

SCHEDULE 51

Short-Term Reserve

I. GENERAL

The Short-Term Reserve product aligns the Transmission Provider's market requirements with operational needs to: recover to operating limits within the Short-Term Reserve Deployment Period following system events; ensure compliance with standards requiring restoration of Contingency Reserves following deployment; provide a transparent price signal that values reliability needs to manage uncertainties; and assure that rampable online or offline capacity is available where it is needed to ensure reliability. Short-Term Reserve may be provided by Short-Term Reserve Qualified Resources. The MISO Balancing Authority will procure Short-Term Reserve from cleared Resource Offers submitted by Market Participants selected in the Energy and Operating Reserve Markets as provided for in Sections 39.2 and 40.2 of this Tariff.

II. DESCRIPTION OF SERVICE

Short-Term Reserve is a Resource's unloaded Capacity set aside to be available to manage transmission constraints, stability limits, or contractual requirements, and to maintain reliable system operations. Short-Term Reserve must be fully deployable within the Short-Term Reserve Deployment Period. Short-Term Reserve requirements are specified by the MISO Balancing Authority at the market-wide, sub-regional, and local levels. Short-Term Reserve is cleared and priced every Hour in the Day-Ahead Energy and Operating Reserve Market and every Dispatch Interval in the Real-Time Energy and Operating Reserve Market. Short-Term Reserve is settled on an hourly basis in both the Day-Ahead Energy and Operating Reserve Market and the Real-Time Energy and Operating Reserve Market.

A. Market-Wide Short-Term Reserve Requirement

Market-wide requirements specify flexible Capacity needed to maintain reliable system operations in response to Market-Wide Short-Term Reserve needs. The Market-Wide Short-Term Reserve Requirement will be provided to the market clearing functions with a compatible Demand Curve. The Market-Wide Short-Term Reserve Requirement will be cleared in an economic manner and, if required by overall market-wide conditions, may vary by market Hour. All Market-Wide Short-Term Reserve cleared in the Energy and Operating Reserve Market must be supplied by Short-Term Reserve Qualified Resources. Market-Wide Short-Term Reserve can be provided from Resources in any Reserve Zone in the Market.

B. Local and Sub-Regional Short-Term Reserve Requirements

Local and sub-regional requirements for Short-Term Reserve Capacity can be driven by several factors that include thermal limits, stability limits, and contractual requirements. These needs are represented in Post Reserve Deployment Constraints combining cleared Energy and Short-Term Reserve to provide the needed response within the Short-Term Reserve Deployment Period. Local and sub-regional Short-Term Reserve can be met from Resources in any Reserve Zone that can address the applicable Post Reserve Deployment Constraint specified by the Transmission Provider.

**III. PURCHASE OBLIGATIONS WITHIN THE MISO BALANCING AUTHORITY
AREA AND RATES**

Day-ahead and real-time Short-Term Reserve procurement costs are collected from Load Serving Entities and Exporting Entities on a zonal basis using the following rate methodology:

A. Binding Settlement Zone Short-Term Reserve Charges

Market Participants, and Carved-Out GFA billing entities associated with Carved-Out GFAs, with Actual Energy Withdrawals and real-time Export Schedules, other than Coordinated Transaction Schedules and Export Schedules for External Asynchronous Resources, within a Binding Settlement Zone shall be charged each Hour, a *pro rata* share of the total payments to Market Participants for Resources providing Short-Term Reserve within that Binding Settlement Zone for that Hour as follows:

Cost allocated to Carved-Out GFAs:

Carved-Out GFA Short-Term Reserve Charge = GFA Short-Term Reserve Procurement Rate multiplied by the Market Participant Actual Energy Withdrawal minus the applicable Day-Ahead Ex Post MCP for Short-Term Reserve or Hourly Real-Time Ex Post MCP for Short-Term Reserve multiplied by the Minimum of [Short-Term Reserve schedules associated with the Carved-Out GFA, and the Market Participant Carved-Out GFA Short-Term Reserve Obligation] for the Binding Settlement Zone,

Where:

GFA Short-Term Reserve Procurement Rate = Short-Term Reserve Procurement Cost / Total Actual Energy Withdrawal in the Binding Settlement Zone;
Short-Term Reserve Procurement Cost = The sum of all credits calculated under Section 39.3.2A.e plus the sum of all charges/credits calculated

under Section 40.3.3.3.b.vi specific to Resources providing
Short-Term Reserve within the Binding Settlement Zone;

Market Participant Carved-Out GFA Actual Energy Withdrawal = Market Participant Actual
Energy Withdrawal, associated with Carved-Out GFA
Actual Energy Withdrawal and including real-time Export
Schedules, other than Export Schedules for External
Asynchronous Resources, within the Binding Settlement
Zone; and

Total Actual Energy Withdrawal = The sum of all Market Participant Actual Energy
Withdrawals, including Carved-Out GFA Actual Energy
Withdrawals and including real-time Export Schedules,
other than Coordinated Transaction Schedules and Export
Schedules for External Asynchronous Resources, within
the Binding Settlement Zone; and

Market Participant Carved-Out GFA Short-Term Reserve Obligation = Market Participant
Carved-Out GFA Actual Energy Withdrawal divided by
Total Actual Energy Withdrawal within the Binding
Settlement Zone multiplied by the sum of all Short-Term
Reserve schedules within the Binding Settlement Zone.

Costs allocated to Non-GFA Withdrawals:

Short-Term Reserve Charge non-GFA = Non-GFA Short-Term Reserve Procurement Rate *
Market Participant Actual Energy Withdrawal for the Non-
Binding Settlement Zone,

Where:

Non-GFA Short-Term Reserve Procurement Rate = The difference between the Non-GFA Short-Term Reserve Procurement Cost and the aggregate sum of all Carved-Out GFA Short-Term Reserve Charges divided by Total Actual Non-GFA Energy Withdrawals within the Binding Settlement Zone;

Non-GFA Short-Term Reserve Procurement Cost = The sum of all credits calculated under Section 39.3.2A.e plus the sum of all charges/credits calculated under Section 40.3.3.3.b.vi specific to Resources providing Short-Term Reserve minus the aggregate sum of the applicable Day-Ahead Ex Post MCP for Short-Term Reserve or Hourly Real-Time Ex Post MCP for Short-Term Reserve multiplied by the Minimum of [Short-Term Reserve schedules associated with the Carved-Out GFA, and the Market Participant Carved-Out GFA Short-Term Reserve Obligation] for all GFA billing entities within the Binding Settlement Zone;

Market Participant Actual Energy Withdrawal = Market Participant Actual Energy Withdrawal, excluding Carved-Out GFA Actual Energy

Withdrawal including real-time Export Schedules, other than Coordinated Transaction Schedules and Export Schedules for External Asynchronous Resources, within the Binding Settlement Zone; and

Total Actual Non-GFA Energy Withdrawals = The sum of all Market Participant Actual Energy Withdrawals, excluding Carved-Out GFA Actual Energy Withdrawals and including real-time Export Schedules, other than Coordinated Transaction Schedules and Export Schedules for External Asynchronous Resources, within the Binding Settlement Zone.

B. Non-Binding Settlement Zone Short-Term Reserve Charge

Market Participants, and Carved-Out GFA billing entities associated with Carved-Out GFAs, with Actual Energy Withdrawals and real-time Export Schedules, other than Coordinated Transaction Schedules and Export Schedules for External Asynchronous Resources, within a Non-Binding Settlement Zone shall be charged each Hour, a *pro rata* share of the total payments to Market Participants for Resources providing Short-Term Reserve within that Non-Binding Settlement Zone for that Hour as follows:

Costs allocated to Carved-Out GFAs:

Carved-Out GFA Short-Term Reserve Charge = GFA Short-Term Reserve Procurement Rate multiplied by the Market Participant Actual Energy Withdrawal minus the applicable Day-Ahead Ex Post MCP for Short-Term Reserve or Hourly Real-Time Ex Post MCP

for Short-Term Reserve multiplied by the Minimum of
[Short-Term Reserve schedules associated with the Carved-
Out GFA, and the Market Participant Carved-Out GFA
Short-Term Reserve Obligation] for the Non-Binding
Settlement Zone,

Where:

GFA Short-Term Reserve Procurement Rate = Short-Term Reserve Procurement Cost / Total
Actual Energy Withdraw in the Non-Binding Settlement
Zone;

Short-Term Reserve Procurement Cost = The sum of all credits calculated under Section
39.3.2A.e plus the sum of all charges/credits calculated
under Section 40.3.3.3.b.vi specific to Resources providing
Short-Term Reserve within the Non-Binding Settlement
Zone;

Market Participant Carved-Out GFA Actual Energy Withdrawal = Market Participant Actual
Energy Withdrawal, associated with Carved-Out GFA
Actual Energy Withdrawal and including real-time Export
Schedules, other than Export Schedules for External
Asynchronous Resources, within the Non-Binding
Settlement Zone;

Total Actual Energy Withdrawal = The sum of all Market Participant Actual Energy
Withdrawals, including Carved-Out GFA Actual Energy

Withdrawals and including real-time Export Schedules,
other than Coordinated Transaction Schedules and Export
Schedules for External Asynchronous Resources, within
the Non-Binding Settlement Zone; and

Market Participant Carved-Out GFA Short-Term Reserve Obligation = Market Participant
Carved-Out GFA Actual Energy Withdrawal divided by
Total Actual Energy Withdrawal within the Non-Binding
Settlement Zone multiplied by the sum of all Short-Term
Reserve schedules within the Non-Binding Settlement
Zone.

Costs allocated to Non-GFA Withdrawals:

Short-Term Reserve Charge non-GFA = Non-GFA Short-Term Reserve Procurement Rate *
Market Participant Actual Energy Withdrawal for
the Non-Binding Settlement Zone,

Where:

Non-GFA Short-Term Reserve Procurement Rate = The difference between the Non-GFA Short-
Term Reserve Procurement Cost and the aggregate sum of
all Carved-Out GFA Short-Term Reserve Charges divided
by Total Actual Non-GFA Energy Withdrawals within the
Non-Binding Settlement Zone;

Non-GFA Short-Term Reserve Procurement Cost = The sum of all credits calculated under
Section 39.3.2A.e plus the sum of all charges/credits

calculated under Section 40.3.3.3.b.vi specific to Resources providing Short-Term Reserve minus the aggregate sum of the applicable Day-Ahead Ex Post MCP for Short-Term Reserve or Hourly Real-Time Ex Post MCP for Short-Term Reserve multiplied by the Minimum of [Short-Term Reserve schedules associated with the Carved-Out GFA, and the Market Participant Carved-Out GFA Short-Term Reserve Obligation] for all GFA billing entities within the Non-Binding Settlement Zone;

Market Participant Actual Energy Withdrawal = Market Participant Actual Energy Withdrawal, excluding Carved-Out GFA Actual Energy Withdrawal and including real-time Export Schedules, other than Coordinated Transaction Schedules and Export Schedules for External Asynchronous Resources, within the Non-Binding Settlement Zone; and

Total Actual Non-GFA Energy Withdrawals = The sum of all Market Participant Actual Energy Withdrawals, excluding Carved-Out GFA Actual Energy Withdrawals and including real-time Export Schedules, other than Coordinated Transaction Schedules and Export Schedules for External Asynchronous Resources, within the Non-Binding Settlement Zone.