NEW YORK INDEPENDENT SYSTEM OPERATOR
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March 2, 2011

VIA ELECTRONIC FILING

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: New York Independent System Operator, Inc.'s Comments in Response to the Federal Energy Regulatory Commission's Notice of Proposed Rulemaking on the Integration of Variable Energy Resources; Docket RM10-11-000

Dear Secretary Bose:

The New York Independent System Operator, Inc. ("NYISO") hereby provides its comments on the November 18, 2010 Notice of Proposed Rulemaking regarding Integration of Variable Energy Resources.[1] If there are any questions concerning this filing, please call me at (518) 356-7656.

Respectfully submitted,

/s/David Allen
David Allen
Attorney
New York Independent System Operator, Inc.
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[1] *Integration of Variable Energy Resources*, Notice of Proposed Rulemaking, Docket No. RM10-11-000, 133 FERC ¶ 61,149. ("NOPR")

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Integration of	**}**	
Variable Energy Resources	**}**	**Docket No. RM10-11-000**
	}	

COMMENTS OF NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

The New York Independent System Operator, Inc. ("NYISO") respectfully submits these comments in response to the Federal Energy Regulatory Commission's ("Commission") November 18, 2010 Notice of Proposed Rulemaking regarding Integration of Variable Energy Resources[1] ("NOPR"). As a member of the ISO/RTO Council ("IRC") and a signatory to the joint IRC comments filed in this proceeding, the NYISO supports the IRC comments recommending that the Commission provide for ample flexibility in its final rule to allow public utility transmission providers to adopt and implement the necessary just and reasonable mechanisms to address the unique regional challenges posed by the increasing numbers of variable energy resources ("VERs") across the country. As the IRC comments point out, the different operational issues and market concerns being driven by the expansion of VERs within the different ISO and RTO regions require that the proposed reforms recognize regional differences in the challenges presented by VERs. In addition, the Commission should consider the various regional differences in the approaches taken and currently underway to facilitate the integration of VERs.

The NYISO provides these comments separately to briefly discuss the operational tools it has developed and the market design changes that the NYISO has already put in place to address the challenges it has experienced in integrating a growing amount of wind generation since 2005.

[1] *Integration of Variable Energy Resources*, Notice of Proposed Rulemaking, 133 FERC ¶ 61,149 (2010). ("NOPR")

As the NYISO demonstrates below, these measures address much of the concern that the Commission seeks to address with its proposed reforms outlined in the NOPR.

In the NOPR, the Commission proposes a limited set of reforms to the *pro forma* Open Access Transmission Tariff derived from the information obtained in its Integration of Variable Energy Resources Notice of Inquiry[2] ("NOI"). The Commission proposes reforms in three operational areas: (1) transmission scheduling practices, (2) VER power production forecasts, and (3) generator regulation service. The NYISO generally supports the Commission's goals to facilitate greater integration of VERs and eliminate any undue discrimination with respect to the integration of VERs. The NYISO, however, submits to the Commission that the proposed reforms should set in place flexible policies and practices to accommodate the various regional efforts already undertaken to facilitate the increased penetration of VERs. Examples of such efforts that have been developed in New York include the NYISO's special rules for Intermittent Power Resources, the power production forecasting rules in place for all New York wind plants interconnecting to the New York State Transmission System, and the market rules that have integrated wind generation into the NYISO's Security Constrained Economic Dispatch. Going forward, Commission policies should continue to take into account unique regional operational requirements and market issues that will arise as the number of VERs continues to grow. The Commission's proposed reforms must allow public utility transmission providers to conform and apply these policies as needed to address these regionally distinct issues.

[2] *Integration of Variable Energy Resources*, Notice of Inquiry, 130 FERC ¶ 61,053 (2010). ("NOI") As a member of the ISO/RTO Council ("IRC"), the NYISO was a signatory to the joint IRC filing made in NOI proceeding and submitted separate comments to detail its experiences addressing the operational and market design challenges posed by the rapidly growing number of wind generators in the New York Control Area.

I. INTRODUCTION AND BACKGROUND

The NYISO experienced a period of rapid growth in VERs, particularly wind power, through 2009, and continues to see additional capacity added each year.[3] With more than 7,000 MW of wind generation seeking to complete the NYISO's interconnection study process, wind generation, as a resource type, dominates the NYISO Interconnection Queue. The NYISO has instituted several efforts in its role as transmission planner, grid operator and market administrator to accommodate the growth of this resource.

In 2004, the NYISO joined the New York State Energy Research and Development Authority in commissioning a wind integration study[4] to assist in evaluating the reliability implications of increased wind generation in New York State. Published in 2005, this study demonstrated that special market rules for intermittent power resources (wind, solar, landfill gas, and certain run of river hydro facilities) could be extended to 3,300 MW of such resources. Special market rules exempt these intermittent resources from deviation penalties for under- and over-generation, and thus fully compensate them for all their output, regardless of their dispatch schedule. As an intermittent resource, wind generation shares in these special market rules to the extent that the transmission system is not subject to any reliability constraints that require them to reduce their output.

In 2008, the NYISO implemented a centralized wind forecasting system for all wind plants. The forecast for each wind plant is evaluated in the NYISO's Day-Ahead Security Constrained Unit Commitment ("SCUC) and Real-Time Security Constrained Economic

[3] The NYISO currently has 1,275 MW of wind generation interconnected to the NYS Transmission System, and has executed interconnection agreements representing more than 300 MW of additional wind generation.
[4] NYISO and the New York State Energy Research and Development Authority, *The Effects of Integrating Wind Power on Transmission System Planning, Reliability, and Operations (2005)*, available at http://www.nyiso.com/public/services/planning/special_studies.jsp.

Dispatch ("SCED") market evaluation and dispatch software platforms in order to better dispatch economically offered units with the output of wind plants in the NYISO's system dispatch.

In 2009, the NYISO integrated wind plants into its SCED platform, which maintains minute-by-minute system security by dispatching resources to meet the electrical load using a least-cost, bid-based optimization algorithm that recognizes transmission constraints and is the cornerstone of the NYISO's reliable, market-based, grid operations. This enhanced functionality allows NYISO operators to re-dispatch wind output, to maintain system security and reliability by evaluating each plant's economic preferences (as it does other generating resources) within the NYISO's SCED process and to optimize wind plant output in real time. Integrating wind into the system dispatch allows the NYISO to use the most efficient resources to address reliability requirements while minimizing any limitations on wind generation output.

The NYISO also recently completed an update to its 2005 wind integration study in order to assess the further expansion of wind resources from the existing 1,275 MW interconnected to the NYS Transmission System to 8,000 MW of wind generation by 2018.[5] This planning study evaluated in detail the many challenges posed by the variability of wind generation including the fact that terrestrial wind in New York tends to be non coincident with peak system loads. Wind tends to increase in the late evening and throughout the night in New York, which is the time of day when power use is generally declining. Conversely, wind tends to decrease in the morning periods, which is the time of day when power use is increasing throughout the NYCA. Notwithstanding this mis-match, the study report found that increased wind generation would bring a number of benefits to New York State and that the operational requirements associated

[5] NYISO, *Growing Wind: Final Report of the NYISO 2010 Wind Generation Study,* (September 2010)*; available at:* http://www.nyiso.com/public/webdocs/newsroom/press_releases/2010/GROWING_WIND_-_Final_Report_of_the_NYISO_2010_Wind_Generation_Study.pdf

with the 8,000 MW of wind generation could be addressed with transmission upgrades and additional regulation service.

The NYISO has also recently established a market-based program for Limited Energy Storage Resources ("LESR") that complements the increased penetration of VERs. This program integrates resources, such as flywheels, advanced batteries and compressed air storage, into the NYISO's markets to provide Regulation Service. LESRs are evaluated and scheduled by the NYISO's real time SCED software in a manner that is consistent with the NYISO's other regulation suppliers.

Having conducted these detailed planning studies regarding wind integration and having implemented these significant operational and market-based program innovations with regard to the integration of wind generation resources, the NYISO fully supports the Commission's efforts in this proceeding to address the continued challenges presented across the nation by the increased penetration of VERs on the bulk power system. The proposed reforms, however, must take into account the unique regional challenges that VERs present for different parts of the country. The Commission should also recognize the regional measures that are already in place or underway in order to facilitate a growing number of VERs that we all anticipate will supply more of our energy demands in the future.

II. COMMENTS

A. THE PROPOSED AMENDMENT TO THE *PRO FORMA* OATT TO REQUIRE PUBLIC UTILITY TRANSMISSION PROVIDERS TO PROVIDE THE OPTION OF INTRA-HOURLY SCHEDULING ON A 15-MINUTE BASIS SHOULD NOT BE ADOPTED AS PROPOSED.

The Commission's preliminary findings indicate that hourly transmission scheduling protocols are no longer just and reasonable and may be unduly discriminatory as the default

scheduling time periods required by the *pro forma* OATT.[6] The NOPR found that establishing a 15-minute scheduling protocol for all regions will benefit transmission customers as well as the public utility transmission providers. The NYISO supports requiring that all regions schedule transmission service in 15-minute (or less) intervals. The NYISO already provides these benefits to its internal transmission customers as it provides transmission schedules in 15- and 5-minute intervals through its SCED software.

The Commission also found that the consistent availability of 15-minute scheduling intervals would benefit VERs. VERs tend to be located far from load centers and may frequently be scheduled to deliver energy across multiple systems. With a 15 minute scheduling interval as the default process for all public transmission providers, VERs will benefit from frequent intra-hour scheduling intervals that are consistent across service territories.[7] The NYISO again agrees with the Commission on this point and is currently undertaking efforts with its neighboring systems to ensure that these benefits will inure to the transmission customer delivering energy across NYISO borders as they do those customers utilizing only the NYS Transmission System.[8]

The NOPR, however, also proposes to require public utility transmission providers to offer all transmission customers "the option to submit changes to schedules in an interval of 15 minutes [or less] and allow all transmission customers the option of ***submitting intra-hourly***

[6] NOPR, ¶ 37, p. 31.
[7] NOPR, ¶ 37, p. 35.
[8] The NYISO and its neighboring systems, PJM Interconnection, LLC ("PJM"), the Midwest Independent Transmission System Operator, Inc. ("Midwest ISO"), the Ontario Independent Electricity System Operator ("IESO"), Hydro Quebec Trans Energie ("HQ") and ISO New England ("ISO-NE"), are working through in its Broader Regional Markets Initiative to develop 15 minute scheduling for external transactions as part of the Enhanced Interregional Transaction Coordination ("EITC"). *See Proposed Tariff Revisions to Support Enhanced Interregional Transaction Coordination*; filed with the Commission on December 28, 2010, Docket No. ER11-2547-000 ("EITC Filing"). The NYISO's EITC proposal is currently pending before the Commission. Once implemented EITC will enable interregional transactions that are currently economically evaluated and scheduled on an hourly basis to be evaluated for scheduling on a more frequent (15 minute or 5 minute) basis.

schedules up to 15 minutes before the scheduling interval."[9] The NYISO does not support this proposed reform because the costs associated with the NYISO meeting this requirement would greatly outweigh the benefits. This proposed reform would require the NYISO to completely re-design its market processes and software platforms for little apparent improvement in market efficiency. It is not apparent to the NYISO that such an option is needed if the increased variability VERs are expected to bring to the system has been appropriately accommodated through operational tools, Commission-accepted tariff reforms, such as those discussed above, and appropriate planning and operational studies . The NYISO's experience with integrating wind generation demonstrates that instituting state-of-the-art power production forecasting requirements and implementing robust market-based SCED tools to manage the variability of generation provide for accurate and efficient intra-hour schedules for intervals of 15 minutes or less. The NYISO respectfully submits that allowing transmission customers to submit schedule changes within 15 minutes of the dispatch hour will not produce any marked improvement in the system the NYISO currently employs.

The NYISO market design is comprised of a number of closely linked processes to ensure efficiency and promote reliable operation. Currently the NYISO's SCED functionality provides real-time intra-hourly scheduling on a 15- and 5-minute interval basis for generation in the NYCA through its Real-Time Commitment ("RTC") and Real-Time Dispatch ("RTD"). These processes, however, require that transmission customers (*e.g.* generators and external loads) submit Real-Time Bids no later than 75 minutes before each hour. Real-Time Bids

[9] NOPR, ¶ 41, p. 34.

indicate the economic willingness of suppliers to be dispatched as frequently as every five minutes and external loads to be scheduled hourly.[10]

RTC is a multi-period security constrained unit commitment and dispatch process which co-optimizes the schedule for Load, Operating Reserves and Regulation Service on a least as-bid production cost basis in 15-minute intervals looking ahead over a 195 minute period. RTC produces advisory schedules for 15-minute intervals for the scheduling hour for internal generators. RTC currently produces binding top-of-the-hour hourly schedules for external transactions, which are posted 30 minutes prior to the hour. The Control Area to Control Area interchange associated with scheduled imports and exports is required to be confirmed by the NYISO and the affected neighboring control area. In accordance with NERC Standards, the E-TAGs for Real-Time external transactions are required to be submitted no later than twenty minutes prior to the hour. As mentioned above, the NYISO is working diligently with its neighbors to increase the frequency with which external transactions are scheduled.[11]

The RTD co-optimization system uses the same set of bids and offers considered by RTC. Again these bid curves were submitted by transmission customers no later than 75-minutes prior to the hour along. RTD evaluates these bids along with the most recent system information to solve for load, operating reserves and regulation service while minimizing the total production costs. RTD, which executes repeatedly throughout the hour on a 5-minute basis with a 50, 55, or 60-minute look-ahead horizon, sends base points to internal generators, calculates real-time clearing prices for energy, operating reserves and regulation service and establishes real-time schedules on a 5-minute basis.

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[10] The NYISO's EITC proposal, currently pending before the Commission in Docket No. ER11-2547-000 proposes to schedule suppliers and external loads across our interfaces with other Control Areas more frequently.

[11] *Id; see also* February 14, 2011 Inter-Regional Interchange Scheduling (IRIS) presentation by NYISO and ISO New England, link: http://www.nyiso.com/public/webdocs/committees/bic_miwg/meeting_materials/2011-02-14/IRIS_Presentation.pdf.

Compliance with the NOPR to accommodate changes to real-time bids and offers that allow their submission in a shorter time period than the RTC/RTD requirement would require a major overhaul of the NYISO's SCED software[12] at substantial costs; and with potentially cascading effects to other elements and processes that comprise the NYISO's market design (e.g., the day-ahead SCUC process). The NYISO is able to minimize production cost due to its look-ahead capability in real-time. Frequent changes to real-time bids would compromise the quality of the solution and increase overall system costs.

Further, it is not in any way apparent to the NYISO that shortening the time in which bids and offers are submitted and evaluated will capture any additional benefits since a resource's marginal cost are not expected to change on a 15 minute basis. The NYISO's Bid-based energy market promotes marginal-cost based bidding. It is unclear to the NYISO that a unit's marginal costs change so drastically every 15 minutes that the Commission should require all transmission providers to make the shortened bid window available, particularly at the cost such a software overhaul would exact, not only financially but in the redesign likely to be necessary across software systems. If a resource submits bids that accurately reflect its variable costs, the NYISO's RTC/RTD scheduling and dispatch systems will provide it an efficient schedule that reflects its marginal costs and up-to-date system conditions. A more narrow Bid window, closer in time to the dispatch hour, would do little to improve the existing efficiency of the NYISO's system.

Over the last three years, the NYISO has pioneered efforts to integrate VERs (e.g., wind generation) and manage the inherent variability of these resources through its SCED systems, including the RTC and RTD. These efforts have improved the utilization of these facilities while

[12] The NYISO's current market design took over 5 years to design and implement. Further, while it is not clear to the NYISO that shortening the 75 minute ahead bid and offer requirements would provide any additional benefits, it is clear that shortening this time period could have negative impacts on both reliability and gaming.

maintaining a secure, reliable system that provides accurate price signals to the market. By evaluating the power production forecasts provided for each wind plant in the RTC and RTD systems (every 15- and 5-minutes respectively), and also evaluating the economic offers from wind plants during periods where the system is experiencing a reliability constraint, the NYISO has been able to efficiently manage the current level of wind generation. It is not clear to the NYISO that any significant additional benefits could be gained by shrinking the NYISO requirement for submitting real-time bids and offers (i.e., desired transmission schedules) from 75-minutes to 15 minutes prior to the hour.

In addition, there are potential gaming concerns that must be considered and addressed if the lead time for bids and offers is reduced to 15 minutes. For example, certain bidding behavior under a 15 minute ahead bid/offer period could provide an unfair advantage to market participants that seek to exploit fast start resources to respond to revisions they intend to make to a previously scheduled external or bilateral transaction. Further, a constantly changing bid and offer set will have a negative effect on the integrity of a multi-period optimization, likely increasing costs and adding risk to reliability.

The NYISO therefore respectfully submits that there is little improvement to be expected from a 15-minute ahead bid window over what the NYISO's RTC/RTD processes already accomplish in establishing efficient and accurate schedules in 15- and 5-minute intervals while minimizing the costs for energy, regulation and ancillary services. The NYISO urges the Commission to reconsider its proposal to require all public utility transmission providers to offer all transmission customers the option to submit intra-hour schedules (e.g., bid and offer curves) up to 15 minutes before the scheduling interval. In the NYISO's market design, the 75-minutes prior to the scheduling hour is a necessary and sufficient time period that balances the interest of

the transmission customers in submitting accurate bids and offers with the requirements of the NYISO to evaluate these schedules for both internal and external resources in its RTC/RTD systems.

B. THE PROPOSED AMENDMENT TO THE *PRO FORMA* OATT TO ADD A GENERIC ANCILLARY SERVICE RATE SCHEDULE BY WHICH THE PUBLIC UTILITY TRANSMISSION PROVIDERS WILL RECOVER RESERVE COSTS ASSOCIATED WITH MANAGEMENT OF SUPPLY-SIDE VARIABILITY SHOULD PROVIDE FOR REGIONAL FLEXIBILITY.

As provided in the NOPR, the Commission is proposing to add a generic ancillary service rate schedule to the *pro forma* OATT through which public utility transmission providers must offer generator regulation service to transmission customers and establish a generic generator regulation reserve rate. The Commission's proposal seeks to bring consistency to the manner in which public utility transmission providers offer generator regulation service and bring clarity and transparency to the rates, terms and conditions that apply to this service.

This proposed generic Schedule 10 — Generator Regulation and Frequency Response Service — would require public utility transmission providers to provide this service "to the extent it is feasible to do so from its resources available to it" and transmission customers will be subject to the proposed rate unless they can demonstrate that it is satisfied through dynamically scheduling its generation to another balancing authority or by self supplying the regulation reserve capacity from other resources.[13] The proposed reform outlined in the NOPR would require that the public utility transmission providers file Schedule 10, setting forth their obligation to offer generator regulation service and the rate at which it will be provided, but it expressly refrains from requiring a volumetric reserve requirement at this time.[14] The

[13] NOPR, ¶ 89, pp. 69-70.
[14] NOPR, ¶ 85, pp. 67-68.

Commission has also set forth guidelines in the NOPR under which generator regulation reserve charges may be assessed to transmission customers.

The NYISO is currently obligated under Schedule 3 of its OATT to provide regulation service when transmission service is used to serve load, including imports. As such, the NYISO's cost of providing regulation service is charged to internal load. Under the proposal outlined in the NORP it appears that the NYISO would be obligated to recover regulation costs of generation, including VERS, and exports based upon a cost causality demonstration. At the current levels of wind penetration, the two wind studies commissioned and conducted by the NYISO (completed in 2005[15] and 2010, respectively) did not demonstrate significant increased regulation and reserve costs resulting from the variability of the wind generation. As such, the NYISO sees little benefit that will accrue to its current operations from the proposed Schedule 10 outlined in the NOPR and therefore would request that the Commission permit exceptions to the proposed *pro forma* OATT Schedule 10 based on evidence presented in support of an exception request.

The NYISO is also concerned that requiring exports to pay for a portion of the costs to procure regulation service could amount to double counting if, in neighboring Control Areas, regulation service is currently charged to imports. Expanding recovery of regulation costs by charging exports as well could result in the same MWs being charged for regulation service twice, once upon leaving a control area as an export and then again by the receiving Control Area as an import. Simply moving the charge from imports to exports, to avoid double counting does not appear to the NYISO to increase efficiencies.

[15] NYISO and the New York State Energy Research and Development Authority, *The Effects of Integrating Wind Power on Transmission System Planning, Reliability, and Operations (2005)*, available at http://www.nyiso.com/public/services/planning/special_studies.jsp.

Moreover, adding a regulation service charge to exports will increase cost-inefficiencies that the NYISO is currently working with its neighbors to eliminate through its Broader Regional Markets Initiative. The NYISO also notes that it currently provides Energy Imbalance Service through Schedule 4 to the NYISO OATT. Through this service the NYISO charges generators that have not met their scheduled output to serve a bilateral transaction or an export the Real Time Market costs of that energy shortfall.

Further, the cost of the regulation service for the month is offset by generator deviation penalties that are assessed when generators fail to follow their NYISO basepoints, outside of a threshold. This deviation penalty is also extended to wind resources that have been directed to a specific output via SCED. For these reasons, the NYISO believes that under its market design and existing tariff requirements there are sufficient financial incentives for generators, including wind resources, to remain on schedule and follow the NYISO's dispatch directions and that further charges under the proposed Rate Schedule 10 are unnecessary and may be duplicative.

While the NYISO supports the Commission's finding that managing the variability of generation resources, particularly VERS, may subject the public utility transmission providers to additional costs, it urges the Commission to allow for flexible and innovative measures to be employed by the transmission provider to recover these costs from generators when it is necessary. The NYISO also respectfully requests that the Commission clarify that all balancing authorities will not required to implement the Generator Regulation and Frequency Response Service without a causal demonstration by the balancing authority that such a service is necessary.

C. THE COMMISSION'S PROPOSAL TO REQUIRE EACH PUBLIC UTILITY TRANSMISSION PROVIDER TO DEMONSTRATE COMPLIANCE WITH THE FINAL RULE WITHIN SIX MONTHS OF THE RULE'S EFFECTIVE DATE SHOULD BE EXTENDED

The Commission proposes to require that each public utility transmission provider submit a compliance filing within six months of the effective date of the final rule to demonstrate that it meets the *pro forma* requirements, or that the transmission provider's existing OATT is consistent with, or superior, to the final rule.[16] As the NYISO has pointed out in its EITC proposal currently pending before the Commission in Docket No. ER11-2547-000, revising the current one-hour scheduling interval for external transactions to a 15-minute scheduling period (or less) will require significantly more time than six months.[17] In the event that the Commission adopts this portion of the NOPR proposal for external transactions, the NYISO respectfully requests that the Commission allow transmission providers ample additional time to demonstrate compliance with the final rule.

III. Communications and Correspondence

All communications in this proceeding should be directed to:

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[16] NOPR, ¶¶ 101 -102, pp. 78-79
[17] As the NYISO indicated in its December 28, 2010 EITC filing, the new intra-hourly scheduling and pricing rules will be phased in on an interface-by-interface basis beginning in March 2011. Implementation is expected to run through 2013.

IV. CONCLUSION

For the foregoing reasons, the NYISO cautiously supports the Commission's efforts to facilitate the integration of VERs given the caveats and concerns expressed above. As noted, the NYISO urges the Commission to provide sufficient flexibility to deviate from the *pro forma* rule to preserve the benefits captured by measures that have already been put in place, as well as the prospective benefits of ongoing efforts, to address the challenges posed by the growing numbers of VERs.

Respectfully Submitted,

/s/ David Allen
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March 2, 2011

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. §385.2010.

Dated at Rensselaer, NY this 2nd day of March, 2011.

/s/ Joy Zimberlin

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