Attachment III

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

New York Independent System Operator, Inc. **Docket No. ER21-___-000**

AFFIDAVIT OF ZACHARY T. SMITH

Mr. Zachary T. Smith declares:

1. I have personal knowledge of the facts and opinions herein and if called to testify could and would testify competently hereto.

2. The purpose of this Affidavit is to present the findings put forth in the *Buyer-Side Mitigation (BSM) Renewables Exemption Study Spreadsheet*, dated May 4, 2021, ("Study Spreadsheet") and provide further support for certain aspects of the New York Independent System Operator, Inc.'s filing in this proceeding, including the study results.[1]

I. Qualifications

3. My name is Zachary T. Smith. I am currently the Manager, Capacity Market Design for the New York Independent System Operator, Inc. ("NYISO"). My business address is 10 Krey Boulevard, Rensselaer, NY 12144. I received a Bachelor of Science in Computer Engineering degree from Union College, and a Master of Science in Engineering and Management Science degree from Union Graduate College (now Clarkson University).

4. I originally joined the NYISO as a Price Validation Analyst in 2009. I joined the ICAP Market Operations department in 2013, and was promoted to Supervisor of ICAP Market Operations in 2015. I transitioned to the Manager of Capacity Market Design in 2017. As the Supervisor of the ICAP Market Operations department, I collaborated with the NYISO's Capacity Market Design team on the development of and analysis supporting NYISO's compliance filing for developing a Buyer-Side Mitigation ("BSM") exemption for Renewable Resources. In my current role, I oversee the NYISO's internal team responsible for overseeing the development of Capacity Market designs and ensuring compliance with the ISO Tariffs and Commission orders, including the BSM

[1] NYISO, *BSM Renewables Exemption Study Spreadsheet.* (presented at the May 4, 2021 Installed Capacity Working Group and Market Issues Working Group meeting), available at: https://www.nyiso.com/documents/20142/21189817/Posting_BSM_RE_Study_5.4.2021.xlsx/7a7e6524-94a3-bfb2-d970-29b7f46ea9dc

Renewables Exemption Study. I am also directly involved with the BSM Renewables Exemption Study.

II. Background

5. This periodic review is conducted pursuant to Section 23.4.5.7.13.2 of the Market Administration and Control Area Services Tariff (”Services Tariff”). The analysis conducted determines whether there are feasible intermittent renewable technologies that, within the context of the current market conditions and the newly accepted Installed Capacity Demand curves, have a) high development costs and b) a low capacity factor, such that considering a) and b) there is limited or no incentive and ability for these technologies to be used to artificially suppress capacity prices. Such technologies are Exempt Renewable Technologies as defined in Section 23.2 of the Services Tariff, which currently provides: “‘Exempt Renewable Technology’ shall mean, in all Mitigated Capacity Zones, an Intermittent Power Resource solely powered by wind or solar energy.”

6. The tariff requires the study be conducted in two parts, and allows for a stakeholder process to inform both phases of the study. The first part of the study requires the identification of technically feasible candidate technologies that are purely intermittent and a development of the capital costs to develop resources using these technologies within the New York Control Area. The NYISO commissioned Sargent and Lundy in 2019 to assist in the completion of the first phase of this periodic review. This study included solar photovoltaic (“PV”), land-based wind, offshore wind, Limited Control Run-of-River Hydro Resources (“run-of-river hydro”), and landfill gas resources.

7. The second part of the study requires the analysis of each candidate technology’s revenues as an Installed Capacity Supplier that enters the NYISO Installed Capacity Market and whether sponsoring such entry into the market would likely cause a reduction in capacity clearing prices that would benefit load. This cost benefit analysis is conducted from the viewpoint of load to determine whether the candidate technology could be economically utilized by load interests to suppress capacity clearing prices. The NYISO evaluated each candidate technology in the Mitigated Capacity Zones to determine the net present value (“NPV”) of each facility’s cash flow combined with the cost savings that would accrue to the load in the ICAP Market as a result of the plant’s entry. This NPV of plant cash flow and cost savings to load determined whether or not a candidate technology had limited or no ability and incentive to suppress capacity prices.

III. Part 1: Identify Candidate Technologies and Costs

8. Services Tariff Section 23.4.5.7.13.2.1(a) requires the NYISO’s periodic review to identify Intermittent Power Resources or Limited Control Run-of-River Hydro Resources that are technologically feasible, and should therefore be included in the study. The NYISO commissioned Sargent and Lundy to produce a report detailing the costs of these feasible renewable technologies by location, including

engineer, procure, construct costs, as well as Operation and Maintenance ("O&M") costs.[2]

9. Construction of candidate intermittent renewable technologies ("candidate technology") was considered for Mitigated Capacity Zones, as these areas are subject to BSM. A candidate technology was only evaluated if it was thought to be technologically feasible in each location. For example, land-based wind and run-of-river hydro in Load Zone J were not considered feasible, and thus were not evaluated. Solar PV, land-based wind, offshore wind, run-of-river hydro, and landfill gas resources were ultimately identified as the candidate technologies in the areas shown in Table 1 below. The NYISO presented the list of candidate technologies for stakeholder and Market Monitoring Unit ("MMU") review and comment, as required by Services Tariff Section 23.4.5.7.13.2.3(a), at the June 2, 2020 Installed Capacity Working Group stakeholder meeting.[3]

Table 1: Candidate Technologies and Locations Evaluated

Locality (Load Zone)	Candidate Technology
G-J (G)	Solar
G-J (H)	Solar
G-J (I)	Solar
NYC (J)	Solar
G-J (G)	Land-based Wind (PTC)
G-J (G)	Land-based Wind (ITC)
NYC (J)	Offshore Wind
G-J (G)	Run-of-River Hydro
G-J (G)	Landfill Gas
G-J (H)	Landfill Gas
G-J (I)	Landfill Gas
NYC (J)	Landfill Gas

10. The Sargent & Lundy estimates of capital and O&M costs for each candidate technology that informed the NPV analysis were based upon the different, reasonably sized facilities. The NYISO sought stakeholder feedback on these

[2] Sargent & Lundy, *Renewable Technology Costs* (June 2020), available at: https://www.nyiso.com/documents/20142/17450815/NYISO_Renewable%20Technology%20Costs_26June2020public.pdf/25661725-15bd-33e2-1fdb-d883f9f82963

[3] NYISO, *BSM Renewable Exemption Study Technologies* (presented at the June 2, 2020 Installed Capacity Working Group and Market Issues Working Group meeting), available at: https://www.nyiso.com/documents/20142/12891716/6%20BSM%20Renewable%20Exemption%20Study%20Candidate%20Technologies.pdf/411569af-ddc0-4bdd-ddb7-0b260f2a12fe

Sargent and Lundy cost estimates at the December 7, 2020 Installed Capacity Working Group meeting.[4]

IV. Part 2: Revenues and Net Present Value Determinations

11. The NYISO presented and sought stakeholder feedback on the BSM Renewable Exemption Study methodology at the January 28, 2021 Installed Capacity Working Group meeting.[5] Once the study was completed, study results were reviewed with stakeholders at the May 4, 2021 Installed Capacity Working Group meeting.[6] This included a Study Spreadsheet detailing the study and results.[7] The NYISO discussed the study methodology and draft study results with the MMU on several occasions, and the MMU provided feedback throughout this process, as discussed below.

12. The cost of capital assumptions for the study were derived from utility annual reports for Con Edison, including Orange & Rockland, and Central Hudson.[8][9] These utilities serve the area in question, Load Zones G, H, I, and J. Some stakeholders thought these cost of capital assumptions should be based on rates typically available to merchant investors. However, the resources evaluated are anticipated to receive relatively steady income through Offshore Wind Renewable Energy Credit and Renewable Energy Credit ("REC") payments, and thus it is more appropriate to assume the cost of capital for the candidate technology projects are similar to a utility.

13. As mentioned above, Sargent and Lundy provided an estimate of capital cost and O&M cost assumptions for the candidate technologies. The MMU provided

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[4] NYISO, *BSM Renewable Exemption Study* (presented at the December 7, 2020 Installed Capacity Working Group and Market Issues Working Group meeting), available at: https://www.nyiso.com/documents/20142/17450815/December_7_2020_BSM_Renewable_Study_ICAPWG_FINAL%20(002).pdf/5c9d4577-9133-0a36-1f57-0d5b1a57bac0

[5] NYISO, *BSM Renewables Exemption Study: Methodology* (presented at the January 28, 2021 Installed Capacity Working Group and Market Issues Working Group meeting), available at: https://www.nyiso.com/documents/20142/18803752/BSM_Renewables_Exemption_Study_Methodology_1.28.2021_FINAL.pdf/519285e1-35ef-93c9-5fb5-7390c52f0a02

[6] NYISO, *BSM Renewables Exemption Study: Draft Study Results* (presented at the May 5, 2021 Installed Capacity Working Group and Market Issues Working Group meeting), available at: https://www.nyiso.com/documents/20142/21189817/BSM_Renewables_Exemption_Study_5.4.2021_FINAL.pdf/40754327-934b-38a7-f270-3399af3bbeee

[7] NYISO, *BSM Renewables Exemption Study Spreadsheet.*

[8] Consolidated Edison, Inc. *Form 10-K* (December 2020), at p.132 & 135, available at: https://investor.conedison.com/static-files/1dfbf939-fcc6-4ae7-9f92-05689eb5bd51

[9] CH Energy Group, Inc. & Central Hudson Gas & Electric Corp., *Annual Financial Report* (December 2020) at p. 9 & 88, available at: https://www.chenergygroup.com/financialinformation/CHEnergyGroup_2020_Q4.pdf

feedback to the NYISO that offshore wind would be unlikely to incur the property tax expense assumed by Sargent and Lundy. The NYISO agreed with this feedback, and replaced the property tax expense for offshore wind with an estimate of the offshore wind federal lease cost, as shown on the "OSW NYC" tab of the Study Spreadsheet.

14. The MMU provided feedback that the REC payment to the plant should also be included as a cost to load in the analysis, reducing the capacity market cost savings to the load. The NYISO agreed with this feedback, and has counted REC payments as a cost to load in the study.

15. The NPV of the plant cash flow combined with the cost savings to load was calculated for each chosen combination of the candidate technology and Load Zones within each Mitigated Capacity Zone, as shown in Table 1. These calculations are detailed on each of the candidate technology tabs of the Study Spreadsheet. For example, "Solar G" details the calculation of the NPV of plant cash flow and cost savings to load for a representative solar unit in Load Zone G in the G-J Mitigated Capacity Zone.

IV. Determinations

16. The NYISO identifies solar, land-based wind, offshore wind, and run-of-river hydro each as an Exempt Renewable Technology. A negative NPV of plant cash flow and cost savings to load indicates that there is limited or no incentive for these candidate technologies to be built in order to impact capacity prices to benefit load. In other words, a negative NPV of plant cash flow and cost savings to load indicates that the cost to load of building the unit in question exceeds the benefit of lower capacity market prices paid by load.

17. The NYISO identifies that landfill gas is not an Exempt Renewable Technology. Landfill gas technology does not clearly have limited or no incentive to be built in order to impact capacity prices because the NPV of plant cash flow and cost savings to load for landfill gas was significantly positive in Load Zone J, which is a part of the G-J Mitigated Capacity Zone. This is in part due to the relatively low derating factor of the technology. Landfill gas is therefore not identified as an Exempt Renewable Technology.

18. Though landfill gas is not identified as an Exempt Renewable Technology, a landfill gas unit looking to build in G, H, I, or J would be able to seek an individual exemption from the NYISO under Services Tariff Section 13.1.1. Such an analysis would take into account the unique project costs of the individual unit in determining whether to grant the individual exemption.

19. The study results for each candidate technology and Load Zone combination are shown in Table 2 below. These results are also detailed on the "SUMMARY" tab of the NYISO's Study Spreadsheet.

Table 2: Study Results

Locality (Load Zone)	Candidate Technology	NPV of Plant Cash Flows and Cost Savings to Load
G-J (G)	Solar	$ (49,160,615)
G-J (H)	Solar	$ (19,135,912)
G-J (I)	Solar	$ (19,092,292)
NYC (J)	Solar	$ (9,399,212)
G-J (G)	Land-based Wind (PTC)	$ (44,619,252)
G-J (G)	Land-based Wind (ITC)	$ (33,512,420)
NYC (J)	Offshore Wind	$ (849,717,597)
G-J (G)	Run-of-River Hydro	$ (44,453,943)
G-J (G)	Landfill Gas	$ (3,251,665)
G-J (H)	Landfill Gas	$ (4,090,710)
G-J (I)	Landfill Gas	$ (4,015,960)
NYC (J)	Landfill Gas	$ 13,028,678

V. Stakeholder Feedback and Sensitivity Cases

20. Capacity market prices typically decline after the entry of a new resource, with this decline in prices eventually forcing resource exit from the capacity market, which causes prices to recover to roughly the previous level. This price impact, the return to the historical level of excess ("LOE") is accounted for as an input to the study. The NYISO assumed a 5 year return to historic LOE the first time it filed the BSM renewables exemption study with the FERC, and the NYISO continues to believe that this is an appropriate assumption. Nevertheless, the NYISO received feedback during the stakeholder process requesting a 10 year return to LOE sensitivity case. A sensitivity case was thus run with a 10 year return to LOE scenario, as detailed on the "SUMMARY" tab of the NYISO's Study Spreadsheet.

21. The NYISO received feedback from the MMU that the property taxes assumed in the study seemed high. The NYISO used the property tax values provided by Sargent & Lundy in the study, except for in the case of offshore wind as noted above. A sensitivity was conducted whereby the property tax value was changed to zero for each resource, except for in the case of offshore wind, since property tax had already been excluded, as noted above. The results of this sensitivity are also detailed on the "SUMMARY" tab of the NYISO's Study Spreadsheet.

VI. Conclusion

22. The NYISO concludes that solar, land-based wind, offshore wind, and run-of-river hydro should each be identified as an Exempt Renewable Technology. Landfill gas is not identified as an Exempt Renewable Technology; however,

developers intending to build a landfill gas unit in Load Zones G, H, I, or J may request to be evaluated for an individual unit exemption. This evaluation would consider the unique costs of the applicable landfill gas unit to determine whether the unit has limited ability to impact capacity prices.

This concludes my affidavit.

Respectfully submitted,

/s/ Zachary T. Smith
Zachary T. Smith
Manager, Capacity Market Design
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