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**Statement of Professor Paul L. Joskow before the Committee  
on Governmental Affairs United States Senate**

**by  
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**STATEMENT OF PROFESSOR PAUL L. JOSKOW<sup>1</sup>**  
**BEFORE THE COMMITTEE ON GOVERNMENTAL AFFAIRS**  
**UNITED STATES SENATE**

**November 12, 2002**

Mr. Chairman and Members of the Committee:

Thank you for giving me the opportunity to appear here today to discuss issues associated with the restructuring of U.S. electricity industry and FERC's role in guiding the development of efficient competitive wholesale electricity markets. I last appeared before this Committee on June 13, 2001 as a participant in a hearing that focused on California's electricity crisis, FERC's responses to it, and more generally on the state of restructuring and competition in the electric power industry.<sup>2</sup> I thought that it would be most useful for me to update the comments and observations I made at that time in light of 18 months of additional experience.

A lot has happened in 18 short months. The extraordinarily high wholesale electricity market prices and power supply emergencies that plagued California and the rest of the West during the second half of 2000 and the first several months of 2001 subsided by the summer of 2001 and these extraordinary conditions have not reappeared since then. These changes in market performance followed several actions by federal and state officials that constrained wholesale prices, increased supplies of and reduced the

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<sup>1</sup> Elizabeth and James Killian Professor of Economics at the Massachusetts Institute of Technology (MIT) and Director of the MIT Center for Energy and Environmental Policy Research. The views expressed here are my own and do not necessarily reflect the views of MIT or any other organizations with which I am affiliated. A CV with my educational background, affiliations and a list of my publications can be obtained at <http://econ-www.mit.edu/faculty/pjoskow/index.htm>.

<sup>2</sup> Statement of Paul L. Joskow Before the Committee on Government Affairs of the United States Senate, June 13, 2001 available at <http://econ-www.mit.edu/faculty/pjoskow/files/JOSKOWSENATEFINAL.PDF>.

demand for electricity, along with favorable weather conditions and a significant softening in natural gas prices. However, the impacts of the crisis continue to be felt. Retail electricity prices have increased dramatically (on average) in California to cover the costs of power supplies purchased during the crisis, while its two major utilities have yet to regain investment grade credit ratings and one remains in bankruptcy. The future structure and performance of California's electricity industry remains uncertain.

In October 2001, Enron announced that it had to restate its earnings due to accounting irregularities and within a few short months it was bankrupt. Earnings restatements, additional accounting irregularities, sham round-trip energy transactions, abusive self-dealing arrangements and evidence of efforts to manipulate market prices during the California electricity crisis were subsequently revealed at Enron and other energy trading and merchant generating companies. The financial rating agencies downgraded the credit ratings of many energy firms to "junk" levels in response to new information about the quality of reported earnings, falling profits and profit forecasts, and a new understanding of the true risks associated with energy trading and investments in merchant generating capacity. The share prices for many energy trading and merchant generating companies tumbled and capital markets have largely closed to them. A growing number of companies have withdrawn from energy trading or scaled back their activities, wholesale market liquidity has declined and an enormous amount of new generating capacity that was under construction, development or planned to come on line over the next few years has been cancelled or indefinitely delayed. Investment in transmission infrastructure has continued to stagnate and congestion problems continue to grow.

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In response to these events, public and investor confidence in competitive electricity markets has been shaken, and several states that had planned to introduce restructuring, wholesale and retail competition initiatives have delayed or suspended these programs. Numerous investigations by federal and state agencies have been initiated, indictments and criminal convictions are growing.

The developments in electricity markets and regulation over the last 18 months have inevitably become intertwined with revelations of broader corporate accounting, financial reporting, and related abuses by several large companies, their senior executives, their auditors, and their bankers both within and outside the electricity and gas industries--- Enron, Worldcom, Tyco, etc. These revelations should remind us that certain types of regulatory rules and effective regulatory oversight, as well as clear and accurate disclosure of relevant accounting and financial information, are necessary for market economies to work effectively for consumers and investors. Clearly, the system of checks and balances that we have relied upon to police and mitigate such abuses failed to work effectively in these cases. However, it has been my experience that the vast majority of energy companies play by the rules, file accurate financial reports, have diligent internal and external auditors, have Boards that provide effective oversight, care about their customers and their communities, and run their businesses with high ethical standards. As we learn from recent experience, tighten regulatory rules and oversight, and seek to restore the confidence of the general public and investors it is important to keep this in mind.

What have we learned over the past 18 months about the initiatives to create competitive wholesale and retail electricity market in the United States? My list of important lessons learned is as follows:

- Creating well functioning competitive wholesale and retail electricity markets is a significant technical and institutional challenge. It is easy to do it badly! We still have much to learn about how to make these markets work well and we must expect that there will be a process of (hopefully) continuing improvement. Careful attention to the details of electricity market design, drawing on both U.S. and international experience, and active involvement by federal and state regulators in defining and implementing these details is very important.
- Electricity's unusual attributes also create unusual opportunities to exercise market power and to engage in behavior to raise market prices to supra-competitive levels either unilaterally or through tacit coordination.
- The creation of sound electricity market structures and good market rules can reduce firms' incentives and ability to exercise market power, withhold output, violate market rules, and drive up market prices. It is important that the restructuring process continue to create the necessary market structures and rules to support effective competition and reduce incentives to engage in behavior that harms consumers.
- A well designed market and associated market rules, however, is not enough to ensure that there will be no serious market abuses. An effective, credible and professional market monitoring system must be in place to measure and evaluate market performance, to identify actions necessary to improve market performance where it is poor, to enforce the market rules, and to punish those who violate them. These monitoring and enforcement systems should be insulated as much as is reasonably possible from interest group politics. More public transparency and more public disclosure of market and financial information are necessary in a competitive electricity industry than a regulated electricity industry, just the opposite of the trend that emerged during the recent past. The public, their elected representatives, and investors have lost confidence in the credibility of competitive electricity markets over the last 18 months. Unless the credibility of the markets and market participants is restored, and efforts made to disclose more information and analysis to the marketplace to facilitate the restoration of their credibility, it is unlikely that there will be support for extending electricity restructuring and competition initiatives to additional states.
- At the same time, it is important to guard against unnecessary and ineffective regulatory initiatives that undermine the behavior and performance of well

functioning competitive markets. Hard competition is to be encouraged while unfair competition, unreasonable levels of market power, and misleading or fraudulent presentations of financial and market information are mitigated by effective monitoring and appropriate sanctions. Finding the right balance continues to be an important challenge. I believe that the best approach is (a) to put good market designs and associated market rules in place at the outset, (b) to monitor and enforce compliance with these market rules, (c) to monitor and measure market performance on a continuing basis, (d) to identify sources of poor market performance where it has been found, and (e) to implement mitigation measures in response to poor market performance. Going forward, I would like to see more emphasis on ongoing measurement of market performance and responding quickly to serious performance failures before they do serious damage and less emphasis on micromanagement of individual firm behavior and delayed ex post investigations of behavior after it has run its course and harmed consumers.

- Much more attention needs to be paid to the development of an active demand side in wholesale and retail electricity markets that enables and encourages consumers who can respond to short term swings in market prices to do so. In most markets for goods and services consumers can and do protect themselves from unreasonable prices by buying less. While demand response opportunities for electricity may be less than for many other products, there is some underlying demand elasticity, and allowing it to be revealed in wholesale markets will help to improve market performance.
- The retail competition programs in those states that have adopted them are not working well for residential and small commercial customers. The deficiencies in retail competition programs will have adverse effects on the performance of wholesale markets as well. States need to bite the bullet on retail competition for residential and small commercial customers. They should either do what is necessary to make retail competition work well or abandon the effort and turn to a wholesale competition model in which distribution companies take on the obligation to serve smaller customers with appropriate compensation and incentive regulatory mechanisms in place. A retail procurement/competition framework that is characterized by both short-term contracts and little spot demand response will enhance market power problems and may undermine timely and efficient investment.
- Electricity policy needs to pay more attention to longer-term investment issues. About 100,000 Mw of new generating capacity has been completed in the U.S. in the last two and one-half years, most of it merchant generating capacity. This represents the primary success of the wholesale electric competition initiative to date. Indeed, many regions now find themselves with excess generating capacity and consumers are benefiting from lower wholesale prices that accompany it. However, a large quantity of generating capacity under construction and development has been cancelled or indefinitely delayed in the last 18 months.

The pipeline of generating capacity under construction will soon be empty and it will take years to refill it once projects begin to be planned and built once again. Many of the cancellations and deferrals reflect a natural and healthy response to changing supply and demand conditions. But some of them also reflect the turmoil in the merchant generating sector and uncertainties about future federal and state policies regarding market structure, market rules, market monitoring and mitigation, supply obligations and compensation rules. We must anticipate that significant additional investment in merchant generating capacity will not take place until credit is restored to the sector (on both the supply and purchasing sides), until uncertainties about market structure and market rules are resolved, and until a sound stable framework for encouraging investment is established. This framework must recognize that future investments in generating capacity will involve higher financing costs and more risk management requirements than was the case during the most recent building boom.

- More broadly, we must adopt policies to support the future evolution to an industry structure where merchant generators make most of their money by building and operating power plants cheaply and reliably and selling most of their output under longer term contracts to financial intermediaries and load serving entities. We want to design the markets so that firms earn profits by being the least cost suppliers, rather than by being good at engaging in behavior to increase price spikes in the spot market.
- Well functioning competitive power markets require a more robust transmission systems than we had under with vertically integrated regulated monopolies. Yet transmission investment continues to stagnate as congestion problems increase. In some parts of the country, reliability problems are growing, not because there is inadequate generating capacity in the region, but because there is inadequate transmission capacity to deliver it where it is needed. More transmission congestion increases local market power problems which in turn triggers the need for more regulatory interventions which may simultaneously undermine investment incentives. If we are not successful in adopting policies that stimulate more investment in transmission capacity to support competitive electricity markets we will face very serious electricity reliability and local market power problems in many parts of the U.S. within a few years.
- The absence of a coherent national policy governing electricity sector restructuring, wholesale and retail competition, and effective market monitoring and enforcement, supported by compatible federal legislation, is a serious impediment to achieving good performance for the sector. Wholesale electricity markets naturally span large regions of the country that encompass many states. Decisions made in one state affect electricity prices, supplies, and reliability in other states in the region. The conflicts between policies and perspectives about the costs and benefits of electricity sector restructuring and competition among the states substantially increases the difficulties FERC faces in enforcing its responsibilities under the Federal Power Act. The lack of clear national policy

mandates no doubt reflects the lack of consensus about the merits of industry restructuring and competition and how best to get from here to there. However, at the very least, FERC and the states must have a constructive cooperative working relationship that reflects a common set of performance goals. Moreover, at least in the Northeast, there is a broad commitment to wholesale and retail competition and a reasonable amount of agreement about how to move forward with it. It is important that controversies elsewhere in the country not slow down the efforts by the states, market participants, and ISOs in the Northeast to continue to make constructive reforms.

Let me now turn to a brief assessment of how FERC has responded to the lessons learned over the last 18 months. In my June 13, 2001 testimony I was critical of FERC's responses to the California electricity crisis:

"It should not have taken FERC so long to evaluate the performance of California's markets when they exploded during summer 2000..."

"I was especially disappointed by FERC's response to abundant evidence that market power problems were exacerbating an already bad situation caused by rising natural gas prices, reduced imports of power, higher demand and rising prices for NOx emissions permits."

"There is a very basic problem here. FERC does not appear to have a clear definition of market power, has not identified the empirical indicia it will use to measure the presence and extent of market power, does not routinely collect or analyze the data necessary to draw conclusions about market power, has not defined how much market power is too much market power to satisfy its obligations to ensure that wholesale electricity prices are just and reasonable, and it does not appear to have a well developed set of mitigation measures that it can choose from if it indeed finds that there is a significant market power problem. This is not a prescription for success in the identification of and effective response to serious market power problems."

"By delaying its analysis of the problem, by failing to specify a clear definition of market power, by failing to specify or apply clear numerical criteria for evaluating market performance generally, and by ignoring constructive comprehensive proposals for mitigation, FERC did not in my opinion properly fulfill its responsibilities to respond to the California's market meltdown adequately or in a timely fashion."<sup>3</sup>

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<sup>3</sup> I also indicated that "It is not my intention to place all of the blame on FERC for prolonging or exacerbating the crisis. There is plenty of blame to go around and policy makers have spent too much time looking for parties to blame and too little time fixing the problems. The CPUC's slow reaction to the problems, its failure to increase retail prices, the ensuing utility credit problems, and the legitimate reluctance of suppliers to supply without some assurance of getting paid certainly worsened the underlying

“If FERC is successfully to perform on its obligations it will have to change as well. FERC needs to become an agency with the human resources, organizational structure, administrative procedures and leadership that allows it to play an active constructive role in guiding resolution of wholesale market design issues, to be actively involved in ongoing monitoring of market performance, to develop and effectively apply objective market performance indicia, and to act quickly and cooperatively with the relevant state agencies, Independent System Operators, Regional Transmission Organizations, and market participants to fix serious market performance problems quickly once they have been diagnosed. FERC must also play a more active role in creating new organizational structures and regulatory institutions to govern the nation’s currently balkanized transmission system.”

I believe that FERC has made a lot of progress in the last 18 months under Chairman Patrick Wood’s leadership and has responded positively to the criticisms that I made in mid-2001. While I do not necessarily agree with everything FERC has done or proposes to do, I am generally pleased with the tone that has now been set at the top, the institutions that have been created to monitor electricity and gas markets, and with the electricity market reform initiatives that have been undertaken. The Chairman and the other FERC Commissioners have repeatedly made it clear to market participants that they are committed to creating well functioning competitive wholesale markets and that they will not tolerate efforts to manipulate market prices, violate market rules, engage in fraud, and other market abuses. The FERC Commissioners now appear to recognize that market power, price manipulation and fraud are real potential problems in electricity and gas markets, that serious market aberrations require serious investigation, that if a careful and professional investigation results in evidence of abuse, penalties will be assessed where appropriate, and that FERC must play a central role in responsibly monitoring

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wholesale market problems. The failure of FERC and the CPUC to find a way to work together constructively to find practical solutions in the early Fall of 2000 made the crisis much worse than necessary.”

markets and responding quickly to serious problems in order to restore credibility to wholesale electricity markets and to improve their performance.

In April, 2002 FERC created a new Office of Market Oversight and Investigations. The new Office is to “ ... help the Commission improve its understanding of energy market operations and ensure vigilant and fair oversight of those areas under Commission jurisdiction. The Office of Market Oversight and Investigations will oversee and assess the operations of the nation's gas, oil pipeline, and electricity markets. Its functions will include understanding energy markets and risk management, measuring market performance, investigating compliance violations, and analyzing market data. The office will be made up of a multi-disciplinary team of economists, engineers, attorneys, auditors, data management specialists, financial analysts, regulatory policy analysts, energy analysts, and support staff.”<sup>4</sup>

I have been arguing for some time that there was the need for an office of this type to be created within FERC. I am very pleased that an office with a professional staff dedicated to measuring market performance, market monitoring and investigation has now been created. There is still much work to be done in defining how market performance will be measured, what criteria will be used for monitoring market behavior, and what mitigation measures will be proposed and how they will be received by the Commission. However, the Office seems to be off to a good start, is reaching out to others with experience with these issues for suggestions for how it can best do its work,<sup>5</sup>

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<sup>4</sup> <http://www.ferc.fed.us/about/offices/offices/omoi/omoi.htm>

<sup>5</sup> I participated in the Technical Conference on market monitoring issues held by FERC Staff on October 2, 2002. <http://www.ferc.fed.us/Electric/RTO/Mrkt-Strct-comments/nopr/RM01-12omoi-09-20-02.pdf>. The Staff received a range of views regarding methods and metrics for measuring market structure, performance and participant behavior.

and improving coordination with market monitoring units in the three ISOs in the Northeast and the California ISO.

The Commission has also launched a number of investigations growing out of the California electricity crisis. In February, 2002 FERC initiated an investigation of gas and electricity markets in the West prior to and during the explosion in electricity and natural gas prices that accompanied the California electricity crisis, largely stimulated by revelations about Enron's behavior.<sup>6</sup> The investigation has been broad, aggressive and has sought help by outside experts to assist with it.<sup>7</sup> It is being coordinated with other agencies, including the Department of Justice, the SEC and the CFTC. An interim Staff report was issued in August 2002 which found evidence of violations by Enron and possibly other market participants of the letter or the spirit of market rules, resulting in higher electricity prices, along with actions aimed at inflating prices and trading volumes for natural gas and electricity reported to and by trade publications.<sup>8</sup> (The efforts to inflate prices reported to trade publications would only have made sense if this behavior in turn led to higher actual prices in spot or forward markets, though the FERC Staff has made no finding yet on these effects.) Indeed, perhaps for the first time, the Staff concluded that certain behavior represented the exercise of market power and not just the result of flawed or inconsistent market rules.<sup>9</sup> A number of other investigations and litigated cases are ongoing, including the California refund cases, the El Paso Pipeline

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<sup>6</sup> <http://www.ferc.fed.us/electric/bulkpower/pa02-2/02-13-02.pdf> .

<sup>7</sup> <http://www.ferc.fed.us/electric/bulkpower/pa02-2/pa02-2.htm> .

<sup>8</sup> <http://www.ferc.fed.us/electric/bulkpower/pa02-2/Initial-Report-PA02-2-000.pdf> .

<sup>9</sup> Staff Report, ibid. at page 94; "This behavior (raising prices and the last minute where buyers are unable or incapable of saying no) was not legitimate arbitrage, but was an exercise of market power."

investigation,<sup>10</sup> abusive self-dealing transactions between Enron's regulated and unregulated affiliates.

Ultimately, FERC's effectiveness and credibility as both a market facilitator and a complementary market monitor will depend on its ability to establish rules that increase market and regulatory transparency, to complete ongoing investigations in a way that demonstrates that it will carefully, completely and professionally evaluate the evidence, assess penalties if serious abuses are found, exonerate market participants under investigation if they are not, and complete the investigations as quickly as is reasonably possible.

In Order No. 2001 (April, 2002), FERC established rules that require detailed reporting on transactions within the electric energy and natural gas markets. These new rules should increase market transparency and facilitate more effective monitoring of these markets by FERC and the public.

Finally, on July 31, 2002, FERC issued its Notice of Proposed Rulemaking on Standard Market Design and Structure (SMD).<sup>11</sup> This is a sweeping rulemaking that attempts to deal with many of the problems with wholesale markets that have been identified, including effects to respond to many of the "lessons learned" discussed earlier in my testimony. I recognize that many of the proposals in the SMD are controversial. And while I agree with many of them, I also believe that there are several aspects of the SMD NOPR that need significant improvement and revision. Nevertheless, this is a

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<sup>10</sup> <http://www.ferc.fed.us/electric/bulkpower/RP00-241-006-09-23-02.pdf> .

<sup>11</sup> [http://www.ferc.fed.us/Electric/RTO/Mrkt-Strct-comments/discussion\\_paper.htm](http://www.ferc.fed.us/Electric/RTO/Mrkt-Strct-comments/discussion_paper.htm) .

serious, even courageous effort by FERC to facilitate wholesale market competition and improve market performance. Market monitoring and mitigation proposals are fully integrated into the SMD and the potential for exercising market power and the need to mitigate it has influenced important aspects of the proposals.

FERC has wisely extended the time period for filing comments on the SMD NOPR and has initiated various outreach efforts to better explain certain aspects of the SMD proposals and to receive advice from interested parties about problems with the SMD and potential improvements to its proposals.<sup>12</sup> Because there are wide variations among states and regions in how deeply they have embraced FERC's vision of wholesale and retail electricity competition, and how far they have moved down the restructuring path, it is likely that the SMD's basic principles for wholesale market structure will have to be adapted to better match these regional differences. The alternative appears to be political gridlock and substantial delays. As I have already noted, it would be unfortunate, for example, if the controversies over the SMD, slowed down reforms taking place in the Northeast where most of the states have embraced FERC's vision for wholesale and retail electricity competition and where the better features of the SMD are already being implemented.

Overall, I believe that FERC is doing a much better job today as both a market facilitator and a market monitor than it was doing at the height of the California electricity crisis. The Commission's efforts to facilitate fair competition in wholesale power markets, to improve market performance and to identify and mitigate market abuses deserve your support. One does not have to agree with all of FERC's decisions

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<sup>12</sup> [http://www.ferc.fed.us/Electric/RTO/Mrkt-Strct-comments/discussion\\_paper.htm](http://www.ferc.fed.us/Electric/RTO/Mrkt-Strct-comments/discussion_paper.htm). As of October 20, 2002.

and policy proposals to recognize that this is an agency whose leadership now recognizes that a credible market monitoring and enforcement program is an important part of its job and that it is necessary for facilitating the development of competitive electricity markets that work well. However, institutional cultures can take a long time to change, and only time will tell whether this view at the top has been fully institutionalized within the agency.

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