

# Independent Reports Show Competitive Markets Delivering for Consumers and Leading the Way for Renewables and Demand Response

*“These three reports show that, while improvements can always be made, ISOs and RTOs are effective in setting accurate incentives and will continue to play a key role in encouraging investment in renewables and demand response. EPSA welcomes these reports as further evidence that these markets are good for consumers and the environment. These reports should serve as a shift away from the debate of whether or not competition provides benefits – it clearly does – to ensuring that the necessary infrastructure is developed in these established markets and elsewhere.”*

**John E. Shelk, President and CEO, EPSA**

## RELIABLE SUPPLY, LOWER PRICES AND NEW INVESTMENT

- “Over the past decade, ISOs and RTOs have established highly competitive wholesale electricity markets, developed effective regional planning processes to ensure a reliable bulk power grid and have improved operating efficiencies – all in a cost-effective manner.” (*Progress of Organized Wholesale Electricity Markets in North America: A Summary of 2006 Market Data from 10 ISOs and RTOs*, ISO/RTO Council, October 16, 2007, p. 1)
- “A review of the 2006 data from these ISOs and RTOs shows that organized wholesale electricity markets in North America are maturing and delivering substantial benefits:
  - Demand is growing, but wholesale electricity prices are falling.
  - Markets and additional transmission infrastructure encouraged by ISO and RTO-led regional planning are stimulating investment in generation, encouraging use of demand resources, and reducing congestion costs.
  - The bulk of power systems in organized market regions are operating reliably.” (p. 1)
- “A number of factors affect the supply and demand for electricity and its wholesale cost. These factors include weather, the economy, the cost of fuel used to produce electricity, transmission constraints, consumer response to retail rates, and participation in demand-response programs. A number of these factors, especially lower fuel prices, have driven down wholesale prices in most organized wholesale electricity markets.” In 2006, prices fell in all U.S. organized markets:

REGION	2005	2006	PERCENT CHANGE
ERCOT	\$77.22	\$55.23	- 28.5%
ISO-NE	\$79.96	\$62.74	- 21.5%
NYISO	\$88.81	\$71.32	- 19.7%
CAISO	\$57.83	\$47.55	- 17.8%
PJM	\$63.46	\$53.35	- 15.9%
MISO	\$34.91	\$29.98	- 14.1%

- “[The] competitive process [in organized markets] has motivated improvements in generation operating efficiencies and investment in new, more-efficient generation facilities – this means that more demand is served by lower-cost, more fuel-efficient generators. In addition, infrastructure improvements in the ISO and RTO region... have improved access to additional, lower-cost resources.” (p. 4)
- “The ISOs and RTOs conduct extensive system planning and interconnection studies to assess reliability and market efficiency needs, as well as to accommodate new transmission, generation, and demand resources.... These planning

processes are open and inclusive and include participation by state government officials, market participants, and other interest entities.” (p. 5)

- **PJM:** \$7 billion of new transmission investment has been authorized since 2000.
- **MISO:** The Midwest Transmission Expansion Planning Process has brought online \$1 billion of new transmission and \$2.1 billion of new investment has been committed.
- **ISO-NE:** Between 2002 and 2006 \$833 million of new transmission projects were placed in service, with an additional \$336 million coming on-line this year. The ISO’s 10-year plan is tracking the development of \$4.4 billion worth of projects.
- **CAISO:** From 1998 through 2006 \$8.2 billion was invested in over 400 transmission projects, enabling the interconnection of 16,000 megawatts of new capacity.
- **ERCOT:** \$3.5 billion has been invested since 1999 to build, rebuild or re-conductor over 5,200 circuit miles of transmission.

➤ “Price and market transparency, new market incentives, and the transmission infrastructure improvements achieved through regional system planning have facilitated significant new investments in the organized wholesale electricity markets.” (p. 6)

REGION	2006 INSTALLED GENERATION	NEW GENERATION 2001-2006	% OF 2006 GEN. FROM NEW SOURCES
ISO-NE	30,825	10,554	34.2%
CAISO	54,500	15,986	29.3%
ERCOT	80,141	21,883	27.3%
SPP	45,950	10,883	23.7%
MISO	137,016	25,114	18.3%
PJM	162,143	19,465	12.0%
NYISO	40,536	4,754	11.7%

- “One of the most important responsibilities of ISOs and RTOs as control area operators is to maintain secure bulk power system operations in real time. In the face of extended heat waves in 2006, every ISO and RTO met its peak load without incident by scheduling and coordinating the available supply- and demand-side resources and having day-ahead and real-time prices provide the incentives to these resources to deliver in the times and places needed.” (p. 8)
- “The continuing decline of “Transmission Load Relief” incidents within PJM and other markets further demonstrates these reliability improvements. As PJM uses locational marginal prices to guide generators’ operational decisions, it finds fewer incidents of overloaded transmission lines and can more frequently use economic redispatch to cure potential overloads.” (pp. 8-9)
- “The markets run by ISOs and RTOs provide the best avenue for meeting rising demand and environmental objectives in a timely, cost-effective way. By harnessing the energy and innovation inherent in market forces, ISO and RTO markets can induce the investment needed to meet growing demand at efficient prices.” (p. 9)

## ORGANIZED MARKETS ARE AT THE FOREFRONT OF DEMAND RESPONSE

- “The success of ISOs and RTOs in encouraging and supporting demand response is demonstrated by the 23,129 MW of demand-response resources either directly enrolled in ISO and RTO product markets or enrolled in utility programs that operate within the ISO and RTO markets. This is about 4.5% of the summer-peak electricity demand of those markets.” (*Harnessing the Power of Demand: How ISOs and RTOs are Integrating Demand Response into Wholesale Electricity Markets*, ISO/RTO Council, October 16, 2007, pp. 6-7)
- ISOs and RTOs make up more than 89% of all demand-response resources in the U.S. MISO has the most with 8,645 MW, followed by PJM (3,759 MW), CAISO (2,249 MW), NYISO (2,019 MW), SPP (1,201 MW) and ISO-NE (1,028 MW). (p. 8)
- “ISOs and RTOs have been at the forefront in fostering demand response to improve the performance of both the wholesale markets they operate and the retail markets that rely critically on price transparency and resource coordination to

achieve optimal resource utilization.... The result of ISO and RTO demand-response initiatives is a more vibrant and flexible wholesale market and infrastructure that benefits all consumers and all sectors of the economy.” (p. 11)

- **CAISO:** Thanks to demand response, in July 2006 CAISO met the record-breaking demand of 50,270 MW with sufficient operating reserves. The 1,200 MW of demand resources used was only about half the total demand resources available that day. (p. 20)
- **ERCOT:** In December 2006 demand resources allowed ERCOT to recover almost instantaneously from a loss of nearly 1,300 MW of generation units. Within minutes the system returned to normal operating conditions. (p. 23)
- **ISO-NE:** The ISO’s Forward Capacity Market permits all demand resources to participate in the wholesale capacity market on a comparable basis with traditional generation resources. In ISO-NE’s first forward capacity auction, roughly 80% of the new demand-resource capacity was proposed by competitive, nonutility providers. (pp. 29-30)
- **MISO:** In February 2006, facing bitter winter temperatures, MISO was able to call up to 500 MW of demand resources to maintain grid reliability with another 500 MW in reserve. (pp. 32-3)
- **NYISO:** While setting all-time peak demand of 33,939 MW in August 2006, the NYISO was able to call in 1,000 MW of demand resources. Without demand response, NYISO would have been unable to supply 1,300 MW to ISO-NE on August 2<sup>nd</sup>. (pp. 37-8)
- **PJM:** PJM recently conducted a study on the power of demand response, finding that a modest 3 percent reduction in load during the highest-priced hours could add up to savings of almost \$300 million per year. (p. 41)

## RENEWABLES THRIVE IN ORGANIZED MARKETS

- “Renewable resources, including hydroelectric generation, currently supply about 9% of the electric energy provided by North America’s [ISOs] and [RTOs].... The markets supported by the ISOs and RTOs have proven to be fertile ground for the development of renewable resources.” (*Increasing Renewable Resources: How ISOs and RTOs Are Helping Meet This Public Policy Objective*, ISO/RTO Council, October 16, 2007, p. ES-1)
- “The success of markets in enabling renewable resources is evidenced by the fact that ISOs and RTOs host 79% of today’s installed wind generation, which is well above their 44% share of wind energy potential and 53% share of total North American electricity demand.” (p. ES-2)
- “Renewable generators account for 142,171 [MW] of the 326,459 MW of generation in the ISO and RTO interconnection queues. ...[W]ind generation is the largest proposed generation technology in the ISO and RTO queues, totaling 124,012 MW. This exceeds natural gas (89,579 MW), is more than double that of coal (55,667 MW), and is nearly four times that of nuclear (36,047 MW). Wind accounts for 87% of the renewable generation in the ISO and RTO queues.” (p. ES-2)
- “Four features of these wholesale electricity markets play an especially critical role in developing renewable resources.... These features are enhanced by the open governance process of ISOs and RTOs, which includes extensive stakeholder input in establishing market rules and can quickly respond to the needs of new technologies. (p. ES-2,3)
  - “First, large, organized markets in ISO and RTO regions are open to all those interested in investing and building new power plants.
  - Second, the price transparency of these markets lets developers know the value of their power, making investment decisions easier.
  - Third, the five- to fifteen-minute dispatch of these large markets and the large size of these markets reduce the cost of integrating wind into the power system by taking advantage of wind diversity and the ramping capability of conventional generators.
  - Fourth, coordination of regional transmission planning makes it possible to build the transmission needed to bring renewable energy to market.”
- “Of the 25 states and the District of Columbia with [Renewable Portfolio Standards], 17 are served at least partially by an ISO or RTO.... ISOs and RTOs play an important role in the implementation of Renewable Portfolio Standards. Most prominently, they help with tracking generation, RECS [Renewable Energy Credits], or both because ISOs and RTOs have the generation and load data necessary to measure [RPS] compliance.” (p. 8)