Northwest Power Crisis Deepens: Go Nuclear!

by Marsha Freeman

The electricity crisis that has gripped the state of California for the past eight months has now spread throughout the region, engulfing the Pacific Northwest states of Washington and Oregon. The Northwest, long the bastion of inexpensive electricity from Federal hydroelectric plants strung along the Columbia and Snake Rivers, is now experiencing the shutdown of its aluminum, paper, and other energy-intensive industries. Electricity shortages plus deregulation have led to explosive prices, making production uneconomical.

California customers of Pacific Gas and Electric and Southern California Edison will soon see their rates rise 9%, in an attempt to keep the utilities out of bankruptcy, and help them recoup some of the extra nearly $11 billion they have paid out to power suppliers. But residents of the state of Washington will see rate increases of up to *50%,* as the region struggles with shortages, and manipulated, speculative prices.

For the first time in a decade, the Pacific Northwest is suffering from low levels of precipitation. Experts estimate that the snowpack in the mountains, whose Spring melt supplies the water to power the dams, is only 75% of normal this year. This Winter, hydroelectric reservoirs should be refilling with water to run turbines next Summer, but water is being drained faster than it is flowing into the manmade lakes.

The West Coast has depended heavily upon the 11,000 MW of mainly hydroelectric power the Federal Bonneville Power Authority sells and distributes to public utilities and industries in the region. Through Bonneville's long-term contracts, prices have remained stable and some of the lowest in the nation. But the Bonneville dams no longer produce enough power for the region, and with the cold snap this Winter, communities have found themselves thrown onto the speculation-driven open market. The situation will only worsen over the next year, when long-term Bonneville contracts expire, and must be renegotiated. Beginning on Oct. 1, Bonneville itself will have to buy a quarter of its power from the open market.

But the crisis that is now hitting this region was not created by nature, but by the acts of men.

The shortage of generating capacity controlled by utilities in the state of California led the Federal government to intervene in an emergency situation, "to keep the lights on" across that state. Energy Secretary Bill Richardson invoked his authority under the Federal Power Act on Dec. 13 (which order has been extended to the present time), requiring energy suppliers in the region to sell California power at a reasonable cost. When cold spells hit the Northwest, local utilities saw their demand increase, but all excess power was being shipped south. Spot market prices zoomed to $3,200 per megawatt-hour for utilities that had been paying $30 the year before, leading to the double-digit rate increases now going into effect in Washington State.

The situation has become so critical, that Idaho Governor Dirk Kempthorne issued a directive on Dec. 22 to the Idaho Public Utilities Commission, to restrict utilities that are drawing down dam-generated reserves from selling electricity to California, directly defying Secretary Richardson's Federal order. Gov. Kempthorne reiterated his directive on Jan. 10.

Calculations at the end of December indicated that the Northwest will find itself about 4,000 MW, or 15%, short of the power the region will need through January. Emergency meetings have been held by the region's Emergency Response Team, and calls for conservation have been made by each state's governor.

The Northwest Almost Went Nuclear

It was recognized thirty years ago that electricity demand on the West Coast would exceed what could be provided by Federal dams. In the late 1960s, planners saw that with the 6-

7% per year ongoing demand growth, capacity to supplement the region's hydroelectric power would be needed by the 1970s. Nuclear power was the obvious answer, in the West and nationally.

To generate 1,000 MW of electricity in conventional steam turbine systems would require 11.9 million barrels of (mostly imported) oil, or 3.3 million tons of coal. Because the energy flux density in a nuclear fission reaction is orders of magnitude higher than that of burning fossil fuels (see **Table 1**), annual refueling was all a nuclear plant required for operation, rather than unit trains of coal or long-distance pipelines for oil.

In 1973 the Washington Public Power Supply System (WPPSS) secured a permit and began construction of WPPSS nuclear Unit 2, placed on land leased by the Federal government at the Hanford nuclear reservation. It was designed to produce 1,120 MW of power for the state. Two years later, the Unit 1 plant was under construction, as well. In neighboring Oregon, the Trojan nuclear plant had begun construction in 1971.

The 1973 Middle East war, and oil crisis of the following year, led to drastic cutbacks in energy use, as prices for petroleum quadrupled, and coal prices soared. Projections that future electricity growth would be cut to 1-2% under Jimmy Carter's "conservation" regime, led to the first round of nuclear power plant cancellations around the nation, which numbered 39 by 1979.

But in the Northwest, a drought suffered by the region in 1976-77 led to power shortages, and in 1978, construction began on additional WPPSS Units 3, 4, and 5. This boom in nuclear power plant construction, however, did not last long.

In 1979, the "accident" at the Three Mile Island nuclear plant in Pennsylvania provided the small but vocal anti-nuclear "environmentalist" movement, the hot news item which it needed to substitute public irrationality and fear for reasonable planning. Acceding to public pressure, the Federal Nuclear Regulatory Commission heaped piles of new "safety" regulations upon utilities with nuclear power plants, requiring them to spend billions of dollars to retrofit facilities. "Intervenors," that is, very well-funded modern-day Luddites, tied utilities up in court for years, stretching out construction times and doubling and quadrupling power plant costs. When Federal Reserve Chairman Paul Volcker raised interest rates over the Columbus Day weekend in 1979, and utilities faced double-digit costs for borrowing funds for construction, the death knell was sounded for nuclear power.

In Washington State, the WPPSS management estimated in 1981 that it would cost $23.8 billion to complete its five planned nuclear units, due to the inflation ravaging the capital markets, the NRC requirements, and sabotage by the environmentalists. Facing a financial market that required it to pay 15-16% interest rates, WPPSS found that in July 1981, it had saturated the bond market. The Carter Administration's "controlled disintegration" of the economy and collapse in growth made it appear that the planned nuclear plants would create a surplus of power.

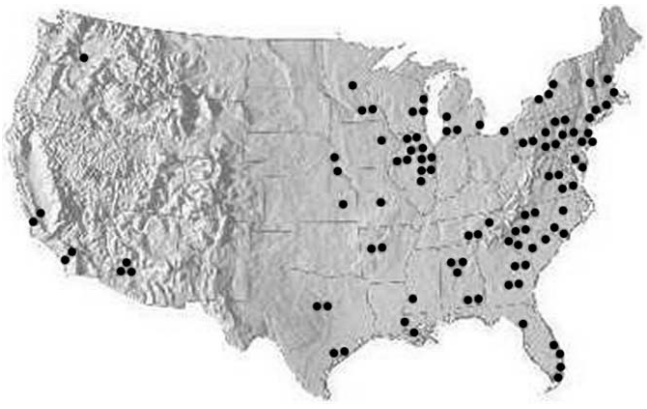
At the beginning of the following year, all construction was stopped on WPPSS Units 4 and 5, and they were cancelled. In April 1982, construction was halted on Unit 1, which was more than 60% complete at the time. In July 1983, the utility ran out of funds, and work on Unit 3, then 75%

TABLE 1
Energy Flux Density Comparisons

Solar—biomass	0.0000001
Solar—earth surface	0.0002
Solar—near-earth orbit	0.001
Solar—near-solar orbit	1.0
Fossil	10.0
Nuclear Fission	50.0 to 200.0

Energy flux density is measured by the amount of power, in megawatts, through the surface area of various energy systems. The higher the figure, the more efficient the system in creating heat to raise the temperature of water. Today's nuclear fission reactors are between 5 and 20 times more efficient than comparable fossil-fuel plants.

FIGURE 1
103 Operating Nuclear Plants Produce 20% of U.S. Power



Source: Nuclear Energy Institute.

- *The cheapest, most reliable and efficient 20% of the U.S. electrical power grid, is nuclear.*
- *Total U.S. capacity added only 11,000 megawatts power from* all *energy sources (1.5%) in past five years. No capacity was added in California in a decade.*
- *5,000 MWof nuclear power was abandoned under construction—up to 75% complete—in Washington State. The Northwest region is 4,000 MW short of capacity in January 2001.*
- *GE and other U.S. firms currently build 1,000 MW and larger nuclear units in Japan, Korea, Taiwan in 4-5 years to operation, in cooperation with those nations.*

complete, was halted.

The cancellation of the four nuclear plants left the Bonneville Power Authority, and the consortium of 88 public utilities that had financed them, billions of dollars in debt, and in court with lawsuits for years. But to put the widely publicized WPPSS "fiasco" in perspective: *Tri-City Herald* reporter Chris Mulick, writing on Dec. 31 of last year, remarked that the current combined debt of more than $10 billion accumulated by the two California utilities in only eight months on the deregulated free market, is already twice the size of the WPPSS default, in 1980s dollars.

Eventually, WPPSS Unit 2 went into operation, and is the only one of the five planned WPPSS nuclear plants to ever produce power. As unbelievable as it may sound in today's crisis situation, in 1998 there was talk of *shutting down* Unit 2, because Bonneville Power was trying to get its wholesale rates down to 2 cents per kilowatt-hour so it could "compete" under deregulation. The cost of power from the nuclear unit was 2.8 cents. Now, the power from Unit 2 is one of the cheapest sources in the region, and is less than one-tenth what the utilities are being forced to pay for power on the "open market."

The insane flight forward in half the nation's states toward deregulation, has actually led to the closure of operating plants in the past seven years, simply because they needed upgrades, maintenance, or refurbishment, and it was feared that such investments would make the plants "non-competitive." These included the Trojan plant in Oregon, and the San Onofre plant in California.

In total, between 1974 and 1987, fully 104 of the 227 nuclear power plants that had been ordered during those years were cancelled (see **Table 2**). About a dozen were already more than half complete. A look at the map of nuclear power plants in operation around the United States today provides a quick glimpse as to why California and the Pacific Northwest have run short of capacity. If just the other four WPPSS units had been built, the Northwest would have a shade under 5,000 MW of power it does not have today.

TABLE 2
Orders and Cancellations of Nuclear Power Plants

Year	New Orders Placed	Plants Cancelled
1966	20	0
1967	31	0
1968	16	0
1969	7	0
1970	14	0
1971	21	0
1972	38	0
1973	41	0
1974	26	4
1975	4	11
1976	3	2
1977	4	9
1978	2	13
1979	0	8
1980	0	16
1981	0	6
1982	0	8
1983	0	6
1984	0	8
1985	0	0
1986	0	3
1987	0	0
		TOTAL 104

Source: U.S. Council on Energy Awareness.

A Return to Sanity?

Robert Engelken, Western Regional Director for the Nuclear Regulatory Commission, who had also been a plant inspector for 15 years, was interviewed in California's *Valley Pioneer* newpaper, just before his retirement. In the Oct. 13, 1982 article, the reporter remarked that "the depth of public objection to nuclear power apparently is not perceived as very substantial by Engelken." "If people are hurting for energy the public relations problems will evaporate very quickly," Engelken said. "All it would take would be a cut-off of energy resources, and there would an instant need to create electricity." Engelken believes that today "there is a crisis developing rather rapidly, I believe, and I think we'd better start thinking seriously about getting back into nuclear power."

According to experts in the nuclear industry, the operational nuclear plants that have been shut down over the past decade could not be reopened, as they have been stripped of their nuclear and generating equipment.

The one exception to that may be Browns Ferry Unit 1 in Alabama. It is more than a decade since the Tennessee Valley Authority (TVA) shut down its three reactors at that site, over concerns about safety. Units 2 and 3 have been brought back into operation, but the third unit has remained in mothballs. Early last year, the TVA began to consider reactivating Unit 1. Demand has skyrocketed, and the plant could add more than 1,000 MW to TVA's electric grid. In the 1970s, TVA had 17 nuclear power plants in the pipeline. Today it has five operating plants. Nationally, the plants that had been partially completed were largely "left to ruin," according to General Electric, and would be impractical to complete.

Now that the crunch has hit, many utilities are scampering to make sure they at least will have their operational nuclear plants to depend upon in the future. Recently, five reactors near the end of their 30-year operating licenses, at Calvert Cliffs in Maryland, and the Oconnee units in South Carolina, have been granted 20-year license extensions. Five more have filed for renewals, and the Nuclear Energy Institute foresees

that over the next five years, 28 more applications for license extensions will be filed. There is very little talk today about shutting down plants.

But holding on to the status quo, of 103 operating plants, will not solve the problem. The nation must start building new plants.

Over these last twenty years that the United States has not been building new nuclear plants, the focus of world nuclear activity shifted to Asia. There, nations intent upon building up their infrastucture, have taken the lead in nuclear power technology. In Japan, General Electric has put nuclear plants on line in *48 months,* ahead of schedule, and on budget.

Dr. Bert Wolfe, former head of GE Nuclear, is concerned that American manufacturers are close to losing the capability of building nuclear power plants. Were GE to receive an order from an American utility for a plant, the pressure vessel would have to be *imported from Japan* to build it. U.S. companies are so dependent upon sales to Asia, that the recent (perhaps temporary) cancellation of a nuclear plant in Taiwan, led to immediate lay-offs at GE. Dr. Wolfe suggests that to save time, new plants could be placed at sites where there are already operating nuclear reactors, to cut down on the approval time required in Washington.

In the 1960s, Dr. Wolfe reminds us, the plan was for there to be 1,000 nuclear power plants on line in the U.S. by the end of the century. Indeed, California's Pacific Gas and Electric projected at that time that it would be *entirely* nuclear by the 1980s. We have lost three decades.

Now that the folly of the past decades has become obvious, the press is increasingly reporting that today's 103 operating nuclear plants produce about 20% of the nation's power, reliably, safely, and at reasonable cost. There are indications the tide of "public opinion" may be shifting, driven by the prospect of freezing in the dark this Winter, and withering in the heat next Summer.

Steve Kerekes at the Nuclear Energy Institute reports that a group of utility executives approached NEI last year, and asked them to set up a task force to examine what would be required for new power plant deployment. The 15-member task force, which held its first meeting in September, includes the three U.S. nuclear manufacturers and two construction companies, in addition to utility executives.

They are looking into putting together a consortium of companies to order perhaps 10 or 20 plants, to minimize the cost of each unit through economies of scale of production, and standardization. Each of the 103 plants operating today is nearly unique. The companies would pool their resources, thereby spreading their risk, and are considering a time frame of perhaps three years for orders to be placed.

The timetable envisioned by the utilities should be accelerated, and may very well be, by the fast-paced flow of events that has brought us back to the realization that was so obvious thirty years ago—we must go nuclear.

Asset-Stripping Plan for Russian Electricity Forestalled

by Rachel Douglas

"United Energy Systems should be reformed not according to Chubais, but according to reason," declared Russian President Vladimir Putin in his RTR TV and Radio Russia interview on Dec. 25. "As we know, very often the manager of a big company, planning a reform, considers the interests of this company, but not the interests of the economy as a whole. The United Energy Systems are to be transformed in a way to benefit the whole economy, rather than the particular company, not to mention personal interests."

With that, the Russian head of state confirmed that, on the question of reforming the country's major infrastructure, he is unwilling to walk in lock-step with his liberal economic advisers, down a path to the dismemberment, fire sale, and asset-stripping of those national assets. Suddenly, at the end of 2000, the debate over the future of the national electricity utility shifted: away from a farcical debate among different schemes for deregulation as a means to loot, toward consideration of the national interest. The governors of some provinces in Siberia, who already took part in preparing for President Putin an outline for the revival of Russia's physical economy, are involved (see "Is Russia's Putin Breaking with 'Liberal Reform' Economics?" *EIR,* Dec. 8, 2000).

Anatoli Chubais is the chief executive officer of United Energy Systems (UES), which comprises the generating and transmission capacities for electricity in Russia. He was one of the young economists, schooled by Lord Harris of High Cross and other apostles of the Mont Pelerin Society's radical monetarism, to impose such neo-liberalism in Russia after the breakup of the Soviet Union. Under Boris Yeltsin's Presidency, Chubais oversaw the first, fire-sale stage of the privatization of Russian industry.

As first deputy premiers in 1997, Chubais and his fellow "young reformer," Boris Nemtsov, set their sights on the privatization and deregulation of the so-called natural monopolies: UES, the Ministry of Railroads, the natural gas monopoly Gazprom, and the communications system. The model they promoted was the British Commonwealth scheme, under which the income-stream section of a utility—sales and delivery—may be hived off as a separate, financial company, while the physical plant and equipment is subdivided into several privatized firms that are supposed to compete, but have often ended up being asset-stripped by their new owners. Chubais's