



BILLING CODE 6717-01-P  
DEPARTMENT OF ENERGY  
Federal Energy Regulatory Commission  
[Docket No. ER20-588-000]

Midcontinent Independent System Operator, Inc.; Notice of Technical Conference

By order dated March 10, 2020,<sup>1</sup> the Commission directed staff to convene a technical conference regarding Midcontinent Independent System Operator, Inc.'s (MISO) filing of proposed revisions to its Open Access Transmission, Energy and Operating Reserve Markets Tariff to allow for the selection of a storage facility as a transmission-only asset (SATO) in the MISO Transmission Expansion Plan (MTEP). The technical conference will explore issues including, but not limited to, MISO's proposed evaluation and selection criteria for SATOs, the SATO's market activities and any potential wholesale market impacts of those activities, how MISO's current formula rate structure accommodates cost recovery for SATOs, a SATO's potential effects on the generator interconnection queue, and operating guides that will apply to a SATO.<sup>2</sup>

Take notice that the Commission will hold this staff-led technical conference on Monday, May 4, 2020, between 9:00 am and 5:00 pm (Eastern Time). This conference will be held remotely, as further described below.

Participants should be prepared to discuss, at minimum, the following:

**A. Evaluation and Selection Criteria for SATOs**

MISO proposes Tariff language stating that, to be selected for inclusion in Appendix A of the MTEP as a transmission asset, a proposed SATO must demonstrate:

- a.** Unique characteristics or circumstances of the proposed SATO necessary to meet the identified Transmission System performance requirements and not otherwise available at comparable costs from other proposed solutions, including speed of operation, lead-time to implement, right-of-way, or other property considerations.
- b.** A need to resolve the Transmission Issue(s) through the storage facility's functioning as a SATO instead of as a Resource that

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<sup>1</sup> *Midcontinent Indep. Sys. Operator, Inc.*, 170 FERC ¶ 61,186 (2020).

<sup>2</sup> *Id.* P 56.

participates in [MISO's] markets.<sup>3</sup>

MISO states that an example of a unique characteristic is the storage asset's ability to rapidly inject and withdraw real or reactive power in solving transmission issues that could not otherwise be resolved if the storage asset was participating in markets.<sup>4</sup>

1. What is an “identified Transmission System performance requirement?” How and where are they identified? What is the difference between an identified Transmission System performance requirement and a Transmission Issue? What are examples of Transmission System performance requirements that can be addressed by a proposed SATOA?
2. What criteria will MISO consider when determining whether a proposed SATOA has unique characteristics or circumstances necessary to meet the identified transmission system performance requirements? How does MISO intend to communicate these criteria to stakeholders and participants in the MTEP? What does MISO mean by “other property considerations”?
3. What criteria will MISO consider when determining whether there is a need for the storage facility to solve the transmission issue through the storage facility's functioning as a SATOA instead of as a resource that participates in MISO's markets? How does MISO intend to communicate these criteria to stakeholders and participants in the MTEP?
4. With regard to MISO's example of a unique characteristic—i.e., a storage asset's ability to rapidly inject and withdraw real or reactive power in solving transmission issues—how can storage as transmission be distinguished from storage resources participating in markets that could have their dispatch schedules adjusted to rapidly inject or withdraw real or reactive power to solve transmission issues if needed as part of the normal security constrained dispatch of market resources?
5. If a traditional transmission project and a SATOA can both meet a transmission system performance requirement equally well, how will MISO determine which solution to select in the regional transmission planning process? If multiple SATOA proposals have unique characteristics or circumstances necessary to meet the identified transmission system performance requirements, how will MISO determine which solution to

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<sup>3</sup> MISO Dec. 12 Filing, Tab A, proposed MISO Tariff Att. FF, § II.G.1.c.i (71.0.0).

<sup>4</sup> MISO Dec. 12 Filing, Transmittal Letter at 2 n.5.

select in the regional transmission planning process?

6. If the entity that proposes a SATOA does not provide sufficient information for MISO to determine whether the SATOA meets the criteria outlined in the Tariff excerpted above, how will MISO proceed? For instance, will MISO attempt to determine if the SATOA meets the criteria using MISO's own independent analysis? Will that analysis be available to other participants in the regional transmission planning process?
7. How will MISO's evaluation criteria ensure that SATOAs are limited to only those electric storage resources that are performing a transmission-specific function?
8. Please explain how MISO will communicate its decision in approving a SATOA. For instance, MISO stated in its filing that there is currently a storage resource pending as a recommended project in MTEP19. Is the explanation provided in the MTEP19 executive summary regarding this recommended project representative of the type of explanation that MISO intends to provide in the future? What steps will MISO take if additional information is requested from participants in the regional transmission planning process?

MISO states that comparative evaluations of a proposed SATOA will include the minimum and maximum capacity required to address the transmission issue to ensure that excess storage capacity is not treated as a transmission asset. MISO further states that cost recovery under transmission rates is limited to the cost of the maximum capacity to be determined needed to address the transmission issue.<sup>5</sup>

9. How will MISO determine the maximum capacity needed to address the transmission issue? Please explain.

**B. SATOA Market Activities and Market Impacts**

MISO states that the SATOA owner is responsible for maintaining the necessary state of charge to be ready to serve the transmission function for which it was approved in the MTEP, and MISO will exercise functional control of the SATOA for transmission purposes only, i.e., charging and discharging to meet the transmission need will be done at the direction of MISO.<sup>6</sup>

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<sup>5</sup> MISO Dec. 12 Filing, Tab A, proposed MISO Tariff Att. FF, § II.G.1.a.ii (71.0.0).

<sup>6</sup> MISO Dec. 12 Filing, Transmittal Letter at 6-7; MISO Answer at 15.

10. What does it mean for a SATOA to be under MISO’s “functional control,” while making the SATOA owner responsible for maintaining state of charge? Will MISO tell the SATOA when to charge and discharge while the SATOA is performing to meet the transmission need? What is the practical difference, if any, between charging/discharging to “meet” the transmission need and charging/discharging to be “ready to serve” the transmission need?
11. How will MISO ensure that a SATOA under its “functional control” is available (e.g., not fully charged when needed to withdraw power and not fully discharged when needed to inject power) to solve a transmission issue?
12. Please explain your view on whether and, if so, how the charging/discharging activities of the SATOA directed under MISO’s functional control or, in connection with the SATOA owner’s responsibility to maintain state of charge, impact the wholesale energy and capacity markets. For example, would these activities impact transmission capacity, congestion, and/or other resources’ ability to meet energy and ancillary services needs, etc.? Please explain.

MISO proposes that the SATOA owner will need a registered market participant to receive energy net costs when charging and discharging under MISO’s functional control. MISO states that the market participant for a SATOA will be credited the applicable Real-Time Ex Post LMP for Non-Excessive Energy and will be charged for Non-Excessive Energy withdrawals. MISO explains that the SATOA market participant then must provide the net revenues back to the transmission owner, and those net revenues will offset the transmission revenue requirement associated with the resource.<sup>7</sup> MISO states that the SATOA will be a price taker.

13. Does a SATOA’s direct participation in the wholesale energy markets as a price-taker create potential impacts on the wholesale energy and capacity markets by, for instance, displacing otherwise marginal or infra-marginal resources and possibly changing the energy market price? Why or why not? If energy market impacts occur, will they be minimal or might they be mitigated, and if so how?
14. Please provide further information on: (1) what types of entity could serve as the SATOA’s market participant; (2) whether such market participant and/or the SATOA owner would have market-based rate authority; and (3)

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<sup>7</sup> MISO Dec. 12 Filing, Transmittal Letter at 23, Tab A, proposed MISO Tariff, Module C, § 40.3.3.3.a.i (44.0.0).

if the market participant were affiliated merchant function staff, how the standards of conduct would be met.

**C. Cost Recovery for SATOAs**

MISO proposes that costs resulting from a SATOA's market activities directed under MISO's functional control be collected through transmission rates in a manner consistent with the treatment of costs associated with the transmission project type in which the SATOA is included in Appendix A to the MTEP. Any revenues collected from the SATOA's market activities directed under MISO's functional control would be credited through transmission rates in a manner consistent with the treatment of costs associated with the transmission project category in transmission rates.<sup>8</sup>

15. How does MISO's current formula rate structure in Attachments O, GG, or MM accommodate cost recovery for SATOAs? Are any of those provisions sufficient to allow net market revenue to be credited through the transmission revenue requirement? Will the net energy revenue be credited outside the existing formulas, e.g., through a separate rider?
16. If the existing formulas will need to be modified to accommodate SATOAs, what types of modifications are needed and when will such modifications be filed to ensure that they are effective before a SATOA becomes operational?

**D. Impact on the Generator Interconnection Queue**

MISO proposes that, if it or a stakeholder identifies a potential impact to newly-interconnecting generation resources in the interconnection study process, MISO will assess whether the proposed SATOA will have an impact. If the assessment demonstrates that the necessary operating mode of the proposed SATOA will cause the need for additional system mitigation, the cost of such mitigation will be included in the evaluation of the proposed SATOA as compared with other potential transmission solutions. MISO proposes that its impact assessment may include targeted contingency analyses applying NERC TPL and applicable regional and local planning criteria to evaluate the incremental impact.<sup>9</sup>

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<sup>8</sup> MISO Dec. 12 Filing, Transmittal Letter at 22, Tab A, proposed MISO Tariff, Att. FF § II.G.6 (71.0.0).

<sup>9</sup> MISO Dec. 12 Filing, Transmittal Letter at 20-21, Tab A, proposed MISO Tariff Att. FF, § II.G.1.d (71.0.0).

17. Please provide further details on how MISO would assess the impact of a proposed SATOA on newly-interconnecting generation resources and compute costs if system mitigation is needed. Would MISO account for changes due to restudies in the interconnection study process and, if so, how? Could a SATOA be considered a contingent facility? Will MISO's interconnection procedures be modified to include any of these details? Does MISO intend to include any of these details in its Business Practice Manuals? Will the analysis of the impact of the proposed SATOA on the newly-interconnecting generation resources be available to market participants in the regional transmission planning process and/or interconnection customers in the interconnection queue?
18. Will MISO's assessment of impacts include assessment of delays in the interconnection queue, and if so, how would MISO mitigate those delays? If not, why is it not necessary to assess potential delays to the interconnection queue as a result of a proposed SATOA?
19. MISO states that the cost of additional mitigation if the SATOA affecting newly-interconnecting generation resource is selected as the preferred transmission solution in the MTEP will be included in the *evaluation* of the proposed SATOA. Will such costs also be included in the total SATOA cost recovered through transmission rates and, if so, how?

**E. Operating Guides**

MISO states that it will coordinate with the SATOA owner, MISO Operations, and the transmission operator to develop an operating guide that will establish (1) conditions for which the SATOA should be discharged and charged to meet the anticipated planning objective and (2) boundaries for operation that will be consistent with this objective and will reflect the unique operating parameters of the individual SATOA.<sup>10</sup>

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<sup>10</sup> MISO Dec. 12 Filing, Transmittal Letter at 21, proposed MISO Tariff, Att. FF, § II.G.2 (71.0.0).

20. Please provide a summary and explanation of the information that may be contained in the operating guides. Please provide specific examples of the information to be contained in the operating guides.

**F. Miscellaneous**

21. Are there any scenarios where a SATOA might be called upon under emergency conditions to relieve an issue outside of the specific transmission issue for which the SATOA was selected? If so, how will MISO handle any out-of-market payments that the SATOA receives?
22. Are SATOAs studied for reliability impacts in the same way as storage as non-transmission alternatives, particularly regarding dynamic stability? If not, why not? Please explain in detail how SATOAs will be studied for reliability impact.

The technical conference will be led by Commission staff, and is open to the public. All people interested in participating in the conference must register at the following link: <https://www.ferc.gov/whats-new/registration/05-04-20-form.asp> by no later than noon on May 1, 2020. There is no registration fee. Information on joining the technical conference will be posted on the Events Calendar available at <https://www.ferc.gov/EventCalendar/EventsList.aspx?View=listview>.

The conference will include discussions between Commission staff and MISO. If time permits, there may be an opportunity for parties that are participating in the conference to ask questions or provide comments. The proposed agenda for the technical conference is described below. Procedures to be followed at the conference and any changes to the proposed agenda will be announced by staff at the opening of the conference. The technical conference will not be transcribed.

Commission conferences are accessible under section 508 of the Rehabilitation Act of 1973. For accessibility accommodations, please send an email to [accessibility@ferc.gov](mailto:accessibility@ferc.gov) or call toll free 1-866-208-3372 (voice) or 202-502 -8659 (TTY); or send a fax to 202-208-2106 with the required accommodations.

Following the technical conference, the Commission will consider post-technical conference comments submitted on or before May 25, 2020. The written comments will be included in the formal record of the proceeding, which, together with the record developed to date, will form the basis for further Commission action.

For more information about this technical conference, please contact Mark Byrd, 202-502-8071, [mark.byrd@ferc.gov](mailto:mark.byrd@ferc.gov). For information related to logistics, please contact Sarah McKinley, 202-502-8368, [sarah.mckinley@ferc.gov](mailto:sarah.mckinley@ferc.gov).

Dated: April 10, 2020

Nathaniel J. Davis, Sr.,  
Deputy Secretary.

## Storage as a Transmission-Only Asset (SATOA) in MISO

### Technical Conference - Webex Teleconference

**Monday, May 4, 2020**

**9:00 a.m. – 5:00 p.m.**

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|-------------------------|--|
| 9:00 a.m. – 10:30 a.m.  | Evaluation and Selection Criteria for SATOA <ul style="list-style-type: none"><li>• Identified Transmission System performance requirement</li><li>• Unique Characteristics or Circumstances</li><li>• Functioning as SATOA Compared to Market Participant</li></ul> |
| 10:30 a.m. – 10:45 a.m. | Break  |
| 10:45 a.m. – 11:30 a.m. | Evaluation and Selection Criteria for SATOA (continued) <ul style="list-style-type: none"><li>• Traditional Transmission Project compared to SATOA</li><li>• SATOA Evaluation Criteria</li><li>• Communication of Decision Approving a SATOA</li></ul>               |
| 11:30 a.m. – 12:45 p.m. | SATOA Market Activities and Market Impacts <ul style="list-style-type: none"><li>• Meaning of “Functional Control”</li><li>• Impact of SATOA Activity on Wholesale Market</li><li>• Information Regarding Market Participant</li></ul>                               |
| 12:45 p.m. – 1:30 p.m.  | Lunch  |
| 1:30 p.m. – 2:15 p.m.   | Cost Recovery for SATOAs <ul style="list-style-type: none"><li>• Formula Rate Structure</li></ul>  |
| 2:15 p.m. – 3:30 p.m.   | Impact on the Generator Interconnection Queue <ul style="list-style-type: none"><li>• Assessing the Impact of a SATOA on Newly Interconnecting Generating Resources</li><li>• Assessment of Delays and Mitigation</li></ul>  |
| 3:30 p.m. – 3:45 p.m.   | Break  |
| 3:45 p.m. – 4:15 p.m.   | Operating Guides <ul style="list-style-type: none"><li>• Information in Operating Guides</li></ul>   |
| 4:15 p.m. – 5:00 p.m.   | Miscellaneous <ul style="list-style-type: none"><li>• Emergency Conditions</li><li>• Reliability Impacts</li></ul>   |