UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Tilton Energy LLC	)	
	)	
Complainant,	)	
	)	
v.	)	Docket No. EL16-108-000
	)	
Midcontinent Independent System Operator, Inc.,	)	
	)	
Respondent.	)	

MOTION TO INTERVENE OUT OF TIME
AND COMMENTS OF POTOMAC ECONOMICS, LTD.

Pursuant to Rules 212 and 214 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("FERC" or "Commission"), 18 C.F.R. §§ 385.212 and 214 (2007), Potomac Economics respectfully moves to intervene in the above captioned proceedings regarding the complaint filed pursuant to Sections 206 and 309 of the Federal Power Act ("FPA")[1] by Tilton Energy LLC ("Tilton").[2]

We generally support MISO's Answer filed in response to the complaint and briefly describe in the comments below why allocating congestion charges to pseudo-tied resources is reasonable.[3]

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1 16 U.S.C. §§ 824e, 825h (2012).

2 Complaint of Tilton Energy LLC, Docket No. EL16-108-000 (August 25, 2016) ("Complaint").

3 Answer of the Midcontinent Independent System Operator, Inc., Docket No. EL16-108-000 (September 26, 2016) ("Answer").

I. NOTICE AND COMMUNICATIONS

All communications, correspondence, and documents related to this proceeding should be directed to the following persons and such persons should be placed on the official service list maintained by the Commission's Secretary for this proceeding:

Dr. David B. Patton
Potomac Economics, Ltd.
9990 Fairfax, Boulevard, Suite 560
Fairfax, VA 22030
(703) 383-0720
dpatton@potomaceconomics.com

II. MOTION TO INTERVENE

Potomac Economics is the Independent Market Monitor ("IMM") for the Midcontinent ISO ("MISO"). In this role, we are responsible for monitoring and evaluating the performance of the energy and ancillary services markets. We also are responsible for recommending market design changes to improve the performance of the markets and evaluating design changes proposed by MISO or market participants. As the IMM for MISO, Potomac Economics has a unique responsibility to monitor, evaluate, and comment on the efficiency and integrity of MISO wholesale power markets. Potomac Economics' interests, therefore, cannot be adequately represented by any other party.

Good cause also exists to permit Potomac Economics' motion to intervene out of time as it has a significant interest in this proceeding.[4] Permitting Potomac Economics to intervene at this time will not prejudice any party in the proceeding as the Commission has not yet acted on the Filings. Potomac Economics agrees to accept the record in this case as developed to date.

[4] *See, e.g.*, 18 C.F.R. § 385.214(d) (2007) (requirements for motion for late intervention); *Consolidated Gas Supply Corp.*, 20 FERC ¶ 61,305, at 61,599 (1992) (factors considered by Commission in determining whether good cause exists to permit late intervention).

For these reasons, Potomac Economics respectfully requests that the Commission grant this motion for leave to intervene out of time in this proceeding.

III. COMMENTS

A. Congestion Concerns Associated with Pseudo Ties

The issues raised in the Complaint cannot be disentangled from the broader concerns with pseudo-tied resources. We have been very concerned about the adverse economic and reliability effects of allowing a large number of generating facilities in one Regional Transmission Organization ("RTO") to be "pseudo tied" to a neighboring RTO. This arrangement transfers the dispatch control of the generating resource to the neighboring RTO that is not responsible for managing the flows over the transmission network to which the resource is interconnected. This rapid trend toward pseudo tying resources is being driven almost entirely by the requirement in PJM's tariff that external capacity resources be pseudo tied to PJM.[5] As PJM takes dispatch control of large numbers MISO generators, the efficiency of MISO's dispatch is undermined and the reliability of the region is degraded. This occurs because MISO loses the ability to commit and dispatch these resources efficiently to manage the congestion and losses on its network.

Although the market-to-market process provides some level of coordination, this coordination occurs on only a subset of the affected constraints and is not as accurate, responsive, or efficient as the native RTO's real-time dispatch.[6] In reality, the market-to-

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5 PJM Interconnection, LLC, 147 FERC ¶ 61,060, PP 49-54 (2014), order denying reh'g, 150 FERC ¶ 61,041, PP 13-19 (2015); PJM Interconnection LLC, 151 FERC ¶ 61,208, PP 96-97 (2015), order on reh'g, 155 FERC ¶ 61,157, PP 42-46 (2016).

6 The market-to-market protocol is set forth at Attachment 3, Rate Schedule 5, Joint Operating Agreement (JOA) Between the Midcontinent Independent System Operator, Inc. And PJM Interconnection, L.L.C.

market coordination cannot lead to an efficient commitment and dispatch of the pseudo-tied resources because:

- Many constraints that are substantially affected by the pseudo-tied resources do not pass the current tests to be coordinated under the market-to-market processes. The JOA tests cannot be broadened to include these constraints because there are practical limits to how many MISO constraints PJM can model in the various markets;
- The MISO and PJM network models are not fully consistent so even perfect coordination will not lead to the same dispatch;
- There is no efficient mechanism to coordinate the economic commitment of the pseudo-tied resources (only the dispatch). We have seen a number of cases when a recently pseudo-tied unit that would be economic to commit to manage congestion on the MISO system was not committed by PJM; and
- This dispatch coordination happens with a significant lag and the RTOs often fail to achieve good convergence on coordinated constraints.

Finally, an evaluation of these issues is contained in the *2015 State of the Market Report* published by Potomac Economics as the MISO IMM. Based on our analysis in this report, we found that almost 300 non-market-to-market constraints that bound in 2015 will now qualify to be defined as market-to-market constraints so they can be coordinated with PJM. This increase is the result of the proliferation of pseudo-tied resources and creates a serious issue because the value of the congestion on these constraints was approximately $400 million in 2015, roughly 30 percent of all MISO real-time congestion value.[7] The total congestion affected by the pseudo tying is even larger because this value does not include non-market-to-market constraints that do not qualify to be coordinated under the market-to-market process, but are nonetheless adversely

[7] In addition, MISO would lose the direct control to economically commit/decommit these resources for congestion management.

affected by the pseudo-tied resources. Additionally, some of the pseudo-tied resources affect flows on jointly-coordinated constraints with SPP. Since PJM has no market-to-market coordination process with SPP, the pseudo ties will reduce MISO's ability to efficiently coordinate the management of congestion on these SPP constraints.

Some of these concerns regarding the effects of pseudo tying large quantities of MISO generation to PJM were raised with the Commission when PJM proposed the pseudo-tying requirement as part of its Capacity Performance framework.[8] Although FERC approved the requirement, the Commission ordered the RTOs to work together to address seams concerns. However, the Commission could not have had a full understanding at that time of the adverse economic and reliability effects this requirement would have on MISO and on the other parts of the Eastern Interconnect around PJM. The Commission noted in its approval that MISO must approve the specific pseudo ties and satisfy the NERC requirements. However, this evaluation is limited to ensuring the pseudo tying does not substantially undermine reliability and does not address the economic costs and reliability impacts caused by the large-scale pseudo tying.

Although the RTO's have discussed the many issues that arise in the context of large-scale pseudo tying, very few true solutions have been advanced. In Section C, below we discuss this process and the one potential solution to address the pseudo tie concerns.

B. Double-Charging Issue Raised in the Complaint

The Complaint argues that MISO's charges for congestion and certain administrative charges is contrary to the MISO Tariff and unreasonable. We agree with MISO's Answer that this charges are consistent its Tariff and that the pseudo-tied suppliers are using MISO's transmission network to meet their capacity obligations in PJM. Tilton also argues that the

[8] 151 FERC ¶ 61,208, PP 96-97 (2015), order on reh'g, 155 FERC ¶ 61,157, PP 42-46 (2016).

congestion charges assessed by MISO are duplicative with the charges collected by PJM through its energy settlement at the generators Locational Marginal Prices ("LMP"). We do not agree that these charges are unjust or unreasonable for at least three reasons.

First, PJM's energy settlement does not include the myriad of non-market-to-market constraints that the pseudo-tied resources affect. Second, although one could make the argument the congestion onjointly-coordinated constraints is collected, however imperfectly, through the PJM LMPs, these congestion costs do not fully reflect the congestion that is caused by the pseudo-tied units. The pseudo tying unambiguously raises the costs of managing these constraints by reducing the efficiency of the MISO dispatch. Although this cost is indirect, we believe it is significant and should be considered in the allocation of costs to the pseudo-tied suppliers. In fact, the magnitude of this inefficient congestion cost increase is directly correlated with the magnitude of the congestion on the market-to-market constraints at issue in this complaint and would likely more than offset the costs being allocated to the pseudo-tied resources.

Third, we find no basis for an argument that the administrative charges imposed under the MISO Tariff should be refunded. In reality, the requirement to evaluate and support large quantities of pseudo-tied resources is imposing substantial administrative costs on MISO and PJM that are not being allocated to PJM's external capacity resources.

C. The Pseudo-Tie Requirement in the PJM Tariff and Potential Solutions to the Issues Raised by Pseudo Tying

Although there can be commercial reasons for pseudo tying, the vast majority of the recent pseudo tying is directly attributable to the PJM Tariff, which requires external capacity resources to pseudo tie their resources to PJM. The Commission required the RTOs to work together to address any issues that the pseudo-tied resources may cause and to evaluate reliability and market issues. As a result, MISO formed a Pseudo-Tie Issue Task Team

("PITT"). This group included MISO subject-matter experts and its market participants. PJM staff also participated on a limited basis. Although the PITT identified and addressed a large set of reliability, commercial, and economic issues, no meaningful solutions were developed and implemented to address the economic costs imposed on MISO's market from pseudo tying. Ultimately, most of the efficiency and some of the reliability issues caused by the pseudo-tied resources are inherent in turning dispatch control for a resource located on one RTO's network to a neighboring RTO and, therefore, cannot be addressed by any other means than to simply reduce the reliance on pseudo-tied resources themselves.

Ultimately, the pseudo-tying requirement imposed by PJM provides no real reliability benefits to PJM and, in the end, raises costs to PJM, MISO, and the owners of the pseudo-tied resources relative to other more sensible arrangements for delivering capacity to PJM. Hence, we developed and recommended "Firm Capacity Delivery Procedures" as a substitute for the pseudo-tie requirement, under which MISO would guarantee the delivery of the energy from these capacity resources without turning over dispatch control to PJM. Under these procedures, MISO would work with PJM to ensure that its capacity performance obligations are enforced comparably to the obligations borne by internal PJM generators. Appendix A to this filing includes a memorandum that we posted for the May 25, 2016 Joint and Common Market ("JCM") meeting of the two RTO's, which describes this proposal and addresses each of the concerns that PJM had originally raised. Prior to this meeting, we worked with MISO to revise and flesh-out the proposal.

Importantly, this proposal would more reliably ensure that the capacity procured by PJM is actually delivered when needed. Additionally, it was crafted to satisfy one of the Commission's primary reasons for approving the pseudo-tie requirement, namely that pseudo ties provide "unit-specific visibility of external resource performance necessary to accurately

apply Non-Performance Charges to external resources"[9] The Capacity Delivery Procedures provide comparable visibility without generating the inefficiencies described above.

At the same JCM meeting, MISO proposed a substantially similar version of these Capacity Delivery Procedures as a means to address the adverse impacts of the pseudo ties while satisfying all of PJM's reliability and planning needs. Without much explanation, PJM informed MISO and the JCM participants at this meeting that it was unwilling to consider this proposal, but offered no alternatives for addressing the numerous concerns about the inefficiency of pseudo ties.

In sum, there is no process currently underway that has a reasonable prospect of addressing the Commission's mandate to "minimize" the commercial harm on MISO (and PJM) Market Participants due to the inefficiencies caused by pseudo ties. Therefore, we recommend that the Commission address the underlying problem by revisiting the pseudo-tie requirement in the PJM tariff, which will fully address the concerns raised by Tilton in the complaint because they will no longer be required to bear the costs of pseudo tying to PJM.

IV. CONCLUSION

WHEREFORE, for the foregoing reasons, Potomac Economics, Ltd. respectfully requests the Commission to grant its motion to intervene in this proceeding and accept this protest.

Although we do not believe that relieving pseudo-tied suppliers of the congestion and administrative charges is reasonable, we do believe that this complaint highlights the harm and difficulty of requiring external capacity resources to pseudo tie their resources to PJM. If the Commission chooses to act on this Complaint, we recommend that it address the true source of the problem, which is the requirement in the PJM Tariff that external capacity resources be

[9] Id, at 97.

pseudo-tied to PJM. Hence, Potomac Economics respectfully recommends that the Commission reject the relief requested by Tilton and, instead, issue an order under FPA Section 206 for PJM to reform the capacity delivery requirements and obligations applied to external resources under its Tariff.

Respectfully submitted,

/s/ David B. Patton

David Patton
President
Potomac Economics, Ltd.

October 14, 2016

CERTIFICATE OF SERVICE

I hereby certify that I have this day e-served a copy of this document upon all parties listed on the official service list compiled by the Secretary in the above-captioned proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated this 14th day of October 2016 in Fairfax, VA.

/s/ David B. Patton

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Appendix A

POTOMAC ECONOMICS

MEMORANDUM

TO: Joint and Common Market

FROM: David B. Patton, Michael Wander

DATE: May 24, 2016

RE: Comments on Pseudo-Time Impacts and Alternative Firm Capacity Delivery Procedures

This memo summarizes our concerns with the economic and reliability effects of the current pseudo-tie requirements. It also provides our views on alternative firm capacity delivery procedures.

A. Summary

This memo discusses the adverse effects of pseudo-tying large numbers of MISO resources to PJM, including providing an analysis showing the number of constraints and value of congestion that will be affected by the pseudo-tied resources.

To avoid these adverse effects, we recommend that the RTOs adopt Alternative Firm Capacity Delivery Procedures. With a few modifications, MISO's proposed procedures can:

- Meet PJM's objectives for reliably delivering external capacity;
- Fully enforcing PJM's capacity obligations to ensure that MISO resources gain no advantage in selling capacity into PJM;
- Avoid the significant adverse efficiency and reliability consequences for both RTOs created of pseudo-tying large quantities of MISO resources to PJM; and
- Prevent the substantial congestion costs and FTR funding issues that the pseudo-ties may be cause PJM's customers because of the new market-to-market flows that will occur over MISO's constraints.

B. Impacts of Pseudo-Tying MISO Resources to PJM

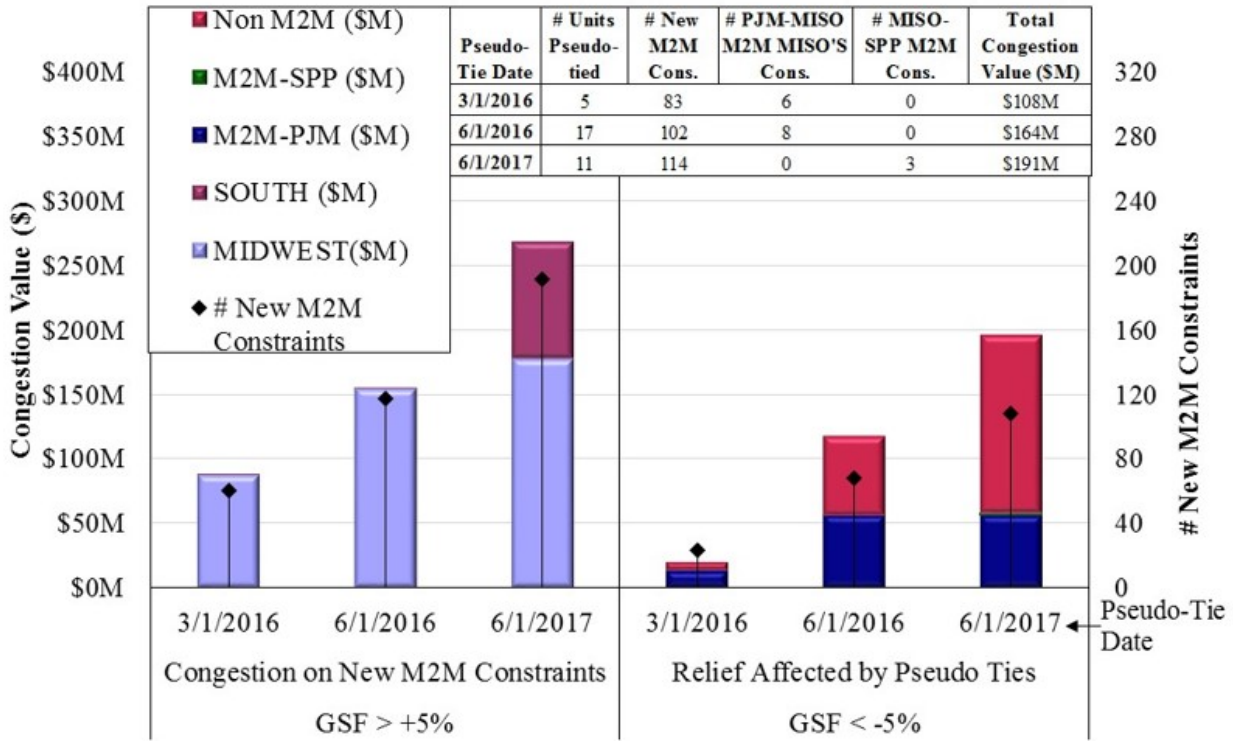
Having PJM take dispatch control of large numbers external generators will harm both MISO and PJM by undermining MISO's dispatch and exposing PJM to large levels of congestion costs on MISO's network. These concerns arise because the pseudo-tying:

- Causes forward flows over a large number of MISO transmission facilities that are difficult to manage; and
- Will transfer generators that create counter flows over other MISO constraints that will no longer be available to manage congestion on these constraints.

The first issue can be partially addressed to the extent that the constraints loaded by these generators are defined as market to market constraints and, therefore, coordinated with PJM. However, this coordination is much less efficient to managing the flows caused by these resources through MISO's own 5-minute dispatch. Additionally, PJM is exposing itself and its customers to substantial costs.

Based on our analysis shown in figure below, more than 300 MISO non-M2M constraints that bound in 2015 will now need to be defined as market-to-market constraints so they can be coordinated. This will occur because units located on MISO's transmission system will be under the dispatch control of PJM so the flows they cause on MISO's constraints will now become PJM's market flows and the market-to-market process will be necessary to manage these flows. Unfortunately, the market to market coordination is not nearly as effective as full dispatch control and many of the constraints will remain non-market to market constraints. This is a serious issue because the figure also shows that the value of the congestion on these constraints exceeded $400 million in 2015, roughly 30 percent of all MISO congestion.

The left panel of the figure shows the constraints that the pseudo-tied units load and the right panel shows the constraints that they unload. The drop line in each panel shows the number of new MISO constraints in each class that will now qualify as market-to-market constraints while the bars show the value of the real-time congestion on the constraints. Finally, the data is divided to show the effects of each of the groups of resources that have or are pseudo-tying to PJM on March 2016, June 2016, and June 2017.



Pseudo-Tie Date	# Units Pseudo-tied	# New M2M Cons.	# PJM-MISO M2M MISO'S Cons.	# MISO-SPP M2M Cons.	Total Congestion Value ($M)
3/1/2016	5	83	6	0	$108M
6/1/2016	17	102	8	0	$164M
6/1/2017	11	114	0	3	$191M

This figure shows that the constraints and associated congestion in 2015 that would be affected by the pseudo-tied resources is large. The value of the congestion affected by the pseudo-ties will rise in the future if gas prices rise and/or if congestion becomes more poorly managed because of the pseudo-ties.

C. Firm Capacity Delivery Procedures Proposal

We continue to participate in discussions with MISO and PJM on alternatives to pseudo-tying in an attempt to meet PJM's objectives for comparability between internal and external resources while avoiding the negative impacts of pseudo-tying. These proposals would establish procedures to guarantee the delivery of the capacity purchased by PJM. The discussions have been productive and we believe an agreement can be achieved that will satisfy all of PJM's objectives, while benefiting the participants of both RTOs by protecting the efficiency and reliability of the system.

The MISO IMM proposal that was presented in February to the JCM included:

- The host RTO would be obligated to deliver energy associated with capacity resources in an amount equal to the lower of:
  - ✓ The quantity of capacity purchased by the attaining RTO; or
  - ✓ The maximum dispatch level of the unit (zero if the resource is on outage, or a reduced amount if the unit is derated due to a generation or transmission issue).
- To mimic the availability of an internal unit, the host RTO will schedule the firm export subject to notice being provided by the attaining RTO by:
  - ✓ 20 minutes prior to real time if the resource is online; or
  - ✓ The length of the start-up time prior to real time if the resource is offline.
- When scheduled, the external capacity supplier will settle the export with both RTOs consistent with the settlement of all imports and exports.
  - ✓ The export need not clear in the day-ahead market;
  - ✓ Exports called by the attaining RTO would be scheduled in the real-time and necessary ramp would be allocated to it (ahead of exports being scheduled to any other location);
- The host RTO shall not curtail the firm exports unless PJM approves the curtailment because host RTO has declared an emergency.

This is comparable to MISO presentation in most regards, MISO's proposal offered to make the firm energy available to PJM even if the unit was derated. We believe this is excessive and raises comparability concerns for PJM. Additionally, MISO proposed to curtail the exports pro-rata with its own load. We do not believe this is justified since PJM should receive the capacity value of the resource. Only the units availability/rating should be the basis for reducing the delivery to PJM.

D. Response on Remaining Concerns and Principles

Capacity cleared in RPM must be available for commitment and dispatch in day-ahead and real-time

- This capacity import to PJM may be called or scheduled by PJM in the day-ahead or real-time market.
- However, the transaction need not be scheduled day ahead to be available to PJM.
- Under the IMM proposal, the operational flexibility should be equal to or better than the pseudo-tie.

Internal and external generation must be treated comparably (deliverability & equal opportunity)

- The delivery rules can be set up to ensure comparability.
- As proposed by the IMM, PJM will only have access to firm energy to the extent that the external capacity unit is available. If it derated, forced out of service, or otherwise unavailable (including due to local transmission or interconnection issues), the supplier will be subject to capacity shortfall penalties.
- Additionally, because MISO can provide any necessary assistance required by PJM to enforce the capacity performance requirements, the external units will have to fully comply with these requirements.
- Choosing between pseudo-tying and the capacity delivery procedures will not change the deliverability of an external resource to PJM in the operating horizon. In addition, MISO resources are subject to comparable deliverability tests by MISO to ensure that they can be delivered to the network and, if not, must make network upgrades.

External generation needs to be treated consistently between neighboring entities (consistency & equal opportunity)

- The capacity delivery procedures could be adopted by any other neighboring entities that choose to adopt them. If they do not adopt them, the units could still provide capacity to PJM via pseudo-tie.
- Since the capacity delivery procedures are designed to be comparable to capacity from internal units, and PJM believes pseudo-ties are comparable to internal units, there should be no comparability or competitive concerns between MISO generators and pseudo-tied resources located in other external areas.

Capacity offers need to reflect replacement capacity costs & re-dispatch costs

- Under the IMM proposal, PJM load will not be exposed to congestion or upgrade costs through MISO's dispatch. MISO will simply perform an economic dispatch to serve its load and net import/export needs. Any associated costs on any network constraints are borne by MISO. Importantly, no market flows would be attributed to PJM associated with the capacity sale (if market flows were attributed to PJM, it would convey cost responsibility).

- In contrast, pseudo-tied resources will create market flow over many MISO constraints for which PJM has no firm flow entitlements.
- Our analysis indicates that roughly 300 new constraints from 2015 will qualify as M2M constraints once all of the units are pseudo-tied that have cleared in PJM's RPM. These new constraints experienced in excess of $400 million in congestion in 2015 (and 2015 was a mild congestion year). This will expose PJM load to substantial costs.
- Although some of the congestion associated with this new market flow may be borne by the pseudo-tied supplier, this will often not be the case. If the constraint doesn't bind in the day-ahead market or isn't modeled in the day-ahead market, all of the market-to-market charges/costs to coordinate in the real-time market would be borne by PJM's other customers.