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Via Email (Peter.VanBrunt@law.njoag.gov)

Mr. Peter Van Brunt **Deputy Attorney General** Department of Law & Public Safety Division of Law **Public Utilities Section** 124 Halsey Street P.O. Box 45029 Newark, New Jersey 07101

Re: I/M/O the Implementation of L. 2018, c. 16 Regarding the Establishment of a Zero Emission Certificate Program for Nuclear Power Plants **BPU Docket No.: EO18080899**

Dear Mr. Van Brunt:

This law firm represents the PJM Power Providers Group ("P3") in the above-referenced matter. On behalf of P3, we respectfully submit P3's response to the prompt from Board Staff, dated March 1, 2019.

Thank you for your attention to this matter.

Respectfully submitted,

DECOTIIS, FITZPATRICK, COLE & GIBLIN, LLP Glenpointe Centre West 500 Frank W. Burr Boulevard Teaneck, New Jersey 07666 (201) 928-1100 Attorneys for the PJM Power Providers Group ("P3")

By: ________Alice M. Bergen

NEW JERSEY NEW YORK

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cc: BPU Service List (via e-mail only)

STATE OF NEW JERSEY BEFORE THE BOARD OF PUBLIC UTILITIES

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IN THE MATTER OF THE IMPLEMENTATION OF L. 2018, c. 16 REGARDING THE ESTABLISHMENT OF A ZERO EMISSION CERTIFICATE PROGRAM FOR ELIGIBLE NUCLEAR POWER PLANTS

BPU Docket No. EO18080899

<u>RESPONSE OF PAUL M. SOTKIEWICZ, PH.D. ON BEHALF OF THE PJM</u> <u>POWER PROVDIERS GROUP IN REGARD TO STAFF QUESTIONS ON</u> <u>ACCOUNTING FOR RISK</u>

I. INTRODUCTION

 My name is Dr. Paul M. Sotkiewicz. I am the President and Founder of E-Cubed Policy Associates, LLC ("E-Cubed") and formerly served as the Chief Economist in the Market Service Division of PJM Interconnection, L.L.C. ("PJM"). I have been asked by the PJM Power Providers Group ("P3") to submit responses on their behalf in regard to questions posed by the New Jersey Board of Public Utilities ("NJ BPU" or "BPU") staff regarding accounting for risk in PJM's markets on March 1, 2019 in BPU Docket No. EO18080899.¹

2. Specifically, the questions are the following:

Please describe how generators bidding into the PJM Energy and Capacity Markets typically cover their operational and market risks. Specifically, please

¹ State of New Jersey, Office of Attorney General, Department of Law and Public Safety, Division of Law, In the Matter of the Implementation of L. 2018, c. 16 Regarding the Establishment of a Zero Emission Certification Program for Eligible Nuclear Power Plants BPU Docket No. EO18080899, Letter addressed to PSEG, Rate Counsel, NJLEUC, IMM, NRG, and P3, March 1, 2019.

discuss whether these risks are built into pricing bids (as defined by the PJM market guidelines), or assumed by the bidder?²

II. MITIGATING MARKET RISK ASSOCIATED WITH CHANGES IN UNDERLYING CONDITIONS

- 3. Generation resources can manage shifting supply-demand conditions in both the shortterm and long-term through various contractual arrangements that provide price certainty into the future. These shifting supply and demand conditions include secular changes in energy and peak demand growth, changes in underlying fuel prices, and technological innovations that can drive unexpected shifts in market prices for energy and capacity.
- 4. Given that generation resources owners are much closer to these developments than are customers, the wholesale market places the burden for mitigating these risks on the generation owners.
- 5. Mitigating such risk does not mean that the generation owners will only get the upside risk of the hedge paying higher-than-market prices, they may also experience instances where the hedge pays out lower-than-market prices. The point of instruments to hedge against overall market risk is that generation owners are buying certainty around their future revenue streams.
- 6. Additionally, in order to execute such a hedging strategy, generation owners must find a willing counter-party to take the counter position on the hedge. This only happens to the extent that there are counter parties that have a different view of the future and are willing to take the counter position in the anticipation they will earn the upside risk of the hedge.

7. All such hedges against market conditions take place outside of the framework of the PJM market, though the structure of the PJM market provides the opportunity to execute that hedge.

III. OPTIMAL OFFERS AND RISK MITIGATION IN THE ENERGY MARKET

- 8. In competitive electricity markets it is the responsibility of the generation owner to find the means to mitigate operational and market risks, and to enjoy the payoffs from successfully managing this risk as well as any potential downside of not successfully managing such risks.
- 9. In the energy market a competitive offer is equal to the generator's marginal cost of operation including fuel cost, variable operating and maintenance ("O&M"), and any emissions related costs such as the cost of allowances for nitrogen oxides ("NOx") and sulfur dioxide ("SO2") related to the EPA administered Cross State Air Pollution Rule ("CSAPR") or carbon dioxide ("CO2") allowances associated with participation in the Regional Greenhouse Gas Initiative ("RGGI").
- 10. When there is no market power mitigation imposed, generation resources with marketbased rate authority granted by FERC can submit offers that can reflect their assessment of risks over and above the aforementioned marginal costs of being committed in the day-ahead ("DA") market or being dispatched in the real-time ("RT") market. However, the inclusion of such risks in market-based energy market offers reduces the likelihood of a resource being committed or dispatched. The consequence of doing so could be to leave the generation resources uncommitted or dispatched despite having costs below the energy price and giving up what is an otherwise profitable strategy. In other words, such a risk mitigation strategy on its own is likely to lead to lower profits than for the generator than it would otherwise enjoy by offering into the energy market competitively.

A. Risk Mitigation in Day-Ahead and Real-Time Energy Markets

- 11. The kinds of risk that could be faced by being committed in the DA Energy Market include: 1) Tripping offline in the RT energy market when prices are higher than in the DA market and having to settle at the higher RT energy price; or 2) having prices that are higher RT than DA and foregoing additional revenues.
- 12. The risk of tripping off-line can be easily managed through prudent maintenance practices that ensures the resource will be operational and meets its DA commitments.³ In fact, for nuclear resources on average, this is not a concern since as a fleet they have the lowest equivalent Forced Outage Rates under demand ("EFORd") of any other generator type in PJM.
- 13. With respect to the risk of being unable to earn RT prices if they are expected to be higher than DA prices, generators have strategies available to them to manage this market risk. A generation resource with its DA commitment can also simultaneously clear a virtual demand bid known as a Decremental Bid ("DEC") in the DA Energy Market for an amount equal to the amount of generation it clears. In the DA Market the net settlement is then zero.
- 14. In the RT Energy Market, the DEC is then "unwound" and looks like virtual supply in real-time, but the generator commitment remains and simply runs as committed DA. The RT settlement leaves the generator exposed to RT prices and enjoying those higher prices relative to what they might have earned DA. Of course, there is also the risk that RT

³ The costs of such prudent maintenance practices can be reflected in the PJM RPM Capacity Market, as discussed below.

energy prices are lower than DA prices and in this case such a strategy may not be profitable.

15. Risk mitigation is not a guarantee of always "winning" or receiving the highest prices possible, but it simply provides certainty to the generator on the prices (DA vs. RT) it will face or the ability to operate to meet its commitments.

B. Risk Mitigation in the Face of Market Power Mitigation in the Energy Market

- 16. In the energy market, for cost-based offers when market power mitigation is imposed to manage local transmission constraints, there is a 10 percent adder that accounts for the concept that costs cannot be measured perfectly, or for costs that are hard to quantify such as risk. In this way risk can be accounted for in cost-based energy market offers.
- 17. But again, like market-based offers, including a 10 percent adder into an otherwise competitive offer places the resource at risk for not being dispatched if there are other resources available to manage the local transmission constraint. In the PJM market, the frequency of market power mitigation is extremely low with only 0.1 percent of unit run hours subject to such mitigation.

IV. OPTIMAL OFFERS AND RISK MITIGATION IN THE RPM CAPACITY MARKET

18. Absent any risk of being subject to performance penalties, the optimal offer into the capacity market is the net avoidable or net going forward costs for the resource to remain in commercial operation. Net avoidable/going forward costs consist of fixed costs that must be incurred in each year to remain in commercial operation less net energy and ancillary service market revenues. These fixed costs include fixed O&M, administrative overhead, property taxes, insurance, facility staffing and any other such costs that must be incurred no matter how much the unit operates in the energy market. This optimal

offer is the competitive offer into the capacity market, and this is directly analogous to offering in at marginal cost in the energy market.

A. Mitigating Performance Risk through Enhanced Maintenance Practices

- 19. In the current capacity market, under Capacity Performance ("CP"), resources are subject to performance penalties if they are unable to perform when the system needs them most: system emergencies. To manage this risk, enhanced O&M can mitigate such performance risk and the cost of mitigating this risk can be placed directly into capacity offers as part of net avoidable/going forward costs.
- 20. In this instance, mitigating performance risk can be done through additional expenditures, but those expenditures can also be reflected in the optimal capacity market offer and are recoverable in the capacity market.

B. Mitigating Performance Risk through Offers

- 21. Generation resources can factor in performance risk when needed into their capacity market offers to any extent they wish so long as the offer is below Net CONE*B. In this way the risk of non-performance during system emergencies can be explicitly accounted for, and this would also provide additional revenues to go toward covering potential penalty costs or for better maintenance and preventative measures to ensure performance under the most extreme of weather conditions when emergencies are most likely to occur.
- 22. But as with market-based energy market offers, there are down-side risks to building in penalty and performance risk into capacity offers in that it is possible to be "out-competed" by resources with lower risks, all things being equal, and be left without a capacity commitment to cover net avoidable/going forward costs.
- 23. This offer flexibility allows a resource to build in risk for lower than expected net energy revenues in future years. But the same downside risks also apply here in that a resource

offering above their expected net avoidable/going forward costs can be out-competed for capacity commitments from other resources that do not face such risks.

24. Moreover, even if a resource has verifiable avoidable/going forward costs in excess of New CONE*B, the market seller offer cap formula in the PJM tariff allows for a 10% adder that accounts for hard to quantify costs such as risk.

V. CONCLUSIONS

- 25. Generation resources have many opportunities to manage their market and operational risk both outside of PJM's markets and within the framework of PJM's markets.
- 26. Given this ability to manage risk, it would not be appropriate to allow PSEG nuclear resources to include in any ZEC payments risks for which they already have the ability to manage and for which they are best positioned to managed.

Respectfully submitted,

Paul M. Sotkiewicz, Ph.D.