

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**Midwest Independent Transmission )  
System Operator, Inc. )**

**Docket No. ER12-\_\_\_\_-\_\_\_\_**

**Affidavit of David B. Patton, Ph.D.**

**I. Qualifications and Purpose**

1. My name is David B. Patton. I am an economist and President of Potomac Economics.

Our offices are located at 9990 Fairfax Boulevard, Fairfax, Virginia 22030. Potomac Economics is a firm specializing in expert economic analysis and monitoring of wholesale electricity markets. Potomac Economics currently serves as the Independent Market Monitor (“IMM”) for the Midwest Independent Transmission System Operator, Inc. (“MISO”) as well as the Independent Market Monitor for the New York Independent System Operator, Inc. and the External Market Monitor for the ISO New England, Inc. In these engagements, we are responsible for assessing the competitive performance of the markets, including assisting in the implementation of monitoring plans to identify and remedy market design flaws and abuses of market power. We also provide recommendations regarding market mitigation measures and other market rules.

2. I have worked as an energy economist for twenty years, focusing primarily on the electric utility and natural gas industries. I have provided strategic advice, analysis and expert testimony in the areas of electric power industry restructuring, pricing, mergers, and market

power. I have also advised other existing and prospective RTOs on transmission pricing, market design, and congestion management issues. With regard to competitive analysis, I have provided expert testimony and analysis regarding market power issues in a number of mergers and market-based pricing cases before the Federal Energy Regulatory Commission (“Commission”), state regulatory commissions, and the U.S. Department of Justice.

3. Prior to my experience as a consultant, I served as a Senior Economist in the Office of Economic Policy at the Federal Energy Regulatory Commission, advising the Commission on a variety of policy issues including transmission pricing, open-access and electric utility mergers.
4. Before joining the Commission, I worked as an economist for the U.S. Department of Energy. During this time, I helped develop and analyze policies related to investment in oil and gas exploration, electric utility demand side management, residential and commercial energy efficiency, and the deployment of new energy technologies. I hold a Ph.D. and M.A. in Economics from George Mason University and a B.A. in Economics with a minor in Mathematics from New Mexico State University.
5. The purpose of my affidavit is to address certain issues associated with MISO’s proposed changes to the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff (the “Tariff”). The proposed Tariff changes seek to address adverse circumstances surrounding resource commitments undertaken for certain local operating conditions. More precisely, MISO is proposing important changes to (1) monitoring and mitigation of market power associated with commitments for voltage support and local reliability and (2) the way it will allocate costs associated with these commitments. The affidavit I am filing

today addresses the proposed Module D changes and a second affidavit I am also filing today addresses MISO's concurrent filing that proposes changes in the allocation of uplift costs associated with these commitments. Module D contains Market Monitoring and Mitigation Measures.

6. Commitments for voltage support are made to ensure there is sufficient generating capacity available at specific locations critical to sustaining voltage levels. Commitments for local reliability are made to avoid thermal transmission limits on low-voltage facilities. For the purposes of implementing mitigation and cost allocation procedures, these commitments can be treated as a single set that I will refer to as "local commitments."
7. Local commitments and the solution to the underlying operating constraints generally require commitment of specific resources often owned by a single entity. The need for the same resources for local commitments often occurs every day for substantial periods of time. The committed resources are guaranteed recovery of their as-offered costs under the Revenue Sufficiency Guarantee or "RSG" provisions. Because the voltage and local reliability requirements can often only be satisfied by a single supplier, the local commitments occur under conditions where suppliers have substantial market power and the incentive to exercise that market power.
8. This affidavit will discuss the local market power issues associated with local commitments. In recent reports we identified significant market power issues in North Wisconsin-Upper Michigan System ("WUMS") associated with these local commitments. The current Module D market monitoring and mitigation provisions do not adequately address the market power associated with local commitments, and MISO is proposing new

provisions with tighter conduct and impact thresholds than those associated with either Broad Constrained Areas (“BCAs”) or Narrow Constrained Areas (“NCAs”). As the IMM for MISO, I recommended that MISO pursue tighter market power mitigation thresholds for local commitments, and I support MISO’s proposed changes to Module D that are intended to respond to this recommendation. In this affidavit, I explain why the MISO’s proposed changes to the Module D market monitoring and mitigation measures are necessary and why they are an effective and efficient way to address the local market power.

## **II. Local Market Power and the Proposed Monitoring and Mitigation Measures**

### **A. Overview of Monitoring and Mitigation Measures**

9. In accordance with the Tariff, resources committed by MISO to meet reliability requirements are guaranteed to recover as-offered production costs. RSG payments are made when the revenues from the energy and ancillary services markets are less than the as-offered production costs.<sup>1</sup> These provisions apply to the local commitments that are the subject of this affidavit.
  
10. Because the resources will receive at least their as-offered costs, suppliers have an incentive to submit offers exceeding the resources’ true production costs (startup, no-load, and incremental energy) costs in circumstances when they anticipate being committed for reliability needs that other suppliers cannot satisfy. Local reliability and voltage support

---

<sup>1</sup> This guarantee depends on these committed resources actually operating in accordance with the relevant instructions.

needs generally pertain to a very limited geographic area where the resources available to satisfy the reliability needs are owned by a very small number of suppliers, often only a single supplier. This creates substantial opportunities to exercise market power and raises significant competitive concerns. These concerns are exacerbated by the fact that these needs often result in very frequent and predictable local commitment patterns that reoccur daily.

11. MISO's proposed changes to the market monitoring and mitigation measures are in response to a recommendation in the IMM's *2010 State of the Market Report*. In that report, we noted significant increases in RSG payments in late 2010 that were the result of market power associated with local commitments in the North WUMS area.
12. The market power in North WUMS that led to the increased RSG payments was not subject to mitigation under the existing market monitoring and mitigation measures because the offers did not satisfy the "conduct test" specified in MISO's Tariff. As I will explain, the current market power mitigation provisions in Module D of the Tariff are not sufficient to address the market power associated with local commitments.
13. Currently, resources committed in a BCA to resolve a transmission constraint can be offered above their reference level by up to \$100 per MWH or 300 percent without exceeding the conduct thresholds. In NCAs, the conduct thresholds vary depending on the frequency of congestion and net revenue requirements in the defined area. The "tightest" NCA currently is North WUMS where the threshold is \$24.37 per MWh. However, the NCA thresholds do not typically apply to local commitments unless an NCA has been defined associated with the local reliability or voltage support. A resource exceeding the

conduct thresholds would then only be mitigated if the conduct resulted in an increased RSG payment of \$50 per MWh or more. The RSG mitigation impact test threshold is the same for BCAs and NCAs.

14. Under the current framework, BCA and NCA mitigation only applies if a resource fails both the conduct and impact tests. RSG mitigation was generally not triggered for local commitments. We conducted an analysis to determine the potential impact on RSG payments if the proposed conduct and impact thresholds had been applied to local commitments in 2010. As presented in the 2010 SOM, we estimated that suppliers with resources committed to satisfy certain local commitment needs increased their Revenue Sufficiency Guarantee (“RSG”) payments by \$16 million by raising their offer prices. Most of the identified commitments were repeated over an extended period of time when the supplier faced no meaningful competition to satisfy the local needs. Reduced conduct and impact thresholds are the most efficient means of mitigating this type of severe market power.
15. In recognition that generators committed for voltage and local reliability often have extreme local market power, MISO has proposed the following new mitigation measure to more effectively mitigate the market power associated with local commitments. We believe that the proposed changes to Module D will adequately address the market power risks.
16. The proposed measures to be applied to local commitment would be invoked when:
  - a) the unit in question is identified by operators as being required for voltage or local reliability;

- b) the unit was committed for reliability (rather than economics);
  - c) the unit's as-offered production costs (startup, no-load, and incremental energy) exceed its Module D reference level production costs by 10 percent or more; and
  - d) the elevated offers (above references) result in increased RSG payments during the relevant commitment period. (The impact test is only a strictly positive value for the impact – there is no safe harbor once the conduct test is failed).
17. The proposed measures to deal with local reliability commitments are substantially similar to a measures approved by the Commission in response to comparable situations in New York and New England.<sup>2</sup>
18. The following subsections discuss the proposed conduct and impact thresholds.

## **B. The Proposed Conduct Thresholds**

### **1. Production Cost Thresholds**

19. The proposed conduct thresholds are triggered when as-bid production costs (the sum of start-up, no-load and incremental energy costs) increase at least 10 percent above reference production costs. This is a substantially lower threshold than the current BCA and NCA conduct thresholds for all but the highest-cost resources. These lower thresholds are justified because extreme local market power exists when the resources owned by a single supplier are required for a local reliability commitment.
20. Percentage thresholds are effective in accounting for changes in fuel prices. As fuel prices rise, both reference levels and the conduct threshold rise. For example, if fuel prices cause a unit's reference production costs to increase from \$50 to \$100 per MWh, the conduct

---

<sup>2</sup> See, e.g. *New York Independent System Operator, Inc.*, 131 FERC ¶ 61,169 (2010) and *ISO New England Inc. and New England Power Pool*, 129 FERC ¶ 61,008 (2009); PJM Interconnection, LLC, FERC Electric Tariff, Section 6.4.2.

threshold will rise from \$5 per MWh to \$10 per MWh. This is appropriate because the uncertainties associated with the unit's true production costs generally increase with fuel prices (although these uncertainties are not strictly related to fuel costs).

21. There are several precedents for modifying the thresholds in the presence of local market power. A 10 percent threshold is used in NYISO for upstate resources identified as possessing local market power related to local reliability requirements. PJM also uses a 10 percent trigger for mitigation of local market power. ISO-NE similarly adopted a 10 percent threshold for generators committed for local reliability.

## **2. Thresholds for Economic Minimum Generation and Minimum Runtime**

22. Offering inflexible physical parameters allows units being committed for voltage or local reliability to increase their RSG payments. For example, if we assume that a unit with average production costs of \$80 per MW and an actual minimum run time of 4 hours was committed to provide voltage support when the LMP averaged \$40 per MW across the commitment period, it would receive total RSG payments of \$160 per MW. However, if the generator offered an inflated minimum run time of 8 hours it would receive RSG payments totaling \$320 per MW, thereby doubling its RSG payment. Similarly, offering minimum generation levels above reference levels also would magnify the RSG payments being made to the generator, thereby increasing market power rents and inefficiencies. Physical parameter thresholds such as Economic Minimum Generation MW ("EcoMin") provide safeguards against generators inflating their physical parameter offers as a means to increase their RSG payments.

23. The proposed modifications to Section 64.1.3 of Module D to address these physical parameters clarify the specific criteria that would lead to a conduct test failure under this section. The current section 64.1.3 specifies certain resource offers parameters that may cause or contribute to a resource being “*scheduled at a location where the LMP is less than 50 percent (50%) of the applicable Reference Level....*” However, it does not specify thresholds for all offer parameters. In particular, it does not specify thresholds for the physical offer parameters. Accordingly, MISO has added conduct thresholds for EcoMin and other physical parameters that are necessary for the proposed mitigation to be effective for local commitments.
24. The EcoMin resource offer parameter is used by MISO to establish the minimum commitment level. Uneconomic energy production can result when an inflated minimum generation offer is accompanied by an energy offer that is above the LMP. Because MISO must commit the resource at that level, it must produce and pay for energy up to the EcoMin level. The proposed change in 64.1.3.i.(b) specifies that a 25 percent increase above the reference Economic Minimum Generation level will be the conduct threshold used to identify potential uneconomic production associated with that parameter. Economic Minimum Generation levels are subject to some variation due to changes in operating conditions so a 25 percent threshold will protect against over mitigation.
25. Regarding minimum run times, the proposed change in 64.1.3.i.(c) clarifies that the currently applicable thresholds for in Section 64.1.2.a.v. – vi apply to other parameters that may result in uneconomic production including minimum run times and ramp rates.

### C. Proposed Changes in the Impact Test

26. If a resource selected for local commitment exceeds the conduct threshold defined in Section 64.1.2 g, then it will be subject to mitigation of its RSG payments if it would result in any increase in RSG payments regardless of magnitude.<sup>3</sup> Given the extreme market power associated with local commitments and the chronic nature of these reliability issues I agree that, it is appropriate to mitigate any increase in RSG costs associated with the conduct identified in 64.1.2 without testing the conduct for impact.<sup>4</sup>
27. The conduct and impact test framework is designed to balance the risk of over-mitigation against the risk of under-mitigation. In general, the impact test prevents the RTO from intervening in the market when offers above the conduct threshold do not have substantial market impact, which is intended to limit intervention in cases where a supplier does not have market power as evidenced by the fact that its conduct is not significantly affecting the market. However, since the suppliers satisfying local reliability and voltage requirements generally face little or no competition, applying an impact test is unnecessary and would reduce the effectiveness of the proposed measure.
28. The fact that no impact test is necessary for local commitments has been recognized by the Commission in approving similar market power mitigation measures in the NYISO and

---

<sup>3</sup> Per the changes proposed to Section 64.2.1.d and f.

<sup>4</sup> In practice, MISO's systems will test the conduct for impact, but impose an impact threshold equal to zero.

ISONE markets. In both cases, the RTOs proposed measures that employ only a conduct test and no impact test to mitigate market power associated with local commitments.<sup>5</sup>

29. The substantially tighter market power mitigation for local commitments proposed by MISO maintains the balance between over and under-mitigation because the risk of under-mitigation is much more severe than in BCAs and NCAs. Some local requirements can be satisfied by only one generating station that may be needed in nearly every hour of the year. Consequently, the risk of under-mitigation is significantly greater and warrants tighter thresholds.
30. Additionally, there is less risk of over-mitigation with local commitment RSG payment mitigation than there would be in the energy market. Local commitment mitigation is performed *ex post* and, therefore, has no impact on energy prices. Finally, the risk of over-mitigation is also reduced by the consultation process specified in Module D. Nonetheless, if a participant disagrees with an outcome of the mitigation process, it may file a complaint with the Commission (and could be re-settled if the complaint is valid without affecting market clearing prices). Taken together, these processes afford the participant ample opportunity to justify its offers. Therefore, the tighter thresholds proposed by MISO should not result in inappropriate mitigation.

---

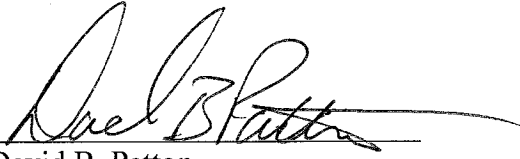
<sup>5</sup> See, e.g. 131 FERC *New York Independent System Operator, Inc.*, 131 FERC ¶ 61,169 (2010) and *ISO New England Inc. and New England Power Pool*, 129 FERC ¶ 61,008 (2009) PJM Interconnection, LLC, FERC Electric Tariff, Section 6.4.2.

### **III. Conclusion**

31. As discussed above in this affidavit, the local reliability and altered support requirements that precipitate local commitments generally cause severe local market power to exist. Due to the severity and frequency of such market power, I had found that the existing market power mitigation measures are not sufficient to effectively address the competitive concerns. Based on this finding, we recommended improvements in the market power mitigation measures.
  
32. In the course of developing the proposed changes in MISO's market power mitigation measures, we have provided advice to MISO and stakeholders. Therefore, we have closely evaluated the proposed changes and find they will be effective in addressing the competitive concerns we have raised. Therefore, I respectfully recommend that the commission approves the changes MISO proposes in this filing to its market power mitigation measures.
  
33. This concludes my affidavit.

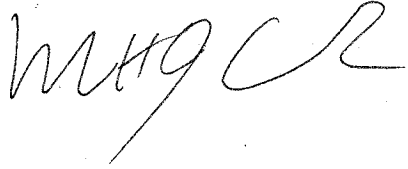
ATTESTATION

I am the witness identified in the foregoing Affidavit of David B. Patton, Ph.D. dated December 22, 2011 (the "Affidavit"). I have read the Affidavit and am familiar with its contents. The facts set forth therein are true to the best of my knowledge, information, and belief.

  
David B. Patton

December 22, 2011

Subscribed and sworn to before me  
this 22nd day of December, 2011



Notary Public

**MATTHEW JAMES CARRIER**  
Notary Public  
City/County of Fairfax  
Commonwealth of Virginia  
Notary registration number - 7233763  
My commission expires - Nov. 30, 2013

My commission expires: Nov. 30, 2013