

Renewable Energy Question # 35: How has the dispatch of renewable generation changed since the implementation of MISO's Dispatchable Intermittent Resource (DIR) tariff? How has dispatching of renewable energy impacted rates in Michigan?

The introduction of MISO's DIR tariff makes the integration of renewable energy less expensive and more efficient. It also has resulted in more renewable generation being utilized to meet demand across the MISO system. The DIR tariff provides MISO and the wind farm operators more tools with finer control for managing the output of wind farms. It also provides more certainty and less curtailment for wind energy providers. According to the MISO DIR Factsheet (available at <https://www.midwestiso.org/Library/Repository/Communication%20Material/Strategic%20Initiatives/DIR%20FAQ.pdf>), DIR's are beneficial in several ways:

- The entire market benefits when more resources are fully integrated into the Energy Market. Specifically, operational efficiency and market transparency will be improved since fewer manual wind curtailments will be necessary and locational marginal prices (LMPs) will reflect each resource that impacts a constraint.
- The automated dispatch for DIRs will be more efficient than the manual curtailment process previously in place for Intermittent Resources. This will lead to more optimal economic solutions that utilize wind more completely than a manual process.
- The make-whole provisions of the tariff apply to DIRs, whereas they do not apply to Intermittent Resources. If a DIR is unprofitably dispatched above its Day-Ahead position, it is eligible for the real-time Offer Revenue Sufficiency Guarantee Payment provisions of the tariff. If a DIR is dispatched below its Day-Ahead position, and does not maintain its Day-Ahead margin, it is eligible for the Day Ahead Margin Assurance Payment provisions of the tariff. This provides DIRs with assurance that the dispatches, both upward and downward, will be economical.

According to MISO's Reliability Subcommittee, manual curtailments of wind power have dropped significantly since the implementation of MISO DIR tariff – from 2.7 percent in 2011 to 0.9 percent in 2012. Overall curtailments (including manual and DIR dispatch) dropped from about 3.3 percent in 2011 to about 2.7 percent in 2012 even as increasing amounts of wind energy are deployed onto the grid. This reduction in curtailments means more economic certainty for wind power providers as they are paid for more of the total energy they are able to generate. The share of wind generation in MISO that is participating under the tariff has increased from 17 percent in December 2011 to 53 percent in December 2012, to 78 percent in March 2013. The remaining 22 percent is exempt because it was operational before April 1, 2005 or is an intermittent resource with certain network designations and firm transmission rights.

The DIR tariff also provides benefits to MISO grid operators. Before implementation of the DIR tariff, wind resources were manually curtailed – i.e. the grid operator had to call the wind power provider and tell them to curtail in real-time. Under the DIR tariff, wind resources are now dispatchable automatically using MISO's Unit Dispatch System that identifies the most cost-effective dispatchable resources. In this

way, the DIR tariff provides more precise management of the fleet of generation and thus reduces the costs and risk of providing the bulk electricity supply.

The impact of the DIR tariff on rates in Michigan is difficult to quantify, particularly due to the fact that the DIR tariff is still in the early stages of implementation. However, because the DIR tariff allows for higher levels of wind energy onto the grid and more efficient dispatch of those resources, the DIR tariff is likely decreasing wholesale electricity rates across the system, including the portions of Michigan that it serves. Because there are no fuel costs associated with renewable energy resources like wind and solar, these resources are “price-takers”; that is they will accept whatever the market is offering at the time generation occurs. In contrast, fossil fuel and nuclear resources are “price-makers” in that they must receive a certain minimum price for generated electricity to make operating the power plant economical. When additional renewable energy resources are available, this tends to push higher-priced resources out of the market, reducing the overall price paid for electricity. This effect has been documented in other parts of the Midwest. See, for example, *Annual report: The costs and benefits of renewable resource procurement in Illinois under the Illinois Power Agency and Illinois Public Utilities Acts* that found that wind and other renewable energy sources reduced wholesale electricity prices across the entire eastern United States, resulting in \$177 million in savings for Illinois in 2011 alone.

Resources:

- 1) MISO Reliability Subcommittee Monthly Informational Forum presentations, available at <https://www.midwestiso.org/STAKEHOLDERCENTER/COMMITTEESWORKGROUPSTASKFORCES/RSC/Pages/home.aspx>.
- 2) Illinois Power Agency (IPA). 2012. *Annual report: The costs and benefits of renewable resource procurement in Illinois under the Illinois Power Agency and Illinois Public Utilities Acts*. Springfield, IL: IPA. Online at www2.illinois.gov/ipa/Documents/April-2012-Renewables-Report-3-26-AAJ-Final.pdf, accessed March 24, 2013.
- 3) MISO Market Subcommittee. 2012. *Dispatchable Intermittent Resource Registration Deadline*. Presentation on October 2, 2012. Online at <https://www.midwestiso.org/Library/Repository/Meeting%20Material/Stakeholder/MSC/2012/20121002/20121002%20MSC%20Item%2004i%20DIR%20Registration%20Deadline.pdf>; accessed April 23, 2012.
- 4) MISO Wind Integration website: <https://www.midwestiso.org/WhatWeDo/StrategicInitiatives/Pages/WindIntegration.aspx>.
- 5) MISO February 2013 Monthly Markets Assessment Report. Online at <https://www.midwestiso.org/Library/Repository/Report/Monthly%20Market%20Reports/2013%20Monthly%20Market%20Reports/201302%20Monthly%20Market%20Report.pdf>.