BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

Rulemaking to implement the provisions of Senate Bill 204 (2017)	**Docket No. 17-07014**

COMMENTS OF THE ENERGY STORAGE ASSOCIATION ON THE IMPLMENETATION OF SENATE BILL 204

Pursuant Procedural Order No. 4 issued by the Public Utilities Commission of Nevada ("Commission") on October 2, 2018, in Docket No. 17-07014 Investigation and Rulemaking to Implement Senate Bill ("SB") 204 (2017), the Energy Storage Association ("ESA") respectfully submits these comments for the Commission's consideration. In our comments, ESA demonstrates that the findings of the Brattle Group study Commissioned by the Governor's Office of Energy as part of the Commission's implementation of SB 204 supports the creation of a biennially increasing energy storage target. ESA proposes that to be effective, such a target must contain several programmatic elements developed through a robust stakeholder process. A recommended framework for stakeholder discussion is included in our comments for the Commission's consideration.

I. ABOUT THE ENERGY STORAGE ASSOCIATION

ESA is the national trade association dedicated to energy storage, working toward a more resilient, efficient, sustainable and affordable electricity grid – as is uniquely enabled by energy storage. With more than 170 members, ESA represents a diverse group of companies, including independent power producers, electric utilities, energy service companies, financiers, insurers, law firms, installers, manufacturers, component suppliers and integrators involved in deploying energy storage systems around the globe.

II. COMMENTS ON ENERGY STORAGE TARGETS

i. Brattle Group study provides clear evidence that energy storage deployments are in the public interest.

Senate Bill 204 (2017) calls on the Commission to investigate whether certain levels of deployment of energy storage are in the public interest for the State of Nevada. The legislature specifically notes that, if energy storage is determined to provide a net benefit to Nevada, the Commission must develop targets for energy storage. The system-wide study commissioned by the Governor's Office of Energy and conducted by Brattle Group provides a comprehensive and analytically sound analysis of the costs and benefits of energy storage. The study determines that by 2030, with reasonable energy storage cost assumptions, 1,000 megawatts (MW) of energy storage deployment provides a net benefit for the State. The findings of this report present the modeling and analytical basis on which to build an energy storage program. Importantly, the study thoughtfully reviews the specific needs of the State's electric grid and quantifies the benefits energy storage can provide with a dollar value. The study stacks estimated and quantifiable values, subtracts the estimated costs of those storage deployments, and determines a net benefit. Given that the benefits outweigh the costs of a storage deployment of 200 MW by 2020 and 1,000 MW by 2030, along with 40 MW of behind-the-meter resources, the study demonstrates that energy storage deployment is in the public interest.

The study takes a conservative approach with several assumptions, suggesting that the ultimate net benefit is likely greater that the study estimates. For example, transmission and distribution deferral value is much lower than similar cost-benefit studies conducted in New York and Massachusetts, since the Brattle study primarily focuses on storage solutions for distribution transformer upgrades, which is narrower than the opportunities identified in the New York and Massachusetts studies. Moreover, the study admits to adopting a conservative approach to modeling an asset's ability to provide multiple

values, thereby potentially leaving additional values out of the calculation.[1] The study also takes note of the potential for behind-the-meter resources to provide additional values, such as ancillary services and avoided transmission and distribution costs, but does not quantify those values, either in the projection of deployment of behind-the-meter resources or in the net benefit calculation. Finally, by focusing on standalone storage and 4-hour duration assets, the study likely underestimates the potential value of energy storage, therefore resulting in a lower deployment number.

Considering the conservative approach taken by the Brattle Group in quantifying benefits, the fact that deployment levels of up to 1,000 MW result in a net benefit provides the Commission with the necessary information to move forward on the guidance provided by the State Legislature. In fact, ESA anticipates that even higher levels of deployment would produce a net benefit given the issues noted above. The Brattle study presents findings consistent with the cost-benefit studies conducted in New York and Massachusetts. ESA notes that New York has developed a deployment target of 1,500 MW by 2025 and is currently reviewing a 2030 target that may reach as high as 3,000 MW.[2] Similarly, Massachusetts' cost benefit study determined that 1,766 MW[3] of energy storage would be in the public interest and has developed an energy storage target of 1,000 megawatt-hours by 2025.[4]

SB 204 specifically calls for the determination of storage deployment targets to be based on a cost benefit analysis that includes integration of renewable energy, reliability, reduction in peak capacity costs, reduction in generation, distribution and transmission investment, ancillary services, and emissions reductions. The Commission has sufficient evidence that a deployment scenario of 1,000 MW by 2030 provides a net benefit in all of these categories.

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[1] The Brattle Group, The Economic Potential for Energy Storage in Nevada, October 2018, pg. 57.
[2] New York State Energy Storage Roadmap and Department of Public Service / New York State Energy Research and Development Authority Staff Recommendations, June 2018, available at: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={2A1BFBC9-85B4-4DAE-BCAE-164B21B0DC3D}.
[3] Massachusetts State of Charge report, September 2016, available at: https://www.mass.gov/files/2017-07/state-of-charge-report.pdf.
[4] An Act to Advance Clean Energy, H.4857 (2018), available at: https://malegislature.gov/Bills/190/H4857.pdf.

In our comments below, we highlight the evidence from the report that addresses these specific statutory requirements.

Renewable energy integration and the increased use of renewable energy resources to generate electricity. The study quantifies the benefits of renewable energy integration in a number of ways. First, the study determines that a deployment scenario of 1,000 MW of energy storage will result in reduced curtailment of renewable energy resources by 50%. The study also notes that storage can provide flexible capacity on the system that can generally assist with balancing a system with more intermittent resources but does not quantify the benefit of that in a dollar amount. The legislative guidance calls for the need to consider the benefit of increased use of renewable energy resource to generate electricity, and its clear that both in terms of prevented curtailment and enhanced flexibility, energy storage can support those state policy goals cost-effectively.

Improvement of the system's reliability. The study finds that energy storage deployments can enhance system reliability while reducing the costs of doing so. Particularly on the distribution level, energy storage provides cost-competitive reliability solutions and improves reliability by reducing the frequency and duration of service interruptions to customers. The study quantifies the value for avoided distribution outages and incorporates it into the net benefit calculation.

Reduction of the need for the additional generation of electricity generation during peak demand periods. The Brattle Study found that storage can effectively offset the need for additional peaking capacity in both 2020 and 2030, across all levels of deployment evaluated. In fact, avoided capacity investment counts for approximately 50% of the benefits value of energy storage deployments in the study scenarios. The Massachusetts and New York energy storage cost-benefit studies similarly found that the benefit of reducing the need for additional generation capacity during peak loads was a significant portion of the savings and benefits of energy storage because the cost of providing that generating capacity is so high.

Avoidance or deferral of investment by the electric utility in the generation, transmission and distribution of electricity. ESA notes that in most studies, the deferral of distribution and transmission investment with non-wires energy storage solutions has made up approximately 25% of the savings potential for energy storage deployments and is expected to be a significant market segment for energy storage across the U.S. The Brattle Group study identifies a small number of high-value opportunities to defer specific transmission and distribution investments incorporated into the utilities' investment plans and determine storage can provide savings opportunities for the State of Nevada, but Brattle's analysis may underestimate the market opportunity for distribution and transmission deferral through energy storage solutions. Specifically, we note that the study leans on NV Energy's capital expenditure data to identify potential opportunities for transmission and distribution deferral. While this is a good start, additional deferral potential at the distribution level is likely to be found with more granular analysis, beyond just the transformer upgrades to support local load growth that Brattle identified in the benefits calculation.

Replacement of ancillary services provided by facilities using fossil fuels. The study finds that due to its high operational flexibility energy storage can provide ancillary services more cost-effectively than conventional resources in certain cases. The study incorporates the estimated value of ancillary services into its production cost savings assessment.

Greenhouse gas emissions reductions. The study finds that 1,000 MW of storage by 2020 could decrease WECC-wide CO2 emissions by 132,000 tons in 2020 and 235,000 tons in 2030 if charged with low emitting resources and discharged during high emitting periods, particularly evening ramp hours. The study did not quantify the dollar value of the avoided CO2 emissions and still found the deployment of storage to provide a net benefit. While not applied to the cost-benefit calculation, Brattle Group quantified a societal-emissions-cost decrease of $0.7 to $10.6 million in 2020 and a decrease of $1.6 to $27.0 million in 2030. Considering the statutory guidance to consider emissions reductions, it is likely that there is an even stronger benefit for the deployment of 1,000 MW of energy storage, if the net dollar value of the emissions reductions' benefits were included in the benefits assessment.

ii. Setting a long-term target is critical for capturing benefits of energy storage deployment.

ESA commends the Commission and NV Energy for the significant work already underway to integrate energy storage systems in the State of Nevada's regulatory framework and electric system. Notably, revisions to the distribution interconnection rules, the development of distribution resource planning regulations, and greater consideration and request for proposals of energy storage in the integrated resource planning process can advance the energy storage industry in the State. These critical steps to overcome the regulatory hurdles facing energy storage and to develop programs for the deployment of energy storage can certainly help in the realizing a portion of the deployment scenarios identified in the Brattle Group study as providing a net benefit to the State.

However, these important steps do not obviate the need for a long-term policy signal in the form of an energy storage target. In fact, without the target, the steps described above are encouraging but are unlikely to result in the industry making the significant investment of setting up infrastructure and a presence in the State of Nevada. In recent years, California, New York, New Jersey, and Massachusetts have set such targets and goals and are developing the programmatic framework that will support those targets. Moreover, Arizona is currently exploring an energy storage target. Turning the findings from the Brattle Group study that provides a Nevada-specific assessment of the appropriate levels of storage deployment in to a long-term deployment target will ensure that the State sends a signal that it intends to address any regulatory hurdles facing energy storage resources over the coming years. A robust presence of energy storage providers in the State is necessary to drive innovation and efficiencies that enhance offerings and reducing costs of energy storage devices.

ESA respectfully suggests that while determining long-term energy storage deployment targets is a necessary policy signal to remove barriers to energy storage deployment in the State and realize net benefits to ratepayers, such a target must be supported by effective programmatic elements. These elements should be developed through a robust stakeholder process. ESA recommends an overall

deployment target to include the total number of megawatts deemed to be in the public interest, and then set a clear plan for which programs to include to meet that deployment target. An effective target is one that provides both a long-term number, such as the 2030 deployment scenario provided by the Brattle Group study, and also a number of interim goals, such as 2020 and 2025. Development of the target should include a process for the provision of energy storage by Nevada utilities, as well as other programs targeting behind-the-meter technologies, such as an incentive program or utility programs that signal for customers when to charge and discharge their battery to align with the grid's needs.

Below ESA provides a framework for the Commission's considerations of the key elements that stakeholders in this proceeding should develop in a collaborative manner. ESA notes that these components will differ for each jurisdiction and should be considered through the prism of Nevada's unique circumstances and regulatory context.

- **Setting the target.** In setting the target, consideration should be made for whether the target should be set in megawatts or megawatt-hours. For example, while California, New York, and New Jersey set megawatt targets, Massachusetts set a megawatt-hour target. Additional consideration should be made for whether the target should be divided by point of interconnection (for example, distribution connected versus transmission connected).

- **Review of existing programs to achieve the target.** Review existing programs to determine if they are sufficient for achieving the deployment targets. If it is determined that existing programs and procurement mechanisms are not sufficient to achieve the deployment program, identify new mechanisms.

- **Eligibility criteria.** Program design should include consideration of what energy storage technologies should be eligible as well as whether the target should include existing projects or projects under development.

- **Competitive frameworks.** Consider what programmatic elements and guidance should be in place to facilitate the most diverse deployment of energy storage assets, including energy storage ownership models and energy storage applications.

- **Reporting considerations.** For elements of the deployment target that the utilities are tasked with procuring, consider what kind of accountability mechanisms, such as annual reporting, are appropriate.

- **Addressing additional barriers to deployment.** Identify any remaining barriers to deployment for energy storage resource in the state and propose a plan for addressing those barriers.

III. CONCLUSION

ESA respectfully urges the Commission to determine that energy storage targets are in the public interest, based on the evidence provided by the Brattle Group analysis. The development of a regulatory framework for that target, as described in our comments, is paramount to realizing the benefits for the electricity consumers of the State of Nevada. This strong policy signal will help steer a fast-growing storage industry to make its home in the State and create significant new investments and jobs. ESA thanks the Commission for the opportunity to provide comments in support of the development of energy storage deployment targets in the State of Nevada. We look forward to working with the Commission and other stakeholders in this docket to undertake the important discussions related to the development of an energy storage program.

Respectfully submitted on this 31st day of October, 2018.

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