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BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

Investigation and rulemaking to implement Senate Bill 204. Docket No. 17-07014

COMMENTS OF NEVADA POWER COMPANY AND SIERRA PACIFIC POWER COMPANY

Nevada Power Company d/b/a NV Energy (“Nevada Power”) and Sierra Pacific Power Company d/b/a NV Energy (“Sierra”) (together with Nevada Power, “NV Energy” or the “Company”) hereby submit these Comments pursuant to Procedural Order No. 4 (“Procedural Order”) issued by the Public Utilities Commission of Nevada (“Commission”) on October 2, 2018.


The Procedural Order at page 3, paragraph 17 asks parties to provide in their Comments:

(A) recommendation to the Commission as to whether it is in the public interest to establish by regulation biennial targets for the procurement of energy storage systems by an electric utility as required by Section 7 of SB 204. The written comments must explicitly consider the purposes listed in Section 2 of SB 204 and the benefit and cost considerations detailed in Section 3 of SB 204.

NV Energy believes that although the Report provides useful information, due to the significant assumptions and high level of uncertainty identified in the Report, fundamental issues exist as to whether the existing regulatory framework for the review and approval of supply side additions renders both unnecessary and impractical the setting of targets for the procurement of energy storage systems. These Comments discuss these issues.

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I. Summary

Nevada’s energy landscape unquestionably is in a state of flux; technological advances and cost reductions have the potential to allow the cost-effective integration of more renewable energy. NV Energy’s 2018 Joint Integrated Resource Plan proposes the addition of 100 megawatts (400 megawatt-hours) of integrated battery storage in a cost-competitive manner. These projects were selected through a competitive request for proposals and currently are being vetted in a transparent, public proceeding. Most, but not all stakeholders support the addition of these projects. The filing is just one part of NV Energy’s commitment to increasing its use of renewable energy, including energy storage systems,

Nevada voters are considering two ballot measures that would alter the State’s energy policy. Question 3, if passed, would dismantle and replace the current regulatory regime by requiring customers to select an energy retail provider. Question 6 would increase Nevada’s renewable portfolio standard. Regardless of the outcome of these initiatives, policy makers will consider emerging issues in the 80th Session of the Nevada Legislature, slated to begin in three months.

Senate Bill (“SB”) 204 from the 79th Session of the Nevada Legislature gives the discretion, but does not compel the Commission to adopt biennial targets for the procurement of energy storage systems. NV Energy does not believe that the Commission should establish biennial or annual targets for the procurement of energy storage at this time. Existing processes – the triennial integrated resource plan and the distributed resource plan – provide appropriate and flexible venues for evaluating and comparing the merits of energy storage systems, whether integrated into supply-side systems, the transmission or distribution system, or behind the meter, with all other alternatives to ensure that Nevada continues to develop a more robust, reliable and less carbon-intensive electric system. NV Energy has previously stated its goal to ultimately
deliver 100 percent renewable energy to its customers.\(^1\) That cannot be achieved without procuring at some point the kinds of levels of energy storage presented in the Report.

**II. Analysis and Recommendations**

**A. Existing venues – the Integrated Resource Planning and Distributed Resource Planning processes – provide superior means for evaluating the addition of energy storage projects to NV Energy’s system.**

Nevada’s resource planning process is centered on the triennial Integrated Resource Plan (“IRP”). The IRP provides a long-term vision for Nevada’s energy future, containing 30 and 20-year analysis. In that filing NV Energy also submits its three-year action plan, which provides a plan for requiring the resources NV Energy will need to meet its customers’ energy needs. When preparing its Action Plan, NV Energy considers and weighs various supply and demand-side options, and builds its plan based upon the best cost-effective mix of potential resources, including energy storage and demand side programs. The process compares supply and demand-side alternatives, with the choices made on a combination of factors such as price impact, societal cost, economic development and reliability metrics.\(^2\) With each resource planning study cycle, the resources needed to meet customer needs and advance Nevada’s energy policies are identified and secured in the most cost-effective way.

Senate Bill 146, enacted by the 2017 Legislature (“SB 146”), has added an additional element for resource planning by requiring the filing of a Distributed Resources Plan (“DRP”) as part of the triennial IRP.\(^3\) The first such plan is to be filed by NV Energy no later than April 1, 2019, as an amendment to the Action Plan approved in the pending IRP proceeding, Docket No. 18-06003. The DRP will evaluate the locational benefits and costs of distributed resources, “based upon reductions or increases in local generation capacity needs, avoided or increased investments

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\(^3\) Nevada Revised Statutes (“NRS”) 704.741(5).
in distribution infrastructure, safety benefits, reliability benefits and any other savings the
distributed resources provide to the electricity grid for this State or costs to customers of the electric
utility or utilities".4

NV Energy is concerned that the timing differences between a DRP submitted in a triennial
IRP and the setting of biennial energy storage targets will result in a disharmonious process that
creates the potential for biennial energy storage targets conflicting with an approved IRP Action
Plan. Energy storage resources are clearly important elements in the evaluation of supply-side,
demand-side and distributed resources that will be submitted in a triennial IRP. Both the Action
Plan and the DRP will include consideration of cost-effective energy storage systems, and their
inclusion in the ultimately approved plan will necessarily reflect the considerations listed in
Section 7 of SB 204. Having energy storage goals set on a schedule that is not consistent with the
review and approval of an Action Plan, and in a venue outside of the IRP process, presents the
risks of inconsistent direction being given to NV Energy. A superior approach would be to utilize
the robust IRP process, which will establish which energy resources will be the most cost-effective.

Furthermore, the central approach of an IRP is that resource technologies compete with
each other. Determining energy storage targets outside of this process removes the cost-
effectiveness driven competition and results in a technology being slotted into a resource
acquisition strategy solely by having a specific regulatory carve-out. The Report recognizes the
role that the IRP should have in evaluating the cost effectiveness of energy storage when it states
that:

Within these ranges, the optimal storage procurement target will depend on
the state’s evolving need for new generating capacity. Thus, the
incorporation of similar storage scenarios into NV Energy’s resource
planning process would be valuable to further confirm these conclusions.5

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4 NRS 704.741(5)(b).
5 Report, Executive Summary, p. v.
A similar concern with setting procurement targets outside of the IRP process is that the Report presents its analysis of potential targets for 2020 and 2030 based upon a snapshot in time. If relied upon to set targets, this necessarily would result in the setting of static procurement targets in a dynamic system and industry. Changes in loads, policies, resource mix, and technologies all have the potential to dramatically change the Report’s outlook in the longer term.

The Commission will determine whether it is in the public interest to establish biennial targets. The work discussed in the Report was completed at a level to identify the “potential” for energy storage additions. This is much different than the rigorous periodic planning paradigm captured in the IRP/DRP process that identifies the best and lowest cost long-term plan to meet resource needs, advance renewables, maintain prices, reduce emissions, and so forth. NV Energy submits that the robust IRP/DRP process that will establish which resources will be cost effective is a superior process for evaluating energy storage systems.

B. A Target Set Under SB 204 is a Goal, not a Mandate

SB 204 requires the Commission to “determine whether it is in the public interest to establish by regulation biennial targets for the procurement of energy storage systems by an electric utility.”6 The statute gives the Commission the discretion to decide whether targets are necessary; the statute also allows the Commission to establish “targets” instead of “requirements” or procurement “mandates”. The term “targets” is not defined in the bill. NV Energy believes that it is important for the Commission, NV Energy, and interested parties to understand precisely what setting a target means. If the Commission believes it is required to establish a hard and fast standard that the Company must achieve under penalty for noncompliance, such as with the Renewable Portfolio Standard (“RPS”) (“the amount of energy that a provider must generate, acquire, or save . . .”7), it should approach the setting of this target differently than if the target is considered to be an aspirational accomplishment that the Company will work to reach (“to carry

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6 SB 204, Section 7(1); NRS 704.795(1)
7 NRS 704.7805
out the intent of the Legislature to promote the installation of at least 3,000 solar thermal systems . . ."8). If the Commission finds that the energy storage acquisition target is a mandate, then it should exercise caution and scrutinize methods and assumptions when deciding whether to set such standards in the first place.

   NV Energy believes that the Legislature intended that the target it directed the Commission to examine in SB 204 is the latter, an aspirational accomplishment that carries no penalties for a failure to reach the specific target set. Unlike the RPS, which uses the word “must”, SB 204 contains no such mandatory direction. According to the Cambridge Dictionary, a “target” is “a result or situation that you intend to achieve”, and alternatively “an intended result”.9 Applying this definition to SB 204, NV Energy believes that a target set by the Commission is not a legal mandate, but rather a goal that the Company will attempt in good faith to achieve.

   Legislative history supports this interpretation. The original version of SB 204 used the word “requirements”.10 That word was replaced by the word “targets” in an amendment to the bill approved by the Senate Committee on Commerce, Energy and Labor at its meeting on March 22, 2017.11 Commenting on the change, Senator Gansert stated that “I appreciate the amendment because the language has been softened from “requirement” to “target. This being new technology to Nevada, there is a place for it, but there is uncertainty. The changes are positive.”12 During the May 8, 2017 meeting of the Assembly Committee on Commerce and Labor, a representative of Tesla, which was a primary supporter of the bill, testified that “if the utility could not obtain cost-effective storage, it can either defer or waive its target so it does not have to buy storage.”13

   With the understanding that an energy storage procurement target set by the Commission is not a requirement or mandate, but rather a goal that the Company incorporates into its planning

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8 NRS 701B.336(1).
12 Id.
13 Minutes of the Meeting of the Assembly Committee on Commerce and Labor, May 8, 2017, p. 33.
process, the disconnect in the timing between biennial target setting and the Company’s triennial IRP process becomes clearer.

C. Comments on the Brattle Group Report

1. General Comments

The Report by the Brattle Group was commissioned by the Governor’s Office of Energy (“GOE”). NV Energy provided Brattle with information from the 2018 Joint IRP, namely load data, resource project plans, outage information, and fuel price data. While the Brattle Group and NV Energy coordinated in ensuring the former’s understanding of the data being provided, the Brattle Group interpreted that data and performed the analysis in the Report independently.

The Report discusses the methods and details the necessary assumptions to complete a high-level analysis of energy storage potential in Nevada. NV Energy understands the complexity of the methods, that assumptions are necessary to perform such an analysis, and that these assumptions can significantly impact the outcomes of the models.

SB 204 requires the Commission to consider certain costs and benefits of energy storage in its determination whether “the establishment of targets for the procurement of energy storage systems by an electric utility is in the public interest if the benefits to the customers of the electric utility exceed the costs of the procurement of energy storage systems”. This means that targets for energy storage procurement should only be established if it is cost-effective to do so and the establishment of targets at this time would be in the public interest. The method of determining this cost-effectiveness for utility customers established in the GOE’s Request for Proposals for the study was the use of the Rate Impact Measure (“RIM”) test, which was performed for each energy storage use case in the Report. The Report focused on the following values provided by energy storage: Avoided Capacity Investments, Production Cost Savings, Deferred Transmission and Distribution Investment, and Avoided Distribution Outages. Although the Report included the Avoided Distribution Outages in the stacked values to support the estimated energy storage

14 NRS 704.795(3), SB 204, Section 7.3.
deployment potential in 2020 and 2030, it also correctly pointed out that Avoided Distribution Outages value does not impact rates, and therefore, cost-effectiveness for utility customers per the RIM test.\textsuperscript{15}

The Report depicts the stacked values mentioned above, including the Avoided Distribution Outages value, as cost-effective if the overall values are greater than the costs of energy storage. It must be recognized when stacking values that not all of certain values can be extracted when the storage is deployed for multiple uses. Brattle recognizes this limitation, when it discusses in Section II-B of the Report how locational and operational constraints were accounted for in the study. For example, a specific assumption was made that storage could either be deployed to provide Deferred T&D investment value or Avoided Distribution Outage value, but not both,\textsuperscript{16} and prioritizing the discharging of storage to reduce local peak load over all other potential applications to achieve T&D deferral.\textsuperscript{17} Other examples are discussed in more detail in each review below. NV Energy also agrees with statements in the Report that T&D deferral benefits are locationally unique and require a case-by-case evaluation to determine the validity of any deferral benefit. While a stacked benefit of a T&D deferral value is presented, caution should be exercised in viewing this benefit as a static and definite value in a stacked set of values. The T&D benefits of case-by-case investment deferral should rely on the utility’s planning methods and the specific set of facts evaluated in each case in order to select and include the cases in the IRP and DRP filings. For this reason, these unique cases should not have targets for procurement.

Furthermore, the Report identifies 175 MW of storage deployment in 2020 and 700 MW of storage deployment in 2030 as the deployments amounts that maximize benefits.\textsuperscript{18} It should be understood that the Net Benefit of $0/kW-year shown in Figure 2 is a breakeven point for costs versus benefits. The Figure shows where the curves cross the $0/kW-year line as a maximized

\textsuperscript{15} Report, p. 15.
\textsuperscript{16} Report, p. 9.
\textsuperscript{17} Report, p. 10, 25, and 72.
\textsuperscript{18} Report, p. vii, Figure 2.
benefit, but instead that point is where zero net benefit are achieved. With this perspective, if a storage target is to be established, it should be something less than those amounts to achieve positive net benefits.

2. Comments on Value Drivers (Section 3 of the Report)
   a. Reduction in Production Costs

   On June 1, 2018, NV Energy filed a joint application of Nevada Power and Sierra seeking Commission approval of their 2019-2038 Triennial Integrated Resource Plan and 2019-2021 Energy Supply Plan. Pursuant to Commission regulations, the IRP includes a “preferred plan” and an “alternate plan” with resources optimized to reduce production costs and provide societal benefits. The IRP reviews options for programs that modify loads, such as energy efficiency and demand response, and supply-side options such as renewable resources and energy storage systems in the determination of the preferred plan. NV Energy executes production cost modeling studies in the development of the IRP, but unlike the regional modeling performed by Brattle, NV Energy’s studies focus on serving the native load requirements of the Company’s customers. While there are differences in the production cost methodologies employed by NV Energy and Brattle, NV Energy agrees that energy storage resources have the ability to reduce overall production costs of the system.

   Brattle studied the production costs impacts of adding energy storage resources for two snapshots in time, the years 2020 and 2030, and compared the results of those simulations to scenarios based on the Preferred Plan in the joint IRP. The snapshots contained in the Brattle report provide the reader with useful information to quantify the changes in production costs across the entire western interconnection.

   NV Energy understands the time intensive nature of the modeling performed by Brattle, particularly in the context of measuring production cost impacts on resources across the entirety of the Western Electricity Coordinating Council (“WECC”). However, for purposes of considering whether it is in the public interest to establish procurement targets for energy storage
systems, NV Energy recommends that production cost modeling be performed on a continuous, multi-year basis, as opposed to the two discrete snapshots in time separated by ten years, such as what is performed in the IRP. NV Energy has been proactive in the evaluation and procurement of energy storage systems, with the preferred and alternate plans in the 2018 Joint IRP proposing the approval of power purchase agreement contracts that include 100 megawatts of battery energy storage systems. The triennial nature of the IRP provides a means for NV Energy to present the Commission and Nevada stakeholders with the most current information on the costs and benefits of energy storage systems in Nevada.

b. Avoided Generation Capacity

The Report studied a value of capacity. The values of capacity noted in Table 8\textsuperscript{19} are important to understand. That table shows results of 86% to 90% for the amount of storage is available for resource adequacy when deployed for multiple use cases. These results are dependent on the Transmission and Distribution use-cases’ constraints. Since the construction deferral projects “…need to be evaluated on a case-by-case basis…”\textsuperscript{20} the evaluation that must be done was necessarily based on averaged assumptions. The constraints are averages of typical load profiles and not specifics based on a rigorous engineering evaluation completed on a case-by-case basis. The results will also vary with different ratios of deployment, variations in use cases and, very importantly, the coincidence of peaks.

Another important variable to determine the adequacy of storage to meet the system peak load is the load shape. Today, at the current level of renewable penetration, it is considered that a 4-hour storage system is adequate to meet the duration of the peak. The duration depends on the load shape that will be “flattened”. The shape and duration should be expected to change as the penetration of renewables increases, the penetration of storage increases, the generation shape of

\textsuperscript{19} Report, p. 23.
\textsuperscript{20} Report, p. 24.
renewables (wind versus solar, for example), customer programs such as energy efficiency and
demand side management, and load shapes of new business over time.

The benefit of the deferred “capacity value” is an important and a large portion of the
reported value in the Report. It is agreed that storage provides a capacity benefit. However, the
Company believes the value of capacity and the duration to satisfy adequacy requirements is best
determined in the periodic planning process of the resources in IRP filings when all assumptions,
programs, load analysis, and new resources are reviewed and comprehensively planned.

c. Transmission and Distribution Investment Deferral

The Report acknowledges that “(s)toage is not suited to defer all types of T&D
investments”, and “(w)hether storage can defer specific transmission or distribution projects would
need to be evaluated on a case-by-case basis”. While grid-integrated storage may have the
potential to defer the construction of certain, but not all types of, transmission and distribution
(“T&D”) investments, it does not necessarily follow that such storage can definitively achieve that
deferral, nor does it mean that storage would necessarily be the most cost-effective non-wires
alternative (“NWA”) solution to achieve that deferral. The actual ability of storage to defer T&D
investments must be determined through case-by-case evaluation. The study acknowledges that
this in-depth review was not performed, and that the estimated T&D investment deferral potential
value was based upon certain necessary assumptions, some of which are discussed below.22

The Report further notes on page 24 that “(s)uch deferrals are especially valuable if load
growth is relatively slow and predictable such that the upgraded system would be fully utilized for
many years”.23 This relates to the assumption in the study that the implementation of storage in
lieu of a T&D project would be able to defer that project at least, and not more than, 15 years,
which is the assumed lifespan of storage devices in the study. Understanding that a consistent
assumption regarding the deferral timeframe of a T&D project in the generalized analysis

22 Id.
23 Id.
performed for the Report must be made, the actual number of years that storage would be able to defer a T&D project can only be determined through specific analysis.

It is NV Energy’s belief that a case-by-case analysis would likely reveal that certain T&D projects could not economically be deferred for 15 years given the forecasted growth rate in the area causing the system constraint. The size and cost of the storage system required to achieve a 15 year deferral in higher growth areas would render the storage option not cost-effective versus the traditional T&D wired solution. Additionally, lower cost NWA options such as energy efficiency or demand response are potentially well-suited to achieve deferral in slow growth areas that cause future forecasted system constraints and the need for T&D projects. This supports the Company’s belief that even if storage can indeed defer a T&D project from a technical standpoint, it may not be the most cost-effective distributed energy resource to achieve that deferral.

Another assumption in the Report that supports the estimated T&D investment deferral value is a 2% uniform growth rate in the area of the T&D upgrade projects.24 The Report notes that “(t)his rate of growth is intentionally higher than NV Energy’s average system-wide peak growth rate, reflecting that locations requiring upgrades may be experiencing higher than average load growth”.25 The assumption that these areas will likely have a peak growth rate that is higher than the Company’s average system-wide peak growth rate could be valid for T&D upgrade projects that are based upon constraints caused by load growth, however, the selection of a 2% growth rate likely understates the current forecasted peak load growth rate in many of the areas where growth-related T&D upgrade projects are planned in the Company’s 10-year capital plan.26 This means that the estimated total peak load in 15 years is likely understated for these situations, and the required battery size/growth required to defer the T&D upgrade projects for 15 years is likely higher than what is estimated in the Report for these situations. This would result in lower

24 Report, p. 25, 70, and 72
25 Report, p. 70-71
26 Based upon a quick review of the T&D upgrade projects identified by Brattle as potentially deferrable by storage, NV Energy estimates that at least 25% of those projects have a forecasted area average load growth rate greater than 2%.
$/kW Deferral Savings values in Tables 9 and 20, and consequently lower $/kW-year Estimated Value of Deferral figures in those tables. For example, a situation in which the actual forecasted average growth rate is 3% instead of 2% would result in an Estimated Value of Deferral of approximately $22/kW-year for the residential customer class - approximately a 39% decrease from the $36/kW-year result based upon a 2% growth rate assumption. This illustrates the significant sensitivity of the Estimated Value of Deferral result based upon the actual peak load growth rate in a local area.

The Report notes that 14% of all NV Energy T&D projects (35 projects) were selected by Brattle as potentially deferrable in the 10-year timeframe of data provided by the Company, and that an assumption was made to scale up this number of opportunities by 30%.\textsuperscript{27} The identification of 35 individual projects as potentially being deferrable by storage is a reasonable number based upon the data that NV Energy provided for the Report. Due to inherent planning uncertainty at the local level in future years, it is appropriate to assume a certain upscaling, and 30% does not seem to be an unreasonable assumption. It should be noted, however, that a risk in this assumption is if the actual load growth rates experienced in the NV Energy electric system decrease going forward from what they are presently forecasted to be, this upscaling would overstate the actual number of opportunities in the future timeframe. Alternatively, if the actual load growth rates increase going forward from what they are presently forecasted to be, this upscaling assumption might understate the number of opportunities. The important point to note is that the validity of this upscaling assumption is dependent upon actual future growth rates compared to what those rates are presently forecasted to be.

Another important result to note relates to Figure 11 on page 26 of the Report, which shows the Marginal T&D Deferral Benefit as a function of the amount of Storage Installed. Brattle notes that in Figure 11 they were “able to identify a small number of high-value opportunities to defer

\textsuperscript{27} Report, p. 70.
specific T&D investments.” Figure 11 illustrates that the incremental value of installing storage to achieve T&D upgrade project deferral benefit drops steeply, down to $40/kW-year when 100 MW of storage is deployed. This, coupled with the discussion above pointing towards allowing a case-by-case analysis to freely determine when storage should be cost-effectively deployed to achieve this potential benefit, supports a cautious approach to deploying storage for this purpose, and one that does not establish targets for energy storage on the basis of potential T&D upgrade deferral benefit.

Given the above, the Report’s estimated potential T&D investment deferral value likely overstates what will actually be determined as technically achievable and, most importantly, cost-effective through specific case-by-case analysis.

The Company has performed NWA analysis on several forecasted constraints and capital investment projects at the transmission level in support of its June 1, 2018 Joint IRP filing. As part of its April 1, 2019 DRP filing, the Company will file NWA analyses examining both transmission and distribution-level constraints to determine if NWA solutions may be more cost-effective and could defer planned T&D capital investment solutions.

d. Customer Outage Reduction Value

The GOE directed Brattle to use the RIM test in its economic evaluation of the costs and benefits in the Report. Since the customer outage reduction value does not affect rates for the commercial, industrial, and residential customer classes, NV Energy believes it is inappropriate for the Report to include the customer outage reduction value as a potential benefit for storage in its analysis. Because this benefit is the second largest stacked benefit in the evaluation, when it is removed in the “zero outage reduction” sensitivity, the Report concludes that “the optimal level of storage would fall to zero [emphasis added] in 2020, and depending on storage costs, to a range

from 300 MW to over 1,000 MW in 2030." This sensitivity supports NV Energy’s belief that
the Commission should not set storage targets, certainly in the short-term.

NV Energy asked Brattle to analyze the impacts of removing the Customer Outage
Reduction Value, which is shown in Attachment 1 to these Comments. These curves are the same
as Figure 2 of the Report with that value removed. Compared to the curves in Figure 2, these new
curves show the lower incremental net benefits of storage deployment when the Avoided
Distribution Outages benefit is removed from the value stack.

Notwithstanding this, the Company offers the following comments regarding the Customer
Outage Reduction Value analysis in the Report.

The Report at several places discusses the Company’s efforts with automated distribution
feeder control and grid modernization. The Company assumes the “island” referred to on page
75 of the Report to be an “intentional island”. This is because the Institute of Electrical and
Electronics Engineers (“IEEE”) Standard 1547-2018 requires the distributed energy resource (in
this case, energy storage) to cease to energize the electric power system within two seconds when
an “unintentional island” is formed, and so storage could not aid in providing any outage
reduction value to customers in the area in this scenario.

To explain further, NV Energy is piloting distribution automation projects, including Fault
Location, Isolation and Service Restoration (“FLISR”). These projects are aimed at isolating a
section of the distribution system where the cause of the service interruption lies, and restoring
service to as much of the system (as many customers) as possible in short order. While IEEE
1547-2018 allows the formation of an intentional island, the Company’s distribution automation
pilots do not include allowing the formation of such. Although NV Energy can explore the
necessary technical, operational, control, and safety requirements to allow this type of automated

30 Report, p. 27, 29, 73, and 75.
Resources with Associated Electric Power Systems Interfaces, Section 8.1.1, pg. 65.
operation in the future on a 1 – 2 second basis, it should be noted that such islands do not presently exist, are not an approved operational condition, and would represent a new operational paradigm on the Company’s distribution systems. The Report acknowledges that “this capability currently is not present in all NV Energy feeders and may require further network upgrades”. In fact, no NV Energy feeder currently has the capability to be islanded, and there would be costs involved with ensuring the necessary technical, operational, control, and safety requirements to allow such operation, utilizing either the current capabilities of the Company’s advanced distribution management system or a yet-to-be-identified distributed energy resources management system. These distribution automation costs are not evaluated in the Report.

The Report also states that “(t)o the extent these grid modernization efforts are ongoing, we anticipate that the integration of batteries would not require any additional network upgrade costs”. Although there are grid modernization efforts ongoing on the Company’s distribution systems, this fact alone does not lead to the conclusion that there will be no costs for interconnecting and integrating battery storage of sufficient capacity to economically provide customer outage reduction value in certain areas of the system. NV Energy is performing initial Hosting Capacity Analysis on its distribution feeders in support of its DRP efforts, but until the results of these studies are known and areas that may have limited capability to accommodate both the load (charging) and generating (discharging) characteristics of battery storage are identified, a generalization cannot be made that no upgrade costs on the distribution system will be required to interconnect and integrate battery storage in certain areas of the system.

The Report assumes for purposes of its outage study that a 5-MW, 20-MWh battery is deployed, and states that this sizing is roughly consistent with the average peak load of feeders on the NV Energy distribution system, which is based upon information from a study by Navigant in 2010. NV Energy recently examined the peak loading of its distribution feeders, and this analysis

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32 Report, p. 75.
33 Report, p. 29.
34 Report, p. 74.
revealed that the average peak loading on the Company’s distribution feeders is approximately 6.5 MVA. The average power factor on NV Energy’s feeders is above 90%, so the average peak loading is above 5.85 MW (6.5 x 0.9). The Report does not provide the detailed calculations of the estimated customer outage reduction value where the assumed battery size is integrated into those calculations, but the Company believes that it is reasonable to assume that a change in the average peak loading assumption from 5 MW to at least 5.85 MW (resulting in the assumption of a 5.85 MW, 23.5 MWh battery) would affect the results. The Company cannot determine the exact effect at this time.

The Report explains the framework Brattle used for determining the value of storage to reduce distribution outages was a two-step process, accounting for the fact that past reliability performance does not necessarily directly translate to future reliability performance, i.e., just because a feeder has performed poorly in the past does not mean it will in the future.\footnote{Report, p. 27–28, 72–73.} Brattle’s approach seems reasonable for the purposes of the study, but it does underline the uncertainty involved with the Avoided Distribution Outages value and the Company’s concern regarding utilizing the potential results of the Report to directly establish biennial targets for energy storage.

\textbf{D. The Considerations Set Forth in Section 7 of SB 204.}

Procedural Order No. 4 states that the comments of interested persons recommend to the Commission whether it is in the public interest to establish biennial targets for the procurement of energy storage systems by the electric utility. It also directed that “(t)he written comments must explicitly consider the purposes listed in Section 2 of SB 204 and the benefit and cost considerations detailed in Section 3 of SB 204.”\footnote{Procedural Order No. 4, Paragraph 17.a., p. 3}

As discussed previously, NV Energy does not believe that setting biennial targets for the procurement of energy storage systems is in the public interest, and that instead it should plan to procure cost-effective energy storage systems through its triennial IRP/DRP process. While the
seven “purposes” listed in Section 7(2)(a) are generally true, they would be best evaluated in the
triennial IRP process when each can be considered under the facts and circumstances that are
present at that time. NV Energy believes that the procurement of energy storage systems that are
cost-effective for its customers will generally be in line with each of the seven purposes listed in
Section 7(2)(a), and that its IRP/DRP processes will address each of the seven.

Section 7(2)(b) of SB 204 directs the Commission to consider “the interconnection of
energy storage systems at each point of the electric grid, including, without limitation, in the
transmission and distribution of electricity and at the site of the customer.”37 The Brattle Report
primarily examined utility-scale storage, which necessarily would be interconnected to the
transmission and distribution portions of the grid. NV Energy does not contemplate any
unsolvable issues with Interconnection at the T&D level; indeed, the Company has 100 MWs of
storage pending Commission approval and initiated another RFP seeking proposals for renewable
energy resources with energy storage systems.

The Report separately analyzed behind-the-meter (“BTM”) installation of storage, and
stated that the deployment of energy storage by customers would most likely occur in the
commercial and industrial sectors, and would be used to provide retail bill reduction, backup
generation, and aggregation as a demand response resource.38 NV Energy sees no unsolvable
issues with the interconnection of BTM systems. Technical issues are addressed through the
Company’s tariffed rules and engineering standards. Further, NV Energy has already commenced
the new energy storage incentive programs established by Senate Bill 145 that provide incentives
for the installation of BTM storage systems that are integrated with renewable energy systems.
Installation of small energy storage systems has already commenced without the need for energy
storage targets.

37 NRS 704.795 (2)(b).
38 Report, p. 42.
Procedural Order No. 4 also directed interested parties to consider the cost and benefit considerations listed in Section 7(3). NV Energy discussed above in Section II. C. its concerns with the Report’s quantification of the costs and benefits of energy storage, and it is important to remember that the Report’s calculations provide a snapshot of the costs and benefits at one point in time. NV Energy operates in a fluid environment, not a static one, and the IRP process, which is filed once every three-years, with amendments filed more frequently when called for by circumstances, would be far superior to assessing the costs and benefits of energy storage projects over time.

NV Energy also notes that, as it discussed with regard to outage avoidance costs (Section II. C. 2.d.), the Report’s inclusion of the Customer Outage Reduction Value in its RIM calculation overstates the current cost effectiveness of energy storage. This again argues against setting procurements targets outside of the IRP/DRP process.

**III. Conclusion**

At this time the Company is concerned that targets should not be set in a process that would pose conflicts with the well-established IRP process, which provides a rigorous periodic planning process that identifies the best and lowest cost long term plan to meet the resource needs, advance renewables, maintain prices, reduce emissions, and so forth. The Company believes the intent of SB 204 was to prompt the utilization of storage in a resource plan when it is cost effective. In the short time since the Senate Bill passed, this has already begun and through the IRP process, NV Energy has already proposed storage in a cost competitive manner that is currently being vetted in a transparent, public proceeding. NV Energy believes that the robust IRP/DRP is the appropriate venue for evaluating and comparing the merits of energy storage systems, whether integrated into supply-side systems, the transmission or distribution system, or behind the meter, with all other alternatives to ensure that Nevada continues to develop in the public interest a more robust, reliable and less carbon-intensive electric system.
NV Energy appreciates the work performed by Brattle and the insights its Report provides. The Company looks forward to reviewing the Comments of the other interested parties and participating further in this Docket.

Submitted this 31st day of October, 2018.

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

By:

/s/ Douglas Brooks
Douglas Brooks
Senior Attorney
6226 W. Sahara Ave.
P.O. Box 98910
Las Vegas, Nevada 89151
Tel: 702-402-5697
Fax: 702-402-2069
Email: dbrooks@nvenergy.com
ATTACHMENT 1
Net Benefits 2020: Excluding Distribution Outage Value

- **Low Battery Cost**
- **High Battery Cost**

$\$/kW-year vs. Storage Deployment (MW)
Net Benefits 2030: Excluding Distribution Outage Value

$/kW-year

Storage Deployment (MW)

Low Battery Cost

High Battery Cost
CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing filing of NEVADA POWER COMPANY D/B/A NV ENERGY and SIERRA PACIFIC POWER COMPANY D/B/A NV ENERGY in Docket No. 17-07014 upon the persons listed below by the following:

Tammy Cordova
Public Utilities Comm. of Nevada
1150 E. William Street
Carson City, NV 89701-3109
tcordova@puc.nv.gov
Staff Counsel Division
Public Utilities Comm. of Nevada
9075 West Diablo, Suite 250
Las Vegas, NV 89148
pucn.sc@puc.nv.gov

Paul Stuhff
Attorney General’s Office
Bureau of Consumer Protection
8945 W. Russell Road, Ste. 204
Las Vegas, NV 89148
bcpserv@ag.nv.gov
Ernest Figueroa
Bureau of Consumer Protection
100 N. Carson St.
Carson City, NV 89701
bcpserv@ag.nv.gov

Eugene Mocbius
Universal Solar Direct
4775 W. Teco Ave. #115
Las Vegas, NV 89118
eugeneusdlv@gmail.com
Robert Johnston
Western Resource Advocates
550 W. Musser St., Ste. H
Carson City, NV 89703
Robert.johnston@westernresources.org

Jim Noh
Strategen Consulting
2150 Allston Wy, Ste. 210
Berkeley, CA 94709
jnoh@strategen.com
Nitzan Goldberger
Energy Storage Association
1800 M. St. NW Ste. 400S
Washington, DC 20036
n.goldberger@energystorage.org

Russell Rowe
Rowe Law Group
7435 S. Eastern Ave. Ste. 510
Las Vegas, NV 89123
russ@rowelawnv.com
Sarah Van Cleve
Energy Policy Advisor
Tesla, Inc.
3500 Deer Creek Road
Palo Alto, CA 94304
svancleve@tesla.com

Rebecca Wagner
Wagner Strategies
316 California Ave. #857
Reno, NV 89509
rebwagner@rowelawnv.com
Adam Horwitz
Longroad Energy Holdings Inc.
133 Federal St., Ste. 1202
Boston, MA 02110
Adam.horwitz@longroadenergy.com
Angel De Fazio (NTEF)
National Toxic Encephalopathy FDN
PO Box 29194
Las Vegas, NV 89126
angel@ntef-usa.org

Angel De Fazio (NVE SSM)
NV Ennergy Stop Smart Meters
PO Box 29194
Las Vegas, NV 89126
info@nvestopsmartmeters.info

Angel De Fazio (PUC Watch Dogs)
PUCN Watch Dogs
PO Box 29194
Las Vegas, NV 89126
info@pucnwatchdogs.com

Aron Branam
EDP Renewables
53 SW Yamhill St.
Portland, OR 97204
Aron.branam@edpr.com

Emily Duff
CERES
99 Chauncey St. 6th Flr.
Boston, MA 02111
duff@ceres.org

Lisa Tormoen Hickey
Tormoen Hickey LLC
14 N. Sierra Madre
Colorado Springs, CO 80903
lisaehickey@newlawgroup.com

Rebecca Langer
EDP Renewables
53 SW Yamhill St.
Portland, OR 97204
Rebecca.langer@edpr.com

DATED this 31st day of October, 2018.

/s/ Lynn D’Innocenti
Lynn D’Innocenti
Sr. Legal Admin. Assistant
Nevada Power Company
Sierra Pacific Power Company