UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

New York Independent System Operator, Inc.	)	Docket Nos. ER04-230-002,
	)	ER04-230-003,
	)	ER04-230-004,
	)	ER04-230-005,
	)	ER01-3155-005,
	)	ER01-1385-014,
	)	EL01-45-013

REQUEST FOR REHEARING OF
THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

Pursuant to Rule 713 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.713 (2004), the New York Independent System Operator, Inc. ("NYISO") respectfully requests rehearing of a single aspect of the August 10 Order in the above-captioned proceedings.[1] The August 10 Order required the NYISO to introduce improved combined cycle modeling within 150 days of the implementation of its Real-Time Scheduling ("RTS") market reforms. The NYISO recognizes the benefits that more advanced combined cycle modeling will bring, and has been discussing this capability with its stakeholders since January 2004. It will formalize this process and will work diligently to bring it to fruition as quickly as possible. Nevertheless, the NYISO will need to continue its stakeholder consultations to ensure that the combined cycle modeling software design actually meets their needs. It will also have to work closely with its vendor to develop the new software, test it, and incorporate it into existing systems. In short, adding enhanced combined cycle modeling will be a major project, comparable to creating a new ancillary services market.[2]

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[1] *New York Independent System Operator, Inc.*, 108 FERC ¶ 61,188 (2004) ("August 10 Order").

[2] *See* Affidavit of Dr. John Finney ("Finney") at P 13 (Attachment I to this request).

It is therefore clear that the NYISO will need more time than the Commission has given it to implement combined cycle modeling. Although the NYISO cannot yet specify an exact timetable it will not be possible to introduce both a 15-minute scheduling option and combined cycle modeling by the current deadline. Consequently, the NYISO respectfully asks that it be permitted to first complete work on 15-minute scheduling, which is a significant project in its own right, but which can be done by the deadline. The NYISO would simultaneously begin the formal stakeholder process to lay the foundation for enhanced combined cycle modeling. It will, however, almost certainly need considerable time beyond the Commission's deadline to finish the project.

I. Request for Rehearing

A. Introducing Improved Combined Cycle Modeling Capability Will Be a Major Software Project

1. Suitable Combined Cycle Modeling Software Will Take Substantial Time to Develop, Test, Integrate, and Implement

In response to a protest filed by Sithe Energy Marketing, L.P. ("Sithe") and others,[3] the August 10 Order found that the "NYISO's current software does not adequately model the costs" or "adequately model the bids" of combined cycle units. It therefore concluded that the NYISO must "submit a compliance filing one hundred and fifty (150) days after the effective date of RTS to implement 15-minute scheduling in combination with improvement of combined cycle modeling."[4]

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[3] *See Protest of Sithe Energy Marketing, L.P., Indeck Energy Services, Inc., PSEG Power LLC and PSEG Energy Resources & Trade*, Docket No. ER04-230-003 (April 4, 2004).

[4] August 10 Order at P 28.

Existing market software is designed to represent gas turbines, traditional steam units and other generators that have a minimum generation level and a wide range of dispatchable energy output capability with an upward sloping cost curve. As is explained in the attached affidavit of Dr. John Finney, "multi-mode" combined cycle units that consist of gas turbines feeding a steam turbine, and/or or one or more gas turbines with peaking capability, pose more sophisticated modeling problems.[5] Their cost of generating at a given level can vary based on their operating configuration at a given time, *i.e.*, by which portion of each unit is operating and the level at which it is operating. A combined cycle unit can have multiple start-up cost requirements, cost curves that are not monotonically increasing, and operating limitations that depend on configuration. In addition, ramp limits may depend on configuration not output level. Finally, combined-cycle unit costs can change because of events at a cogeneration facility's steam or heat load or because of atmospheric conditions.

The existing NYISO bidding software does not prevent combined cycle units from participating in the NYISO market dispatch but can limit their ability to precisely reflect their costs in their bids. Software enhancements allowing sellers to describe the full range of a unit's output over multiple operating configurations will permit combined cycle units to capture their costs more accurately.

This does not alter the reality, however, that developing the needed software enhancements will be challenging and time-consuming. Adding the ability to accurately model the costs and functionality of combined-cycle units in each of their configurations will require fundamental changes that go to the core optimization algorithms of the NYISO's market

[5] *See* Finney at P 8.

software. The finished product will be more advanced than other commitment and dispatch software in use today.

The new software will also have to be designed to address specific New York market characteristics. First, it will have to be integrated into the commitment and dispatch software that is being developed for RTS. This means that it will need to be capable of performing reliably in compressed timeframes and over the multiple evaluation horizons used by RTS. If trade-offs between performance and functionality need to be considered they will be discussed with stakeholders. The software will also have to be able to support the fully co-optimized scheduling of energy, reserves, and regulation service that is at the heart of RTS.

Second, introducing new combined cycle modeling capabilities will require a careful review of the criteria and thresholds employed by the NYISO's automated market power mitigation software. The review will ensure that the mitigation software does not over-mitigate, or under-mitigate, bids and that no new opportunities for gaming are created. Third, it will be necessary to integrate the new combined cycle modeling software into NYISO's billing and data storage systems.

Earlier in this proceeding, it was suggested that the NYISO's software vendor had developed combined-cycle unit modeling software for the Detroit Edison Company that could be used in New York. As the NYISO has previously noted,[6] however, the Detroit Edison software is far more limited in scope and was not designed for use in a locational marginal pricing based market environment. In addition to the need to greatly expand its capabilities, the Detroit Edison software would also have to be drastically modified if it were to be integrated into the New York

[6] *See New York Independent System Operator, Inc.'s Motion to Reject, Request for Leave to Answer, and Answer*, Docket No. ER04-230-003 (April 20, 2004).

system. In short, while the Detroit Edison software will definitely inform the development of suitable software for New York, it is only a starting point, not a viable "off-the-shelf" solution. Indeed, there is no off-the-shelf solution, nor any software that the NYISO could purchase from another system and readily adopt for use in New York.

The Commission has previously recognized that developing complex market software the right way takes time.[7] The NYISO is already fully immersed in finalizing and implementing RTS. As any other ISO and RTO would, the NYISO will need time to complete a project on the scale of adding enhanced combined cycle modeling capability to its commitment and dispatch software.

2. The NYISO and its Software Vendor Will Establish a Specific Timetable and Implement Enhanced Combined Cycle Modeling as Quickly as Possible

The NYISO intends to comply with the Commission's mandate to implement combined-cycle modeling as quickly as possible. The NYISO does not believe that it would be efficient or appropriate, however, to begin to implement the new software in earnest until several preliminary steps are complete.

Before it can even commence software development the NYISO will need to continue to seek stakeholder input on what functions should be included, what associated market rules must

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[7] *See, e.g., New England Power Pool and ISO New England Inc.,* 105 FERC ¶ 61,204 (2004) (approving temporary forward reserves mechanism as an interim measure while ISO-NE worked on a multi-year project to add co-optimized ancillary services markets to its energy market); *Midwest Independent Transmission System Operator, Inc.,* 103 FERC ¶ 61,210 (2003) at P 34; *Midwest Independent Transmission System Operator, Inc.,* 102 FERC ¶ 61,196 (2003) at PP 19, 38-43 (2002) (allowing the Midwest ISO to begin designing reserves and regulation markets six months after the implementation of its energy market). *See also Midwest Independent Transmission System Operator, Inc.,* 108 FERC ¶ 61,163 at PP 33-40 (2004) (emphasizing the importance of taking the time to ensure that new market initiatives will work as intended before they are implemented).

be modified, and how legitimate stakeholder interests would be impacted by various design choices.[8] Stakeholder input will help the NYISO and its vendor to anticipate the issues that are likely to arise, to avoid unnecessary disputes, and to more precisely define the software's design specifications. It will also help the NYISO to determine what lessons can be learned from other markets and whether they have software features that should be emulated in New York.[9] All of this will enable the NYISO to adopt the best possible software design as quickly and as cost-effectively as possible.

The NYISO will initiate a full, formal stakeholder process in October 2004. The process is likely to be iterative in nature, with stakeholder comments prompting design changes with implications that will themselves require stakeholder input. Based on the approach that proved so successful in the development of the RTS software, it will take a number of months to move from preliminary discussions, to agreement on a Concept of Operations ("COO"), to a final Functional Requirements Specification,("FRS") the critical software design document. It is only at that point that software development can begin. Later on, the NYISO will also want to review necessary tariff changes with stakeholders.

Indeed, the most significant difficulty in any major software design project is achieving consensus among the software's users (NYISO's stakeholders) and between the users and the software design team.[10] Stakeholders will have to focus on exactly what they want this new software to do, resolve conflicts, and develop rules necessary to integrate the new modeling

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[8] At this point, stakeholders have not told the Commission or the NYISO what specific features should be included in the combined cycle modeling software.

[9] NYISO staff intends to continue exchanging information and progress reports regarding combined cycle modeling with PJM, where a similar effort is also underway.

[10] *See* Finney at P 16.

capability into the NYISO's market and mitigation software. The NYISO's independent market advisor will also have to evaluate the new market rules. Thus the NYISO has planned to spend significant time developing both the COO and the FRS. Early consensus on detailed design decisions will help to avoid unforeseen coding and integration issues.

During the early stages of the stakeholder process, the NYISO will also be focused on implementing RTS. Both internal testing of RTS and the interactive market trials have gone well but past experience in introducing innovative market software suggests that there may well be unexpected complications that will command attention and resources. Plans for future software development must account for the likelihood that resources will be needed for this purpose.

Once RTS has been successfully implemented, and has proven to operate in a stable fashion, the NYISO believes that it should be allowed to concentrate on introducing a 15-minute scheduling option without incorporating enhanced combined cycle modeling at the outset. The reasons for this request are discussed below in Section B. Implementing 15-minute scheduling alone is a significant project that will require 150 days after RTS implementation.

Once the stakeholder process is complete, a COO and the FRS are finalized and the software coded, (a process likely to take ten months), the new software enhancements will need to be extensively tested to ensure that they can perform satisfactorily and will not have unanticipated effects on other systems. Time will be needed to make any necessary modifications identified by the testing process before the software will be ready for deployment. During each step of this process, the NYISO and its vendor will have to ensure that the new software is compatible with other market, mitigation, and billing and data storage systems.

Given all of this, it is difficult to say with certainty how long it will take to implement enhanced combined cycle modeling. Both NYISO and its software vendor will be breaking new

ground and may face novel problems. At this time, the NYISO's best estimate is that it can have combined cycle modeling in place approximately nine to twelve months after the 15-minute scheduling option takes effect.[11] In providing this estimate, the NYISO has used the common assumption that properly managed software projects are typically equal parts requirements specification, development, and testing.[12] If the post-implementation process with RTS goes smoothly, if the design and coding work on the 15-minute scheduling option proceeds without incident, and if stakeholders reach an early agreement on software design, the enhanced combined cycle modeling software may be available for deployment two to three months earlier.

Attachment II sets forth the preliminary timetable for implementing combined cycle modeling. In order to keep the Commission, and all interested stakeholders, apprised of its progress, the NYISO proposes to file reports every three months, starting sixty days after the date of this filing. Once the FRS is complete, the NYISO will also give the Commission a more specific implementation date for enhanced combined cycle modeling.

B. The NYISO Should Be Allowed to Implement the 15-Minute Scheduling Option First

Since the Commission's conditional approval of RTS in February, the NYISO and its software vendor have planned to begin work on a 15-minute scheduling option immediately after

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[11] By way of comparison, the development timeline for RTS spanned approximately two and one-half years. Approximately six months were needed to develop the conceptual description documents and to achieve stakeholder agreement on the market changes, followed by, approximately, a two-year effort for FRS development and software coding, testing and implementation on both the vendor supplied portion of the project and the internal NYISO IT development work. The NYISO is not suggesting that combined cycle modeling is as complex as RTS. Like that project, however, combined cycle modeling will impact multiple software systems both internally developed and vendor supplied. The NYISO's experience indicates that the time necessary to plan and design such software systems can be substantial.

[12] *See* Finney at P 15.

the successful implementation of RTS. The NYISO has never planned to include combined cycle modeling features in this enhancement because it has always expected that it would, as the more complex project, be developed on a separate track. The NYISO's earlier pleadings in this proceeding consistently reflect this assumption.[13] The fact remains that the NYISO will still need the 150 days that it originally requested to implement 15-minute scheduling.

The NYISO continues to believe that it would be most efficient to proceed with the 15-minute scheduling option first. It will allow the NYISO to economically schedule combined cycle units, that currently operate off-dispatch,[14] at fifteen minute intervals, rather than on an hourly basis. The NYISO's dispatch software will ramp the unit to a new basepoint every fifteen minutes, rather than once an hour. While 15-minute scheduling will not solve all of the problems facing modern combined cycle units, it is a feature that has been requested by combined cycle unit owners and will make it easier to operate such units efficiently.

Fifteen-minute scheduling will also help a number of other units that are forced to run off-dispatch today because they lack the equipment, or the staff resources, to reliably follow five-minute NYISO basepoint signals. While the NYISO cannot predict the number of off-dispatch

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[13] In its request for rehearing of the February 11 Order, the NYISO stated that it would need 150 days to develop, test and introduce software implementing the 15-minute scheduling option. It did not address the combined cycle modeling issue. In its concurrently submitted compliance filing, in which it adopted the 15-minute scheduling, the NYISO was clear in its belief that the introduction of 15-minute scheduling did not require the development of the modeling software, and that the "costs of enhancing combined cycle modeling, and the time required, would be substantial." At no time did the NYISO suggest that it could implement both features within the 150-day deadline.

[14] Units unable to reliably follow five minute dispatch signals may choose to operate "off-dispatch," which means that they can either indicate at what output level they wish to be operated once an hour or give the NYISO a bid curve with which it will economically schedule them once an hour. At initiation, RTS will allow these units to designate the output level at which they want to be operated on a 15 minute interval, rather than once an hour. Fifteen-minute scheduling, as is discussed in this request, will add the ability for the NYISO to use a unit's bid curve to economically schedule its output every 15 minutes.

units that may choose to utilize 15-minute scheduling, the universe of units that will benefit from it is broader than combined cycle units capable of running in multiple configurations.

Consolidating 15-minute scheduling with the development of combined cycle modeling will only delay the benefits of the former without materially advancing the effective date of the latter. Therefore, on rehearing, the Commission should revise the August 10 Order's mandate that advanced combined cycle modeling be implemented simultaneously with 15- minute scheduling. Doing so will more accurately reflect the time needed to implement combined cycle modeling and avoid impeding the expeditious implementation of 15-minute scheduling.

II. Specification of Error

Pursuant to Rule 713(c), the NYISO respectfully states that:

- The Commission should not have required the NYISO to implement an enhanced combined cycle modeling capability within 150 days of RTS implementation because suitable combined-cycle modeling software does not exist, and cannot be developed, tested, and integrated into existing NYISO systems in that timeframe.

- The Commission should not have required the NYISO to implement a 15-minute scheduling option at the same time as combined cycle modeling because 15-minute scheduling will bring benefits that would be needlessly delayed if it were tied to the combined cycle modeling project.

III. Request for Relief

For the reasons set forth above, the New York Independent System Operator, Inc., respectfully requests that the Commission: (i) grant rehearing to give it additional time to implement enhanced combined cycle modeling software; and (ii) grant rehearing to allow it to implement a 15-minute scheduling option before it implements enhanced combined cycle modeling software.

Respectfully submitted,

/s/ *Ted J. Murphy*
Ted J. Murphy
Counsel for
New York Independent System Operator, Inc.

Arnold H. Quint
Ted J. Murphy
Michael E. Haddad
Hunton & Williams LLP
1900 K Street, NW
Suite 1200
Washington, DC 20006

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cc: Daniel L. Larcamp
Alice M. Fernandez
Connie N. Caldwell
Michael A. Bardee

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 these proceedings in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. § 385.2010 (2004).

Dated at Washington, DC this 9th day of September, 2004.

By: /s/ *Ted J. Murphy*

Ted J. Murphy
Hunton & Williams LLP
1900 K Street, NW
Suite 1200
Washington, DC 20006-1109
(202) 955-1500