

An hourglass-shaped graphic with a globe inside. The top bulb is dark blue, and the bottom bulb is light blue. The globe is a darker shade of blue. The hourglass is centered on the page.

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*Federal Energy Regulatory Commissions Standard Market  
Design Activities*

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**Abstract.** On July 31, 2002, the Federal Energy Regulatory Commission (FERC) issued a Notice of Proposed Rulemaking (NOPR) on standard market design (SMD) that is intended to remove the remaining impediments to competitive electricity markets. FERC expects to issue a final rule in the summer of 2003. The SMD NOPR addresses congestion management, long-term resource planning, day-ahead and spot market design, and market monitoring and mitigation. Those in favor of the SMD NOPR argue that it is necessary to eliminate discrimination in the transmission system and to create competitive markets. Opponents argue in part that the NOPR would usurp state authority by transferring aspects of transmission, resource planning, and retail rate design away from the states.

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## Federal Energy Regulatory Commission's Standard Market Design Activities

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### Summary

On July 31, 2002, the Federal Energy Regulatory Commission (FERC) issued a Notice of Proposed Rulemaking (NOPR) on standard market design (SMD) that is intended to remove the remaining impediments to competitive electricity markets. FERC expects to issue a final rule in the summer of 2003. The SMD NOPR addresses congestion management, long-term resource planning, day-ahead and spot market design, and market monitoring and mitigation. Those in favor of the SMD NOPR argue that it is necessary to eliminate discrimination in the transmission system and to create competitive markets. Opponents argue in part that the NOPR would usurp state authority by transferring aspects of transmission, resource planning, and retail rate design away from the states. This report will be updated as events warrant.

### Background

The electric utility industry has been in the process of transformation. During the past two decades, technology improvements, changes in the economics for generating electricity, and new federal laws and regulations have changed the nature of electric generation and created wholesale markets for electricity. As a result, competition is occurring on the wholesale level and more than half of the states are moving toward retail competition. Between 1989 and 2000, wholesale trade of power nearly tripled to represent 40% of the total electricity supply. Congress continues to face the issue of how much to intervene to ensure that functioning markets are operating throughout the United States.

As a result of a mandate in the Energy Policy Act of 1992 (EPACT),<sup>1</sup> the Federal Energy Regulatory Commission (FERC) issued Order 888 and its companion Order 889 in April 1996. These Orders required investor-owned utilities to open up their

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<sup>1</sup> P.L. 102-486.

transmission systems on a nondiscriminatory basis to any power supplier.<sup>2</sup> FERC recognized that Orders 888 and 889 did not completely eliminate unfair discriminatory business practices.

As a result, Order 2000 attempted to address remaining issues related to nondiscriminatory access to the wholesale transmission system.<sup>3</sup> The Order encourages transmission owners to join Regional Transmission Organizations (RTOs) that would maintain independent grid oversight and eliminate utilities' ability to exert control over transmission lines. FERC has approved three RTOS, the Midwest Independent System Operator (MISO), RTO West and PJM Interconnection, LLC. Several other RTOS have been conditionally approved by FERC.<sup>4</sup>

However, many have asserted that discrimination still exists in wholesale electric markets and that a wholesale electric market design is needed to provide a level playing field for all market participants. According to FERC, many recent cases demonstrate that discrimination still occurs in the wholesale electric markets: Transmission owners favor their own generation; inconsistent transmission rules exist that allow utilities to limit some transactions while lowering costs for others; different tariffs and rules between areas increase costs for interregional bulk power transfers; and vertically integrated utilities can interrupt their competitors' transmission transactions to address system reliability, while protecting their own affiliates' generation and transmission flows.<sup>5</sup>

## Notice of Proposed Rulemaking

On July 31, 2002, FERC issued a Notice of Proposed Rulemaking (NOPR) on standard market design (SMD) (Docket No. RM01-12-000).<sup>6</sup> FERC's stated goal of establishing SMD requirements in conjunction with a standardized transmission service is to create "seamless" wholesale power markets that allow sellers to transact easily across transmission grid boundaries. Currently, seams issues occur when there are different transmission rules and power market rules across a public utility or regional transmission organization boundary. Under the SMD, bilateral contracts would form the basis of the power market. These contracts would be supplemented with a spot market for energy and ancillary services. The proposed rulemaking would create a new tariff under which each transmission owner would be required to turn over operation of its transmission system to an unaffiliated independent transmission provider (ITP). The ITP, which could be an

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<sup>2</sup> Order 888 can be found at: [<http://www.ferc.gov/news/rules/pages/order888.htm>].  
Order 889 can be found at: [<http://www.ferc.gov/news/rules/pages/order889.htm>].

<sup>3</sup> Order 2000 can be found at: [<http://www.ferc.gov/news/rules/pages/RM99-2A.pdf>].

<sup>4</sup> A map of the RTO geographic boundaries as well as FERC RTO orders can be found at : [[http://ferc.gov/Electric/rto/post\\_rto.htm](http://ferc.gov/Electric/rto/post_rto.htm)].

<sup>5</sup> FERC *SMD 101 Document*, can be found at: [<http://ferc.gov/Electric/rto/Mrkt-Strct-comments/nopr/SMD101.pdf>].

<sup>6</sup> The SMD NOPR can be found at: [<http://www.ferc.gov/Electric/RTO/Mrkt-Strct-comments/nopr/Web-NOPR.pdf>].

RTO, would provide service to all customers and run energy markets. Under the NOPR, congestion would be managed with locational marginal pricing.<sup>7</sup>

The NOPR comment period originally was 75 days (November 15, 2002), but the comment period was extended to January 10, 2003, for the following issues: 1) market design for the Western Interconnection; 2) transmission planning and pricing, including participant funding; 3) Regional State Advisory Committees and state participation; 4) resource adequacy; and 5) Congestion Revenue Rights and transition issues. FERC expects to release a White Paper in April 2003 that outlines public input to the NOPR. The Final Rule is expected to be published in midsummer 2003.

Public Utility Commissioners from 19 states (Alabama, Arkansas, California, Colorado, Georgia, Idaho, Kentucky, Louisiana, Mississippi, New Mexico, New Hampshire, North Carolina, South Carolina, Oregon, South Carolina, South Dakota, Tennessee, Virginia and Washington) have voiced opposition to FERC's SMD proposal. Most of the Commissioners' concerns are on the grounds that FERC usurps state authority by transferring aspects of transmission, resource planning, and retail rate design away from the states.<sup>8</sup> Other critics have asserted that the NOPR does not take into account regional differences and sees the standard market design proposal as a "one-size-fits-all" approach. As a result, these critics predict that the SMD would lead to the export of cheap power to regions with higher electricity costs. FERC's assertion of jurisdiction over all transmission, including service to bundled retail customers, is based on the recent Supreme Court decision in *New York v. FERC*.<sup>9</sup>

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<sup>7</sup> Locational Marginal Pricing determines electricity prices at each location (node) along the transmission system based on bids of sellers and buyers at a particular time. Congestion prevents the cheapest power from being transmitted to all nodes along the grid. At points of congestion, prices will be higher. LMP manages congestion through economic dispatch: increasing energy generation behind a constraint (where power is flowing to) and decreasing generation in front of a constraint (where power is flowing from). Locational Marginal Pricing is currently used by PJM and the New York ISO.

<sup>8</sup> State Public Utility Commissioners and consumer advocates opposed to SMD have formed the Alliance of State Leaders Protecting Electricity Consumers. Their website can be found at: [<http://protectpowerconsumers.org/index.htm>].

<sup>9</sup> On October 3, 2001, the U.S. Supreme Court heard arguments in a case (*New York et al. v. Federal Energy Regulatory Commission*) that challenged FERC's authority under Order 888 to regulate transmission for retail sales if a utility unbundles transmission from other retail charges. In states that have opened their generation market to competition, unbundling occurs when customers are charged separately for generation, transmission, and distribution. Nine states, led by New York, filed suit, arguing that the Federal Power Act gives FERC jurisdiction over wholesale sales and interstate transmission and leaves all retail issues up to the state utility commissions. Enron argued that FERC clearly has jurisdiction over all transmission and FERC is obligated to prevent transmission owners from discriminating against those wishing to use the transmission lines. On March 4, 2002, the U.S. Supreme Court ruled in favor of FERC and held that FERC has jurisdiction over transmission including unbundled retail transactions. The ruling is available at: [<http://a257.g.akamaitech.net/7/257/2422/04mar20021030/www.supremecourtus.gov/opinion/s/01pdf/00-568.pdf>].

On August 15, 2002, state regulators from 22 states and the District of Columbia (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Montana, North Dakota, Ohio, Oklahoma, Texas, Wisconsin, Delaware, the District of Columbia, New Jersey, New York, Pennsylvania, West Virginia, Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island) released a statement that “voiced support for FERC’s ongoing effort to remedy undue discrimination in the use of the nation’s interstate high voltage transmission system in order to create a truly competitive bulk power market.” Supporters argue that the SMD would make it easier and cheaper to transfer electricity between regions, and prevent incumbent utilities from preventing access to transmission lines that they own. In general, the industry has been in favor of FERC’s SMD proposal, but some industry groups have voiced concerns about the implementation of SMD.

## Selected Issues

**Power Markets and Market Power Monitoring and Mitigation.**<sup>10</sup> FERC’s concept of a Standard Market Design relies on bilateral contracts between buyers and sellers to satisfy the bulk of electricity demand in a region. Under the NOPR, independent transmission providers would be required to operate day-ahead and real-time energy markets to handle generation imbalances and ancillary services.<sup>11</sup> The ITP would determine a single market-clearing price for energy, transmission service and ancillary services at each node for the next day, based on bids. Ancillary services would be bid on an hourly basis, while energy prices in the real-time market would be determined at each node for each 5-minute period.

Under the Federal Power Act, FERC is charged with establishing just and reasonable rates for electricity. Cost-of-service rate regulation has evolved to depend on market forces to set prices. In an efficient market with many buyers and sellers who cannot individually influence price, the value of additional supplies and conservation should be reflected in the price. However, FERC recognizes that the electricity market has not reached this stage. In the NOPR, FERC notes two significant structural flaws in the current electricity markets: the lack of price-responsive demand, and generation concentration in transmission-constrained load pockets. In the NOPR, FERC proposes to create a Market Monitoring Unit (MMU) that would implement measures to approximate an outcome that a competitive marketplace would produce. The MMU would report directly to FERC as well as to each governing board of the Independent Transmission Provider.

FERC proposes three mandatory components of market power mitigation as well as a voluntary fourth measure to assure that market power does not result in high prices. First, in areas where generators are concentrated and transmission constraints exist, the ITP will enter into a participating generator agreement. Under such an agreement, the generator would be required to provide all its available energy to the grid during specific

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<sup>10</sup> FERC defines market power as the ability to raise prices above the competitive level either through physical withholding or economic withholding.

<sup>11</sup> FERC proposes that Scheduling, System Control and Dispatch Services; Reactive Supply and Voltage Control; and Energy Imbalance must be obtained from the ITP. Other ancillary services that must be offered by the ITP include: Regulation and Frequency Response; Operating Reserves-Spinning; and Operating Reserves-Supplemental.

conditions identified in each agreement. In addition, each participating generator agreement would specify a bid cap for the energy or ancillary services provided under such conditions. Second, the spot market would be constrained by a safety-net bid cap of \$1,000 per megawatt hour. Third, the NOPR requires a resource adequacy requirement (see following section). Fourth, during times when market power may be exerted, the NOPR calls for a mechanism to determine whether high prices are the result of generators withholding power.

**Resource Adequacy.** While most of the NOPR deals with the transmission system, it also addresses the issue of a reliable supply of electricity. The NOPR addresses the concern that a combination of a spot market and a price cap will not provide enough incentives to invest in additional generating capacity. FERC proposes that resource adequacy be determined on a regional basis and a 12% minimum reserve margin be adopted.<sup>12</sup> Historically, reserve margins for large utilities have averaged 18-20% and utilities have determined their own reserve margin levels.<sup>13</sup> While a 12% reserve margin is considered by some to be too low to maintain a reliable electric system, the NOPR requires that the Regional State Advisory Committee determine the appropriate reserve margin for the region. FERC asserts that single-utility forecasting is inadequate and a more regional approach needs to be taken. Any entity that uses the transmission system would be required to satisfy a portion of the regional resources adequacy requirement by self-generation, local distributed generation, or firm bilateral contracts for power that are backed by specific generating units. FERC proposes to enforce the resource adequacy requirement with both penalties and load curtailment.

**Transmission Resource Planning.** In addition to generation resource planning taking place on a regional level, FERC proposes that transmission resource planning would be a regional process. Regional planning is necessary, FERC asserts, because certain issues such as loop flow cannot be addressed on the local level. Also, certain transmission expansion projects that are needed to maintain reliability may not be financially attractive to private investors.

The NOPR identifies three components of transmission planning. First, the Independent Transmission Providers would establish a mechanism for regional transmission planning that would include identifying all additional transmission needed for both reliability and economic needs. Second, the ITPs would be required to issue requests for proposals when a regional planning process identifies that additional resources are needed. Responses to a request for proposals could include expansion of the grid, addition of generation (including distributed generation), or the implementation of demand response. If the bidding process is not successful, the ITP could require transmission owners to expand or upgrade the transmission system. Although no formal studies have been completed, the Environmental Protection Agency (EPA), in its comments to FERC, expressed concern that the SMD's encouragement of demand

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<sup>12</sup> The generating resources expected to be available during a period, less the forecast peak load during that period, is the reserve. The reserve margin is defined as the ratio of the reserves to the forecast peak load during a period, expressed as a percentage.

<sup>13</sup> North American Electric Reliability Council. 2002 Summer Assessment: Reliability of the Bulk Electricity Supply in North America. May 2002. Available at: [ftp://www.nerc.com/pub/sys/all\_updl/docs/pubs/summer2002.pdf].

response technologies to deal with congestion could increase overall emissions by “providing economic incentives for operating high-emitting back-up diesel generators.”<sup>14</sup>

The third transmission planning component would require the ITP to determine if any proposed projects could be combined to lower costs. For projects that would serve an entire region, all ratepayers would pay for expansion of the transmission system.

Under the NOPR, FERC would allow participant funding of expansion projects if the ITP could determine and assign costs to those that benefit from a particular project. Those in favor of participant funding argue that it is necessary to prevent native load customers from paying for transmission upgrades needed to export power out of the region. Those opposed to participant funding argue that everyone benefits from transmission upgrades by decreasing congestion and that it is virtually impossible to assign costs associated with transmission upgrades.

**Congestion Management.** Congestion on the transmission system would be managed with a combination of Locational Marginal Pricing (see footnote 7) and Congestion Revenue Rights (CRRs).<sup>15</sup> Transmission system congestion prevents the cheapest power from reaching all locations on the grid where buyers want power delivered. LMP is a market-based method for congestion management and depends on the redispatch of energy to avoid constraints. The cost of redispatch is the basis for the congestion charges under LMP. LMP’s effectiveness depends on complex software to manage the markets.

CRRs is a system of financial rights to use the transmission system that is expected to protect customers against congestion costs. The holder of CRRs would be able to receive congestion revenues in a day-ahead market. Any congestion costs that holder pays would be offset by its congestion revenue.<sup>16</sup> FERC also expects CRRs to provide incentives to regions to build necessary transmission capacity. Currently, utilities use a physical reservation system to gain access to the transmission network. During a four-year transition period, FERC proposes a flexible system either to allocate CRRs to customers with the existing contracts or to auction such rights. At the end of the four-year period, all Independent Transmission Providers would be required to auction their CRRs.

RTO West has expressed concern that the transition period may not be long enough for certain regions and that the conversion to CRRs should be voluntary.<sup>17</sup> On the other hand, groups such as the Electric Power Supply Association (EPSA) and the Industrial Energy Consumer Group argued at FERC’s December 3, 2002, Technical Conference that auctions are critical to establishing a forward market to hedge against volatility.

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<sup>14</sup> Comments of the U.S. Environmental Protection Agency to FERC Docket No. RM 01-12, FERC Accession Number 20021115-0345, November 15, 2002.

<sup>15</sup> Congestion Revenue Rights were formerly known as Financial Transmission Rights (FTRs).

<sup>16</sup> If the holder of CRRs does not schedule transmission service, it would still receive the congestion revenues.

<sup>17</sup> Comments of Rich Bayless, Director of Interconnected Systems, PacifiCorp (RTO West) at FERC Technical Conference on SMD, December 3, 2002. Transcript is available at: [<http://ferc.gov/Electric/RTO/Mrkt-Strct-comments/NOPR/transcript-12-03-02.pdf>].