

Blackout Means: Rebuild The Transmission Grid

by Marsha Freeman

The Great Blackout of 2003 has finally made many millions aware of what had been known by the electric utility industry, regulators, and other professionals for more than a decade: That underinvestment in the nation's transmission infrastructure, while stress on the system was rising, due to "electricity deregulation" policies, has dramatically increased the risk of catastrophic failures. Just as the California energy crisis three years ago was characterized as the result of a "perfect storm"—where deregulation on top of inadequate capacity, plus manipulation and stealing, led to blackouts and bankruptcy—the Great Blackout of 2003 was also the result of decades of failed "free-market" policies.

For nearly 20 years, the construction of new high-voltage electricity transmission wires has been sabotaged, along with the modernization of the interconnected grid with the most advanced technologies. The London *Financial Times* of Aug. 18 made an interesting comparison: Over the past year, that Great Britain and the United States each invested roughly \$800 million electricity transmission; but the American grid is 15 times larger than the British one.

David Cook, General Counsel for the North American Reliability Council (NERC), testifying before Congress in May 2001, remarked that "In North America ten years ago, we had a little less than 200,000 circuit-miles of high-voltage transmission lines. Right now, we have about 200,000 circuit-miles of those lines." In other words, zero progress. Short-distance wires have been added, to connect new power plants to the local grid, but no investment has been vectored toward expanding the capacity, or toward increasing the reliability or efficiency of the interconnected grid system as a whole.

Electricity is the life-blood of a modern economy. Transmission is the system of arteries delivering the power. It was only a matter of time before the clogged and damaged transmission arteries would give the patient a major heart attack.

While Congress and the White House are engaged in a competition to see who can convince the American people that they are doing the most to solve the problem, the prescriptions they are proposing—more deregulation—will kill the patient. It is only the "Super-TVA" massive public infrastructure policy of Lyndon LaRouche that will rebuild the electric power system.

When the System Worked

The electrical industry is divided into three necessary parts. First, a company generates electricity, in fossil fuel, hydroelectric, or nuclear power plants. Then, the power, in bulk amounts, is shipped to where the load is, a city or town, via high-voltage transmission lines. Finally, the high-voltage electricity is stepped down to low voltages through transformers at substations near where it is needed, and is distributed to individual homes and places of business.

Until the 1960s, it was rare for a utility to transport power any farther than from its generating plant to the nearby city or town. But during the 1960s, due to the increasing rate of growth of the economy—spurred by the Kennedy lunar landing effort, investment tax credits, and other dirigist economic measures—electricity consumption was growing at 7% per year—a ten-year doubling time. The transmission system grew rapidly through the 1980s to keep pace.

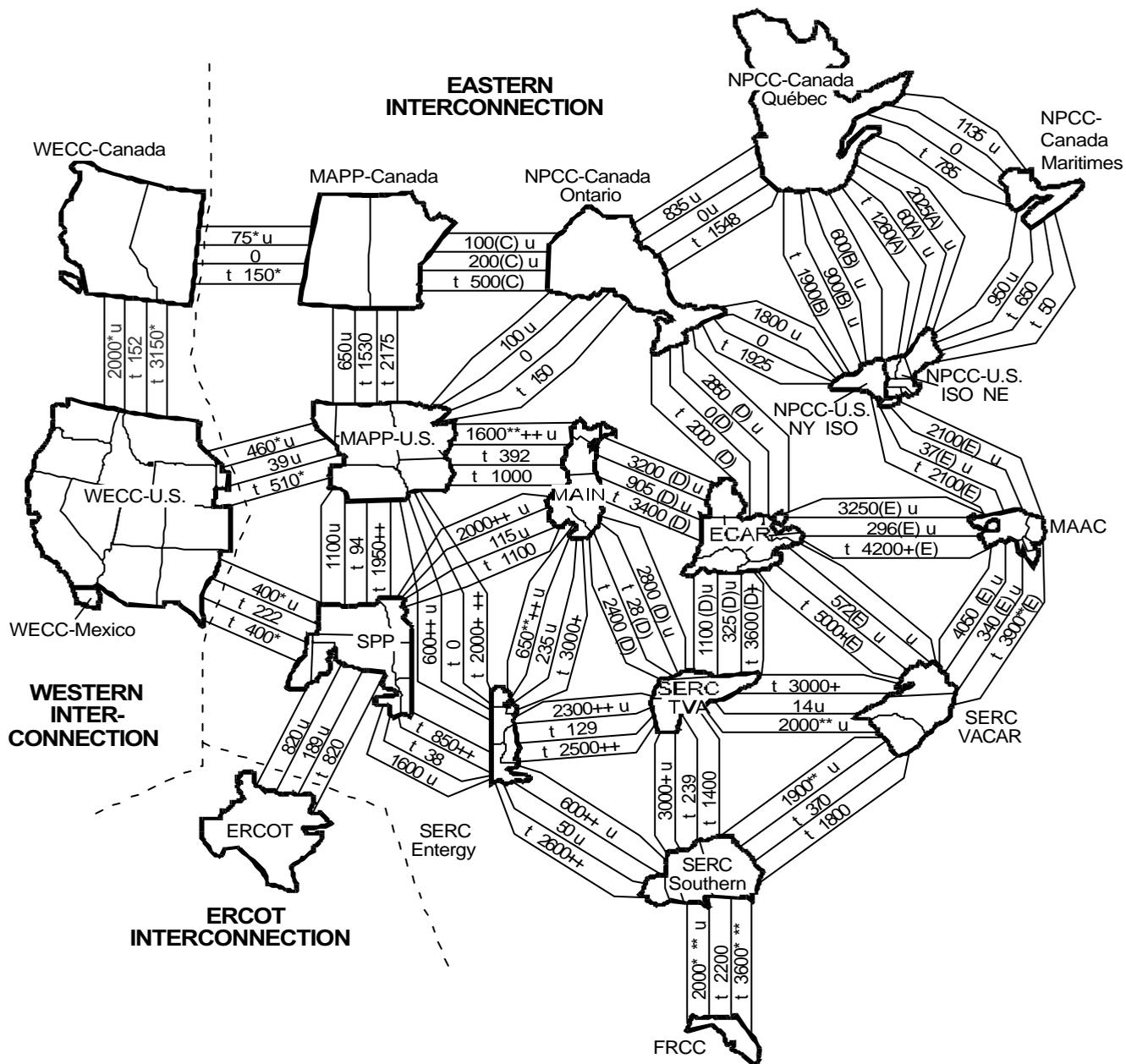
To accommodate this rapidly changing network, neighboring utility companies entered into arrangements, whereby they could buy power from each other when there was a shortage in one area, increasing the reliability of the entire system by preventing local outages, and also increasing operating efficiencies.

The overall management of the electric utility industry also saw changes in the 1960s, after 30 million people on the East Coast suffered a crippling blackout in 1965. In 1968, the industry—private and public—formed the National (now, North American) Electric Reliability Council. Its job, through ten regional reliability councils that span the United States, Canada, and northern Mexico, is to ensure reliability through the coordination of electricity producers, and to set "rules of the road" to keep the lights on. NERC collects and houses all of the data from the industry on their plans for adding capacity for generating and transmission, makes projections on decadal, as well as seasonal demand and capacity, and publishes annual reports which include the potential threats to reliable operation of the grid.

Electricity, unlike other commodities in the economy, can not be stored, but must be produced in real-time to meet demand. The transmission system must, at all times, carry just the amount of power for which there is a demand—no more and no less. In addition, from the standpoint of physics, electricity does not move in a straight path from where it is produced to where it is consumed. It flows over the path of least resistance. So the flow over every company's transmission line affects the flow over lines with which it is interconnected. Therefore, the careful and continuous monitoring of a regional grid is necessary, to either solve or isolate problems.

NERC developed the "rules of the road" for operations which all of its members adhered to. It was in their interest to preserve and enhance the integrity of the transmission grid, to the benefit of all—even if, at times, it was necessary for a member company to keep generation ready to use, or contrib-

FIGURE 1
Electricity Transfers Through the Transmission Grid



Source: "2003 Summer Assessment," North American Electric Reliability Council.

The nation's electricity transmission grid is organized into three regional Interconnections: the Eastern, from the Atlantic Ocean to the Rocky Mountains; the Western, west of the Rockies; and Texas. This intricate 200,000 miles of high-voltage lines operates under the coordination of the North American Electric Reliability Council.

ute other resources, at an additional cost. The private utilities functioned under a regulatory "compact," in which they were given exclusive rights to serve local customers, and were assured a set return on their investment. In return, they cooper-

ated with state regulatory agencies to build the generating and transmission capacity to meet demand.

But in the mid-1980s, transmission additions began to lag badly behind new generation. Environmentalists invented

scare stories that children near power lines were at a higher risk for cancer. The countercultural “not-in-my-backyard” mentality, where personal “feelings” replaced concern for the general welfare, stymied transmission projects. Some companies fought legal battles for 15 years to site new transmission lines, but most gave up. This increasingly untenable situation opened the door for all manner of snake oil salesman, like Enron and their ilk, to propose that the bottlenecks would be relieved if the “magic of the marketplace” were allowed to introduce “competition.”

How the System Was Wrecked

The first part of the electricity triad—generation, transmission, and distribution—that was targeted for deregulation, was transmission. The justification for Federal meddling in what was historically a state responsibility, was that all transmission is interstate, because even if the wires are within state boundaries, the electricity from the local generators is commingled with power carried on out-of-state transmission lines—due to the path-of-least-resistance principle—with which it is interconnected. This gave the Federal Energy Regulatory Commission (FERC) the authority to start tearing down state regulation of transmission.

Deregulation has destabilized the transmission system in four ways.

First, in the 1990s, FERC, often acting to carry out the foolhardy requirements legislated by the Congress, began the destruction of state regulation, by making it mandatory that utilities that built and own their transmission wires, open them for use by other producers, and that they can charge only the same price for the use of their wires as they charge their own customers. No longer could state planners and grid operators project what the demands on the transmission system would be—adding uncertainty to the delicate grid. No higher charges to out-of-state users of the grid were allowed, even though this put strain on the existing system.

Second, under deregulation, the grid has been turned into a superhighway of quick-buck energy trades and transactions. When Federal protections against monopolizing of power by large financial holding companies were waived by FERC, huge mega-corporations, such as Duke Power, Southern Company, Mirant, etc., were formed. As states deregulated and forced their local utilities to sell their generating capacity, these power pirates bought up generating capacity in states all around the country. The result became painfully clear in California, when people realized that most of the generating plants in the state were owned by out-of-state megalopolies, most based in Texas.

Owning generating plants from coast to coast, these unregulated companies were out to sell the cheapest power possible to any customers anywhere, which often meant shipping it hundreds or even thousands of miles, in a process called “wheeling.” These so-called “economy transfers” involve the transport of power between two utilities that are not contigu-

ous, with power flowing through the transmission wires of all of the utilities in between. Unlike the early days of transferring power, which allowed sharing to increase the reliability of the grid, these economy transfers have congested power lines, to the point that local utilities may not be able to deliver power in an emergency, because transmission wires are clogged to capacity thanks to the wheeling (and dealing).

NERC has been warning for years that the increase in these “economy transfers” was adding to the overload of the transmission system. In its Reliability Assessment for the Summer of 1998, for example, NERC’s staff wrote, “Throughout the regions, parallel path flows from increased electricity transfers are stressing the transmission systems. These flows are at magnitudes and in directions not anticipated at the time the systems were designed.”

Third, while these “economy transfers” have been clogging the lines, removing the margin of safety and flexibility in the system, deregulation has militated against new investments to expand and modernize the grid. When companies realized that they could make a financial killing by manipulating the deregulated California and other markets, that is where the “investment” money went. The price of electricity in the West finally settled at the Federal cap of \$100 per megawatt-hour (MWh), which was a very lucrative threefold increase from the pre-dereg price of \$30 MWh. Companies stampeded to build more power plants, to get in on the rip-off. Comparatively, private companies have invested nothing in transmission, because the rates that can be charged are still regulated by states, and no one can get rich quick on regulated rates.

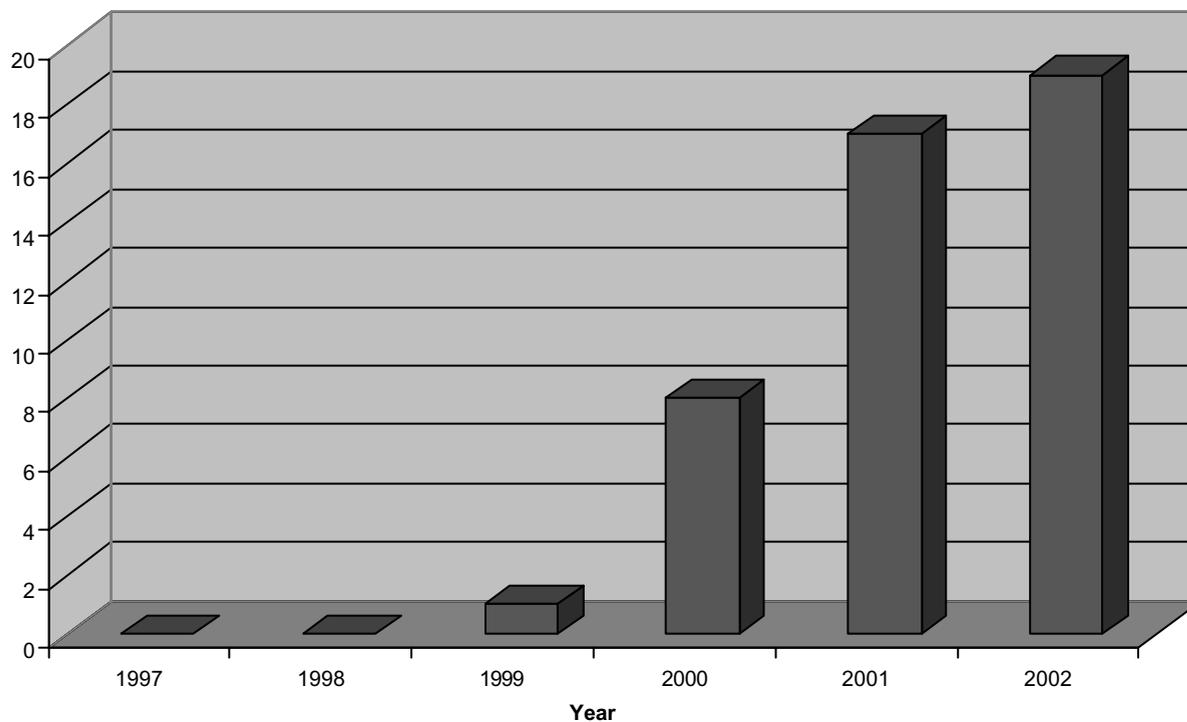
Fourth, with the stampede into building new power plants, companies are throwing up new capacity, but only building enough wires needed to connect them to the *local* distribution grid. This is like adding more and more on-ramps to a highway, to carry thousands of additional commuters from new suburbs to the cities, without ever widening the highway itself.

NERC projects that, over the next ten years, about 10,000 new circuit-miles of high-voltage lines (230 kilovolt and higher) are planned for construction throughout North America. This represents a mere 5% increase in total installed capacity over a decade; meanwhile, consumption, even in this depression-wracked economy, will continue to grow at a minimal 2% per year. NERC explains in its “Reliability Assessment 2002-2011” report that “most of these additions are intended to address local transmission concerns or to connect proposed new generators to the transmission grid, and will not have a significant impact on its capability to transfer electricity over long distances.”

So, now the nation faces a projected need of \$50-100 billion over the next decade to expand, upgrade, and modernize the high-voltage electricity transmission system. How are Congress and the White House proposing to deal with this national emergency?

FIGURE 2

'Transmission Overloading Relief' Measures Required



Source: "Reliability Assess 2002-2011," North American Electric Reliability Council.

The increase in deregulated "economy transfers" on the transmission grid, and the lack of investment in new capacity, has required that an increasing number of "transmission overloading relief" procedures be taken by system operators to avoid major outages. Such procedures were nil in 1997, rising to more than 20 in 2002.

Medicine To Kill the Patient

Soon after George W. Bush entered the White House, it was made public that Vice President and energy magnate Dick Cheney would head an executive task force to "solve" the energy crisis. Interviewed on "Fox News Sunday" on Jan. 28, 2001, Cheney was asked by interviewer Tony Snow what his solution would be in California. Cheney replied, "I'm a believer in markets, and I think the notion of deregulation is basically sound."

The next day, President Bush convened a meeting in the White House and established the Energy Policy Development Group chaired by Cheney, to come up with a short-term plan for the energy crisis, and produce a report recommending a national energy policy. Over the next two years, the "Cheney Group" held secret meetings with Enron and other "energy" executives, which would become the subject of a lawsuit. The *New York Times* reported on May 16, 2001, that on the day the National Energy Plan was released, questions were being

raised about the group's "mysterious ways," amid accusations that it had met in secret mainly with energy industry moguls who would benefit from its recommendations.

Cheney's energy plan centered on controversial proposals such as oil and gas drilling in the Alaska National Wildlife Reserve (ANWR) and offshore, which garnered most of the headlines. These have been vigorously opposed by many, including Democrats, environmentalists, and the President's brother, Gov. Jeb Bush of Florida. Few really thought the drilling was necessary, or that there would be an "oil crisis." Of course, few knew then we would be going to war with Iraq, and potentially with other oil-producing states.

The first Cheney Group proposal concerning electricity, contained in both the House and Senate energy bills that finally passed just this Spring, is to repeal the Public Utility Holding Company Act. FERC has already weakened the 1935 Act, by granting waivers of its anti-trust provisions, so new mega-corporations to control energy supplies could be cre-

ated. With repeal, all protections against financial manipulation, pyramiding, and speculation would be gone.

Second, Cheney proposes that to “increase reliability” of the transmission grid, FERC should take control from the existing state and regional regulatory bodies, and create one big nationally integrated transmission grid. The report describes the transmission system, not as the lifeline for delivering power, but as the “interstate highway for commerce in electricity”! The drafters of the policy were certainly aware of the need for investments in the transmission system, demonstrated by the California blackouts due to congestion on transmission Path 15. Within the FERC-controlled national grid, they proposed “incentives” for investments, which FERC can implement through “innovative transmission pricing proposals.” “The market” replaces government’s responsibility for investment.

Since 1999, FERC has proposed that the next phase of deregulation (actually, transfer from state oversight to Federal control) of the power grid is to get the utilities and statewide grid operators to form Regional Transmission Organizations (RTOs). The ostensible reason is to improve efficiency, by integrating the three regional transmission systems (see map), and introducing “competition” to lower prices. (Remember Enron’s promise that California’s deregulation would lower prices by 50%?)

RTOs would be responsible for operational control of this super-grid; would administer their own transmission tariffs, or charges for use; develop market mechanisms to manage congestion; etc. What gives teeth to this proposed structure is FERC’s so-called Standard Market Design (SMD). This would allow national transmission assets to be doled out by “competitive bidding.” So, if a local community does not bid high enough to use *its own transmission lines* during a period of congestion, it will not be able to bring power to its own local customers, while national power marketers use its lines to wheel electricity around the country.

The RTOs would run the market for electricity transmission, which would not only reflect the production and transmission cost, but the “cost of congestion” on the grid. Retail wheeling, from utilities to far-away customers, would be the mechanism to supposedly “lower prices.” It has been described by the Edison Electric Institute as “wheeling money.” This gameplan would raise electric rates in parts of the nation, such as the Northwest and Southeast, where rates are low; and, therefore, it is opposed by Congressional delegations from those regions—Democrat and Republican.

Instead of providing emergency large-scale funding to expand capacity, this set-up will, no doubt, spawn a derivatives market to take bets on when and where the grid would be congested. Enron had made an art out of manipulating the congested transmission grid in California: It faked electricity transaction sales that would have increased congestion if placed on the grid, thus allowing it to get paid by the Indepen-

dent System Operator to *withhold* the (imaginary) power, in order to avoid the congestion. The possibilities for looting are limitless.

The House and Senate have passed different versions of the energy bill. When Congress returns from its Summer recess, they will have to go to conference and produce a negotiated compromise. But Democrats are opposed to the ANWR proposal; Republicans are opposed to more conservation measures; and there is a bipartisan battle over RTOs and other measures. President Bush has said that he hopes to have a conference energy bill on his desk 20 days after Congress reconvenes.

It would be best if the entire energy bill be tossed in the trash, and LaRouche’s Super-TVA implemented, before the next blackout.

Ingersoll Bankruptcy

Are U.S. Machine Tools Becoming Extinct?

by Richard Freeman

With the decline of the U.S. machine-tool design sector, which is gathering force, the United States economy does not stand a chance of survival.

The truth of this was brought home by the April 22 bankruptcy filing by Ingersoll Milling Machine Co., of Rockford, Illinois, the machine-tool design company which has a highly developed capability possessed by only a few others in the world. The bankruptcy delivered a near crippling blow to the U.S. aerospace-defense industry. Ingersoll made a custom-made, technologically-advanced machine tool critical to the production of parts for the F-35 Joint Strike stealth fighter program, a multinational program in which the United States is the lead producer. Lockheed Martin Aerospace, one of the world’s largest aerospace-defense companies, had, in 2002, won the \$18.9 billion contract for the U.S. side of production of the F-35; it immediately contracted in the Summer of 2002, for Ingersoll to produce the custom-made machine tools needed to produce the parts for the F-35. The Ingersoll bankruptcy pulled the rug out from under Lockheed Martin Aerospace: Ingersoll is only one of two U.S. machine-tool design companies that can produce this custom-made machine tool, and by law, Lockheed Martin Aerospace must buy this machine tool from a domestic U.S. manufacturer.

But beyond the problem it has created for the defense