



Q. What demand response services does MISO offer as part of its wholesale markets?

A. MISO developed market mechanisms to allow demand response to participate in all aspects of its markets through reducing loads whose values to end-use customers are less than the costs of serving those loads (Economic Demand Response), providing Regulation or Contingency Reserves (Operating Reserve Demand Response), reducing demand during system emergencies (Emergency Demand Response or EDR), and substituting for generating capacity (Planning Resources Demand Response).

Demand response has the duplicate benefit of reducing demand at critical times as well as benefiting customers by enhancing the competitive markets through downward price pressure on the affected LMPs. MISO's market instruments for demand response participation are described further below:

[Economic Demand Response Resource](#)

A Demand Response Resource (DRR) is a demand resource or behind-the-meter-generator that can respond to MISO's dispatch instructions. DRRs are the only demand resources that can "inject" energy on an economic basis, i.e., to replace higher-priced energy offered by generators.² There are two types of DRRs under the MISO Tariff:

- **DRR – Type I** supplies a fixed, pre-specified quantity of energy, through physical load reduction, to the energy and Operating Reserve Market when instructed to do so by MISO.
- **DRR – Type II** supplies a range (continuum) of energy or Contingency Reserves, through physical load reduction or behind-the-meter generation, to the Energy and Operating Reserve Market.

MPs may submit DRR offers into the Day-Ahead Market and/or the Real-Time Market. MPs with DRR offers that clear the market, and that subsequently follow MISO dispatch instructions within acceptable tolerances, are paid the hourly LMPs for the energy they return to the market through their load reductions. In addition, they are made whole for their one-time shutdown costs if committed by MISO through its SCUC process (except for "must run" offered resources, which are not entitled to recovery of shutdown costs). However, for DRRs, the MPs are charged for acquiring the energy they "injected" into

² Additionally, the market participant with demand response assets is free to manage its purchases of energy in the MISO markets by self-scheduling its demand resource assets, or controlling its metered load by calling on its demand resource assets directly, to mitigate potential price exposures in the markets or to address local reliability concerns.



the market. This charge is applied because a demand resource cannot produce energy; it can only “inject” energy that would have otherwise been delivered to it for consumption. The LSE within which the load reduction occurs is charged for the demand responder price settlements.

DRR Cost Recovery

In response to FERC Order 745, MISO changed its cost recovery structure for DRRs. The LSE will not be charged for the load if the DRR provides energy, and the LMP is above a monthly price threshold. If a DRR provides energy, but the LMP is below the monthly price threshold, the cost recovery remains as described above. The FERC accepted MISO’s changes, which went into effect June 12, 2012.

Operating Reserve Demand Response

Operating reserve services consist of three forms:

- Regulation Service,
- Spinning Reserve Service, and/or
- Supplemental Reserve Service.

Together, Spinning Reserve and Supplemental Reserve are referred to as Contingency Reserve. In addition to providing energy, DRR-Type I and DRR-Type II resources that are technically qualified to do so may provide one or more forms of Operating Reserve Service. DRR-Type I resources can provide either energy or Contingency Reserve Service, but cannot simultaneously provide both. DRR Type II Resources may provide energy and/or one or more Operating Reserve products simultaneously.

Emergency Demand Response (EDR)

Market participants with demand resources and/or behind-the-meter generation (the MP’s EDR resources) that do not qualify as DRRs, or that are not offered into the Energy or Operating Reserve Markets, may still offer to reduce their gross loads when MISO declares an Energy Emergency event (e.g., NERC Energy Emergency Alert or EEA). MISO’s Emergency Demand Response Initiative allows, but does not require, EDR resources to provide Emergency Demand Response during such events unless they are also claiming capacity credit as Planning Resources. Each day an MP may decide how much of each of its EDR resources to make available to MISO for EDR service the following day, and at what prices. In addition to providing hourly curtailment prices in its daily EDR offer, the MP may also specify one-time shutdown cost and a number of operational constraints for each EDR resource. When an emergency event occurs, MISO will use the information in the EDR offers to decide the order in which to curtail the associated EDR resources and to determine a single market-clearing price to be paid for the curtailments.



Load Modifying Resources (LMRs) and DRRs may qualify as Planning Resources if the market participant registering those assets commits in advance to using them to reduce its gross load when instructed to do so by MISO during an Energy Emergency event. Module E of the MISO Tariff prescribes how DRRs and LMRs are accredited as Planning Resources based on their “unforced” capacities. LMRs and DRRs have monetary value because they can be substituted for Generation Resources by an LSE in meeting its assigned Planning Reserve Margin Requirement.

Q. Who is eligible to participate in MISO with wholesale demand response?

A. Two types of market participants may provide demand response in MISO: LSEs and end-use customers who have market participant status. A third type of market participant - Aggregators of Retail Customers (ARCs) - are allowed to aggregate end-use customer demand response and behind-the-meter generation to provide demand response, effective June 12, 2012.

Q. Does MISO’s demand response construct conflict with state regulatory requirements?

A. No. In addition to MISO’s own standards and requirements for demand response participation in its wholesale markets, the states within the MISO region may also have various requirements and regulations that must be met regarding the participation and use of demand response by the qualified MP. MISO acknowledges the important role state regulatory authorities play, in collaboration with FERC, and has and continues to develop its demand response initiatives to be consistent and compliant with both federal and state requirements. For example, some state regulatory authorities do not plan on allowing ARCs to do business with retail customers served by LSEs subject to their jurisdiction, regardless of MISO’s ARC tariff provisions. Authorities with regulatory control over public power entities and cooperatives, which may be outside the jurisdiction of state regulators, may also impose such prohibitions.

Q. What are the improved opportunities for demand response participation in the wholesale markets operated by MISO?

A. To date, these benefits are derived in two distinct areas: dynamic wholesale pricing and direct load control and interruptibles.

Dynamic Pricing

Dynamic Pricing is a form of demand response that provides wholesale customers a rate signal that varies throughout the day to reflect the higher cost of electricity during peak times. MISO provides a market framework that enables dynamic pricing programs to realize their full value through the reduction of system peak demand. This demand



reduction, in turn, results in additional benefits to the new TO and the entire region by allowing additional generation investment deferrals.

Direct Load Control and Interruptibles

Wholesale market direct load control and interruptibles are two additional forms of demand response. Direct load control provides LSEs the ability to curtail specific end uses of customers, whereas interruptibles provide LSEs the ability to curtail a preset amount of load. MISO provides a market framework that enables direct load control and interruptibles programs to realize their full value through the reduction of system peak demand. This additional demand reduction adds benefits to the new TO and the entire region by allowing additional generation investment deferrals.

Q. How does the market for Financial Transmission Rights (FTRs) operate in MISO?

A. MISO's Financial Transmission Rights (FTRs) market offers Auction Revenue Rights (ARRs) and annual and monthly FTR auctions. ARRs are financial instruments that entitle their holders to a share of the revenue generated in the annual FTR auction. ARRs are initially allocated to MISO's market participants based on firm historical usage of the transmission network. FTRs are financial instruments whose values are determined by the transmission congestion charges that arise in the Day-Ahead Market, leading to differences in the Marginal Congestion Components (MCCs) of Day-Ahead LMPs at different locations. FTRs may be used to provide a financial hedge to manage the risk of congestion cost in the Day-Ahead Market. Market participants who hold FTRs are protected against paying congestion charges for scheduled injections (e.g., generation, bilateral purchases, etc.) at one location, and withdrawals (e.g., load, bilateral sales) at a different location in the Day-Ahead Market. FTRs are defined as between specified locations, for a specified MW level, in a specific direction and for a specified time period. ARRs are allocated to firm transmission customers under the MISO tariff, which can be used to offset the cost of obtaining FTRs in the annual FTR auction. If a new TO is also a LSE, the new TO would be eligible to nominate and be allocated ARRs and hold FTRs once it becomes a registered market participant and meets the Tariff's terms and conditions.

In accordance with the process used to allocate transmission rights, an LSE will be eligible to nominate and receive both short-term and long-term transmission rights. Moreover, the LSE has the flexibility to choose to sell congestion rights in an FTR auction and receive the market value of the congestion rights rather than holding the FTRs. The congestion rights annual allocation and auction process occurs in the first several months of each year. To the extent that an incoming TO integrates prior to the established timelines for participation in the next ARR allocation, the incoming TO