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Regulation

Wind Energy Is Going Real Time In The Midwest

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The Federal Energy Regulatory Commission approved a proposal by the Midwest Independent Transmission System Operator or "MISO" in March that will require most wind farms that are MISO members to make themselves available for automatic dispatch by MISO in the "real-time" market.

This could mean an additional source of revenue for wind farms that sell into the real-time market. It could also mean penalties for such projects that are unable to dispatch as directed.
Whether or not a wind farm that has a long-term power purchase agreement with a utility in MISO will be subject to the economic benefits or penalties of participating in the real-time market will depend on the terms of the individual PPA. The same is true for wind farms that sell output through agents, known as market participants, in MISO: the terms of the agreement with the market participant will dictate the allocation of risk.

Most wind farms have until February 2013 to install equipment required to respond to automatic dispatch signals. The requirement to participate in the real-time market commences on March 1, 2013.

The new rules do not apply to some older wind farms originally completed before April 2005 or to wind farms with certain network designation and firm transmission rights.

MISO is the independent operator of the electricity grid in parts of Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, Montana, North Dakota, Ohio, Pennsylvania, South Dakota and Wisconsin.

The wind farms that are required to make themselves available for automatic dispatch in the real-time market are called "dispatchable intermittent resources" or "DIRs."

DIR is a new category of intermittent resources (essentially renewable) that is to be treated in a manner substantially similar to other conventional generation resources in certain real-time energy markets.

The FERC order may serve as a model for other regional transmission organizations that are trying to incorporate more wind resources into their generation mix using market mechanisms that are comparable to those for conventional generation.

Several parties have asked for a rehearing. However, FERC is unlikely to modify its decision in any material way.

A Tale of Two Markets

MISO has two trading markets: the day-ahead market and the real-time market. The day-ahead market permits generators to bid to provide energy to customers over the following day - hence "day ahead." In the real-time market, on the other hand, generators make energy available for sale during the same day that the energy is delivered - in other words, in "real time."

In MISO, intermittent resources (solar, wind, run of river hydro, biomass) are treated similarly to conventional generation resources in the day-ahead market. In the day-ahead market, the generator can choose to self schedule (essentially, to offer all energy available to be produced and be a price taker to assure delivery) or to offer to sell at a particular price.

However, under existing MISO rules, real-time generation must be dispatchable by the system operator. Intermittent resources are not considered dispatchable in real time due to the fact that they are forecast-dependent resources. In other words, the system operator assumes that it cannot ask an intermittent resource to increase or decrease its output automatically, and therefore all intermittent resources are excluded currently from the real-time markets.

MISO claimed that its inability to dispatch intermittent resources in the real-time energy market means that it cannot redispatch these resources properly to manage congestion on the system that may occur during different hours of the day - for example, during periods when transmission is in short supply or when electricity demand is low.

MISO asked FERC to let it dispatch intermittent resources in the real-time market. It argued that this would reduce congestion costs, make the system more efficient, and save millions of dollars a year.

How DIRs Will Operate

Conventional generators in the real-time market are required to give forecasts of available generation every hour and half hour in advance of the

"operating hour" in which the energy is to be produced.

The DIR will also be required to give forecasts, but its forecasts will be different.

It will be required to give 12 forecasts in five-minute intervals prior to the operating hour. The DIR will have the ability to modify its forecast up to 10 minutes prior to each interval and, thus, will have the right to adjust its maximum available output forecast, called the "forecast maximum limit."

The MISO is developing its own five-minute interval forecast model for wind resources that would be used as a default forecast in the event that the DIR fails to update its forecast as it is permitted to do. The DIR can only be dispatched at or below the forecast maximum limit. The DIR will be able to make an economic offer - or an offer to sell at a particular price - in real time and be dispatched up to its forecast maximum limit based on its most recent five-minute forecast (or MISO's default forecast) and will be subject to its approved ramp rates, or the speed with which it can reach full output.

Real-Time Benefits and Risks

By being required to participate in the real-time market, DIRs can either self schedule or submit "economic offers" to sell energy at particular prices, and they will be paid for all energy that clears the market.

They are also eligible for make-whole payments from the system that will cover costs if the energy dispatched after the day-ahead market closes does not compensate the generator fully for its costs.

Many wind projects in the Midwest will have to make themselves available for automatic dispatch by the grid. It could mean more revenue and also penalties.

Along with the potential benefits of participating in the real-time market, DIRs also will be subject to potential penalties for non-performance or poor performance. It is this aspect of the proposal that has elicited the most comment from intervenors at FERC.

The DIR must produce energy as dispatched by the system operator within an 8% tolerance band. In other words, the DIR must not deliver more than 108% or less than 92% of the requested dispatch amount over each dispatch interval. If the DIR deviates by more than 8% for four or more consecutive dispatch intervals, and the deviation is by more than 6 megawatts, then the DIR will be subject to system penalty charges.

The American Wind Energy Association, which generally supported the MISO proposal for DIRs, asked FERC to adopt a somewhat different and somewhat more lenient standard for permissible deviations from dispatch. AWEA asked FERC to adopt the standard utilized in the so-called nodal protocols by the Electric Reliability Council of Texas or "ERCOT." FERC determined that the MISO proposal on penalties for deviations was supported by data and reasonable, and thus approved it without modification.

On the other end of the spectrum, a group of financial players in the MISO market, representing interests that make virtual sales but do not own power plants in MISO, has asked for a rehearing of the FERC order, claiming that

the proposal would allow wind projects to "escape" a number of potential performance penalty payments - known as "revenue sufficiency guarantee charges" - to which conventional generators and non-generators (virtual suppliers) are subject. In particular, they object to the basic structure of the proposal that would allow wind resources to update their forecasts on short intervals in real time. FERC is unlikely to change its mind on this point on rehearing.

It should be noted that DIRs will only participate in the real-time energy market. DIRs will not be permitted to compete to provide operating reserves in the real-time market. However, such eligibility may become possible in the future as a result of greater experience and data analysis for wind resources.

Who Must Become a DIR

Not all wind farms will be required to become DIRs. Wind farms that are "qualifying facilities" or "QFs" under Public Utility Regulatory Policies Act that are currently not registered members of MISO will not be required to register, although such QFs would be permitted to do so, and other intermittent resources, including solar, hydroelectric and biomass resources, will not have to become DIRs.

Starting March 1, 2013, all other wind farms must become DIRs unless they lack the technical equipment to be capable of set-point instructions and fall into one of two categories. A project without the technical equipment does not have to become a DIR if it was originally placed in service before April 2005. It does not have to become a DIR if it has network resource interconnection service or has been designated as a generator network resource or the energy the wind farm produces is subject to an agreement for long-term firm point-to-point transmission service.

The argument for exclusion of older (pre- 2005) wind farms from the DIR requirement is that they would not have installed, and it would be too expensive to require those older resources to add, technology capable of following automated dispatch instructions. They can elect, but are not required, to become DIRs.

The argument for exempting generators with firm interconnection, firm transmission or network resource designations is that the projects have already been determined to be able to reach any load, and they do not need to be capable of following automated dispatch instructions. Again, such wind farms can elect, but are not required, to become DIRs.

The intermittent resources that are not DIRs would be required to participate in the day-ahead market only.

The delayed start date of March 1, 2013 is supposed to give wind farms built after April 1, 2005 time to install the necessary equipment to permit automatic dispatch by MISO.

Once In, Always In

FERC determined that a wind farm that becomes a DIR cannot elect to drop out from that designation at a later date. Thus, after March 1, 2013, even if a wind farm DIR signs a contract for firm point-to-point transmission service or network resource interconnection service, thus satisfying one of the

allowed exceptions to DIR designation, it cannot avoid being required to continue to participate in the real-time market.

AWEA asked for a rehearing on this point, arguing that failing to allow this switch is unduly discriminatory in favor of wind farms that are currently eligible for exemption from DIR designation, since wind farms currently eligible for exemption from DIR designation could switch to DIR status if they felt it was more economically advantageous to do so. It is unlikely that FERC will be persuaded by this argument, because currently exempted wind farms would also be required to remain DIRs once they elect to switch to DIR designation.

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