docket No. 13-08024, requiring the Companies to continue conducting quarterly gas hedging workshops with the Regulatory Operations Staff and the Bureau of Consumer Protection to review the implementation of the elements of the ESP update and the approved hedging strategy.<sup>3</sup>

**SECTION III  
FORECASTING DATA — NAC § 704.9489(1)(c)**

The Companies will continue to pursue improvements to its forecast models including economic and price projections for all customer classes, end-use saturations and efficiency trends.

**SECTION IV  
TIMETABLE AND BUDGET FOR PROGRAMS — NAC § 704.9489(1)(d), (3), (4)**

The figure below shows the Action Plan timetable and budget by Action Plan year. Further details regarding the project schedules and milestones for capital projects is set forth in the Supply-Side Plan. Further details regarding the Demand Side Management Plan budget can be found in the Demand Side volume.

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<sup>3</sup> See, Order, *Application of Sierra Company d/b/a NV Energy for Approval of its Energy Supply Plan Update for 2014-2015*, ¶ 6, Docket No. 13-08024 (iss. November 19, 2013).

**ACTION PLAN BUDGET**

(Millions excluding AFUDC)				
Action Plan Items	2019	2020	2021	3-Year Total
<b>Nevada Power</b>				
Demand Side				
Outreach & Program Development	\$ 4.40	\$ 4.50	\$ 4.50	\$ 13.40
Home Services	\$ 26.80	\$ 26.90	\$ 26.70	\$ 80.40
Business Services	\$ 18.60	\$ 18.80	\$ 19.40	\$ 56.80
Total Demand Side	\$ 49.80	\$ 50.20	\$ 50.60	\$ 150.60
Transmission				
Copper Mtn 5*	\$ -	\$ -	\$ -	\$ 7.44
Eagle Shadow Mtn*	\$ -	\$ -	\$ -	\$ 0.55
Arden to McDonald	\$ 0.72	\$ -	\$ -	\$ 0.72
WestConnect	\$ 0.15	\$ 0.15	\$ 0.15	\$ 0.45
Total Transmission	\$ 0.87	\$ 0.15	\$ 0.15	\$ 9.16
Nevada Power Total	\$ 50.67	\$ 50.35	\$ 50.75	\$ 159.76
<b>Sierra</b>				
Demand Side				
Outreach & Program Development	\$ 2.15	\$ 2.55	\$ 2.65	\$ 7.35
Home Services	\$ 5.75	\$ 5.65	\$ 5.75	\$ 17.15
Business Services	\$ 6.90	\$ 7.30	\$ 7.70	\$ 21.90
Total Demand Side	\$ 14.80	\$ 15.50	\$ 16.10	\$ 46.40
Transmission				
Dodge Flat Interconnection	\$ 0.90	\$ 8.50	\$ 3.17	\$ 12.57
Fish Springs Interconnection*	\$ -	\$ -	\$ -	\$ 2.38
WestConnect	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.22
Total Transmission	\$ 0.97	\$ 8.57	\$ 3.24	\$ 15.17
Sierra Total	\$ 15.77	\$ 24.07	\$ 19.34	\$ 59.19
<b>Combined NV Energy</b>				
Demand Side				
Outreach & Program Development	\$ 6.55	\$ 7.05	\$ 7.15	\$ 20.75
Home Services	\$ 32.55	\$ 32.55	\$ 32.45	\$ 97.55
Business Services	\$ 25.50	\$ 26.10	\$ 27.10	\$ 78.70
Total Demand Side	\$ 64.60	\$ 65.70	\$ 66.70	\$ 197.00
Total Transmission	\$ 1.85	\$ 8.73	\$ 3.39	\$ 24.33
NV Energy Total	\$ 66.45	\$ 74.43	\$ 70.09	\$ 221.33
* Note: Annual cash flow not available.				

**SECTION V**  
**CHANGES IN METHODOLOGY — NAC § 704.9489(1)(e)**

While some modeling techniques have been improved, especially in the areas of load forecasting and demand-side management planning, the Companies are not proposing any changes in basic planning methodologies.

**SECTION VI**  
**ACQUISITION OF NEW MODELING INSTRUMENTS — NAC § 704.9489(1)(f)**

NV Energy is evaluating upgrades to its production cost modeling software. As the complexity of the electric system increases with the integration of renewable resources, distributed generation resources, and other technologies, production cost modeling needs to evolve. A discussion of the attributes that NV Energy is investigating is included in the testimony of Shawn M. EliceGUI

**SECTION VII**  
**DEMAND SIDE PLAN PROGRAMS — NAC § 704.9489(1)(g)**

A description of continued planning efforts and the plan to carry out and continue selected conservation and DSM measures is set forth in Section II above. The Companies have not attempted to claim or calculate imputed debt associated with energy efficiency contracts in the Preferred Plan.

**SECTION VIII**  
**ACQUISITION OF RESOURCES — NAC § 704.9489(1)(h)**

The Companies do not plan to construct incremental generating resources during the Action Plan period.

**SECTION IX**  
**RENEWABLE ENERGY ZONE TRANSMISSION ACTION PLAN — NAC 704.9489(5)**

In response to the requirements provided for in NAC § 704.9489(5), regarding the development of transmission facilities to serve renewable energy zones within the State of Nevada, the Companies have prepared a Conceptual Renewable Energy Zone Transmission Plan (“REZTP” or “Plan”).

The REZTP is a conceptual plan for transmission facilities that shows possible transmission access to areas of Nevada that have been designated as renewable energy zones. The REZTP does not request any funds construction nor does it request Commission approval of any facilities associated with the REZTP.

The Companies did not produce new studies for the REZTP for this 2018 Joint IRP. There has been no interest by any parties outside the Companies to pursue any studies with respect to this plan. Upon a new identification of renewable energy zones by the Commission, or new interest by outside parties, the Companies will revisit the REZTP and update accordingly. Additional details on the REZTP are provided in the Technical Appendix Item TRAN-9.

## **SECTION X**

### **ASSET RETIREMENT PLAN — NAC 704.9489(6)**

Nevada Power and Sierra hold ownership interests in three generation assets that meet the criteria of NAC 704.9489(6), specifically:

- Brunswick Diesel Plant - Sierra: The Brunswick Diesel Plant is a 6 MW Emergency “Black Start Only” plant, comprised of three reciprocating diesel fired engines located on approximately 10 acres in Carson City, Nevada. This Plant is operational; however, since it is black start only, it cannot be used to serve customer load and so does not provide system capacity.
- Mohave Generating Station – Nevada Power: The Mohave site is located in Laughlin, Nevada and is the previous site of a 1,500 MW coal-fired generating plant. The site is co-owned by Southern California Edison (56 percent), Salt River Project (20 percent), Nevada Power (14 percent) and Los Angeles Department of Water and Power (10 percent). Mohave ceased operations in January 1, 2006 and has been decommissioned. In 2015, the co-owners agreed to proceed with selling the majority of the property through a public sale process. The property was listed by a nationwide commercial real estate firm in October 2016. No sales transactions have been executed at this time.
- Reid Gardner Generating Station – Nevada Power: The last unit at the Reid Gardner Generating Station ceased operations in March 2017 and the plant is in a state of Post-Operational Reserve. The units are currently being dismantled. Dismantling and demolishing will be completed over the next 18 months and site remediation will follow. The Commission approved plan remains as presented in Docket 15-05004. A final disposition plan for the site will be developed as the site remediation scope becomes better known.