



January/February 2007

IN MY VIEW

Electrons Versus People

Which group is smarter?

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Deregulation and the concomitant restructuring of the electric power industry in the United States have resulted in a decline in the reliability of North American bulk power systems and constitute the ultimate root cause of the California meltdown, Enron's depredations, and the 14 August 2003 blackout. Specifically:

- Corporate culture in the electric power industry has shifted from coordination and cooperation to competition and confrontation.
- Industry expenditures for new facilities and manpower have been reduced.
- The qualifications of senior managers have shifted away from a working knowledge of the technical aspects of power systems, and toward marketing and legal issues.
- Institutional knowledge, including lessons learned from past blackouts, has been lost.
- The increased number of players and extensive new regulations have vastly increased the complexity of both decision making and day-to-day operations.
- North American Electric Reliability Council (NERC) has already watered down its reliability standards, and some wish to reduce them even further.

The U.S. and Canadian governments' interim blackout report recommended an independent investigation of the contribution of deregulation to what had happened. Two workshops were held in September 2005 to review the contribution of deregulation to the 13 August 2003 blackout and other reliability problems; a number of experts with differing backgrounds were invited to take part. The predominant view of those participating was that deregulation had contributed to the blackout and the decline in reliability. Some included a request for a far more detailed investigation. However, the final (June 2006, September 2006) U.S./Canadian reports on the blackout did not include this information, and a summary of these workshops has only recently been provided. Delays in holding the workshops, and the delay in publishing their conclusions, suggest that an attempt was made to conceal valuable information from the public. In any case, this information is not being considered in setting future government policy.

The word "deregulation" is a misnomer. Under its guise, the federal government has taken over effective control of the electric power industry. Never in history has the U.S. government so regulated power supply. Thousands of pages of new regulations have been promulgated by Federal Energy Regulatory Commission (FERC), and thousands of pages of rules and procedures have been imposed by NERC. NERC's Energy Regulatory Office (ERO) application alone runs to over 10,000 pages. It's not surprising that proponents nowadays rarely use the term "deregulation," preferring the seemingly more benign "restructuring" instead.

The core issue is an almost fundamentalist reliance on markets to solve even the most scientifically complex problems. As any scientist or engineer knows, when the laws of economics and the laws of physics collide, physics wins—always. Yet many policy makers continue to act as if some adjustment in market protocols is all that's required and steadfastly refuse to acknowledge the accumulating mass of evidence that "deregulation" itself—or at least the way it has been implemented in the United States—is itself the problem. Social scientists call this kind of denial "cognitive dissonance."

Some will point to the Energy Policy Act of 2005 as the solution to reliability problems. However, such officials are either misinformed or guilty of wishful thinking. The act ostensibly provides incentives for the construction of needed new bulk power transmission facilities. While its effectiveness in this area remains to be proven, the underlying fact is that new transmission lines will not by themselves improve reliability. They may increase transfer capabilities, and hence improve commercial use of the grid, but when operated at the calculated transfer limit, they will not improve the performance of the system when specified contingencies occur. Only more stringent standards and competent operation will do that. Reliability is a function of the standards used and the skills and tools available to system operators, not the amount of wire in the air. To enhance commercial use, build new lines; to improve reliability, use more stringent standards. To do both, do both!

Others will argue that the Energy Policy Act will improve reliability by making reliability standards mandatory. This makes good press, but let's look at the facts. Compliance with reliability criteria was not a problem in the prederegulation industry. All players understood that compliance was in their own and everyone's best interests. In any case, compliance with reliability standards was already mandatory in more than half of the North American power system—in Northeast Power Coordinating Council (NPCC,) the Mid-Atlantic Area Council (MAAC), Southeastern Electric Reliability Council (SERC), and substantial portions of Western Electricity Coordinating Council (WECC), at a minimum.

Since the underlying cause has not yet been addressed, the risk of massive blackouts, capacity shortages, market manipulation and other reliability disasters is considerably higher today than in the "old world order," despite the passage of the Energy Policy Act of 2005. Power system reliability will be even more at risk in the future. Reliability standards have already been reduced to accommodate greater use of the grid for commercial transactions. But some would like to further water down even the existing standards.

Perhaps the crisis can be best exemplified by comparing the aftermath of the 1965 Northeast and 1967 PJM blackouts with that of 2003. These prior blackouts triggered the regional reliability council movement; the development of regional reliability standards; the creation of interregional efforts like MEN, VEM, and VAST; an infusion of technical innovation, and the establishment of NERC. No one was required to sign nondisclosure agreements. Three years after the 2003 blackout, all we can see is increased regulation, massive new bureaucracies, and a new federal law. As Dr. Anjan Bose, former dean of engineering at Washington State University, pointed out upon receiving the prestigious IEEE Herman Halperin Award for Electric Transmission and Distribution, the 2003 blackout also accomplished "the transferal of the responsibility for the reliability of the grid from industry engineers to a commission of five government lawyers." Citing the advancement of power systems expertise in China and India, Dr. Bose also speculated that, "the next time a grand-standing politician in North America compares our grid to that of the Third World, he may actually mean it as a compliment."

An independent investigation is needed of all the issues raised by the blackout and other reliability problems to ascertain that all necessary remedial actions have been taken.