

135 FERC ¶ 61,265
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinohoff, Chairman;
Marc Spitzer, Philip D. Moeller,
John R. Norris, and Cheryl A. LaFleur.

Midwest Independent Transmission System Operator, Inc. Docket No. ER11-2794-000

ORDER CONDITIONALLY ACCEPTING TARIFF REVISIONS, SUBJECT TO
COMPLIANCE FILING

(Issued June 28, 2011)

1. On January 28, 2011, Midwest Independent Transmission System Operator, Inc. (MISO) filed proposed revisions to its Open Access Transmission, Energy and Operating Reserve Markets Tariff¹ (Tariff) to enhance the procurement of Operating Reserves² by: (1) taking into greater account deliverability in the operating reserve procurement process; and (2) adding a marginal congestion component to the zonal reserve Market Clearing Price³ (January 28 Filing). As discussed below, the Commission accepts the January 28 Filing, to become effective April 1, 2011, as requested, subject to a compliance filing.

¹ MISO FERC Electric Tariff, Volume No. 5.

² “Operating Reserve” is defined in the Tariff as the capability above firm system demand maintained to provide for Regulation, Load forecasting error, equipment forced and scheduled outages, and local area protection. Operating Reserve consists of Regulating Reserve and Contingency Reserve. Section 1.486, MISO FERC Electric Tariff, Volume No. 5. Capitalized terms used and not defined herein have the meanings ascribed to them in the Tariff.

³ “Market Clearing Price” is defined as the Regulating Reserve Market Clearing Price, the Spinning Reserve Market Clearing Price and the Supplemental Reserve Market Clearing Price. Section 1.379, MISO FERC Electric Tariff, Volume No. 5.

I. Background

2. On September 14, 2007, as amended on September 19, 2007, MISO submitted revisions and amendments to its Open Access Transmission and Energy Market Tariff to implement a centralized and co-optimized Energy and Ancillary Services Market within the MISO region (ASM Filing).⁴ On February 25, 2008, the Commission issued an order conditionally accepting MISO's ASM Filing, subject to compliance, reporting, and certification requirements.⁵ On January 6, 2009, MISO started its Ancillary Services Market.

3. As explained in the testimony of Mr. Joseph Gardner, Executive Director of Real-Time Operations of MISO, after the start of the ASM market, MISO identified certain problems arising from the fact that the deliverability of reserves is not fully addressed by the Tariff's approach to the setting of minimum zonal reserve requirements.⁶ First, the deliverability of Regulating Reserves⁷ is not considered in the establishment of minimum zonal regulating reserve requirements. Second, even though an offline deliverability study for Contingency Reserves⁸ is used to establish minimum zonal Operating Reserve requirements, the scenario analyzed by the offline study that occurs 48 hours prior to the

⁴ See Midwest Independent Transmission System Operator, Inc. Electric Tariff Filing to Reflect Ancillary Services Markets, Docket No. ER07-1372-000 (filed September 14, 2007), and Midwest Independent Transmission System Operator, Inc. Amendment to Tariff Filing Regarding Ancillary Services Markets, Docket No. ER07-1372-001 (filed September 19, 2007).

⁵ *Midwest Independent Transmission System Operator, Inc.*, 122 FERC ¶ 61,172, order on reh'g, 123 FERC ¶ 61,297 (2008).

⁶ January 28 Filing at 2 (citing [Att.][they call it "Tab C"] C (Gardner Testimony) at 3-4).

⁷ "Regulating Reserves" is defined as a(n) frequency responsive Generation Resource, External Asynchronous Resource, or Demand Response Resource-Type II capacity held in reserve for the purpose of providing Regulating Reserve Deployment in both the up and down direction. Section 1.549, MISO FERC Electric Tariff, Volume No. 5.

⁸ "Contingency Reserve" is defined as Spinning Reserve and Supplemental Reserve provided by Resources available to the Transmission Provider to use in the event of a system contingency as specified in Schedule 5-Spinning Reserve and Schedule 6-Supplemental Reserve of this Tariff. Section 1.86, MISO FERC Electric Tariff, Volume No. 5.

Operating Day can be very different from actual system operating conditions. As a result, Contingency Reserves procured based on the results of the offline study, can be undeliverable, if deployed, to the extent that real-time conditions differ from the study's projections.⁹ MISO also states that when the process for procuring reserves does not adequately account for deliverability, the deployment of the procured reserves can cause transmission constraint violations.¹⁰ MISO states that whenever such deliverability problems occur, its real-time operators are forced to alleviate the consequent risk to the system reliability by manually designating non-deliverable resources as "not qualified" to provide reserve products.¹¹

4. Accordingly, MISO considers it essential to modify and enhance the existing reserve procurement process to appropriately address the deliverability of reserves. MISO states that it held a series of meetings with stakeholders to consider how the reserve procurement process can be improved to better address reserve deliverability. MISO states that these meetings were well-attended by a broad spectrum of market participants.¹²

II. Filing and Deficiency Response

5. MISO's proposed revisions will take into consideration transmission constraints: (1) that are relevant to the evaluation of the impact of the deployment of Regulating Reserves and Contingency Reserves on transmission flows on a zonal basis; and (2) which ensure that post-deployment flows are within applicable limits.¹³ MISO states that, since the impact of reserve deployment shall be assessed on a zonal basis, the Tariff's current zonal reserve Market Clearing Price structure can be maintained. MISO states that enforcing such transmission constraints will introduce a congestion component

⁹ Gardner Testimony at 3.

¹⁰ *Id.* at 6.

¹¹ *Id.* at 4.

¹² *Id.* at 14.

¹³ Mr. Gardner, in his testimony, provides that edits to Schedule 29 will not completely eliminate manual work-arounds because it will be computationally practical to evaluate the impact of Regulating Reserve and Contingency Reserve deployment on a limited set of important transmission constraints. He states that the existing manual work-arounds will continue to be needed if Regulating Reserve deployment or Contingency Reserve deployment impacts other transmission constraints. Gardner Testimony at 9.

into the zonal reserve Market Clearing Prices. In order to take the deliverability of reserves into account in the reserve procurement process, thereby avoiding those identified transmission constraints, MISO proposes to modify Schedule 29, Module A, and Module C of the Tariff as described below.

6. Schedule 29 of the Tariff provides the detailed formulas for the simultaneously co-optimized Security Constrained Economic Dispatch algorithm that MISO uses to clear, dispatch, and price Energy and Operating Reserves in its markets. MISO proposes to modify Schedule 29 to provide that the transmission constraints solved using the Security Constrained Economic Dispatch algorithm shall also be evaluated and used to ensure that Operating Reserves are deliverable, i.e. that they can be deployed reliably.

7. In Module A of the Tariff, MISO proposes to modify the definition of Regulating Reserve Market Clearing Price (section 1.551) to incorporate the marginal cost for delivering Zonal Regulating Reserve to the Reference Bus incurred from the newly considered post-reserve-deployment transmission constraints. MISO also proposes adding the following defined terms: “Market Clearing Price Zonal Terms” (section 1.379a); “Reserve Zone Configuration Studies (section 1.574a), “Reserve Zone Requirement Studies” (section 1.574b); and “Zonal Supplemental Reserve Requirement” (section 1.713a). In addition, MISO proposes to revise the definition of “Binding Settlement Zone” (section 1.51) to account for the fact that under the reserve procurement enhancement proposed in the January 28 Filing, a congestion component can be negative and result in a zonal Market Clearing Price lower than the market-wide reserve Market Clearing Price. MISO notes that with this modification, the market-wide reserve Market Clearing Price may not necessarily be the “minimum” Market Clearing Price among all Reserve Zones.¹⁴

8. In Module C of the Tariff, MISO proposes an enhanced reserve procurement process that will evaluate reserve deployment impacts on transmission constraints on a zonal basis. MISO states that it will require reserve zone configuration based on the results of Reserve Zone Configuration Studies. MISO further states that its existing Reserve Zone Requirements Studies will continue and that the proposed new approach will be used in addition to the minimum zonal reserve requirements from Reserve Zone Requirements Studies.

9. MISO states that the Tariff currently does not consider the deliverability of Regulating Reserves during the Reserve Zone Requirements Studies. MISO states that the minimum Zonal Regulating Reserve Requirement is “set at twenty-five (25) percent of the product of the Market-Wide Regulating Reserve Requirement” and the ratio described in section 39.2.1A.e.iii (i.e., the ratio of the sum of the Maximum Regulation

¹⁴ January 28 Filing at 6 (citing Gardner Testimony at 10).

Capability of Resources within the Reserve Zone, to the sum of the maximum Regulations Capability of all Regulation Qualified Resources in all Reserve Zones).¹⁵ MISO states this requirement serves to ensure market-wide dispersion of the Regulating Reserve zonal clearing process. As a result of MISO's proposal, MISO states it may not even be necessary to establish zonal minimums as currently described in section 39.2.1A.e.iii, to achieve an appropriate dispersion of Regulating Reserve. Hence, MISO states that its proposed Tariff modifications provide it with reasonable latitude to set the minimum Zonal Regulating Reserve Requirement, through the appropriate Business Practices Manual, at anywhere from zero to twenty-five percent of the product of Market-Wide Regulating Reserve Requirement and the above-described ratio, as may be warranted by reliability considerations.

10. MISO states that Reserve Zone configuration remains a critical aspect of the enhanced procurement. Accordingly, MISO states it has modified the provision on Reserve Zone configuration to clarify that Reserve Zones can be reconfigured under adverse conditions described in section 39.2.1A.f when such conditions cannot be resolved through normal (i.e. non-emergency) operating procedures.

11. In a second substantive change to Module C of its Tariff, MISO proposes to add congestion components into reserve Market Clearing Price calculations. MISO states that these components represent the marginal cost for delivering the specific zonal reserve to the Reference Bus. MISO also proposes minor typographical corrections to a few typos in Module C.

12. On March 30, 2011, Commission Staff issued a deficiency letter seeking additional information regarding the proposed Tariff revisions. The deficiency letter included questions related to: (1) the reference bus used in calculating the marginal congestion component; (2) price signals and clearing implications of the current and proposed approaches; (3) the effects of operating reserve deployments on additional transmission constraints; (4) examples of Market Clearing Price calculations; (5) the congestion cost included in the Market Clearing Price; and (6) the effect on allocation of costs of various types of resources.

13. MISO filed a response on April 29, 2011 providing the requested information, illustrations and explanations. Referring to Mr. Gardner's testimony that the proposed revisions to Schedule 29 will not completely eliminate manual work-arounds, Staff asked MISO to explain why it will not be computationally practical to evaluate the effects of operating reserve deployments on additional transmission constraints. In its response, MISO explains that the software required to implement this new operating reserve procurement approach will have the flexibility to be expanded in scope to include more

¹⁵ January 28 Filing at 7.

transmission constraints and more zones, to the extent necessary and feasible.¹⁶ Further, MISO states that after it gains more experience with the new operating reserve procurement approach, further improvements to the process of conducting Reserve Zone Configurations Studies will also be considered, as may be deemed appropriate.¹⁷

14. Further, in response to Commission Staff's question seeking an explanation why the congestion cost to be included in the Market Clearing Price reflects a marginal cost for deliveries *to* the Reference Bus, rather than *from* the Reference Bus to the Elemental Pricing Node (as is true for the marginal congestion components for energy), MISO states that, upon further consideration, it has determined that it would be appropriate to clarify the Tariff language on reserve congestion components (i.e., January 28 Filing proposed language in sections 39.2.9.i, 39.2.9.k, 39.2.9.l, 39.2.9.m, 39.2.9.n, 40.2.15.i, 40.2.15.k, 40.2.15.l, 40.2.15.m, 40.2.15.n, 40.2.17.h, 40.2.17.j, 40.2.17.l, and 40.2.17m, and the proposed change in the definition in section 1.379a) to be consistent with existing descriptions regarding energy in sections 39.2.9.b.i, 40.2.15.b.i, and 40.2.17.l.i of the Tariff such that they reflect the marginal cost for managing congestion in order to supply an additional MW of the specific Operating Reserve from the Reference Bus to the Reserve Zone. MISO further states that, if directed by the Commission, it will submit the additional Tariff revisions as part of a compliance filing in this proceeding.

III. Notice of Filing and Responsive Pleadings

15. Notices of the filings were published in the *Federal Register*, 76 Fed. Reg. 6609 (2011) and 76 Fed. Reg. 27,642 (2011), with interventions and protests due no later than February 18, 2011, and May 20, 2011, respectively. Timely, unopposed motions to intervene were filed by American Municipal Power, Inc., Indianapolis Power & Light Company, Ameren Services Company, Duke Energy Corporation, Xcel Energy Services, Inc., Exelon Corporation, and Wisconsin Electric Power Company. A notice of intervention was filed by the Illinois Commerce Commission. Motions to intervene out-of-time were filed by Consumers Energy Company and Hoosier Energy Rural Electric Cooperative, Inc. and Southern Illinois Power Cooperative. MidAmerican Energy Company (MidAmerican) filed a timely motion to intervene and comments. MISO filed an answer to MidAmerican's comments.

A. MidAmerican's Comments

16. MidAmerican suggests a number of minor editorial changes to clarify language or to correct items that it believes appear to have been overlooked in the January 28 Filing.

¹⁶ MISO April 29, 2011 Response to Deficiency Letter at 5.

¹⁷ *Id.*

MidAmerican states that the Market Clearing Prices for ancillary services are generally described in section 39.2.9, 40.2.15, and 40.2.17 of MISO's Tariff. MidAmerican states that it believes MISO inadvertently omitted to propose changes to the calculation of Regulating Reserve Market Clearing Prices (to include a marginal congestion component) for Stored Energy Resources in sections 39.2.9.j, 40.2.15.j, and 40.2.17.i.

17. MidAmerican also proposes corrections to section 40.2.17.k. It states that the first sentence of this section contains an apparently incorrect reference to "Demand Response Resources – Type II" that MidAmerican argues should be deleted. Further, MidAmerican notes that it appears that certain Commission-accepted language that formerly appeared in section 40.2.17.k has inadvertently been removed from the Tariff.¹⁸ Additionally, MidAmerican notes that corresponding sections 39.2.9.1 and 40.2.15.1 contain details on the calculation of Spinning Reserve clearing prices for Demand Response Resources-Type I, but this language is missing from section 40.2.17.k.

18. MidAmerican also suggests that sections 40.2.17.l and 40.2.17.m relating to the calculation of real-time *ex post* Market Clearing Process for Supplemental Reserves are virtually identical and that these two sections should be consolidated and that references to Stored Energy Resources in these sections should be deleted.¹⁹

19. MidAmerican notes that MISO's filing modifies provisions on the day-ahead supplemental reserve clearing price of Demand Response Resources-Type I in Section 39.2.9.n and to the Real-Time *ex-ante* price in section 40.2.15.b.n. (by adding the

¹⁸ MidAmerican notes that former Sheet No. 1074A (the Tariff sheet in effect prior to MISO's baseline eTariff filing in Docket No. ER10-1997-000) had contained the following language and that this language should be restored:

The Ex Post Spinning Reserve M[arket] C[learing] P[rice] for Demand Response Resources – Type I is the sum of the (i) Market-Wide Operating Reserve Constraint Shadow Price, (ii) Market-Wide Regulating and Spinning Reserve Constraint Shadow Price, (iii) Reserve Zone Operating Reserve Constraint Shadow Price and (iv) Reserve Zone Regulating and Spinning Reserve Constraint Shadow Price, all such Constraints as set forth in Schedule 29. Such Ex Post Spinning Reserve M[arket] C[learing] P[rice]s for Demand Response Resources - Type I shall be calculated on a real-time basis for each Dispatch Interval of the Real-Time Energy and Operating Reserve Market.

¹⁹ Section 40.2.17.l addresses such prices for generation resources, Demand Response Resources-Type II, and External Asynchronous Resources, while section 40.2.17.m addresses such prices for generation resources, Demand Response Resources-Type II, and External Asynchronous Resources and Stored Energy Resources.

language “and, beginning November 1, 2011, additional marginal cost for delivering zonal Spinning Reserve to the Reverence Bus,”) but inadvertently did not make corresponding modifications to the Real-Time *ex post* prices for Demand Response Resources – Type I in section 40.2.17.n.

B. MISO’s Answer

20. In response to MidAmerican’s comments, MISO states that it agrees that the inadvertent reference to Stored Energy Resources in section 40.2.17.m should be deleted. MISO also states that, since section 40.2.17.m, with this deletion, would be identical to section 40.2.17.l, the entire provision in 40.2.17.m could be deleted as part of a compliance filing in this proceeding, if MISO is directed by the Commission. MISO also believes it would be appropriate for the Commission to direct MISO to modify the *ex post* price in section 40.2.17.n as part of a compliance filing in this proceeding, consistent with MidAmerican’s comments.

21. However, MISO states that other corrections requested by MidAmerican are beyond the scope of the January 28 Filing or are otherwise inappropriate. First, MISO states that it intentionally did not make changes to the calculation of Regulating Reserve Market Clearing Prices for Stored Energy Resources (in sections 39.2.9.j, 40.2.15.j, and 40.2.17.i. of the Tariff) because Stored Energy Resources cannot meet Zonal Regulating Reserve requirements. MISO points out that section 39.2.1A.g of the Tariff provides that “Regulating Reserve cleared on Stored Energy Resources will be ineligible to satisfy Reserve Zone Operating Reserve requirements.” MISO states that Zonal Operating Reserve requirements are used to address deliverability issues during the deployment of Contingency Reserves. However, MISO states that due to the limitations of their operating characteristics, Stored Energy Resources cannot provide energy in one direction on a sustained basis for a sufficiently long time to aid in the relief of deliverability issues. Thus, MISO states, Stored Energy Resources can be used only to meet Market-Wide Regulating Reserve requirements.

22. With respect to the reference to Demand Response Resources – Type II in the first sentence of section 40.2.17.k (which deals with Demand Response Resources-Type I only), MISO agrees that it would be appropriate to delete that reference, but states that this issue is unrelated to the January 28 filing, and consequently, the correction cannot be made in this proceeding. Likewise, while taking no position on whether the language associated with former Sheet No. 1074A missing from section 40.2.17.k needs to be included, MISO states that any such change is beyond the scope of this proceeding.

IV. Discussion

A. Procedural Matters

23. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2011), the notice of intervention and timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.

24. Pursuant to Rule 214(d) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214(d) (2011), the Commission will grant Consumers Energy Company and Hoosier Energy Rural Electric Cooperative, Inc. and Southern Illinois Power Cooperative's late-filed motions to intervene given their interest in the proceeding, the early stage of the proceeding, and the absence of undue prejudice or delay.

25. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2011), prohibits an answer to a protest and/or answer unless otherwise ordered by the decisional authority. We will accept MISO's answer because it has provided information that assisted us in our decision making process.

B. Substantive Matters

26. We conditionally accept MISO's proposed Tariff revisions to be effective April 1, 2011, as requested, subject to a compliance filing, as discussed below. MISO's proposal to address the deliverability of Operating Reserves in the day-ahead and real-time clearing and pricing processes will provide increased system reliability and send price signals that reflect the deliverability of Operating Reserves, improving the efficiency of the market.

27. Although MISO currently uses an offline deliverability study in the establishment of minimum zonal Operating Reserve requirements for Contingency Reserves, it explains that the offline study occurs more than 48 hours prior to the operating day. We agree that MISO's current process can reduce reliability since the offline study may be very different from actual system operating conditions when reserves are to be deployed. Specifically, Contingency Reserves procured on the basis of the offline study may be undeliverable when real-time conditions differ from the study's projections. If deployed reserves become undeliverable, system reliability could be adversely affected, because the reserve deployment causes transmission constraint limit violations. These shortcomings may lead to system reliability issues that force manual (i.e., out-of-market) actions of MISO reliability coordinators to avoid constraint violations.

28. In addition, relying on out-of-market actions (such as manual work-arounds), results in less than optimal economic solutions as compared to including the operating reserve constraints in the Security Constrained Economic Dispatch. MISO states that its operators have neither time nor tools to take reserve offer prices into consideration when

classifying reserves as non-deliverable.²⁰ Further, out-of-market actions do not allow for an appropriate price signal to reflect the causes of the need for redispatch because the adverse impacts of reserve deployments on transmission constraints are not reflected in MISO's co-optimization process. MISO's proposal will add a marginal congestion component to the reserve Market Clearing Price to reflect a price signal reflective of the deliverability of reserves.

29. Further, MISO explains that without including deliverability in the Security Constrained Economic Dispatch, Security Constrained Unit Commitment, and Reliability Assessment Commitment processes, discrepancies could occur between day-ahead market commitment and dispatch, the Reliability Assessment Commitment process, and real-time dispatch. Further, absent MISO's proposed revisions, resources can be cleared and paid to provide reserves when those resources are not deliverable. We find that MISO's proposal will limit the aforementioned issues.

30. However, as noted above, it is very difficult for MISO to identify all potential transmission constraint issues. MISO states that after more experience is gained with the procedures and software implementing the proposed enhancement MISO will consider expanding the deliverability evaluation in the future to include more transmission constraints, if deemed appropriate.²¹

31. We agree with MISO's statement in its April 29 deficiency response, that it is appropriate to clarify certain Tariff language²² to be consistent with existing descriptions regarding energy in sections 39.2.9.b.i, 40.2.15.b.i, and 40.2.17.1.i of the Tariff, such that they reflect the marginal cost for managing congestion in order to supply an additional MW of the specific operating reserve from the Reference Bus to the Reserve Zone. We direct MISO to make those proposed revisions in a compliance filing within 30 days of the date of this order.

32. We also agree with MidAmerican that the reference to Stored Energy Resources in section 40.2.17.m is inappropriate. Because section 40.2.17.m is identical to section 40.2.17.l with the exception of this language, we direct MISO to remove section 40.2.17.m from its Tariff. We direct MISO make this revision in a compliance filing within 30 days of the date of this order.

²⁰ Gardner Testimony at 7.

²¹ MISO's April 29, 2011 Response at 7.

²² Sections 1.379.a, 39.2.9.i, 39.2.9.k, 39.2.9.l, 39.2.9.m, 39.2.9.n, 40.2.15.i, 40.2.15.k, 40.2.15.l, 40.2.15.m, 40.2.15.n, 40.2.17.h, 40.2.17.j, 40.2.17.l, and 40.2.17m.

33. With respect to MidAmerican's concerns about missing language related to real-time *ex post* price in section 40.2.17.n, we agree with MidAmerican and MISO that the relevant language for section 40.2.17 was not included but should have been, and direct MISO to revise section 40.2.17.n of its Tariff in a compliance filing to include the language "and, beginning November 1, 2011, additional marginal cost for delivering zonal Spinning Reserve from the Reference Bus," within 30 days of the date of this order.
34. With respect to MISO's decision not to propose changes to the calculation of Regulating Reserve Market Clearing Prices for Stored Energy Resources, we agree with MISO that the revision of this definition would be inappropriate because section 39.2.1A.g of the Tariff provides that Stored Energy Resources cannot meet zonal Regulating Reserve requirements.
35. Additionally, while both MidAmerican and MISO agree that the reference to Demand Response Resources – Type II in the first sentence of section 40.2.17.k should be deleted, we agree with MISO that this issue is unrelated to the January 28 Filing, and beyond the scope of this proceeding.
36. Similarly, with respect to the text regarding the calculation of Spinning Reserve clearing prices for Demand Response Resources - Type I that MidAmerican points out was previously included in, but is now missing from, section 40.2.17.k.7, we agree with MISO that the revision MidAmerican requests is beyond the scope of this proceeding. This issue would be more appropriately addressed in Midwest ISO's eTariff baseline filing in Docket No. ER10-1997-000.

The Commission orders:

(A) MISO's proposed Tariff revisions are hereby conditionally accepted for filing, to become effective on April 1, 2011, subject to the compliance filing ordered below and discussed in the body of this order.

(B) MISO is hereby directed to submit a compliance filing within 30 days of the date of this order, as discussed in the body of this order.

By the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.