

Richard P. Dalrymple & Scott Ridley,
Power Struggle! The Hundred-Year War
over Electricity, W.W. Harper & Row, 1986

5. Limits to Growth

The age of innocent faith in science and technology may be over. We were given a spectacular signal of this change on a night in November 1965. On that night all electric power in an 80,000 square mile area of the northeastern United States and Canada failed. The breakdown was a total surprise. For hours engineers and power officials were unable to turn the lights on again; for days no one could explain why they went out; even now no one can promise that it won't happen again.

Barry Commoner
Science and Survival, 1966

The 1960s and early 1970s brought about a series of sudden confrontations and shocking realizations for Americans. Out of the shadows of the Cold War a conflict in Southeast Asia rose to haunt a generation and transform the global image of the United States. Inflation began a seemingly endless climb. The political, if not physical, limits to resources were dramatized by the Arab oil embargo. And in every locale the growth of environmental awareness and the recognition of deep social costs of technology shook industrial giants to their foundations. No industry was hit harder by this than electric utilities and the dream of endless abundance they had been selling for decades.

The 1960s began full of promise. The election of John F. Kennedy and the launching of his New Frontier program proclaimed a stretching of all the old boundaries of prosperity. The United States would mount unparalleled efforts in the space race with Russia, and in the nuclear race, to maintain global technological dominance. Electricity was viewed as a key to these efforts and other industrial expansion. In Kennedy's vision, ancient regional conflicts and struggles between public and private interests would be laid aside in order to utilize fully the nation's resources.

A month after taking office, Kennedy urged accelerated production of energy from nuclear sources. Citing Federal Power Commission esti-

mates, he said total installed electric capacity should triple by 1980 if the nation was to maintain essential economic growth. "Sustained heavy expansion by all power suppliers-public, cooperative, and private-is clearly needed. . . . We must begin now also to plan for regional cooperative pooling of electrical power. Both efficiency and growth goals will be served if we interconnect our hydroelectric and thermal power resource plants."

There was a darker side to this hope. Within a few years, Kennedy's plans would bring about a new era of centralization in the power industry and literally change the face of public power-drawing it into the fold of a re-emerging power empire. It would set the stage for accelerated reactor development and widespread protests. The first emergence of these events took shape in the "power pools."

Power pooling-linking up the transmission lines of power companies in regions-was an idea that went back to the Superpower and Giant Power plans of the 1920s. Over the decades, battles for control of service territory had slowed the growth of interconnections and their benefit to consumers. But plans for huge nuclear plants and the formation of regional conglomerates of utilities to build them sparked the growth of power pools and a rash of new interconnections.

At the time, the nuclear program was perceived to be moving sluggishly at best. A *Newsweek* magazine reporter wrote, "The big reactor program, which had captured the public imagination with the millennial visions of smokeless, all-electric cities, suffered most from rising costs and technical drag-outs. The Dresden, Illinois, nuclear plant 50 miles from Chicago and the Yankee Atomic Electric Plant at Rowe, Massachusetts, are generating electricity. But the Enrico Fermi plant at Monroe, Michigan, has been delayed several times." While Kennedy pushed his appointee to the Atomic Energy Commission, Glenn **Seaborg**, to accelerate the reactor program, new questions arose over who would control the power pools.

As in the old days, power pooling allowed large private power companies in some areas to squeeze out smaller competitors, including cooperatives and **municipals**. In other areas it brought about a truce between public and private power companies to exploit power resources jointly. In early 1961, for example, two private power companies, Northern States Power and Otter Tail Power Company, and three rural cooperatives revealed plans to **form a** power pool in North Dakota and build five **200,000-kilowatt** plants by 1977. When the plans were announced in

In February, popular suspicion about dangers from radioactive waste Bared up when a citizen group from Rochester, New York, revealed highly contaminated drainage water from the West Valley reprocessing plant was leaching into Buttermilk Creek. One member of the group had gone under the security fence to collect samples inside the site. The group claimed that radioactive strontium 90 in water found in the drainage outlet was 30,000 times the allowable limit. A controversy involving state and federal agencies ensued. Security was tightened, and some improvements were ultimately made, but Fuel Services, Inc., which operated the facility, denied that the contamination was of a serious nature. Amid charges of more leaks and hundreds of exposed workers, the facility was shut down in 1972. Some 600,000 gallons of radioactive waste was left abandoned in temporary storage tanks.

As inflation and the growing controversy over nuclear power began to take hold, the nuclear industry seemed to hit a brick wall. In 1968 annual orders for new reactors dropped in half to sixteen. In 1969 they would drop further to seven.

Richard Nixon, the politically savvy Republican presidential candidate, picked up the grass-roots anger over environmental damage. Perhaps to divert some attention from the issue of the Vietnam War, he called the environment "the issue of the decade." Shortly after taking office in 1969 he attempted to calm concerns about nuclear power and the environment with passage of the National Environmental Policy (NEP) Act. The act required an environmental impact statement from federal agencies licensing or funding construction projects. In providing public hearings and a formal process for protest on the effects of a project, it was viewed as the most important single piece of environmental legislation ever enacted.

Other news and events also added to the momentum of the environmental issue. After six years of study on the effects of low-level radiation, two Atomic Energy Commission scientists, Dr. John Gofman and Dr. Arthur Tamplin, found a potential for widespread danger from operating nuclear plants. Effects of low-level radiation, they said, had been vastly underestimated in the past. If average exposure to the United States population was maintained at the current limits, the effects would accumulate to an excess of 32,000 fatal cancer and leukemia cases per year. Beyond the immediate impact, they claimed there was also the danger of far-reaching genetic damage. They recommended that exposure limits be reduced by a factor of 10. Industry leaders and AEC commissioners were stunned by the report and worked to discredit the findings. Both scientists came under extreme pressure, and Gofman resigned from the

AEC, charging that he had been harassed into leaving. The information he and Tamplin released, however, provided ammunition to the growing environmental opposition to nuclear power.

To gather the growing concern, environmentalist organizations sponsored a nationwide **Earthday** celebration in April 1970. The event was an eclectic coordination of local environmental protests and "teach-ins" in universities, state legislatures, and town squares. In New York City, 1,000 youthful supporters gathered at the corner of Wall and Broad streets to hear Senator Jacob Javits warn that environmental organizing should not distract from social problems of the poor. Looking out at the offices of J. P. Morgan and the Stock Exchange, other speakers charged that the quality of life in America was "being destroyed by the people who control the country." In Detroit that same day, forty women picketed the Great Lakes Steel Corporation to protest industrial discharges into the Detroit River. This was one of dozens of local protests taking place around the country. Out of all this activity would come momentum for the Clean Air Act of 1970 and the Clean Water Act of 1972, mandating the states to set pollution regulations and enforce them.

Despite the passage of, these laws, government officials and industry executives still clung to their dream of a society based on unbounded supplies of energy. A campaign was mounted to get the nuclear industry back on track. Glenn Seaborg, chairman of the AEC, published a *Looking Backward*-style article in the *Bulletin of Atomic Scientists* in June 1970. From the vantage point of 1995, Seaborg related how the debates over nuclear power had subsided beginning with a SALT agreement and slowdown and halt of the arms race. He said a substantial amount of evidence was presented to the public that "no harmful biological effects would be caused by the radioactive effluents released from nuclear plants." More pointedly he wrote:

The massive **nuclear accidents predicted by alarmists at the height of the anti-nuclear campaign** never occurred. At times nature did her best to knock out nuclear installations. In the Far East a nuclear station sustained some damage from the **wind** and flooding of a typhoon. And a nuclear plant **on the West Coast of the United States felt the effects of an earthquake**. Although there was **costly damage** to both plants, their containment systems were not breached, and in **neither** case was the public exposed to any serious radiation hazard.

By 1990, Seaborg wrote, "Public confidence in nuclear power had risen to the point where there were few eyebrows raised when a **mid-**

town reactor was proposed for a new city being planned, because many such reactors had been operating in urban sites." Seaborg's vision was one of producing a "steady state" civilization in which nuclear power would help a controlled world population live in harmony with nature.

Just as investment banker Lewis Strauss delivered nuclear technology to private interests, **Seaborg** dedicated himself to accelerating its development to fulfill the naive dreams of atomic visionaries of the early **1950s**. Throughout 1970, the AEC promoted the concept of "abundant nuclear energy." Despite the steady escalation in the cost of plants, commissioners claimed that nuclear power was the technology that would bring about a clean environment and a decline in the cost of electricity. The Atomic Industrial Forum and EEI got behind the AEC in an effort to bring back the market for reactors. Advertising stressed not only all-electric homes, but "infinite energy" for families and "all-electric cities" for the future. Their success would be nothing less than spectacular. In 1970, fourteen reactors were ordered; twenty-one in 1971; thirty-eight in 1972; and a high of forty-one in 1973, before the industry was hit with the Arab oil embargo and the shock wave of rising costs and consumers voluntarily cutting back on inflated use of electricity.

While the power companies renewed their interest in nuclear power, the promotional campaigns didn't convince the public. As announcements and construction of some 106 new reactors in towns throughout twenty-nine states took shape, popular concern broadened. Fed by steadily rising costs, an antiestablishment attitude engendered by Vietnam War protests, and increasing awareness of environmental hazards, mistrust of the electric power companies deepened.

In December 1970, scientists who had been relatively silent confronted **Seaborg**. The group, loosely organized as Scientists and Engineers for Social Action, appeared at a meeting of the American Academy for the Advancement of Science, at which **Seaborg** was scheduled to speak. **Seaborg** left the meeting without speaking. A statement he issued to the press said, "I think we must realize that science is suffering today from a kind of dislocation and disunity brought on by its own success. That is, it has fostered changes in our society faster and with more impact than our social and political understanding can absorb." It was a curious twist on statements Einstein had made twenty-five and thirty-five years before. While Einstein had urged that science rely on the public to decide what risks would be taken, **Seaborg** implied that the public rely on scientists.

Extending Seaborg's rationale, many power industry officials believed

that they were the ones who should make the commercial decisions for science and determine what environmental and economic risks the public should take. They strongly resisted the new Clean Air Act, which appeared to them in the form of increased costs and delays in construction programs. The backbone of the electric power industry at the time was in 665 fossil fuel plants (coal, oil, and natural gas) which together provided 80 percent of the electric power in the United States. Coal plants, the nation's worst source of air pollution, were a chief target of environmentalists. President Nixon and industry officials believed that nuclear power was "safe, clean, and reliable" and offered the only alternative to the pollution caused by coal-fired plants.

The public, which had been left out of the decision making, began to demand a greater voice. Voters in Eugene, Oregon, halted construction of a nuclear reactor by passing a four-year moratorium to study potential hazards from the plant. On the opposite coast, Long Island residents went into a local elementary school auditorium for what would become nearly a year of environmental hearings on the license for the **Shoreham** nuclear power plant. And in Maryland, the proposed Calvert Cliffs plant became a test case over whether the AEC would comply with the environmental impact statement required by the NEP Act. Commission attorneys *argued* that environmental considerations were outside the commission's jurisdiction, but the courts upheld environmental groups' demands and required the commission to make an independent review and evaluation of all effects at every point in its licensing process. The ruling threw the status of more than **fifty nuclear** projects into a temporary limbo. Amid much criticism the commission hastily processed the paperwork on the plants to comply with **the** letter if not the spirit of the law. The events surrounding the Calvert Cliffs decision seriously embarrassed the commission by emphasizing its conflicting mandate both to regulate and promote nuclear power. Wheels were set in motion that would split the agency in a few short years. For environmentalists, the cases pointed to the fact that alternatives for electric power were needed.

Environmentalists wanted clean energy, but many of the traditional environmental organizations were undecided about the use of nuclear power. In 1971, the Sierra Club published **Energy**, a book in which the authors claimed that if the 1,000 reactors projected were in operation by 1990, it would mean **the** nation "could then expect one accident in the US. every year." To debate this danger and possible courses for the future, the Sierra Club organized a meeting of four-hundred environmentalists, regulatory officials, and industry representatives in Vermont in January 1971. The purpose was to try to formulate an environmentally

responsible energy policy. What resulted were recommendations for energy conservation and energy efficiency; improving appliances; reducing industrial use of electricity without sacrificing jobs; changing tax structures and rate structures; and tightening regulation of the industry.

One speaker at the conference, Julius Hobson, a professor at American University, stirred controversy by pointing to the "myth of free enterprise" in the electric power industry. Hobson said that the industry existed in a form of "corporate socialism" or "private socialism" that was determining the future of the nation. "I do not believe that what is good for the utility companies is good for the United States," he said and called for a national takeover of the electric industry. The conference's final recommendation to the Sierra Club members urged a "moratorium on nuclear power plants as presently designed and installed." Not quite as strong as Hobson's appeal, but a significant stance for the Sierra Club to take.

A vastly different perception dominated the industry and federal government. Industry executives believed that alternative technologies (such as solar, wind, and geothermal energies) held promise for the future but were "impractical" in the short term. There was a more fundamental problem as well. Such decentralized power sources were not technologies that could be utilized for increasing centralization of the electric power industry and for laying the base for greater corporate expansion in the future. In a harsh way, Hobson had struck the central issue of the energy debate and the one that had existed since the beginning of the electric industry: Who really controlled the decisions over choices of technology? Was the federal government promoting what industry and Wall Street wanted or what the public wanted? The answer, of course, was tied to an increasingly central part of the economy and the risks individual communities would face.

There was no question of where President Nixon stood, or where his views originated. Under Project Independence he called for 50 percent of the nation's electricity to come from 1,000 nuclear plants by the year 2000. In promoting this centralized vision of the future he predicted in 1972:

The most profound effect on electric utilities through the year 2000 will probably be a completely new restructuring of the industry. Emerging will be a small number of super G&T [generating and transmission] organizations. Utilities as we know them today will be relegated to the distribution function. Donald C. Cook, chairman of American Electric Power, five years

ago was the first to suggest that the regional nature of power generation requirements ultimately could lead to the emergence of only 15 to 20 super G&T utilities serving the demands of the entire U.S., with distribution being provided by the utility organizations as we know them. . . increased demand for electrical energy will lead through normal progression to pool arrangements becoming more and more formal . . . some of the 15 to 20 separate G&T utilities will result, owned in part by those utilities performing the distribution function, but under the direct control of hoards composed of representatives of government, consumers, and the system operators.

Aside from being in agreement with Donald Cook, whose holding company sprawled over parts of seven states and would undoubtedly be one of the "super G&Ts," Nixon said the concept also matched with the results of a "special management think-tank exercise investigating the organization of the electric utility industry into 2000 and beyond, sponsored by the Edison Electric Institute." He said this group envisioned a change in the **ownership and control of electric utility organizations** to "quasi-public corporations, similar to that of the Communications Satellite Corporation (Comsat)." Essentially this meant that federal funds would be used for the private development of these "super G&Ts."

Earl Butz, Nixon's **controversial** Secretary of Agriculture, issued a similar statement concerning the future direction of the nation's rural electric cooperatives for which he had oversight. "The prophets of doom," Butz said, referring to **environmentalists** and others advocating programs for conservation, "tell us the supply of electric energy is running out. . . . They warn that a nation of wastrels, using electricity to power toothbrushes, comb dogsj feed fish, and dry fingernail polish is on a collision course with a colossal power shortage—a catastrophe that will catch up with us between now and the turn of the century." He brushed aside these complaints and the cost of the larger institutionalized waste they **symbolized by saying**, "We live in an energy-oriented society. That's the way it should be." Like President Nixon, Butz said the answer was in "a nationwide network of transmission facilities, and a correlated grid of public and private power systems. . . ."

The similarity to the 1920s, in the rise of fifteen to twenty large companies to provide the nation's power, was clearly visible. Although there was an indication that government officials and consumers would also be present among their directors, the private companies were very likely to dominate the politics of the organizations. One federal official said, "The new mandate for enlightened utilities, as we see it, will be to take a more active role in political planning bodies, development authorities,

and urban renewal projects. . . . Utilities cannot be expected to dive into this directly, since it is a sensitive area politically, and previously outside their scope of activity." He said that along with investment houses the utilities will " 'get involved' indirectly at first when attempting to optimize load projections, predict growth and accommodate commercial and industrial development."

Buried in that involvement is the subtle control that public officials had feared since the nineteenth century. Now the federal government was advocating it and attempting to promote the centralized visions of the future that would help bring it about.

Faced with threats of fuel shortages and increasing costs and debilitated by the long battles, even the municipal power systems sought to work together with private power companies to solve technological problems leading toward this centralized vision. While conflicts remained sharp in some regions, public systems joined with private power companies in creating the Electric Power Research Institute (EPRI), a research and development organization designed to come up with solutions to problems of centralized technology. EPRI would ensure that public and private power systems shared common visions of a future powered by breeder reactors and fusion reactors. Just as public system participation in the North American Electric Reliability Council captured their transmission and growth planning, **EPRI's** private power orientation would harness their technological vision to the centralized plans of private power. The early mandates of local public power systems were now obscured. Despite their potential to bring citizen **control over** electricity, the options for many public systems were almost completely in the hold of private power.

The most prominent symbol of what would soon become widespread joint ventures of public and private systems occurred between Insull's original company, Commonwealth Edison of Chicago, and the TVA. In answer to a call by President Nixon that the nation have a commercial breeder reactor operational by 1980, TVA and Commonwealth Edison signed a memorandum of understanding in August 1972 as principal participants in the Clinch River Breeder Reactor. The project engendered a long battle with environmentalists and consumer advocates. The Clinch River project would eventually be stopped by environmental and consumer protest in 1983 after nearly \$1 billion had been spent and ground breaking had just been completed.

There were much worse financial disasters brewing for the industry. In June 1972, *Business Week* ran a cover story predicting a crisis in the electric power industry. Huge amounts of capital were needed by the

industry to build new plants and refinance the enormous bond issues floated at the end of World War II, which would be coming due over the next several years. At the same time the companies faced tightening environmental restrictions and state regulators attempting to hold rates and inflation down. A series of brownouts and blackouts in major eastern cities had dramatized the dilemma. It was obvious that the industry, preoccupied with public versus private conflicts and sluggish management, had suffered gross neglect during the 1950s and 1960s. One analyst, Ted **O'Glove** of the industrial research firm Coenon and Company, told *Business Week*, "I think the blame lies with their managements. When times were good, they didn't campaign for higher rates because they were afraid of rocking the boat. The regulatory agencies are to blame, too, because they haven't reacted to the problem."

In the same article, American Electric Power Company's Donald Cook observed, "The days when things were easy are gone." Cook was indeed right. Consumer groups were now regularly intervening before regulatory commissions on **issues** of rate increases and environmental complaints, and there would be a tough fight to get the money the power companies wanted to pay off their debts and launch new building projects. But this crisis for **cash** was obscured by a much larger event—the Arab oil embargo.

Trouble over control of the flow of Middle East oil had been brewing for some time. In 1973 the United States was receiving 30 percent of its oil imports from the Middle East. When the United States backed Israel in the Arab-Israeli conflict of 1973 by airlifting emergency arms, the Saudis embargoed all **oil** shipments to the United States. The **long-**predicted fossil fuel shortage, due to political rather than purely resource limits, hit with tremendous impact and underscored the international scope of the energy resource problem.

With American power companies dependent on oil for 17 percent of their generation (some individual companies as much as 75 percent), the embargo sent oil prices **and** electricity prices soaring, particularly in the Northeast. The power industry responded with wave after wave of emergency rate increase requests. State regulatory agencies became **hotspots** for consumer frustration as they buckled to industry's requests. As rates began to soar, the enmity for power companies, which had been growing since the early **1960s**, erupted. Regulation had failed, the yardstick of public power was captured, and consumers had little institutionalized voice. In hundreds of conflicts throughout the 1970s and **1980s**, citizens sought to bring back some sense of control over this runaway industrial empire and the risks it was bringing to their communities.

1961, only four power pools existed. By **1970** there would be seventeen power pools, representing half of the nation's electric capacity.

Many local public power system managers were reluctant to take part in these joint ventures. But amid warnings that they would be swamped in a sea of privately controlled nuclear power, they were urged to "tie or die." In May 1961 at the annual convention of the American Public Power Association in San Antonio, Texas, power pooling and a "new era" of power supply from nuclear plants were the main topics of conversation. After eight years of Eisenhower's actions to dismantle federal power programs, public power systems were seriously debilitated. D. J. **DeBoer**, the association's president, told the 600 members gathered at the convention that power pooling "may be the only means for continuation of local independent operation." They were urged to trust federal leadership and not give up hope for publicly controlled nuclear power.

Representative Chet Holifield, who had cosponsored the controversial legislation to build federal reactors five years before, told the group he still did not believe that the nation's atomic program should be primarily dependent on private nuclear projects. "I suggest that you prepare for the future use of atomic power by planning now for interconnection of your public and co-op systems," he said.

Local public power managers remained wary, however. Connecting into a power pool was a major step away from local control by their consumers. But pressed by competition from **private** systems and issues of survival, they joined larger public consortiums and tied into the pools controlled by private utilities. As a result fundamental concepts of local control and service to consumers would take a back seat to the initiatives set by private companies. They were "captured." In a few short years public power officials would find themselves aligned with private power executives in debates against angry environmentalists. Later they would take positions against their own consumers over the construction of massive power lines or investment in nuclear plants.

More than a few individuals held out hope that the power pools would become part of a federal transmission system. If such a development came about, it would tie the nation's electric plants together and create a balance of control over the industry, replacing the "yardstick" concept that had been destroyed during the Eisenhower years. At a meeting on the ratification of the United States-Canada treaty for upstream development of the Columbia River, Alex Radin of the American Public Power Association said he looked forward to a time when we "think in terms of the interrelationship of power resources of Alaska, Canada, the Pacific Northwest and the Pacific Southwest. . . ." At the same event, UAW

Vice-President Pat Creathouse called for a national power grid developed and maintained by the federal government. Clyde Ellis of the National Electric Rural Cooperative Association proposed a national grid jointly owned by public and private interests. Already bits and pieces of such a grid were forming in the pools. The Colorado Basin Consumer Power Group, including public systems from Colorado, New Mexico, Arizona, Utah, and Wyoming, was pressing for a regional federal transmission system. And in the Northwest, the Bonneville Power Administration was extending its lines into California to form the backbone of a West Coast grid. Private power interests met the proposals for a federal or a jointly owned national transmission system with fierce opposition.

Still locked in their Cold War "anticommunist" strategies to eliminate public power systems, private power companies took advantage of Kennedy's policies to combine their interests and position themselves to take greater control of geographic regions. They wanted control of transmission, and they wanted control of nuclear plant ownership. Edward Vennard, head of the Edison Electric Institute, campaigned against what he called the socialistic dangers of a federal transmission system. He also strongly criticized Kennedy's support for a new proposal for federally owned nuclear plants.

In March 1961, President Kennedy set the private power companies reeling by requesting \$60 million for development of a generating plant to use the waste heat from a plutonium reactor in the weapons program at Hanford, Washington. As the first steam plant to be run by the government outside the Tennessee Valley area and the first government reactor to supply electricity, **Vennard** saw it as "the first link in a coast-to-coast grid tying in all of the regional power systems." Echoing the ancient propaganda of the war between public and private interests, he called the bill "contrary to **the** public interest" and against "American principles." For the next year, the proposal set off a running controversy over whether it was an efficient use of waste heat or the "first step to socialism."

Previous presidents of Edison Electric Institute had made accusations in more biting terms. At the 1959 EEI convention President J. E. Corette of Montana Power **Company** said, "Government ownership of utilities has always been the first goal of the socialists and communists. Because of this, the future of the American system of government is dependent on the electric business continuing in the hands of investor-owned, tax-paying companies. . . . Our problem is not only to save our industry, but to save the American **system** of government."

While the bill for public power systems to use the reactor at Hanford

would fail under heavy lobbying in 1961, the following year his supporters and public power advocates drove it through. The catch was that the federal government would not own or operate the plant. The Hanford generating plant was designated to a small group of public power systems known as the Washington Public Power Supply System, which had joined together to build a dam in 1957. Far from bringing socialism to the Northwest, two decades later the seeds of ambition sown here would be manipulated by private industry and would bring about the creation of a massive five reactor construction project that would collapse in the nation's largest municipal default.

□

□

□

During the time that private power companies were working against the new proposal for federal reactors, other events occurred that shook the electric industry to its core. In Senate hearings during April and May 1961, extensive violations of the Sherman Antitrust Act were revealed to have been committed by executives of GE, Westinghouse, and several other electrical manufacturers. Following a grand jury investigation, a stream of executives appeared before a Senate committee chaired by Estes Kefauver. They confessed to clandestine bid-rigging operations in which equipment prices were inflated, bids were agreed upon in advance, and contracts were divided up according to set percentages. Westinghouse participation in the deals amounted to over \$1 billion. It was significant that the TVA had blown the whistle on the practice. Private power companies had passed the inflated costs for equipment on to their customers with no complaint. Some of the bid rigging had been going on for twenty-five years, but the bulk of it occurred during the Eisenhower years.

Ultimately forty-two executives and thirty-two companies were indicated-an act taken in some corners as an indictment of the free enterprise system. Several top-level executives received fines or brief jail sentences. One committed suicide. President Kennedy called the **affair** a "shadow on the shoulder" of American business.

Kennedy fought to restore public power as a competitive force in the industry and remained opposed to a monopoly of electricity by government or by private companies. Like Roosevelt he saw an abundance of electricity as bringing about a new level of civilization. In August 1962 he appeared at the dedication of the Oahe Dam in Pierre, South Dakota. From a platform on the bank of the Missouri River, he marveled at the dam and talked of the "miracles of engineering," wondering at the impact of electricity on modern life.

When we are inclined to take all of these wonders for granted, let us remember that **only a generation or two ago all the great rivers of America: the Missouri, the Columbia, the Mississippi, the Tennessee, ran to the sea unharnessed and unchecked. Their power potential was wasted. Their economic benefits were sparse. And their flooding caused an appalling destruction of life and property. Then the vision of Theodore Roosevelt was fulfilled by Franklin Roosevelt. . . . And as a result this Nation began to develop its rivers systematically, to conserve its soil and its water, and to channel the destructive force of these great rivers into light and peace. . . . Less than thirty years ago, in the lifetime of most of us here, as you know, fewer than 10 percent of all our rural homes in this country had electric power. . . . That's how quickly the face of a nation can be changed by determination and by cooperative action by all the people. . . . Today over 95 percent of rural homes have electric power.**

While the public remained hopeful of the bright prospects for the future, a harsh reality was also creeping in from the edges of Kennedy New Frontier. In areas where nuclear reactors were proposed, pocket of dissent began to emerge. In the summer of 1962, opposition erupted over Pacific Gas and Electric's proposal for a nuclear plant on Bodega Bay in northern California. And on the East Coast, Consolidated Edison of New York kicked over a political hornets' nest by proposing to **plac** a nuclear plant in the Ravenswood district of Queens, a mile from the heart of New York **City**.

Con Ed's **proposal** came on December 10, just twenty days after the release of a controversial AEC report. President Kennedy had requested that the commission take a hard look at the timing and scope of the nation's nuclear program. Aside from magnifying the glittering hopes for nuclear power, the report noted "for safety reasons, prudence now **dictates** placing large reactors fairly away from population centers." **Con Ed's** proposal for Ravenswood was a challenge to this AEC safety **recommendation**. Voices **rose** up on all sides.

David Lilienthal, gone a decade from the AEC, told reporters "I **would** not dream of living **in** Queens if a huge nuclear plant was located there." He also called for an end to government subsidies for private **nuclear** development and criticized the commission for trying both to regulate and to promote nuclear power. Lilienthal was attacked by the Atomic Industrial Forum (**AIF**) and others who supported the Ravenswood nuclear plant.

The controversy **over** the reactor was debated in the New York City Council for a year. In June 1963, an eight-hour-long city council **hearing**

took place over an ordinance to bar construction of the plant. More than fifty witnesses spoke. Many of the opponents referred to the 1957 **Brookhaven** report, assessing the probability of accidents. It was a raucous meeting. A group of women opposing the plant sat in the balcony wearing yellow paper badges imprinted with a fallout shelter symbol and bearing the slogan "Danger: Radiation-Ravenswood Nuclear Plant." The company's testimony was all but drowned out in the chatter and noise, and occasionally speakers were interrupted by derisive shouts.

Leading the official opposition, state Senator Seymour Thaler of Queens told the council that four out of every five of the borough's residents vehemently opposed construction of the nuclear plant. He reasoned that despite any economic advantages it was unthinkable to endanger the lives of 10 million people. "The mind of man," he said, "has not yet invented an accident-proof piece of mechanical equipment. If the Tacoma Bridge could fall down, if the *Thresher* nuclear submarine could sink, if the Mercury space capsules can be faulty, and if a large part of Manhattan Island could have a blackout in June of 1961, then certainly nobody can be absolutely sure about the safety of the Ravenswood project." Supporters of the plant emphasized economic advantages of siting it in the city and stressed safety features. The city's trade union and construction leaders spoke in favor of the proposal, saying that the city could not afford to turn down a \$175 million project.

A letter from AEC Chairman Glenn **Seaborg** shocked city officials with the news that they had no authority to stop construction of the plant. **Seaborg** wrote, "The act and its legislative history make it clear that Congress intended that the licensing and regulation of nuclear reactors, for purposes of control of radiation hazards, is to remain the exclusive responsibility of the Federal Government." Contrary to their previous warnings about the danger of federal control and "socialism," private power companies supported this kind of undermining of the democratic process.

Faced with such strong local opposition, however, Con Ed was eventually forced to withdraw its plan in late 1963. It was a significant defeat for the electric company Thomas Edison had given birth to and for the entire industry.

Elsewhere, opposition to other plants appeared. In addition to the criticism of the Bodega Bay project, Californians also opposed a 325-megawatt plant proposed for San Clemente by Southern California Edison and a 490-megawatt plant proposed for Malibu by the Los Angeles public power department. The California Democratic Council, the liberal wing of the state's Democratic Party, opposed construction of the

plants out of concern over the danger of accidental release of radioactive gases and the existence of geologic faults near the sites. The early resistance to nuclear plant construction was spreading. The **AIF** noted that, while local and state officials had gotten involved in the fights, congressmen were steering clear of the issue. But at the local level, officials of the companies observed that opposition was beginning to show signs of becoming a national grass-roots movement. A spontaneous new effort at public control-picking up where regulation had failed—was beginning to stir.

For the federal government, it was a time of widely mixed efforts. On the one hand, despite the obvious dangers, the Kennedy Administration lifted old regulations on private power companies and allowed them to work more closely, bringing about new mergers and consolidations of smaller systems. On the other hand, the administration encouraged construction of new dams and nuclear reactors owned by public systems and development of federal transmission lines.

To undermine popular support for the public projects, a new wave of propaganda was mounted by Edison Electric Institute (EEI). Ads appearing in major publications such as *The Saturday Evening Post* and *Readers' Digest* stressed Cold War themes and took dramatic stances against public power. One full-page ad in the September 1962 issue of *Atlantic Monthly* featured the picture of a despairing young man behind a stone wall topped with barbed wire. A military figure stood anonymously in the background. "How Is Freedom Lost?" the caption asks. The answer was right out of the McCarthy era: "Dangers that grow within our borders can string barbed wire around our freedoms as tightly as dangers that come from abroad. But they aren't as easy to see. Some of us are hardly aware of the threat that grows **within**—the expansion of government in business . . . when government owns business, it has in its hands both political and economic power. . . . Isn't it time to call a halt to the expansion of government-in-business?" It was signed by "Investor-Owned Electric Light Companies . . . more than 300 across the nation."

Kennedy called the ads "ugly." In their 1967 book, *Overcharge*, Senator Lee Metcalf and Vic Beinemer would point out nearly \$1.8 billion in overcharges to consumers for "phantom taxes"—taxes collected as part of bills but not paid to the federal government. They also went behind the scenes of the advertising campaign to reveal a much broader effort to undermine the concept of federal dams and local public power systems. Metcalf and Reinemer showed that leading power companies were helping to fund programs of the John Birch Society, which tried to equate public power and rural **co-ops** with communism. Twenty power **compa-**

nies, including Pennsylvania Power and Light, Detroit Edison, Dayton Power and Light, Connecticut Light and Power, and Montana Power Company, contributed to the Birch Society's American Economic Foundation (AEF) program in 1963. Fred G. Clark, chairman of the program, is quoted by Metcalf and Reinemer as saying, "More than 50 privately owned power companies have in one way or another recognized its [the program's] importance and done something about it." In addition to publishing pamphlets and disseminating literature against public power systems, the program also issued films and educational material for schools.

Between 1943 and 1965 material from the AEF had been used in economic training programs for 3.5 million workers in 2,000 corporations, 171 teachers' institutes, and workshops for primary and secondary school teachers. AEF **films** were permanently placed in more than 7,000 schools in 41 states. In 1961 Fred G. Clark told an audience of electric utility **officials** how the AEF and a power company had worked together in Pennsylvania and "within 18 months, the coverage of the public and parochial high schools in eastern Pennsylvania had almost reached the saturation point."

At the same time these events were evolving, the electrical manufacturers embarked on a propaganda campaign to encourage the vision of **an** all-electric future. In 1961, the electric industry planned to spend \$53 **million** on a "Live Better Electrically" advertising campaign. Part of the effort was aimed at encouraging gas users to switch to electricity. **All**-electric kitchens and electric heating were promoted as symbols of personal prosperity and progress. The "Gold Medallion" all-electric home program would include kickbacks to builders who installed **electric** rather than conventional heating systems, a practice that later became widespread. Mason City, Washington, was promoted as exclusively using electric heating. And in the future, the concept of the all-electric city was the corporate vision of the future promoted by Disneyworld.

Both public systems and private systems, locked in their competition and the larger rationale to build and grow or be swallowed by the larger private companies, urged consumers to use more electricity. Every new gadget on the market was electric. And the new models of old standby appliances used more power than ever before. From a perspective of energy efficiency, such uses of electricity promoted inflated consumption and a massive waste of the nation's resources.

There was no better example of the waste of electricity being engineered than in the **refrigerator**—the major household electric appliance. A Massachusetts Institute of Technology study found that refrigerator

models marketed between the years 1925 and 1950 had a power demand of 6 watts per cubic foot; those marketed between 1950 and 1965 had a power demand of 10 watts per cubic foot; and a 1972 model had a demand of 14 watts per cubic foot. This increase in consumption was above and beyond any new features such as defrosters and ice makers. The same kind of inefficiency was also engineered into other home appliances, lighting, and industrial motors. Companies making these appliances, such as GE and Westinghouse, were, of course, also making the equipment for the generating plants. Boosting demand on one side of the electrical outlet was good business for boosting the need for equipment manufacturing on the other. Consumers were unknowingly caught in the middle of this squeeze.

The "Live Better Electrically" advertising and the political propaganda had its effect. *Electrical World* magazine, a publication boosting the interests of private power companies, published a survey in 1963 that revealed a steady shift against public power companies was taking place. In 1943, 56 percent of the people surveyed approved of public power. By 1963 only 37 percent supported the idea. Conversely private power's approval had climbed 17 points to a 48 percent approval rating. In regard to nuclear power, the most dramatic changes in opinion had come since 1961, shifting from support for government ownership of reactors to a 36 to 39 percent split favoring private ownership.

At the opening of the publicly run Hanford electric plant in September 1963, the world's largest **nuclear-powered** facility at the time, Kennedy again expressed hope for nuclear **power** from both public and private sources. Private power officials responded with outrage and intensified their advertising program and their political action at the federal level. Kinsey Roberts, a member of the Business-Industry Political Action Committee and head of a Washington state power company, addressed a convention of the Rocky Mountain League shortly after the Hanford plant opened. "We in business in this country," he said, "are being badly hurt in Congress by socialists and do-gooders that we are partly responsible for sending there, and up to date we have been doing little about it financially or otherwise." Calling up the old ghost of "creeping socialism," he said public power had to be defeated. "If we don't win this fight, someone else will be next. If profit is evil for us, then it is equally evil for any other business. . . ." With the 1964 elections a year off, he asked his audience and representatives of other industries to concentrate their efforts on the federal government.

Before the elections, however, there were other tragic events ahead.

nium fuel. A full-fledged private nuclear industry became a possibility for the **first** time in eighteen years.

The acceleration of the nuclear program came rapidly. Seven months after his election and less than a year after signing the private ownership act, Johnson discussed progress of the nation's atomic energy program **with** Glenn **Seaborg**. He would later note, "We discussed the progress report on nuclear *power* and the nuclear power plants that are being selected by American utilities because of economic considerations alone. About twenty utilities are considering such large plants and several are on the verge of announcing their orders. The commission estimates 5,000 megawatts of nuclear generating capacity by 1970 and 70,000 by 1980; **seems** remarkable." The figures were indeed remarkable, considering that in his report to President Kennedy just three years before, **Seaborg** had predicted only 40,000 megawatts by 1980. Even more remarkable was the fact that within a few years those estimated figures would double again. The first full rush for commercial nuclear plants was on.

The surge of nuclear construction plans led to an increase in popular opposition as more citizens were confronted with the idea of nuclear power plants rising up in the hills or shorelines of their towns. Behind the scenes an update of the 1957 Brookhaven report (*WASH-740*) raised the estimates on the impact of an accident at a nuclear reactor. Instead of the 3,400 deaths projected in 1957, the new report said a meltdown would result in 27,000 deaths. Estimates on people injured rose from 43,009 to 73,000. Assessment of possible property damage increased from \$7 billion to \$17 billion—leaving citizens and the federal government to absorb risks far beyond the insurance limitation of \$560 million set in the Price-Anderson Act. The primary reason the damage estimates had increased was that the new reactors were two and three times the size of the first commercial reactors. It had been hoped that the data would show a lowering of the earlier Brookhaven statistics, which **pronu-**clear speakers said citizen opponents everywhere had memorized. When industry officials became aware of the new figures, they worked to have the report suppressed, and succeeded. It would not be until much later that the public found out what industry and government officials already knew.

Objective insiders, however, began to change their stance on nuclear power. *Popular Science* magazine, which had naively promoted Con Ed's Indian Point One plant a decade before, now expressed grave doubt about nuclear plants. The June 1965 issue featured a cover article with the title "Is Atomic Industry Risking Your Life?" pasted over a graphic of a community being irradiated by a nuclear power plant in the **back-**

ground. A subheading read: "Don't look now, but there may be a nuclear plant near you. Here's the score on atomic accidents. . . ."

In addition to citing the 1957 Brookhaven report, the Windscale accident in Great Britain, and the deaths of seven people irradiated while employed by the Atomic Energy Commission, the article stated: "Power reactors are still largely experimental, and have been plagued by minor operating problems. . . . The growth of the industry and continuing pressure for power reactors in populated areas increase the likelihood of more and bigger accidents. It's also possible to question whether the industry is adequately regulated."

For the first time significant questions about the rushed commercialization of the technology and the industry orientation of the AEC were getting into the open. The growing doubt would not slow the momentum of development at this stage, but realization of the technical problems and resulting environmental and economic impacts continued to spread.

A near catastrophic accident at the Fermi plant in October 1966 would be passed off almost without mention at first. In the Detroit *Free Press* on the following day an article on an unexplained shutdown at the plant was sandwiched into 4 column inches on page 3 between a photo of the homecoming queen for Central Michigan State and a blurb on fall color in Michigan. A year later, as the shutdown extended into a curious silence, a news reporter discovered the extent of the accident and how it had been hushed up. This information heightened fears of nuclear opponents. For the most part, however, the general public was more concerned with the highly visible disasters from the rapid spread of interconnections and power pooling.

In January 1965, a blackout caused by a loose connection in a relay at a South Dakota power plant had rolled outward into Iowa and five other states in the Midwest. The sprawling size of the disaster was in part a result of the increased interconnections among the region's power companies. More than 2 million people in the heart of the midwestern winter were affected. But the event was seen as an aberration unlikely to occur again.

In the Northeast, ten months later, what would become known as the Northeast blackout—one of those events that people use to mark their personal **histories**—struck a six-state area and parts of two Canadian provinces. It began suddenly in the early evening of November 9 on the New York-Ontario border at the eastern end of Lake Erie.

At 516 P.M. 1,500 megawatts of power, equal to the output of two large generating plants, was going over five transmission lines strung northward toward Toronto. For some reason a backup relay malfunctioned,

and one of the lines short-circuited. Power surged to the other four lines, which then overloaded and also went down. With nowhere to go, the power reversed its flow, instantly pouring back over the New York border. The line that paralleled the border flooded with power. Less than four seconds later, the sudden flood of power on that line overloaded the only other line into Canada, two hundred miles to the east at Massena. After it went down, power backed up from the border into New York and lines short-circuited at seven other locations. Traveling at the speed of light, the disruption came in a huge wave rippling outward toward the south and east and west over interconnected power networks in a widening circle. Overloaded power lines and generating plants went down like dominoes as the surges of power rose and fell over a region covering **80,000** square miles. From beginning to end, the process of shutdown took twelve minutes.

Broadcasters in a **traffic** helicopter over Boston's Southeast Expressway watched in disbelief as the city and surrounding suburbs went dark for as far as they could see. In the homes below, televisions went blank, refrigerators stopped, electric lights went out. Two hundred and fifty miles south in New York City, more than 10,000 rush-hour commuters were suddenly stranded in subway tunnels. Radios went dead, and state civil defense officials would later assure transistor radio listeners who looked out over a darkened landscape that "it was not the work of an enemy attack." While in some areas power companies shut down their regional interconnections and experienced a blackout lasting only fifteen minutes, many of the 30 million people affected were without electricity for up to thirteen hours.

It was the premier power catastrophe. Again came the claims that it was a freak accident that would never be repeated. But a similar power failure would hit the pool for Pennsylvania, New Jersey, Maryland, and Delaware in January 1967, and a few months later another would hit a region of the Northwest from La Grande, Oregon, across Idaho to Salt Lake City. The phenomenon, along with the interconnections and power pooling, was here to stay. Records the FPC began to keep in 1967 showed fifty-two outages between January 15 and July 12 of that year. About half of the equipment failures were due to weather conditions. While small blackouts had always been a part of the industry, these larger "cascading blackouts" brought on by the rapid build-up of regional power networks would continue as a serious problem, signaling the increasing fragility of the transmission systems as they grew more centralized.

Following the first major blackouts, there was an attempt in Congress

to pass legislation to require more reliability in the transmission of power. The Johnson Administration called for the formation of regional councils that would give smaller systems, including rural cooperatives and municipal systems without generation, a voice in determining regional power supply planning. Determined to keep their doors closed and maintain private domination of transmission and generation of power, the private companies stopped the bill by offering to increase reliability with voluntary innovations. Eventually, in 1968 nine regional power councils gathered into the North American Electric Reliability Council to oversee power planning in their respective regions. Private power interests dominated the councils. By the mid-1970s nearly all of the 3,600 private, public, rural co-op, and federal power systems had locked the nation's 340,000 miles of overhead transmission lines into twenty-seven regional power pools.

The rationale for the interconnections, predating Kennedy's encouragement, was to keep costs down and prevent blackouts. In some cases this worked, and the concept in its pure form proved to be a noble one if checked by local control, regulatory oversight, and adequate coordination. For the most part, however, the pools and interconnections served as another avenue of **private** domination of the power industry. As **orga-**nized in the national council, the private power companies' ability to influence regulators and growth planning was almost unassailable.

In their 1971 book, *Centralized Power*, Marc Messing and his coauthors cited analyses showing that coordination between the systems "was not substantially greater in 1970 than it was in 1963." Instead of creating the need to build fewer plants, power pooling and planning by regional councils dominated by the private companies resulted in justifying the building of more plants than were needed and ever higher surpluses of electricity. By the early **1980s** these surpluses and overbuilding would present huge problems and threaten to collapse nuclear construction and bankrupt a half dozen large power companies.

"During the period in which power pool agreements have proliferated," the coauthors wrote, "reserve margins have increased almost 300 percent. . . . Large scale plants have proliferated, but purported economies of scale have not been realized. Power pools have proliferated, but utility coordination has remained limited. . . . Regional planning has proliferated but has only 'made the planning less accessible by state and local governments.'"

Power company planning conducted under the auspices of the power pools and regional reliability councils was also less open to public **scru-**

tiny. The private domination of the pools brought back the pressures of the holding companies in the 1920s. The impact on public power was illustrated by a situation in the Big Eleven Power Loop in New England, forerunner of the New England Power Pool. From 1965 through 1968, public power systems in Massachusetts faced increased pressures to sell their systems to the private companies that dominated the regional pool. In September 1967, for example, the town of Westfield was presented with an **offer** from Western Massachusetts Electric Company to “rent” the municipal system to the private company for \$450,000 per year. Under this arrangement, the private company could use the town’s distribution system and avoid paying taxes. At the time Westfield was buying most of its power through wholesale contracts from Western Massachusetts, part of Northeast Utilities holding company, which played a dominant role in the regional power pool. When the town refused the deal, **its** power supply was threatened. The scheme was called a “squeeze” and a “conspiracy” by an attorney for Westfield. During this same period the towns of Hull, **Holden**, Holyoke, and **Taunton** faced similar pressures. Fortunately this “squeeze” was stopped by regulatory agencies.

In the background, the power pooling and joint efforts to build nuclear plants had brought about a new wave of centralization. In New England, the Hartford Electric Company, Connecticut Light and Power, and Western Massachusetts Electric Company had gained approval in 1967 to form Northeast Utilities. The following year another proposal surfaced for Boston Edison Company, New England Electric System, and Eastern Utility Associates to merge into a new super holding company called Eastern Electric Energy System. The new company proposed to cover most of eastern and central Massachusetts as well as parts of Rhode Island and New Hampshire. Nationwide there was a huge surge toward this corporate centralization, reminiscent of the 1920s. In less than four years, twenty-four proposals for corporate mergers and affiliations among private power companies were put before the federal government.

The most ambitious proposal envisioned the combination of eight companies in Ohio, Pennsylvania, and northern Kentucky. This would have created the largest holding company in the nation: Cincinnati Gas and Electric, Cleveland Electric Illuminating Company, Dayton Power and Light, Ohio Edison, Pennsylvania Power Company, Toledo Edison, and Union Heat, Light, and Power. In the Midwest, American Electric Power absorbed Michigan Gas and Electric and proposed taking over Southern Ohio Electric, Iowa’s two largest power companies, Iowa-Illinois Gas and Electric and Iowa Power and Light, would combine into Iowa Public

Service. Further south, Kansas Power and Light, Kansas Gas and Electric, and Empire District Electric Company began working toward an affiliation in 1968. To the north, Minnesota Power and Light and Northern States Power proposed combining as did Montana Dakota Utilities and Otter Tail Power Company.

This surge toward centralization resulted in an increasing loss of regulatory control over the power companies at the state level and **an**-ticompetitive tactics against public systems, such as what was occurring in Westfield. It also heralded something more. In testimony against the Eastern Electric Energy System creation, a Massachusetts attorney charged:

This is the first **major** step toward placing the entire New England Electric power industry under the control of a single corporate entity. . . . Vermont Yankee’s president testified before the Vermont Public Service Board that it has for some time been the industry’s eventual goal to consolidate the New England power industry under the control of a single corporate entity. Unless the boycott against municipal utilities is first broken, such consolidation will make absolute private industry’s ability to enforce its boycott.

Plans for centralizing power under a single corporate entity were not confined to New England alone; such plans were evident for other regions as well. In October 1967, American Electric Power holding company President Donald C. **Cook** told a National Power Conference in Washington, D.C., that the majority of the nation’s electric systems should be eliminated because they are “obsolete, wasteful and an expensive anachronism.” In a throwback to the Insull era, Cook predicted that within twenty-five years the nation would be served by a dozen or so giant electric systems. While many scoffed at the idea, the federal government began to use such a scenario in discussions about the future.

□

□

□

By 1968 the realities of **inflation** and public awareness of environmental damage began to tighten around the electric industry. Huge clouds of sulfurous smoke pouring from the stacks of coal-burning plants and the pollution of streams and rivers by electric power plants became targets of citizen anger. In the background, widening protests over the Vietnam War generated mistrust of the government and industry. Opposition to the modern-day “social Darwinism” of the giant corporations began to spread as people attempted to regain some sense of control over their communities and environment.