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Energy Bill: Who Will Keep the Lights On?

by Robert Michaels

Congress responded to the August 2003 northeastern electrical blackout by revising provisions of the comprehensive energy legislation with which it and the Administration had been grappling for two years. A portion of the bill focuses on improving electric power reliability and increasing competition. The comprehensive bill has been stalled in the Senate since December 2003; thus, there has been virtually no progress on reliability since the blackout. However, the energy bill provisions regarding siting authority for transmission lines, private nonutility investment in new lines, and repeal of the Public Utility Holding Company Act (PUHCA) hold some hope of improving reliability.

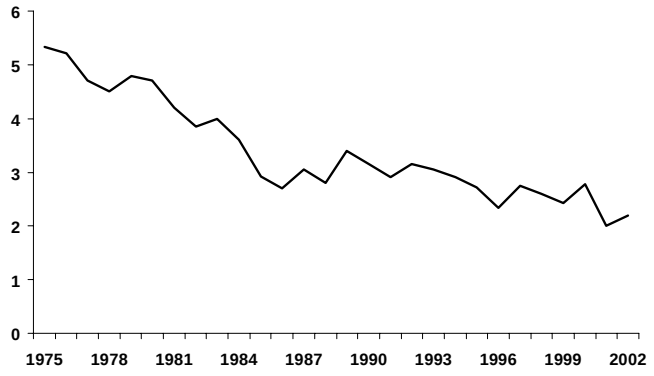
Reliability and Blackouts. The single most important cause of blackouts and power shortages (brownouts) is the increasing inadequacy of the nation's electric power transmission system. Electric power flows from region to region through three grids — the East, West and Texas systems. Although enough power is produced to meet the nation's needs, the grid does not have the capacity to carry all the power everywhere it is needed.

The U.S. peak electrical load — the demand for power — grew by 2.8 percent per year between 1979 and 1999; expansion of the grid, however, has fallen steadily behind:

- Transmission capacity growth fell from 3.1 percent per year over the 1979 to 1989 period to 0.7 percent per year between 1989 and 1999.
- Annual investment in transmission (in constant dollars) has steadily declined since 1975, and in 2000 was less than half as much as in 1980. [See the figure.]
- Due to growing demand and lack of expansion, capacity has fallen 25 percent relative to peak demand since 1982.

As a result, the interstate power grids are less reliable. During the peak months of July and August, the number of "Transmission Loading Relief" incidents requiring emergency operating procedures to ensure a continued steady flow of electricity rose from 14 in 1997 to 489 in 2003. They also rose rapidly — from 22 to 325 — during the January-February off-peak months. The mismatch between demand and transmission capacity contributed significantly to the 2003 blackout and the 2001 northern California blackout. In California, for example, power from the southwest could have moved through southern California, but the north-south ties could not accommodate the required amounts. Construction of new transmission capacity and routes is the key to preventing future power outages.

Annual Transmission Investment, 1975 to 2002
(Billions of 1999 Dollars)



Source: Eric Hirst, "Transmission Planning for a Restructuring Electric Industry," Edison Electric Institute, 2001, and later data from the Edison Electric Institute.

Time to Change Outdated Federal Laws. The remarkable resistance of the electric power industry to reform is built into the Federal Power Act (FPA) and PUHCA. Both were enacted in 1935, when most utilities were self-sufficient, highly localized producers that seldom traded power with other systems and offered customers no choices. The FPA left most aspects of transmission to state regulators, including the authority to determine where new transmission lines should be built. However, long-distance transmission and wide-area controls became prevalent in the 1970s, and today's utilities purchase more than one-third of their power from other systems or from the new industry of competitive independent generators. In a growing number of states, large consumers can bypass utilities to purchase electricity from competitive suppliers or produce their own power in small, fuel-efficient new plants.

Federal Role in Siting New Power Lines. The bill's key electricity provisions authorize the U.S. Department of Energy to designate "National Interest

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Economic Transmission Corridors" where capacity can be expanded for reasons other than reliability. For example, building new lines or strengthening existing ones might give a region access to cheaper power, or the new lines might reach a more diverse mix of generators, thus reducing a community's dependence on a single fuel source for electricity generation. If a state excessively delays a project, the Federal Energy Regulatory Commission (FERC) may intervene and invoke eminent domain — a power it already has with respect to gas pipelines. In this relatively rare case federal preemption seems warranted.

The eminent domain provisions would prohibit single states from vetoing projects that both improve reliability and increase competition in regional power markets. Power flows within states affect entire regions, but states often think only of the costs and benefits to public utilities and consumers within their state. For example, only part of the power traded between California and Washington State moves along the lines that directly link them. A substantial amount also flows southward through Idaho, Utah and the Southwest, sometimes congesting those lines and making it impossible for buyers and sellers there to access the regional market. If Utah builds new lines to relieve congestion, expansion will benefit the entire West, but other states will not necessarily pay for their share of the benefits. This is a classic free-rider problem. It pays those in one area to wait for other areas to build additional lines. More transmission capacity would give both buyers and sellers new competitive opportunities.

New construction may be resisted for environmental reasons, some legitimate and some questionable. It can also come from parties who oppose competition — for example, owners of high-cost generators, including transmission-owning utilities that wish to maintain captive markets.

The bill would also allow nonutilities — such as independent power producers or consumers — to construct their own lines to access larger markets. Utilities hostile to competition would no longer be the only parties able to expand transmission.

Limits of Reliability Standards and Fines to Reduce Outages. In response to the clamor after last year's blackout that Congress "do something," the energy bill would make reliability standards mandatory and enforce them by imposing fines on utilities. Currently, construction and operating standards are set by the North American Electric Reliability Council (NERC), formed after the 1965 northeastern blackout. NERC is dominated by utilities that occasionally violate its rules, forcing other systems to act to maintain reliable power flows — for example, by reducing power to their customers. The bill would allow federal regulators (FERC) to give NERC or some other standards-setting organization the power to fine those who violate its standards.

There is no evidence that imposing fines will improve reliability. Much will depend on the amounts of the fines and how well they are enforced. Utilities are large, capital intensive corporations and substantial fines may be necessary to affect management decisions. More importantly, it is questionable whether mandatory regulations will have enough flexibility to prevent shortages. Power system operators face numerous contingencies. Although responses to routine contingencies such as generator outages are automated, an operator faced with a novel problem must respond quickly with limited information. On some occasions, the best choice might well be a risky procedure that cuts the odds of a major blackout while increasing those of a minor one. Regulations must allow such tradeoffs.

Conclusion. The draft energy bill addresses important causes of the transmission standstill. Its backstop provisions will make it more difficult for environmental groups to delay projects through the courts. FERC can attack other problems by settling on efficient methods of transmission pricing, like off peak pricing discounts, and by deregulating pricing to allow transmission system owners to charge fees commensurate with the risks of competitive markets. The law's repeal of PUHCA will strip away layers of regulation that are irrelevant to today's industry. These energy bill provisions should be enacted.

During the 2003 blackout, former Energy Secretary Bill Richardson said that the United States has a "third world transmission system." While his description of the technology and the competence of the system's operators was unfair, it is true that changes are needed so that the U.S. electricity system can meet the challenges of continued economic growth. These include worthwhile initiatives on transmission and competition that the electricity provisions of the energy bill would help make possible.

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