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Submitted: 7/20/2020 12:05:43 PM

Reference: 2eab62a2-cf02-4b2b-99b2-1ea3992f748e

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**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 of the Fourth Amendment to the 2018 Joint Integrated Resource Plan, including a request for approval of two new renewable energy power purchase agreements, a utility owned renewable facility and updates to the Transmission Plan, including new projects needed to increase import capacity, increase reliability, access renewable energy zones and allow the new renewable facilities to interconnect into the system.

Docket No. 20-07 \_\_\_\_

**VOLUME 3 OF 9**

**TESTIMONY**

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**ANITA HART**

1 **BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA**

2 Nevada Power Company d/b/a NV Energy and  
3 Sierra Pacific Power Company d/b/a NV Energy

4 Fourth Amendment to  
5 2018 Joint Triennial Integrated Resource Plan

6 Docket No. 20-07 \_\_\_\_

7 Prepared Direct Testimony Of

8 **Anita Hart**

9  
10 **I. INTRODUCTION**

11 **1. Q. PLEASE STATE YOUR NAME, OCCUPATION, BUSINESS ADDRESS**  
12 **AND PARTY FOR WHOM YOU ARE FILING TESTIMONY.**

13 A. My name is Anita Hart. I am the Director of Resource Planning and Analysis for  
14 Nevada Power Company d/b/a NV Energy (“Nevada Power”) and Sierra Pacific  
15 Power Company d/b/a NV Energy (“Sierra” or the “Company” and, together with  
16 Nevada Power, the “Companies” or “NV Energy”). My business address is 6226  
17 West Sahara Avenue, Las Vegas, Nevada. I am filing testimony on behalf of the  
18 Companies.

19  
20 **2. Q. PLEASE DESCRIBE YOUR BACKGROUND AND EXPERIENCE IN THE**  
21 **UTILITY INDUSTRY.**

22 A. My professional experience includes more than 25 years in the utility industry and  
23 I have a Master of Arts in Economics with an emphasis in Public Utility Regulation.  
24 I have worked for the Companies since 2008. In addition to my current role in  
25 Resource Planning and Analytics, I was the Manager of Gas Transportation  
26 Planning. I have also held Director and Consultant Staff positions in the Demand  
27 Side Management department at NV Energy.

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Prior to joining the Companies, I was employed as the Manager of Demand Side Management and Market Research at Southwest Gas Corporation (“SWG”). Over a span of 15 years my key responsibilities at SWG included: 1) resource planning and demand forecast modeling and analysis; 2) development and maintenance of tariffs, applications, and filings before three state regulatory agencies, consistent with regulatory, legal and company requirements; 3) development, approval, implementation and management of demand side management, or conservation and energy efficiency and low-income programs; and 4) market research. More details regarding my background and experience are provided in **Exhibit Hart-Direct-1**.

**3. Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS DIRECTOR, RESOURCE PLANNING AND ANALYSIS.**

A. As Director of Resource Planning and Analysis I am responsible for the development of the Companies’ Integrated Resource Plans (“IRP”) and IRP amendments, and Energy Supply Plans (“ESP”), ESP updates and Gas Information Reports. I oversee load forecasting, production cost modeling and economic analysis related to intermediate and long-term planning activities of the Companies.

**4. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA (“COMMISSION”)?**

A. Yes, I have testified in several proceedings before the Commission, in addition to the California Public Utilities Commission and the Arizona Corporation Commission. Most recently, I provided testimony in Docket Nos. 20-02026, 20-02027 and 20-02028.

1 **II. OVERVIEW AND TESTIMONY ORGANIZATION**

2 **5. Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

3 A. I sponsor the economic analysis used in the evaluation of the resource plans in the  
4 Fourth Amendment to the Joint IRP for 2019-2038 (“Fourth Amendment”). In  
5 Section III, I discuss actions that the Companies will take during the amended  
6 Action Plan period (2019-2021) to implement the projects in this Fourth  
7 Amendment. In Section IV, I discuss the economic analysis used in the selection of  
8 the Companies’ Preferred Plan.

9  
10 Together with Dr. David Harrison, I support the Environmental and Externalities  
11 results contained in Technical Appendix ECON-7. In addition, together with Nick  
12 Schlag of Energy and Environmental Economics (“E3”), I support the Effective  
13 Load Carrying Capability (“ELCC”) report contained in Technical Appendix  
14 ECON-5. Together with Jeremy Aguero, I also support the economic, fiscal, and  
15 social impact analysis of Greenlink Nevada completed by Applied Analysis (“AA”)  
16 contained in Technical Appendix ECON-8.

17  
18 **6. Q. ARE YOU SPONSORING ANY EXHIBITS?**

19 A. In addition to **Exhibit Hart-Direct 1**, I am sponsoring the following Technical  
20 Appendix Items:

- 21 • ECON-1: Loads and Resources Tables
- 22 • ECON-2: Capital Projects (Confidential)
- 23 • ECON-3: PWRR (Production Costs plus Capital Costs)
- 24 • ECON-4: PROMOD Area Diagram
- 25 • MF-1: Purchased Power and Natural Gas Price Forecasts (Confidential)
- 26 • GEN-1: Generation Unit Characteristics (Confidential)

1 7. Q. ARE ANY OF THE MATERIALS YOU ARE SPONSORING  
2 CONFIDENTIAL?

3 A. Yes. The following technical appendices are confidential:

- 4 • ECON-2: Capital Projects
- 5 • MF-1: Purchased Power and Natural Gas Price Forecasts
- 6 • GEN-1: Generation Unit Characteristics

7  
8 8. Q. PLEASE EXPLAIN WHY ECON-2, MF-1 AND GEN-1 ARE  
9 CONFIDENTIAL.

10 A. ECON-2 contains sensitive projected capital cost information related to  
11 conventional placeholder resources, MF-1 contains commercially sensitive and/or  
12 trade secret fuel and purchased power forecast costs that are provided to the  
13 Companies by a third-party and GEN-1 contains the unit characteristics of the  
14 Companies' generation fleet. Public disclosure could harm the Companies' ability  
15 to negotiate the best priced contracts moving forward and would put the Companies  
16 at a competitive disadvantage.

17  
18 9. Q. FOR HOW LONG DO THE COMPANIES REQUEST CONFIDENTIAL  
19 TREATMENT?

20 A. The requested period for confidential treatment is for no less than five years.

21  
22 10. Q. WILL CONFIDENTIAL TREATMENT IMPAIR THE ABILITY OF THE  
23 COMMISSION'S REGULATORY OPERATIONS STAFF ("STAFF") OR  
24 THE NEVADA ATTORNEY GENERAL'S BUREAU OF CONSUMER  
25 PROTECTION ("BCP") TO FULLY INVESTIGATE THE FOURTH  
26

1                   **AMENDMENT OR THE INFORMATION SET FORTH IN THESE**  
2                   **TECHNICAL APPENDICES?**

3           A.     No, in accordance with the accepted practice in Commission proceedings, the  
4                   confidential material will be provided to Staff and the BCP under standardized  
5                   protective agreements with them.

6  
7   **III.    RESOURCE PLANNING AND THE ACTION PLAN**

8   **11.   Q.    PLEASE DESCRIBE THE COMPANIES' RESOURCE NEEDS OVER THE**  
9                   **INTEGRATED RESOURCE PLANNING HORIZON.**

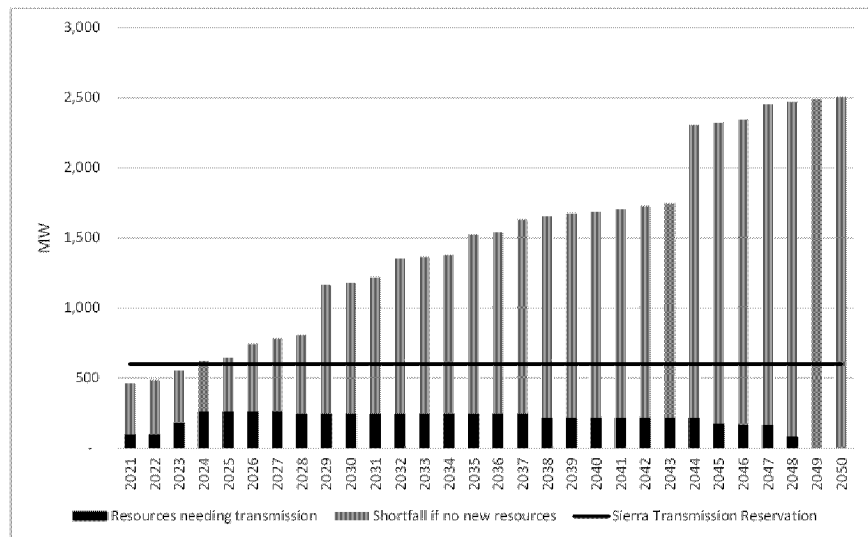
10           A.     The Companies' resource needs in this Fourth Amendment are driven by multiple  
11                   factors. First, under the base case load forecast, the Companies' open capacity  
12                   position is large. In 2021, it is 1,647 megawatts (MW) and even with the new  
13                   renewable contracts approved for 2024, the open position remains large due to load  
14                   growth and retirement of existing generators. Full details of the assessment of need  
15                   is shown in the Economic Analysis section of the narrative. It is clear both utilities  
16                   need additional resources in each year of the study period. Nevada Power may be  
17                   able to secure needed capacity from the electric wholesale market for a period of  
18                   time. Second, Sierra has a need for added resources and/or additional import  
19                   capability in the near term. Figure Hart-Direct-1 illustrates the constraints on  
20                   Sierra's import capability. The solid line represents Sierra's current import  
21                   capacity. The black bars show transmission capacity needed for existing contracts.  
22                   The gray bars show the need for import capability if the open position is filled by  
23                   external resources. In summary, Sierra will use nearly all of its committed  
24                   transmission capacity by 2023 and will exceed its current reservation by 2024. That  
25                   is, Sierra must add internal resources or increase its ability to import from external  
26                   resources to meet its operating requirements and serve native load by 2024. Due, in



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part, to this limitation of import capability each plan developed for the analysis assumes the continued “conditional retirement” of Valmy 1 at the end of 2021. That is, each case assumes Valmy 1 retires in December 2021 but, given certain conditions, the Companies may need to revisit this retirement date to ensure the reliability of the northern system.<sup>1</sup>

**Figure Hart-Direct-1**  
**SIERRA’S USE OF TRANSMISSION IN A SCENARIO WITH NO NEW RESOURCES**



Additionally, since the filing of the Companies’ 2019-2038 Joint IRP in Docket No. 18-06003 the Nevada Legislature enacted Senate Bill 358 (SB358) in 2019, which increases the Renewable Portfolio Standard (“RPS”) from 25 percent by 2025 to 50 percent by 2030. Similarly, SB358 also created the state’s goal of having a net-zero carbon dioxide energy production by 2050, which the Companies embrace, but will need Commission approval of projects to ensure the goal is met efficiently and

<sup>1</sup> Docket 18-06003 Ordering Paragraph 53 expects NV Energy to closely monitor the six Valmy 1 retirement conditions set forth by NV Energy and adopted by the Commission in the 2018 Integrated Resource Plan.

1 economically. Finally, Nevada energy policy is driving a growing need to provide  
2 new and existing customers with sustainable green energy. There is a growing  
3 movement within the Nevada business community to move towards sourcing  
4 electrical generation from zero-carbon, renewable generation.  
5

6 **12. Q. ARE THE COMPANIES REQUESTING PERMISSION TO ADD**  
7 **GENERATING CAPACITY TO ADDRESS THESE NEEDS?**

8 A. Yes, the Companies are seeking approval of a company-owned solar photovoltaic  
9 (“PV”) facility. In addition, the Companies are requesting approval of two long-  
10 term renewable energy power purchase agreements (“PPAs”) to address some of  
11 the Companies’ resource requirements. The three projects combined total  
12 approximately 478 MW. All of this new solar generating capacity will include  
13 battery energy storage. Combined, the battery energy storage systems provided 338  
14 MW of real power capability.  
15

16 These projects are discussed in Section 4 of the narrative. The Renewable Energy  
17 Plan is sponsored by Mr. Shane Pritchard and John Frankovich.  
18

19 **13. Q. DO THE COMPANIES NEED TO INVEST IN TRANSMISSION**  
20 **RESOURCES DURING THE ACTION PLAN PERIOD?**

21 A. Yes. As discussed in the Transmission section of the narrative, NV Energy must  
22 expand import capabilities to meet the needs of native load and wholesale  
23 customers. The amended Transmission plan includes an essential statewide  
24 transmission expansion referred to as Greenlink Nevada, along with network  
25 upgrades that support the new solar PPAs and company-owned project. In addition,  
26 new transmission is required to access renewable energy zones and economically  
27

1 comply with the state’s policy goals. The Transmission Plan and projected project  
2 expenditures are sponsored by Sachin Verma and Carolyn Barbash.

3  
4 **IV. ECONOMIC ANALYSIS**

5 **14. Q. PLEASE DESCRIBE THE METHODOLOGY USED TO PERFORM THE**  
6 **ECONOMIC ANALYSIS OF THE PLANS CONSIDERED IN THIS**  
7 **FILING.**

8 A. After developing the L&R Tables, the Companies use two economic models to  
9 evaluate the alternative plans over the planning period. The first is a production  
10 cost model, “PROMOD.”<sup>2</sup> PROMOD simulates the operation of the electric system  
11 and computes production costs (fuel, purchase power, variable and fixed costs to  
12 operate) by performing hourly, chronological economic unit commitment and  
13 dispatch of the Companies’ electric production resources, and market purchases to  
14 satisfy hourly load requirements in a least cost solution over the planning period.  
15 The second model used is a Companies-designed Capital Expense Recovery model  
16 (“CER”). The CER computes the annual revenue requirement for capital projects  
17 based on the costs of constructing or acquiring resources.

18  
19 The annual production costs from PROMOD, plus the annual revenue requirements  
20 for capital projects from the CER, are summed over the planning period for the  
21 Preferred and Alternate plans. This provides the total revenue requirement over the  
22 planning period. The total revenue requirement is then discounted by the  
23 Companies’ weighted cost of capital to determine the Present Worth of Revenue  
24 Requirement (“PWRR”) for each of the plans. A comparison of the PWRR of each  
25 alternative plan provides a basis for economically ranking the plans from least cost  
26

27 <sup>2</sup> PROMOD is a proprietary software product that the Companies licenses from ABB Group.

1 to most expensive. The PWRR ranking is one factor used to determine the Preferred  
2 Plan.

3  
4 **15. Q. WERE THERE ANY NOTEWORTHY UPDATES TO KEY MODELING**  
5 **ASSUMPTIONS USED IN THE ECONOMIC ANALYSIS?**

6 A. Yes, in addition to the annual updates to model inputs, the following updates are  
7 noteworthy: 1) transmission limits; 2) hourly load forecast; 3) CER inputs and 4)  
8 capacity credit for renewable energy resources.

9  
10 **16. Q. HOW WAS TRANSMISSION LIMITS ADDRESSED IN THE ECONOMIC**  
11 **ANALYSIS?**

12 A. PROMOD utilizes an area configuration in order to assign resources and load to  
13 specific areas, and to capture transmission use between areas. The analysis for this  
14 Fourth Amendment considers changes to the transmission between areas, so the  
15 Companies have prepared multiple diagrams to illustrate each configuration. The  
16 base analysis assumes no change to the transmission. The configuration used in  
17 this case is similar to the one presented in the Third Amendment to the 2018 Joint  
18 IRP, Docket No. 19-06039. Additional diagrams illustrating the Greenlink Nevada  
19 transmission configurations have been prepared. The diagrams used in this filing,  
20 along with the area location of each load and asset and the annual maximum transfer  
21 between areas, are provided in Technical Appendix Item ECON-4.

22  
23 Transmission limits, including limits on access to external markets, as well as limits  
24 over the One Nevada Line (“ON Line”), and proposed Greenlink Nevada  
25 transmission lines were modeled in accordance with Technical Appendix Item  
26 ECON-4. Although PROMOD is not a transmission flow model, all transmission  
27

1 capacity constraints are included in the model and any projected flows based on  
2 economics are not allowed to exceed these capacities.

3  
4 **17. Q. PLEASE DESCRIBE THE COMPANIES' JOINT LOAD FORECAST.**

5 A. The Companies have prepared new individual company and joint load forecasts  
6 taking into account: 1) updated economic and population data, and 2) updated  
7 projections including adjustments due to Governor Sisolak's directives to shut  
8 down non-essential business and stay at home in response to COVID-19.  
9 PROMOD utilized the updated hourly loads. The updated load forecast is  
10 sponsored by the Companies' witness Mr. Terry Baxter.

11  
12 **18. Q. PLEASE DESCRIBE THE CER INPUTS.**

13 A. The CER captures the capital costs of utility-owned resources, such as future  
14 generators or transmission infrastructure, to be constructed and owned by the  
15 Companies. The timing of the project, cash flows during the construction period,  
16 AFUDC estimates, and project book and tax lives are all factors into the final annual  
17 revenue requirement that is captured in the PWRR calculation.<sup>3</sup> Contingency  
18 estimates were not included in capital costs (generation and transmission) to fairly  
19 evaluate and compare alternatives, without skewing results based on either overly  
20 optimistic or conservative cost estimates for known and unknown risks that are  
21 inherent in every project. Work papers associated with capital projects can be found  
22 in Technical Appendix Item ECON-2.

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27 <sup>3</sup> For the cases containing Phase I of Greenlink Nevada, a Construction Work In Progress cost recovery methodology was assumed.

1 19. Q. PLEASE DESCRIBE THE CHANGES UTILIZED TO MODEL THE  
2 RENEWABLE ENERGY RESOURCES.

3 A. The assumptions for modeling renewable energy resources have not changed.  
4 Please refer to the Renewable Energy section of the Supply Side Plan Narrative for  
5 a description of the standard modeled for this analysis. However, the Companies  
6 have updated the capacity credit allocated to each type of renewable resource at the  
7 time of the system peak. The update is based on a refreshed ELCC analysis for  
8 renewable resources. More detail on the allocation by renewable type can be found  
9 in the L&R Tables section below and in the ELCC report, which can be found in  
10 Technical Appendix ECON-5.  
11

12 20. Q. WHO PERFORMED THE UPDATE TO THE ELCC?

13 A. Because the Companies plan to add significantly more renewable and battery  
14 storage and determined it was important to update their resource adequacy analysis,  
15 the Companies retained the services of E3 to perform an analysis to evaluate the  
16 capacity contributions of renewables and storage resources towards its planning  
17 needs using the ELCC methodology. The ELCC report is sponsored by Mr. Schlag,  
18 and as noted above, is located in Technical Appendix ECON-5.  
19

20 21. Q. PLEASE DESCRIBE THE METHOD USED TO DEVELOP AND  
21 EVALUATE THE PLANS FOR THIS IRP AMENDMENT.

22 A. As noted in the Introduction section of the narrative, the Companies embrace the  
23 state’s goal of having net-zero carbon dioxide energy production by 2050 and will  
24 work to make sure they meet this goal economically, while ensuring system  
25 reliability. The Companies have made great strides in this plan to move away from  
26 a fossil-based system to a significantly “greener” one and recognize there is more  
27

1 work to be done, especially to maintain a reliable system for all customers  
2 throughout and after the transition. The Companies retained E3 to review and  
3 analyze the opportunities and challenges for Nevada and the Companies' in  
4 achieving a zero-carbon or near-zero electricity portfolio. See Q&A 35 below and  
5 Technical Appendix ECON-6 for details on their zero-carbon findings and analysis.  
6 Every plan analyzed exceeds the RPS and moves towards the State's net-zero  
7 carbon goal.

8  
9 In addition to building plans in sync with the long-term goals of the Companies and  
10 the state, a sequence of screening analyses were developed to address the unique,  
11 near-term resource needs of each utility. A "preferred case" was selected from the  
12 first screening analyses (the Sierra screening) to meet the near term needs for Sierra.  
13 This case created a starting point for the second screening analysis (the southern  
14 resources screening) to address the large open position of Nevada Power. The  
15 "preferred" case from the second analysis fed into the creation of the long-term  
16 economic analysis which included transmission options.

17  
18 **22. Q. PLEASE DESCRIBE THE SIERRA SCREENING ANALYSIS.**

19 A. To address Sierra's energy and capacity needs, the Companies developed three  
20 cases which add near-term supply-side resources. Based on our current forecasts  
21 and modeling assumptions each case assumes the continued "conditional  
22 retirement" of Valmy 1 at the end of 2021. All three cases vary resources in the  
23 northern system only. That is, the buildouts for the southern system and  
24 placeholder renewables are constant in all three cases.

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**PV Case:** This case adds 300 MW of solar PV with 200 MW of battery energy storage systems (“BESS”) in the northern system in 2024. Additional renewable and fossil resources are added to meet the utility’s planning reserve requirements. Sierra’s import capacity limit is not increased in this plan.

**Peakers Case:** This case adds approximately 400 MW of combustion turbine generation in the northern system in 2024. Additional renewable and fossil resources are added to meet the utility’s planning reserve requirements. Sierra’s import capacity limit is not increased in this plan.

**Repower Case:** This case assumes the retirement of Valmy 1 at the end of 2021 and the conversion of Valmy 1 and Valmy 2 from coal-fired to gas-fired units before summer 2024. This is a conceptual case and its feasibility is unknown. This case further assumes the Companies would acquire rights to the full plant before the conversion takes place. The repowered Valmy Station would then continue operation as a gas-fired station until the end of 2034. Additional renewable and fossil resources are added to meet the utility’s planning reserve requirements. Sierra’s import capacity limits are not increased in this plan.

The Companies selected a “preferred” case based on the analysis from the first screening, then developed the four expansion plans to reduce Nevada Power’s near-term Open Position in the second screening. These plans compare the benefits of fixed-cost, long-term renewable resources versus future renewable and market purchases. The buildout for the northern system is constant in all three cases.



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The production costs, capital costs, and total PWRR results for all the scenarios run are found in Technical Appendix items ECON-2 and ECON-3.

**23. Q. WHAT ARE THE KEY FINDINGS FROM THE SIERRA SCREENING?**

A. The Sierra screening compared different generation options. The Repower case provides the lowest overall cost for the Companies’ customers in the 30-year analysis. The PV case is only 0.14 percent higher in the 30-year PWRR. The PV case was chosen as the “preferred case” for the Sierra screening as the costs are within reason of the lower cost fossil-fuel option, and it furthers the Companies’ and state’s RPS and carbon reduction goals.

**24. Q. PLEASE DESCRIBE THE SOUTHERN RESOURCES SCREENING ANALYSIS.**

A. The second screening focused on resources in southern Nevada. It compares the benefits of fixed-cost, long-term renewable resources versus future renewable and market purchases. The buildout for the northern system remained constant in all four cases using the PV case as the basis.

**No southern PV Case:** This case is the preferred case from the Sierra screening analysis. It assumes Nevada Power does not add any of the three proposed new solar PV/BESS units.

**Dry Lake Case:** This case models the Dry Lake Solar Energy Center project (a 150 MW solar PV facility with integrated battery energy storage capable of discharging 100 MW of real power) and future renewable placeholders. Dry Lake is a Nevada Power-owned asset but was modeled like a PPA because the capital and on-going

1 costs are not rate-based pursuant to NRS 704.752. For this case, it was assumed  
2 100 percent of Dry Lake capacity and energy would be allocated to Nevada Power.  
3 Nevada Power’s placeholder renewables for RPS compliance are adjusted to  
4 account for the credits attributable to Dry Lake.

5  
6 **Chuckwalla Case:** This case models the Chuckwalla Solar project (a 200 MW  
7 solar PV facility with integrated battery energy storage capable of discharging 180  
8 MW of real power) and future renewable placeholders. For this case, it was  
9 assumed 100 percent of Chuckwalla Solar project capacity and energy would be  
10 allocated to Nevada Power. Placeholder renewables for RPS compliance are  
11 adjusted to account for the credits attributable to Chuckwalla.

12  
13 **Boulder Solar III Case:** This case models the Boulder Solar III project (a 128 MW  
14 solar PV facility with integrated battery energy storage capable of discharging 58  
15 MW of real power) and future renewable placeholders. For this case, it was  
16 assumed 100 percent of Boulder Solar III capacity and energy would be allocated  
17 to Nevada Power. Placeholder renewables for RPS compliance are adjusted to  
18 account for the credits attributable to Boulder Solar III.

19  
20 **All southern PV Case:** This case models all three PV/BESS projects (Dry Lake,  
21 Chuckwalla, and Boulder Solar III) and future renewable placeholders. This case  
22 specifically adds 478 MW of solar PV with integrated BESS capable of discharging  
23 338 MW of real power. For this case, it was assumed 100 percent of all three  
24 projects capacity and energy would be allocated to Nevada Power. Placeholder  
25 renewables for RPS compliance are adjusted to account for the credits attributable  
26 to Dry Lake, Chuckwalla, and Boulder Solar III.

1 25. Q. **WHAT ARE THE KEY FINDINGS FROM THE SECOND SOUTHERN**  
2 **RESOURCES SCREENING?**

3 A. All cases with added renewable projects have lower PWRR results in the 30-year  
4 analysis compared to the No southern PV case. The All southern PV case which  
5 includes all three new renewable projects was chosen as the “preferred case” from  
6 Southern Resources screening as it has the lowest 30-year PWRR and it furthers  
7 the Companies’ and state’s RPS and carbon reduction goals.

8  
9 26. Q. **PLEASE DESCRIBE THE FINAL INTEGRATED RESOURCE**  
10 **SCREENING ANALYSIS.**

11 A. The Sierra and southern resources screenings evaluated options for filling the near-  
12 term needs of each utility. The results of the screening analyses yielded a low-cost  
13 expansion plan which meets the system requirements but does not integrate the  
14 transmission expansion options which the Companies must include for wholesale  
15 customers. Nor does the expansion plan address the state’s goal to become a  
16 leading producer and consumer of clean energy and renewables. To that end, the  
17 Companies then analyzed the least-cost plan from the southern resources screening  
18 along with two additional transmission cases for the final screening—the integrated  
19 resource plan.

20  
21 **No New Import Case:** This case is the least-cost case analyzed in the second  
22 (southern resources) screening. It models all three solar PV and battery storage  
23 projects (Dry Lake, Chuckwalla, and Boulder Solar III) and future renewable  
24 placeholders. The expansion plan for this case is identical to the screening analysis.  
25 However, the cost of new transmission needed to interconnect all the new supply  
26 resources is included in this final analysis.

1                    **Greenlink North**: This case uses the least-cost plan from the southern resources  
2 screening above and adds the Greenlink North transmission project (a.k.a.  
3 Greenlink Nevada Phase I). Greenlink North increases the import capacity into  
4 northern Nevada by approximately 500 MW to address the needs of wholesale and  
5 native load customers. Greenlink North allows for the integration of future  
6 renewable resources needed to meet the RPS and other state policy goals. It was  
7 assumed that approximately 75 percent of the total import increase would be  
8 available to native load customers. Renewable and fossil resources are added to  
9 meet the Companies’ planning reserve requirements. A detailed description of the  
10 Greenlink North transmission project can be found in Section 5 – Transmission  
11 Plan.

12  
13                    **Greenlink Nevada**: This case uses the least-cost plan from the southern resources  
14 screening above and adds the Greenlink Nevada transmission project. Greenlink  
15 Nevada increases the Sierra import capacity by approximately 1,520 MW and  
16 Nevada Power’s import by about 1,950 MW through the construction of Greenlink  
17 North and Greenlink West transmission lines. Both allow for integration of future  
18 resources. It was assumed that approximately 75 percent of the total import increase  
19 would be available to native load customers. Renewable and fossil resources are  
20 added to meet the Companies’ planning reserve requirements. Renewable and fossil  
21 resources are also added to meet the Companies’ planning reserve requirements. A  
22 detailed description of the Greenlink Nevada transmission project can be found in  
23 Section 5 – Transmission Plan.

24  
25 **27. Q. WHY DID THE COMPANIES CHOOSE THESE CASES FOR THE FINAL**  
26 **LONG-TERM INTEGRATED RESOURCE SCREENING?**

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A. It is clear that the State is at a pivotal moment, shifting its gaze from a moderate renewable portfolio standard (“RPS”) to a much more comprehensive focus on fueling a clean energy economy. The Companies fully support these State of Nevada goals and requirements which require a shift from the past practices of “just in time” resource planning and narrowly focusing on immediate needs and benefits. The major cases derived for this amendment compare a proactive statewide transmission expansion approach with a reactive “just-in-time” approach.

Figure Hart-Direct 2 below provides a side by side comparison of the nameplate capacity resource mix for the following cases:

- Greenlink Nevada Case which represents the statewide transmission expansion approach;
- No New Import Case which represent the “just-in-time” approach; and
- The preferred case approved in the Third Amendment to the 2018 Integrated Resource Plan (“3rd IRPA”).

**Figure Hart-Direct-2**  
**NAMEPLATE CAPACITY RESOURCE MIX BY CASE (MW)**

