150 FERC ¶ 61,143
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Cheryl A. LaFleur, Chairman;
Philip D. Moeller, Tony Clark,
and Norman C. Bay.

Midcontinent Independent System Operator, Inc. Docket No. ER15-684-000

Midcontinent Independent System Operator, Inc. Docket No. ER15-685-000

(Not Consolidated)

ORDER CONDITIONALLY ACCEPTING TARIFF REVISIONS

(Issued February 27, 2015)

1. On December 19, 2014 in Docket No. ER15-684-000, pursuant to section 205 of the Federal Power Act (FPA)[1] and Part 35 of the Commission's regulations,[2] the Midcontinent Independent System Operator, Inc. (MISO) filed proposed revisions to its Open Access Transmission, Energy and Operating Reserve Markets Tariff (Tariff) to modify its extended locational marginal pricing (ELMP) proposal consistent with certain recommendations made by MISO's Independent Market Monitor (IMM) (Revised ELMP Filing). MISO requests an effective date of March 1, 2015 for the proposed Tariff revisions to coincide with the planned implementation of ELMP in MISO's markets.

2. On December 19, 2014 in Docket No. ER15-685-000, pursuant to section 205 of the FPA and Part 35 of the Commission's regulations, MISO filed Tariff sheets to reflect the most up-to-date version of the current Tariff (Revised Administrative Filing). MISO requests an effective date of March 1, 2015 for the corrected Tariff sheets.

3. As discussed below, we conditionally accept MISO's Revised ELMP Filing effective March 1, 2015, subject to further compliance. We also conditionally accept MISO's Revised Administrative Filing effective March 1, 2015, subject to further compliance.

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[1] 16 U.S.C. § 824d (2012).

[2] 18 C.F.R. Pt. 35 (2014).

I. Background

A. Initial ELMP Filing and July 2012 Order

4. On December 22, 2011 in Docket No. ER12-668-000, MISO submitted proposed Tariff revisions to implement ELMP (Initial ELMP Filing). In that filing, MISO explained that the existing security constrained economic dispatch (SCED) algorithm frequently does not allow certain resources to set market clearing prices (such as locational marginal prices, or LMPs, and marginal clearing prices, or MCPs[3]). To be considered for setting a market clearing price, a resource must be both dispatchable and online. Accordingly, a market clearing price may not always reflect the true marginal cost of serving the next increment of demand. For instance, MISO explained that the resource needed to satisfy the next increment of load may be a block loaded resource which is not typically recognized as a marginal resource.[4]

5. MISO asserted that LMPs and MCPs produced by the SCED algorithm may reflect shortage prices, resulting in transitory price increases, even though MISO is not actually short of capacity and could commit a resource to address the perceived shortage.[5] MISO stated that such elevated prices frequently disappear before market participants have an opportunity to respond.[6]

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[3] MCPs are the prices associated with clearing operating reserves.

[4] MISO explained that a block loaded resource is a resource that can only be dispatched at a specific megawatt (MW) output. Initial ELMP Filing, Transmittal at 2 n.3. A marginal resource should be able to serve the next increment of load, no more and no less. Block loaded resources are not typically recognized as marginal resources because they cannot be dispatched up or down (i.e., they are inflexible and they can only be dispatched at their full capacity as a block). In some cases, the block loaded resource's economic minimum limit may provide more energy than is necessary to satisfy demand, and therefore the existing SCED algorithm requires a less expensive resource to "back down" in order to balance supply and demand. MISO explains that the resulting LMP would thus reflect the cost of the less expensive resource that is backed down, rather than the cost of the more expensive resource that MISO actually committed and dispatched to meet system demand. *Id.* at 2.

[5] *Id.*

[6] *Id.* at 2-3.

6. In its Initial ELMP Filing, MISO proposed to calculate LMPs and MCPs following its proposed ELMP methodology, set forth in Schedule 29A in the Tariff. Under ELMP, MISO would allow certain block loaded resources and resources dispatched at their economic limits to set day-ahead and real-time prices for energy and operating reserves when they are needed to provide incremental reserves or energy to the system. The commitment costs of these resources, in addition to incremental energy and operating reserve offer costs, would be considered in the day-ahead and real-time calculation of ELMPs. MISO stated that its proposal would not alter its current scheduling and dispatch procedures which would occur under the SCED algorithm.[7] Prices produced by the SCED algorithm in the course of scheduling and dispatching resources would be referred to as Ex Ante prices, and would be utilized for informational purposes only.[8] MISO proposed to calculate clearing prices, which MISO referred to as Ex Post prices, using the new ELMP algorithm.[9] These Ex Post prices would be used for settlement.

7. For the purpose of implementing ELMP, MISO also proposed a new category of resources referred to as "Fast Start Resources." Under this proposal, MISO defined a Fast Start Resource as a "Generation Resource that can be started, synchronized and inject Energy, or a Demand Response Resource that can reduce its Energy consumption, within 10 minutes of being notified and that has a minimum run time of one hour or less and that will participate in setting price as described in the process in Schedule 29A of this Tariff."[10] Among other things, MISO proposed that offline Fast Start Resources be eligible to be the marginal resource under shortage conditions (transmission violations and operating reserve shortages) when they can address the shortage. ELMP prices were also designed to reflect the full cost of commitment (i.e., start-up and no-load) of an offline Fast Start Resource when it is the marginal resource. No-load costs were to be amortized (or spread) over an hour, and start-up costs over the minimum run time (typically one hour), such that only about 1/12 of commitment costs were to be allocated to a 5 minute pricing interval.

8. On July 20, 2012, the Commission conditionally accepted MISO's Initial ELMP Filing, finding that the ELMP methodology will result in clearing prices that decrease incentives for strategic behavior and more accurately reflect the cost of actions taken by

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[7] *Id.* at 5 (citing Gribik Test. at 8).

[8] Initial ELMP Filing, Vannoy Test. at 5.

[9] *Id.*

[10] *Id.*, Tab A (Redline Tariff), section 1.220A.

MISO to satisfy demand.[11] The Commission required a further compliance filing regarding, among other things, commitment costs of Demand Response Resources Type I and formulas and language related to offline Fast Start Resources and Emergency Demand Response and associated definitions. The Commission also required MISO to: (1) file a status report within 120 days of the date of the issuance of the July 2012 Order; (2) file an informational report within 14 months after implementing ELMP, and (3) execute parallel testing of ELMP for at least three months prior to its launch.

9. Additionally, the Commission expressed concerns regarding whether the Tariff sections MISO included in its Initial ELMP Filing properly reflected revisions proposed in filings related to compliance with Order No. 745.[12] Specifically, the Commission observed that, contrary to Tariff revisions proposed in MISO's August 19, 2011 Order No. 745 compliance filing,[13] MISO, in the Initial ELMP Filing, either removed or reinserted language related to those proceedings without explanation. The Commission therefore required MISO to submit, in a compliance filing, either (1) an explanation of why these revisions were necessary or (2) Tariff revisions to reinsert the language that the Commission conditionally accepted in the Order No. 745 compliance proceeding. Further, the Commission noted that revisions to sections 39.3.2B, 39.3.2C, 40.3.3 and 40.3.4 in the Initial ELMP Filing were inconsistent with revisions filed in MISO's March 14, 2012 Order No. 719 compliance filing,[14] and in the March 14, 2012 Order No. 745 compliance filing.[15] The Commission conditionally accepted the proposed

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[11] *Midwest Indep. Transmission Sys. Operator, Inc.*, 140 FERC ¶ 61,067 (2012) (July 2012 Order).

[12] *Demand Response Compensation in Organized Wholesale Energy Markets*, Order No. 745, FERC Stats. & Regs. ¶ 31,322 (2011), *order on reh'g and clarification*, Order No. 745-A, 137 FERC ¶ 61,215 (2011), *reh'g denied*, Order No. 745-B, 138 FERC ¶ 61,148 (2012), 2012), *vacated and remanded, Electric Power Supply Association v. FERC*, 753 F.3d 216 (D.C. Cir. 2014) (Order No. 745).

[13] MISO, Compliance Filing, Docket No. ER11-4337-000 (filed Aug. 19, 2011). The Commission conditionally accepted in part and rejected in part this compliance filing. *Midwest Indep. Transmission Sys. Operator, Inc.*, 137 FERC ¶ 61,212 (2011).

[14] MISO, Compliance Filing, Docket No. ER12-1265-000 (filed Mar. 14, 2012). *See Wholesale Competition in Regions with Organized Electric Markets*, Order No. 719, FERC Stats. & Regs. ¶ 31,281 (2008), *order on reh'g*, Order No. 719-A, FERC Stats. & Regs. ¶ 31,292, *order on reh'g*, Order No. 719-B, 129 FERC ¶ 61,252 (2009).

[15] MISO, Compliance Filing, Docket No. ER12-1266-000 (filed Mar. 14, 2012).

revisions to sections 39.3.2B, 39.3.2C, 40.3.3, and 40.3.4, subject to the outcome of the Order No. 745 and Order No. 719 compliance proceedings. The Commission granted MISO's requested effective date of October 1, 2014, subject to compliance filings, which were due 30 days and 120 days after the issuance of the July 2012 Order.

B. ELMP Compliance Filing

10. On August 21, 2012, MISO submitted the first part of the compliance filing required by the July 2012 Order, including proposed revisions to the Tariff to address the Commission's directives (ELMP Compliance Filing). Recognizing the concerns raised by the Commission in the July 2012 Order regarding Tariff inconsistencies, MISO committed to make a subsequent FPA section 205 filing, "to update the ELMP Tariff sheets to reflect the most up-to-date versions of the then-current Tariff" at least 60 days before the October 1, 2014 effective date.[16]

11. On November 19, 2012, MISO submitted the second part of the compliance filing required by the July 2012 Order. MISO stated that it anticipated being able to commence integrated testing of ELMP with settlements in February of 2014; to commence ELMP parallel testing in May of 2014; and that based on this schedule, to implement ELMP by October 1, 2014.

12. On April 11, 2013 in Docket No. ER12-668-002, MISO submitted a filing to correct a number of Tariff inconsistencies, stating that MISO was informed by Commission staff of four inconsistencies between the Tariff language that MISO filed in eLibrary and the electronic Tariff language that MISO submitted through the eTariff software that MISO used. MISO added that, upon review, it identified two additional Tariff sections that required reconciliation between the eLibrary and eTariff versions of Tariff language. Specifically, MISO filed revisions to sections 1.533d, 39.2.9, 39.3.1B, 39.3.2B, 40.2.17, and 40.3.3 of the Tariff. MISO requested an effective date of October 1, 2014.

13. On July 30, 2013, the Commission issued a letter order accepting the Tariff revisions proposed in the ELMP Compliance Filing as amended by the filing on April 11, 2013, effective October 1, 2014.[17]

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[16] ELMP Compliance Filing, Docket No. ER12-668-001, Transmittal at 13-14.

[17] *Midwest Indep. Transmission Sys. Operator, Inc.*, Docket No. ER12-668-000 (July 30, 2013) (delegated letter order).

C. Initial Administrative Filing and Subsequent Withdrawal

14. On August 1, 2014 in Docket No. ER14-2566-000, MISO made a filing revising the ELMP Tariff sheets, including revisions addressed in its Order No. 719 and Order No. 745 compliance filings, to reflect the most up-to-date version of the Tariff, as it had committed to do in its ELMP Compliance Filing (Initial Administrative Filing). In the Initial Administrative Filing, MISO revised several sections of the Tariff to reflect the ELMP methodology, and it provided descriptions of these various ELMP-related changes. MISO requested an October 1, 2014 effective date.

15. On September 12, 2014 in Docket No. ER14-2566-000, however, MISO filed a motion to withdraw the Initial Administrative Filing in order to address concerns raised by the IMM. In an affidavit accompanying MISO's motion to withdraw, the IMM explained that it had reviewed the parallel operations results and expressed concerns that offline Fast Start Resources were being called upon too frequently in setting prices under ELMP.[18] MISO stated that the implementation of ELMP would need to be postponed in order to address the IMM's concerns. On September 12, 2014 in Docket No. ER14-2863-000, MISO also filed to delay the effective date for the ELMP Tariff sections previously accepted by the Commission on July 30, 2013 in Docket No. ER12-668-002. On September 30, 2014, the Commission issued a letter order accepting MISO's revised Tariff filing and granting the delayed effective date.[19]

16. The IMM argued in its affidavit in support of the withdrawal of the Initial Administrative Filing that it is efficient for offline resources to set the price only when they are both feasible (available to produce energy) and economic for addressing a shortage. The IMM found that both of these principles were violated during the parallel operations period. It identified a number of reasons why it believes that excessive quantities of offline resources are being used by ELMP to set prices. Specifically, the IMM observed that (1) the offline units setting prices are rarely started and account for only three percent of the energy dispatched by ELMP, suggesting that they are either infeasible or not economic; (2) over 85 percent of dispatched energy came from energy-limited pump storage units; (3) a large share of the energy made available to ELMP came from units having very small effects on the violated constraint; (4) a large share of the pump storage energy is made available due to PJM Interconnection, L.L.C.'s (PJM's)

[18] Motion to Withdraw, Patton Affidavit at 1-4.

[19] *Midwest Indep. Transmission Sys. Operator, Inc.*, Docket No. ER14-2863-000 (Sept. 30, 2014) (delegated letter order).

market-to-market transmission shortages;[20] and (5) the system marginal price is substantially affected in intervals when units are dispatched due to a transmission shortage, but typically the energy required to resolve a single constraint violation would generally be much smaller and only affect prices in the local area impacted by the constraint.[21]

17. The IMM concluded from these observations that offline Fast Start Resources are being used too aggressively in setting real-time prices. It identified four factors driving this trend: the amortization of offline Fast Start Resource commitment costs in real-time, the treatment of energy-limited resource, generation shift factors, and the treatment of PJM market-to-market constraints. According to the IMM, these factors would need to be addressed to avoid violating the principles that offline resources be both feasible and economic to address a shortage and to be allowed to set the price in ELMP.[22] Following discussions between MISO and the IMM and with stakeholders, MISO and the IMM agreed to propose modifications to ELMP, as discussed below.

II. MISO's Proposed ELMP Revisions (Docket No. ER15-684-000)

18. On December 19, 2014, MISO filed Tariff revisions addressing the concerns raised by the IMM (Revised ELMP Filing). MISO states that it conducted 91 days of parallel operations for ELMP from May 4, 2014 to August 2, 2014. According to MISO, indicative ELMP prices and settlement statements were posted during this period, while the LMPs generated by the SCED were still used for actual market settlements.

19. In the Revised ELMP Filing, MISO states that after conducting additional analysis and working with stakeholders and the IMM, it is proposing to make four changes to the ELMP-related Tariff provisions regarding the participation of offline Fast Start Resources in setting prices under ELMP to address the concerns raised by the IMM.

20. First, MISO proposes to amortize the commitment costs of offline Fast Start Resources committed in real-time under ELMP to four five-minute intervals. According to MISO, amortizing the start-up and no-load costs of offline Fast Start Resources over their commitment period (typically one hour) understates the cost of committing such

[20] According to the IMM, these are simply intervals in which MISO cannot provide the full relief requested by PJM at a cost less than PJM's marginal cost and do not represent a transmission shortage. Motion to Withdraw, Patton Affidavit at 4.

[21] *Id*.

[22] *Id*. at 4-5.

units, while placing all of these costs into a single interval overstates the costs. MISO's and the IMM's empirical analyses indicate that amortizing the commitment costs of offline Fast Start Resources over four real-time intervals (i.e., 20 minutes) appropriately establishes the commitment costs that should be considered in determining the marginal cost for an interval. Therefore, MISO proposes to revise the real-time section of Schedule 29A[23] to reflect the amortization of commitment costs over four intervals. MISO states that it will monitor and further refine the time period for amortization of commitment costs if needed.[24]

21. Second, MISO proposes to make offline energy-limited resources ineligible to set prices under ELMP. According to MISO, offline energy-limited resources should not be included in ELMP because of limits in their availability. For example, pumped storage hydro units have a daily schedule calling for the available water to be used and are not typically available for additional use. MISO states that including energy-limited offline Fast Start Resources that are not actually available to produce energy inappropriately affects ELMP prices.[25] To remedy this, MISO proposes to revise the definition of "Fast Start Resource" to state, "Fast Start Resource does not include fuel-limited resources such as pumped storage, run-of-river hydro, and wind resources."[26]

22. Third, MISO proposes to implement a six percent (in absolute value) generation shift factor[27] cutoff in order for offline Fast Start Resources to set prices under ELMP. As currently proposed, ELMP does not include a generation shift factor cutoff for offline Fast Start Resources. Accordingly, units with a small generation shift factor may provide a large amount of supply to the ELMP algorithm (and decrease marginal clearing price) without actually providing significant mitigation to the transmission constraint violation.

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[23] Schedule 29A, which was first accepted in the Initial ELMP Filing and contains the provisions regarding ELMP, is divided into two sections: one section implementing ELMP in the day-ahead market, and the other section implementing ELMP in the real-time market.

[24] Revised ELMP Filing, Transmittal at 6.

[25] *Id*. at 5.

[26] *Id*. at 6-7.

[27] A resource's generation shift factor relative to a transmission constraint measures how the resource's output impacts the constraint. For example, a 10 MW resource with a 50 percent generation shift factor on a given constraint will provide 5 MW of relief for the constraint.

MISO states that restricting the ELMP algorithm from committing offline Fast Start Resources that do not have a generation shift factor of at least six percent in absolute value will still provide significant relief to transmission constraints. However, at the same time it will also decrease the price suppressive effect of committing offline Fast Start Resources that have a minor impact on the constraint and a large effect on prices. MISO states that it and the IMM examined empirical data from the parallel operations to support the six percent generation shift factor finding. MISO adds that this six percent generation shift factor cutoff has been previously accepted by the Commission in Module D of the Tariff as the basis for market power mitigation in order to select units with a significant impact on a transmission constraint.[28] MISO proposes to revise the day-ahead and real-time sections of Schedule 29A to state that offline Fast Start Resources with generation shift factors equal to or greater than six percent, or equal to or lesser than negative six percent, will be considered to be providing significant relief to a transmission constraint violation, and thus will be eligible to set the ELMP.

23. Fourth, MISO proposes to remove external constraints from transmission violation treatment. The IMM observed that intervals with external market-to-market constraints do not constitute true transmission constraint violations, but rather, are instances where MISO cannot provide the full relief requested by PJM at a cost less than PJM's marginal cost.[29] Accordingly, MISO proposes to revise the day-ahead and real-time sections of Schedule 29A to specify that participation of offline Fast Start Resources in ELMP will apply only to resolution of MISO-monitored transmission constraints so that offline Fast Start Resource are not selected by ELMP to address market-to-market constraints.

24. MISO requests that the Commission accept these revisions with an effective date of March 1, 2015 to coincide with its new proposed launch date for ELMP.

III. MISO's Revised Administrative Filing (Docket No. ER15-685-000)

25. On December 19, 2014, the same date that MISO made the Revised ELMP Filing, MISO submitted a Revised Administrative Filing in Docket No. ER15-685-000 which, it said, was intended to update the ELMP Tariff sheets that were previously accepted for filing to reflect the most up-to-date version of the current Tariff as it had committed to do in the ELMP Compliance Filing in response to Commission directives in the July 2012 Order. MISO specifies that the Revised Administrative Filing contains "all ELMP Tariff sheets previously accepted by the Commission, modified only to include the proposed

[28] Revised ELMP Filing, Transmittal at 6.

[29] Revised ELMP Filing, Patton Affidavit at 9, 11.

new effective date of March 1, 2015."[30] MISO also provided a list of the Tariff sections being revised.

IV. Notice of Filings and Responsive Pleadings

26. Notices of the Revised ELMP Filing in Docket No. ER15-684-000 and the Revised Administrative Filing in Docket No. ER15-685-000 were published in the *Federal Register*, 79 Fed. Reg. 78,848 (2014), with protests and interventions due on or before January 9, 2015.

27. In Docket No. ER15-684-000, timely motions to intervene were filed by NRG Companies,[31] Midcontinent MCN, LLC, Wisconsin Electric Power Company, Ameren Services Company,[32] American Municipal Power, Inc., Consumers Energy Company, Midwest TDUs,[33] and Midwest Municipal Transmission Group. Council of the City of New Orleans and Arkansas Public Service Commission filed notices of intervention. Exelon Corporation (Exelon) and MidAmerican Energy Company (MidAmerican) each filed motions to intervene and comments. MISO filed an answer on January 20, 2015.

28. In Docket No. ER15-685-000, timely motions to intervene were filed by NRG Companies, Midcontinent MCN, LLC, Exelon, Wisconsin Electric Power Company, Ameren Services Company, American Municipal Power, Inc., Consumers Energy Company, MidAmerican, Midwest TDUs, and Midwest Municipal Transmission Group. Arkansas Public Service Commission filed a notice of intervention.

A. Protests and Comments

29. Although generally supporting the implementation of ELMP, MidAmerican states that MISO's proposed revision to the definition of "Fast Start Resources" to exclude fuel

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[30] Revised Administrative Filing, Transmittal at 3.

[31] The NRG Companies are NRG Power Marketing, LLC and GenOn Energy Management, LLC.

[32] Ameren Services Company, a wholly-owned subsidiary of Ameren Corporation, filed on behalf of its affiliated public utility operating companies, Ameren Illinois Company and Union Electric Company d/b/a Ameren Missouri.

[33] Midwest TDUs are comprised of Madison Gas & Electric Company, Missouri Joint Municipal Electric Utility Commission, Municipal Energy Agency of Nebraska, and WPPI Energy.

limited resources (as discussed with respect to MISO's second proposed change discussed above) would cause both online and offline energy-limited Fast Start Resources to be excluded from ELMP calculations. MidAmerican observes that MISO's transmittal letter and all recent discussions with stakeholders have been limited to changes to ELMP associated with offline energy-limited Fast Start Resources. MidAmerican states that it is unaware of any previous recommendations to exclude *online* energy-limited resources from the ELMP calculations. MidAmerican requests that the Commission accept MISO's proposed changes to the ELMP calculation, subject to a further compliance filing by MISO permitting online energy-limited Fast Start Resources to be included in ELMP calculations.[34]

30. Exelon states that it strongly supports the ELMP algorithm as proposed and encourages the Commission to permit comment on MISO's forthcoming informational filing due 14 months after the implementation of ELMP in compliance with the July 2012 Order.[35]

B. Answers

31. On January 29, 2015, MISO filed an answer responding to the comments filed by MidAmerican and Exelon. Regarding MidAmerican's comments, MISO clarifies that online energy-limited resources *will* be excluded from the definition of "Fast Start Resources," and therefore not included in the ELMP calculation as Fast Start Resources. However, MISO states that, *online* energy-limited resources should still be included in ELMP calculations as non-fast start resources.

32. According to MISO, any time energy-limited resources are online they will be committed and dispatched by MISO therefore making them eligible to set ELMP. MISO states that given their high flexibility and low start-up costs, the impact to ELMP of excluding these online energy-limited resources from the definition of Fast Start Resources will be minimal. Further software changes necessary for including online energy-limited resources (as Fast Start Resources) in ELMP calculations would further delay the implementation of ELMP. MISO commits to providing a report to the Commission after six months of operations under ELMP regarding the impact of this decision. MISO will then make any software changes to include online energy-limited resources with Fast Start Resources in ELMP calculations if the data from the first

[34] MidAmerican Comments at 3-4.

[35] Exelon Comments at 3-4 (citing July 2012 Order, 140 FERC ¶ 61,067 at P 66 (requiring an informational filing but specifying that the Commission would neither notice the filing nor accept comment on it)).

six months of operations show that it would be beneficial to MISO markets. MISO states that it has spoken with MidAmerican and that MidAmerican supports this course of action. Additionally, MISO states that it spoke with the IMM regarding the exclusion of online pumped storage hydro units from ELMP calculations, and MISO states that the IMM has no concern with this approach because the online pricing process allows inflexible online units to set prices that would normally not be eligible.[36]

33. Regarding Exelon's comments, MISO supports Exelon's recommendation that market participants be provided the opportunity to review and comment on MISO's forthcoming informational filing.[37]

V. Procedural Matters

34. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2014), the notices of intervention and timely, unopposed motions to intervene serve to make the entities that filed them parties to the proceedings in which they were filed.

35. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2014), prohibits an answer to a protest unless otherwise ordered by the decisional authority. We will accept the answer submitted by MISO because it has provided information that assisted us in our decision-making process.

VI. Discussion

A. MISO's Revised ELMP Filing – Docket No. ER15-684-000

36. For the reasons discussed below, we conditionally accept MISO's Revised ELMP Filing, effective March 1, 2015, subject to a further compliance filing due within 30 days of the date of this order.

1. Amortize Commitment Cost to Four Intervals

37. We accept MISO's proposal to amortize commitment costs of offline Fast Start Resources over four real-time intervals (referred to by MISO in its Tariff revisions as the

[36] MISO Answer at 4-6.

[37] *Id*. at 6.

"predefined allocation time"[38]). The empirical study data supplied in the filing indicates that the average duration of a transmission violation is 3.2 real-time intervals. The IMM examined whether offline Fast Start Resources would be deemed economic under Ex Post ELMP prices for their entire minimum run time under different amortization scenarios (start-up and no-load costs were amortized over two, three, four, and six intervals). The IMM stated that, "[t]he most reasonable amortization assumption will maximize the consistency between the ELMP determination and whether units are economic in reality." The study results indicated that amortizing costs over four intervals led to the greatest consistency in reflecting only units that were truly economic under ELMP.[39] MISO conducted a similar analysis regarding the duration of transmission violations and scarcity events and also concluded that a four-interval amortization of commitment costs was appropriate.[40]

38. In its proposed Tariff revisions, MISO changes several formulas in the ELMP algorithm regarding how ELMP evaluates offline Fast Start Resources in the real-time market to provide for the amortization of commitment costs over four intervals. We find these revisions to be just and reasonable.

39. MISO also proposes tariff language in Schedule 29A, section III.B which indicates that the predefined allocation time period is "initially set" to four real-time market intervals. We find the phrase "initially set" to be ambiguous, and it implies that MISO will have unfettered discretion as to how it will revise this predefined allocation time. Therefore, we direct MISO, in a compliance filing due within 30 days from the date of this order, to remove the word "initially" from this phrase in Schedule 29A, section III.B. If MISO subsequently finds that the predefined allocation time for amortizing the commitment costs of Fast Start Resources should be changed from four real-time intervals, it must make an FPA section 205 filing to do so.

2. Remove Offline Energy-Limited Resources from Setting Prices

40. We accept MISO's proposal to remove energy-limited Fast Start Resources from the definition of Fast Start Resources. This proposal addresses the IMM's concern that ELMP "committed" too many infeasible and uneconomic Fast Start Resources during the

[38] According to MISO, the "predefined allocation time" is "the time to allocate commitment costs rounded up to the nearest five (5) minutes, in hours." Revised ELMP Filing, Tab A (Redline Tariff).

[39] Revised ELMP Filing, Patton Affidavit at 13-18.

[40] Revised ELMP Filing, Gardner Affidavit, Attachment B at 21-22.

parallel operations period, and that it would do so once adopted. We agree that the physical restrictions of pumped storage hydro and similar Fast Start Resources often make them less feasible to run and less economic in practice.

41. We find MISO's proposed revisions to the definition of "Fast Start Resource" to be acceptable because the current definition captures resources that may not be able to respond within 10 minutes of notification time as needed.[41] Regarding the issue raised by MidAmerican about exclusion of online energy-limited resources from ELMP calculations, we agree with the approach proposed by MISO to reevaluate this issue after six months of ELMP operations. We therefore require MISO to provide an informational report to the Commission after six months of ELMP operations to reassess whether online energy-limited resources should be included in the definition of Fast Start Resources. Should MISO conclude that such resources should indeed be included, MISO would need to make an FPA section 205 filing to propose such Tariff revisions.

3. Implement a Generation Shift Factor Cutoff of Six Percent for Offline Fast Start Resources to Set Price

42. We find that MISO's proposal to implement a generation shift factor cutoff of an absolute value of six percent[42] is reasonable. According to the IMM's analysis, the results of parallel operations indicated that ELMP process over-relied on Fast Start Resources that did not provide significant relief on the transmission constraint, as indicated by a small generation shift factor, yet had a substantial impact on the system's clearing prices. The IMM states that the six percent generation shift factor cutoff strikes "a good balance between allowing units that are most likely to be economic for resolving the transmission violation to be included in the price setting model, while not being overly restrictive in making resources available to the ELMP model."[43] Additionally, MISO's analysis (finding that ELMP's impact on the system marginal price changed by only one percent) indicates that there is not a material difference in the ELMP results between when a six percent generation shift factor cutoff versus a ten percent generation

[41] *Id.* at 7.

[42] Resources may have impacts on a line in either flow direction, and the model does not necessarily know beforehand which direction is helpful. Providing for inclusion of resources with high absolute values will allow *all* resources with potentially high impacts upon the constraint (whether in the helpful or harmful direction) to be considered in setting the ELMP.

[43] Revised ELMP Filing, Patton Affidavit at 11-13.

shift factor cutoff is used.[44] We will accept MISO's proposed Tariff language because it properly effectuates this change.

4. Remove External Constraints from Transmission Violation Treatment

43. Finally, we accept MISO's proposal to remove external constraints from the set of transmission constraints that may prompt the utilization of offline resources under ELMP. Market-to-market constraints are not in fact "shortages," but rather instances of when MISO cannot relieve an external constraint at a price lower than PJM's marginal cost. Further, "[t]he ELMP effects on these constraints are particularly harmful because they can cause MISO to be revenue inadequate on these constraints (i.e., to owe more to PJM than the real-time congestion costs collected for the constraint because ELMP has lowered the congestion collections)."[45] We accept MISO's proposed language effectuating this change limiting the constraints which ELMP will address to those within MISO.

5. Miscellaneous Issues

44. With respect to Exelon's request that the Commission permit public comment on MISO's 14-month informational filing about ELMP, we reject this request and maintain that we are only requiring an informational filing as stated in the July 2012 Order. However, should MISO determine that further revisions to ELMP are necessary based on its experience with operating under ELMP, MISO should make an FPA section 205 filing, which would be noticed for public comment.

45. Additionally, in Schedule 29A section II.A (addressing online resources operating in the Day-Ahead Market), MISO has, without explanation, revised a variable under "DRR – Type I" such that $AllocatedShareShutDownCost_{hour}$ has been changed to $AllocatedShareShutDownCost_{t}$. In Schedule 29A section III.A (addressing online resources operating in the Real-Time Market), however, under "DRR – Type I" it states $AllocatedShareShutDownCost_{hour}$. According to Schedule 29A, in the Day-Ahead Market, ELMP allocates a share of shut-down costs to the *hour* for which prices are calculated; in the Real-Time Market, ELMP allocates a share of the shut-down costs to the *interval* for which prices are being calculated. Because costs are allocated on an hourly basis in the Day-Ahead Market, it would seem that the variable in Schedule 29A section II.A should be $AllocatedShareShutDownCost_{hour}$; because costs are allocated on

[44] Revised ELMP Filing, Gardner Affidavit, Attachment B at 11-13.

[45] Revised ELMP Filing, Patton Affidavit at 10.

an interval basis in the Real-Time Market, it would seem that the variable in Schedule 29A section III.A should be $AllocatedShareShutDownCost_t$. In the compliance filing due within 30 days of the date of this order, we direct MISO to either (1) revise the variable in Schedule 29A section II.A to be $AllocatedShareShutDownCost_{hour}$ and revise the variable in Schedule 29A section III.A to be $AllocatedShareShutDownCost_t$; or (2) explain why these variables are correct as they are.

B. MISO's Revised Administrative Filing

46. We find that MISO did not comply with section 35.10(b) of the Commission's regulations which requires a public utility that makes a tariff filing with changes to a previously filed version of the tariff, to file a marked version of the tariff showing additions and deletions.[46] In such a filing, new language must be marked by either highlighting, background shading, bold text, or underlined text. Deleted language must be marked by strike-through. We find that in the Revised Administrative Filing, these standards have not been met. The marked version of the tariff submitted appears to include errors that indicate the filed tariff sheets do not reflect the most current version of MISO's Tariff. For example, there are instances where language that was previously rejected by the Commission has been reinserted, or language that was required by the Commission in other proceedings has been deleted. In other instances, language that is currently pending before the Commission is not highlighted or otherwise marked, making it appear as though that language has been accepted. Similarly, where pending Tariff revisions propose that existing language be deleted, such language has been removed rather than highlighted or otherwise marked with a strike-through. The Revised Administrative Filing also includes some language that has been accepted by the Commission but is not yet effective, making it appear as though it is currently effective. Other language has been redlined without explanation. There may be additional errors as well.

47. In the interest of ensuring that ELMP is implemented by March 1, 2015, we accept the Revised Administrative Filing, subject to a further compliance filing due within 30 days of the date of this order correcting the Tariff language to meet the standards of section 35.10(b) of the Commission's regulations, and to correct the errors identified in the attached Appendix to this order. The Appendix lists specific issues which MISO will be required to address on compliance. We emphasize, however, that this list may in fact not be complete, and we therefore also require MISO to review the entire Revised Administrative Filing to ensure that the compliance filing will be an accurate representation of the most current version of the Tariff, and clearly marking any changes

[46] 18 C.F.R. § 35.10(b) (2014).

from the currently effective Tariff. After reviewing the Revised Administrative Filing, if there are no additional issues, MISO must affirmatively so state.

The Commission orders:

(A) The Revised ELMP Filing and the Revised Administrative Filing are hereby conditionally accepted for filing, to become effective March 1, 2015, as discussed in the body of this order.

(B) MISO is hereby required to submit compliance filings for the Revised ELMP Filing and the Revised Administrative Filing, respectively, within 30 days of the date of this order, as discussed in the body of this order.

(C) MISO is directed to submit an informational report after six months of ELMP operations reassessing whether online energy-limited resources should be included in the definition of Fast Start Resources, as discussed in the body of this order.

By the Commission. Commissioner Honorable is not participating.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Appendix: ER15-685-000 Tariff Compliance Table

	Section/Schedule	Description of Issue	Compliance Directive
A	39.3.2B	In Docket No. ER14-2599-000 (*see Midcontinent Indep. Sys. Operator, Inc.*, 149 FERC ¶ 61,067 (2014)), the Commission accepted the following language: "…as specified in the Market Participant's Demand Bid, External Asynchronous Resources Export Schedule, or dispatchable Export Schedule." In the Revised Administrative Filing, however, the comma after "Demand Bid" has been replaced with a period, changing the meaning of the language.	Delete the period and reinsert the comma as was accepted by the Commission in 149 FERC ¶ 61,067.
B	39.3.1A 40.3.6.1	Additional sections not listed in Tab C, but submitted in this filing	These two sections did not appear to contain Tariff revisions. If they were revised since the versions of these sections were filed in the Initial Administrative Filing, MISO must re-file these sections and show redline or highlighting as appropriate.
C	39.3.2C	Incorrectly reverts to language that was rejected by the Commission (*see Midwest Indep. Transmission Sys. Operator, Inc.*, 137 FERC ¶ 61,212, at PP 37, 72, 131 (2011)). MISO had properly corrected the language and these corrections were accepted by the Commission (*see Midwest Indep. Transmission, Sys. Operator, Inc.*, 140 FERC ¶ 61,059, at PP 74, 135 (2012)).	MISO must revert to the language approved by the Commission in 140 FERC ¶ 61,059.
D	40.3.3 introduction,	Contain revisions accepted by the Commission in Docket No. ER13-2233-	Such language should be deleted from sheets as of March 1, 2015 as it is not yet effective.

	40.3.3.a.i	002 (October 7, 2014, delegated letter order), with an effective of June 30, 2015.	
E	40.3.3.a.ii and 40.3.3.a.iii	Do not reflect revisions accepted by the Commission in Docket No. ER11-2275-000 (*see Midwest Indep. Transmission Sys. Operator, Inc.*, 134 FERC ¶ 61,264 (2011)).	MISO must either include these revisions or explain where these revisions have been subsequently overtaken.
F	Schedule 27	The equation in A.2.d. and the equation in B.2.c.i. differ from how they were accepted in ER14-2599-000 (*see Midcontinent Indep. Sys. Operator, Inc.*, 149 FERC ¶ 61,067 (2014), with the effective date of March 1, 2015. Furthermore, the changes are not redlined or explained. A.2.d. provides $NetRegRev_h^{RT} =)$MAX { [($ClrReg_h^{RT}$ - ~~$ClrReg_h^{DA}$) × $RegMCP_h^{RT}$~~ $ClrReg_h^{RT}$) × $SpinMCP_h^{RT}$] – [$\int^{ClrReghRT} RegOffer_h^{RT}$ – $\int^{ClrReghDA} RegOffer_h^{RT}$], 0 } As revised the $ClrReg_h^{RT}$ variable cancels itself out and through multiplication and makes null the $SpinMCP_h^{RT}$ variable, making the equation equivalent to MAX{0 – [$\int^{ClrReghRT} RegOffer_h^{RT}$ – $\int^{ClrReghDA} RegOffer_h^{RT}$], 0}. Thus, as proposed, the formula no longer contemplates variables $ClrReg_h^{RT}$, $ClrReg_h^{DA}$, and $SpinMCP_h^{RT}$. Also, $SpinMCP_h^{RT}$ is defined in an earlier equation, but not in this equation. In addition, there appears to be an errant "*)*" after $NetRegRev_h^{RT}$. B.2.c.i. adds *MAX ((* where highlighted:	As MISO did not explain or properly redline these changes, it should either explain why the revisions to A.2.d. are correct or provide alternative Tariff revisions to properly account for how Regulating Reserve net revenues are computed and explain such revisions. MISO must also ensure that the errant "*)*" was not part of a function that was mistakenly deleted, and if not, it should be removed. Finally, MISO must affirm that the addition of "*MAX ((*" to equation in B.2.c.i. as described is correct.

		$CDAMAPreg_i = (AdjDASreg_h - RTSreg_i) \times RTMCPreg_i - MAX ((\int^{AdjDASregh} DAOreg_h - \int^{RTSregi} DAOreg_h), (\int^{AdjDASregh} RTOreg_h - \int^{RTSregi} RTOreg_h)$ This does appear to properly correct an error.	