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VIA E-FILING & E-MAIL

Carmen D. Diaz, Acting Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 9th Floor
Post Office Box 350
Trenton, NJ 08625-0350

Re: In the Matter of Declaring Transmission to Support Offshore Wind a Public Policy of the State of New Jersey, BPU Docket No. QO20100630.

Dear Acting Secretary Diaz,

On behalf of our client, LS Power Grid Mid-Atlantic, LLC ("LS Power"), enclosed please find confidential and public versions of LS Power's responses to the questions identified in the Request for Additional Information dated April 27, 2022 in the above docket. A separate letter and affidavit requesting confidential treatment are also enclosed.

Please do not hesitate to contact me if you have any questions.

Very truly yours,

Murray E. Bevan

Enclosures

cc: Adam Gassaway, LS Power (via e-mail)
Scott Carver, LS Power (via e-mail)
Lawrence Willick, LS Power (via e-mail)

LS POWER GRID MID-ATLANTIC, LLC
One Tower Center, 21st Floor
East Brunswick, NJ 08816

May 20, 2022

LS Power Grid Mid-Atlantic, LLC ("LS Power Grid") would like to thank the New Jersey Board of Public Utilities ("BPU" or "Board") for the continued opportunity to comment in BPU Docket No. QO20100630. LS Power Grid provides the following responses to the questions identified in the Request for Additional Information dated April 27, 2022.

As identified in the comments below, the LS Power Grid Clean Energy Gateway Option 1B and Option 2 proposals provide New Jersey with the most cost-efficient and lowest risk approach for integrating Offshore Wind ("OSW") into the State's on-shore electrical grid. Our entirely-HVAC approach provides enhanced reliability and cost savings relative to proposals that require expensive, unnecessary offshore HVDC platforms. Our design includes many measures to reduce the overall project footprint, minimizing environmental impacts. LS Power Grid has set the bar in the transmission industry for delivering high-quality transmission systems within firm cost containment commitments. As such, the cost containment commitments in our proposals are the most comprehensive among all proposals now under review by BPU. LS Power Grid can and will deliver a reliable and resilient transmission system that will support New Jersey in its drive toward achieving its ambitious clean energy goals at a cost at least $1 billion less than alternatives. Providing a fixed offshore interconnection location and eliminating the risk of onshore upgrades translates into significant benefits for OSW developers. Selecting the Clean Energy Gateway provides at least $1 billion in savings and provides other significant benefits for ratepayers and OSW developers alike.

Questions Directed to Transmission Developers:

1. **How should the Board ensure that projects are completed on schedule given upcoming OSW generation projects' timelines? Please explain how changes in a future OSW generation project schedule may affect a selected SAA project, if at all.**

   The Board has several risk management options to ensure that SAA projects are completed on time and address schedule risks as outlined below. In order to minimize project-on-project risk, these risk management factors should be weighed heavily in the Board's selection.

   - Selecting SAA projects that minimize the need for coordination with OSW generators. SAA projects with well-defined endpoints and routes are able to advance permitting, development, and procurement activities ahead of OSW project selection to minimize schedule risks. The Clean Energy Gateway is designed to minimize the necessary upfront coordination with OSW projects. The clear delineation between generator scope and transmission scope minimizes coordination to facilitate an accelerated schedule, where transmission permitting can commence immediately upon selection of SAA projects. LS Power Grid strategically located all points of interconnection (Option 1B and

Option 2 proposals) to provide certainty to OSW developers and mitigate schedule risks. In contrast, SAA projects that require the Board to select an OSW project and then coordinate with the selected OSW developer to determine the platform location introduces significant schedule risks. For example, HVDC projects that propose OSW connections at 66 kV require that the HVDC platform be optimally located within each OSW project and coordinated with OSW turbine and array cable layouts. This required coordination will result in schedule risks and delays as compared to LS Power Grid's proposals.

- Allowing for direct connection to Option 1B proposals can reduce schedule risk among projects, especially for accommodation of Solicitation 2 generation. The Board should consider that the lowest implementation risk and cost profile for some OSW projects may be to connect directly to Option 1B proposals. The long timeframe associated with Bureau of Ocean Energy Management (BOEM) permits for all Option 2 proposals introduces schedule risks for OSW procured by the Board in Solicitation 2. LS Power Grid Option 1B proposals are designed to accommodate these connections directly from OSW projects at 275 kV as well as future connections from the LS Power Grid Option 2 proposal at 345 kV.

- Selecting SAA projects with schedule float between the in-services dates of transmission projects and OSW projects. To minimize the risk to OSW projects, the Board should select and plan for an SAA project to be completed ahead of OSW projects with float to account for schedule uncertainties. Selection of an Option 1B proposal would provide significant schedule float as the Option 1B proposals avoid the long timeframe associated with BOEM permits.

- Selecting SAA projects with the ability to sequence and phase construction to better match the timing of OSW generation. Projects that are modular allow schedule adjustments for individual phases to match OSW project timelines. Phased project solutions reduce schedule risk as all components do not need to be complete to begin delivering OSW energy. The Clean Energy Gateway is designed to be modular to match a wide variety of generation and schedule scenarios.

- Selecting proposals that offer a schedule guarantee. A schedule guarantee aligns the interests of the SAA project sponsor, the OSW developer, and New Jersey ratepayers. If the transmission project is delayed, then the SAA project sponsor will incur financial consequences. Without this protection, a transmission owner could benefit from a delay at the expense of ratepayers.

- Selecting transmission developers with proven project management experience. The Board should select a developer with a proven ability to deliver complex competitive projects on schedule. LS Power Grid conducted extensive due diligence and incorporated New Jersey-specific experience and knowledge to ensure the schedule for the Clean Energy Gateway is well conceived and realistic. LS Power Grid will continually work to identify schedule risks as issues

arise and work to resolve and mitigate risks. LS Power has delivered every one of its competitive transmission projects on or ahead of schedule.

- Consider the upgrade and outage schedule risks associated with SAA Projects. Many of the proposed SAA Projects require substantial rebuilds of the existing transmission system. These projects require future system studies to develop complex outage plans and significant coordination of transmission outages that must occur sequentially. In many cases, outages may be limited to low demand time periods and if one outage is delayed, the schedule of the entire project is impacted. LS Power Grid considered this risk and developed Option 1B proposals (Proposal IDs 781 and 294) that can be completed with limited upgrades on the existing system to minimize outages.

2. **Please outline any anticipated changes in tax policy and any federal sources of money transmissions developers might seek for a selected SAA project —or that New Jersey could seek.**

Drafts of the "Build Back Better" Act have included an Investment Tax Credit ("ITC") for new high-voltage transmission. LS Power Grid's proposed cost-of-service approach (subject to certain caps) would allow any ITC to flow through to ratepayers to the extent realized. As described in response to question 4 below, LS Power Grid will commit to work with the Board and other entities in New Jersey to pursue potential sources of federal grants, loans, and other programs to reduce the cost to New Jersey ratepayers.

3. **Other than an act of Congress amending the current Federal Investment Tax Credit ("ITC"), might there be an innovative way (such as in collaboration with OSW generation developers) for Option 1b, Option 2, or Option 3 projects that support OSW to qualify for the ITC?**

LS Power Grid commits that it will work collaboratively with the Board and OSW generation developers to identify innovative approaches to qualify SAA projects for the ITC. The rate structure proposed for the Clean Energy Gateway facilitates the pass through of realized savings to New Jersey ratepayers.

4. **How might transmission developers explore the availability of federal funding opportunities that may be available to support transmission projects? How would receipt of such funding be incorporated into bids or financing arrangements? How might the Board coordinate on applying for such opportunities?**

LS Power Grid will dedicate staff to coordinate with the Board and federal agencies to promote and pursue federal grants, loans, and other programs that could reduce the cost to New Jersey ratepayers. For example, the U. S. Department of Energy recently announced a Request for Information regarding "Formula Grants to States and Indian Tribes for Preventing Outages and Enhancing the Resilience of the Electric Grid," under the Bipartisan Infrastructure Law. It is possible that elements of Option 1B

proposals would be eligible for such grants. The program will be established later this year, after the comment period that is underway is concluded.

LS Power Grid's proposed cost-of-service approach (subject to certain caps) would allow any funding received to flow through to ratepayers.

5. **How might transmission developers explore the availability of federally-backed loans for loan guarantees that may be available to support transmission projects? How should developers and the Board coordinate on applying for such opportunities? How would receipt of such loans or loan guarantees be incorporated into bids or financing arrangements?**

As identified in response to question 4, LS Power Grid will dedicate staff to pursue federal grants, loans, and other programs that could reduce the cost to New Jersey ratepayers. LS Power Grid has experience in arranging federal loans for transmission with the Department of Energy. LS Power Grid's ownership share in the One Nevada Transmission Line ("ON Line") was the first transmission project to be financed under the U. S. Department of Energy loan guarantee program (see https://www. energy. gov/lpo/one-nevada-line). The savings on interest on this $343 million financing are passed through to Nevada ratepayers. Similarly, for the SAA projects, LS Power Grid's proposed cost-of-service approach (subject to certain caps) would allow any interest savings to flow through to ratepayers.

6. **How might a selected SAA project manage and mitigate material and equipment supply chain risks and any associated costs, particularly as they might related to HVDC?**

The Clean Energy Gateway has less supply chain risk than other proposals as it does not rely on HVDC technology. The use of HVDC technology offshore introduces additional supply chain risks, particularly for multi-terminal/meshed systems that rely on future technology advances, have technology coordination risks, and have never been successfully implemented.

[redacted]

Managing supply chain risk does not end with ordering material and equipment. LS Power Grid has a strict material and equipment quality management program to minimize supply chain risks. This program includes rigorous specifications and a factory monitoring, inspection, acceptance and testing program that is performed by LS Power Grid employees and independent experts. This program is designed to catch manufacturing issues before arriving in the field, provide real-time risk management, and ensure that construction is coordinated with material deliveries. Once materials are delivered at the construction site they are again inspected and tested before being installed and energized.

Even with these measures, any transmission owner could experience delays and outages due to supply chain issues. For example, as noted by PSEG and Atlantic City Electric in their April 29 comments in this proceeding, LS Power Grid's affiliate experienced a derate due to a supplier issue on the Silver Run project. However, the full extent of outages was mischaracterized and did not identify similar issues experienced by the incumbent transmission owner. The first issue, omitted from PSEG's comments, was due to supply chain issues experienced by PSEG. The Silver Run scope was completed and tested on May 22, 2020 (ahead of schedule), but could not transmit power for over 5 months (including the summer period) due to failures and delays of PSEG's transformer supplier. A second outage, also omitted from PSEG's comments, occurred in April 2021 to replace PSEG 230 kV insulators due to another supply chain/design issue. The third outage, referenced in prior comments, occurred when one of Silver Run's cables experienced a fault in June 2021 necessitating the pre-installed spare cable be placed in service, which was completed in approximately 7 days. While operating with the spare cable in service, the manufacturer recommended a reduced rating until April 2022. Contrary to the implication of Atlantic City Electric, (April 29, 2022 comments of Atlantic City Electric, p.6) the cost of cable repair is expected to be covered under warranty, with minimal cost to ratepayers. Silver Run's robust design, which included a spare submarine cable, minimized outage time and its operating procedures ensured reliable operations by not placing the cables at risk.

Regarding the SAA process, it is important for the Board to consider implications of equipment failure in the Project design. An HVDC cable failure would result in substantial curtailment of OSW, whereas an HVAC solution with multiple redundant paths would minimize curtailments.

7. **How might a selected SAA project manage financial risk, including, but not limited to, market and interest rate dynamics, labor costs, raw material and supply chain costs, land procurement costs, and insurance?**

LS Power Grid provides cost containment to shift financial risks from New Jersey ratepayers to itself, as the entity best positioned to manage such risks. This incentivizes LS Power Grid to perform and transfers risks from New Jersey ratepayers to LS Power Grid for construction (capital cost cap) and operations (return on equity cap, equity percentage cap, annual revenue requirement cap). Ultimately, poor

performance in managing these risks will result in a lower return on equity for LS Power Grid. However, there are many strategies and tactics to manage these risks.

First, LS Power Grid put forth considerable efforts as part of preparing its proposal and cost containment measures to identify, assess, and establish mitigation strategies for key risks. We completed extensive due diligence and entered into exclusive strategic arrangements with key suppliers and contractors to best identify and manage risks, including risks related to material and labor availability and cost.

Today, LS Power Grid remains engaged with its team of suppliers and contractors and is actively monitoring key risks and considering mitigation strategies. This process will continue until Project award, at which time LS Power Grid will implement the risk management process it has used to successfully implement large infrastructure projects as detailed in Section VI (Project Risks and Mitigation Strategy) of the BPU Supplemental Attachment submitted with its proposals. The tables in Section VI. 1 (Risk Mitigation Measures) identify key risks and mitigation measures responsive to this question.

This approach has been used on all LS Power Grid transmission projects and is a key contributor to its ability to deliver cost effective transmission solutions with firm cost commitments. LS Power Grid has extensive experience in assembling and managing multi-disciplinary teams to successfully deliver complex projects across the country. LS Power Grid has unparalleled experience delivering competitive transmission projects subject to cost containment and schedule guarantees. LS Power Grid has consistently completed extra-high voltage transmission projects at or below original cost estimates and on or ahead of schedule. The majority of these projects were subject to firm cost and schedule commitments. LS Power Grid's disciplined project management approach and extensive diligence have facilitated firm commitments to the benefit of ratepayers.

8. **If an Option 2 or Option 3 proposal is selected, please detail the potential reliability and economic benefits.**

LS Power Grid's HVAC Option 2 proposal provides reliability and economic benefits with redundant circuits to the on-shore POIs. This design reduces curtailment risk and losses to enable delivery of additional OSW generation as compared to HVDC or radial generation interconnections. This is not the case for an HVDC Option 2 proposal, which provides minimal incremental reliability or economic benefits. An HVDC Option 2 proposal is electrically and functionally the same as a radial generator interconnection. In fact, to the extent an Option 2 proposal aggregates OSW generation into a larger single contingency, it could have reduced reliability compared to multiple radial generator interconnections.

An HVDC Option 3 proposal will provide limited reliability and economic benefits, with such benefits less than the incremental cost at this time. However, LS Power Grid's Option 2 proposal delivers the stated benefits of an Option 3 proposal at no incremental cost. LS Power Grid's Option 2 proposal connects several OSW generators to a single off-shore platform, which creates an offshore transmission network. In addition, it provides more flexibility to expand through Option 3 connections in the future than an HVDC alternative. This is detailed further in LS Power Grid's April 29, 2022 comments (see "Benefits of AC Transmission Offshore" on pages 12-13). HVAC technology is inherently compatible with all potential future connections, either an HVAC or HVDC connection, and is compatible with an Option 3 connection between SAA platforms or with future potential interregional connections. In fact, a future HVDC connection to the Clean Energy Gateway Option 2 facilities would provide controllability where it could provide incremental value, to the extent it could direct power to different on-shore points of interconnection. Selecting an HVAC solution today preserves the flexibility for the Board to make a future determination of the incremental cost and benefits of future HVAC or HVDC Option 3 or interregional connections. Concerns with compatibility identified in Question 10 to OSW Generators are moot with an HVAC approach. Selection of an HVAC Option 2 proposal provides flexibility for future Option 3 connections among SAA offshore platforms or for future interregional connections.

Questions Directed to Offshore Wind Developers and New Jersey Division of Rate Counsel:

In addition to the responses to the questions directed to transmission developers, LS Power Grid offers the following comments in response to the questions directed to OSW developers and the New Jersey Division of Rate Counsel. Many of these questions focused on reliability benefits of Option 2 and Option 3 proposals and the use of HVAC versus HVDC technology. Key points applicable to LS Power Grid's proposals and stakeholder comments include:

- HVAC networked solutions are more reliable than offshore HVDC options. HVDC alternatives create large single contingencies and require more outages, even with multi-terminal or meshed systems. HVAC meshed systems have built-in redundancy and are designed to continue operations in the event of a contingency reducing risk of

generation curtailment.

- Option 2 HVAC proposals provide New Jersey with an offshore network that can be easily integrated with a future regional OSW grid regardless of whether the regional grid uses HVDC or not.

- Option 3 proposals involving HVDC have significant technology risks, have not been implemented in practice, and require future advances in protocols to enable controls to work across different platforms.

- Significant reductions to environmental and community impacts are achieved by avoiding environmentally sensitive areas (New Jersey's bays), using consolidated corridors, and reducing the length of corridors. The number of cables within a corridor has minimal incremental environmental impact. All Option 2 proposals avoid direct beach crossings, either avoiding the beach or drilling under the beach with advanced horizontal directional drilling technology, avoiding any significant public impact.

- Option 2 HVDC solutions do not provide the same benefits as an HVAC solution and any increased cost of HVDC technology is not justified.

- By enhancing the on-shore HVAC system, Option 1B HVAC proposals enhance system resiliency and reliability, a benefit not provided by Option 2 proposals alone, or even combinations of Option 2/3 proposals.