

Turning on the Lights: Deregulating the Market for Electricity

by

Vernon L. Smith

and

Stephen Rassenti

Economic Science Laboratory

University of Arizona

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National Center for Policy Analysis

12655 N. Central Expwy, Suite 720

Dallas, Texas 75243

(972) 386-6272

Executive Summary

Consumers, industry and business have reaped enormous benefits from increased competition and innovation following the deregulation of major industries in the United States and other countries. In the U.S. deregulation of five major industries — natural gas, trucking, long-distance phone service, railroads and air travel — provides total annual benefits to consumers from price reductions and service quality improvements exceeding \$50 billion.

Currently, state legislatures and the U.S. Congress are debating deregulation of the largest, most highly regulated monopolistic industry: electric power. Commercial and residential customers spend more than \$200 billion a year for electricity. Of that amount \$20 billion to \$50 billion is unnecessary spending caused by regulatory inefficiencies. Regulation also causes electricity prices to vary widely from state to state. Thus:

- The annual cost of electricity for a typical family can vary by as much as \$950 from one section of the country to another.
- The average cost of electricity is 10 cents per kilowatt hour (kwh) in New York and almost 10 cents in California, but is only 5 to 7 cents per kwh through much of the country's midsection.
- In Chicago electricity costs 13 cents per kwh, compared to 6 cents in neighboring cities in Indiana.

The Department of Energy's Energy Information Administration has estimated that just allowing competition in retail sales to consumers — without eliminating the costly inefficiencies of federal regulations — could lower electricity prices on average by as much as 6 percent to 13 percent within two years. A Clemson University study estimates that broader deregulation measures and competition would lower electricity prices by at least 13 percent and perhaps as much as 26 percent. This implies:

- A typical household would see its monthly electric bill fall \$18, from \$69 to \$51.
- The average monthly bill for a business would drop \$109, from \$415 to \$306.
- The average monthly bill for an industrial customer would drop \$1,793, from \$6,860 to \$5,067.

When residential and business customers alike can buy their electricity from more than one source, experience suggests that electricity prices will fall, service quality will improve, and the prices of other goods and services will fall as overhead costs from electricity decrease. Additional retail price reductions will become possible because of rapid technological improvements that have cut the potential cost of electricity production in half.

Falling costs and technological innovations were the norm before local electric companies became monopolies — firms with the power to make money by restricting production and raising prices. Before 1910, the United States had competing local electric companies:

- In 1887, six electric companies organized in New York City alone.
- By 1907, 25 electric companies were operating in Chicago.
- Duluth, Minn., had five electric lighting companies operating before 1895, and by 1906, Scranton, Pa., had four.
- As late as the 1930s, Cleveland and Columbus, Ohio, each had direct competition between two private electric companies.

In exchange for monopoly franchises, utilities accepted regulated pricing that provided a “fair” return on capital invested. The federal government became involved in electric power beginning in the 1930s, as both regulator and producer. Today about 25 percent of electricity in the U.S. is generated by local, state and federal governments.

Most states are moving toward retail competition, which will allow consumers to purchase electricity from competing generators. However, retail competition will not be effective if all consumers are required to pay arbitrary fees to reimburse utilities for their so-called stranded costs — utility investments that, while apparently justified under regulation, are uneconomical under competition. Nor is there much consumer choice if there are price controls on power transmission or if local distributors are able to exercise monopoly power.

A solution to these difficulties is divestiture. Today’s electric utilities should divest themselves of power generation facilities and restructure the industry. Divestiture would create two discrete kinds of businesses.

- “Supply” companies involved in power generation.
- “Wires” companies involved in transmission and distribution.

Divestiture will encourage the transition from regulated monopolies to competitive markets by driving down costs and attracting new entrants. States could require utilities to separate into wires and supply companies in order to get compensation for stranded assets.

Since much of the cost of electric service is related to generation, deregulating that end of the business will produce immediate and substantial benefits to consumers and open new opportunities to entrepreneurs.

Consumers will have a variety of service and pricing plans to choose from, as with long-distance and cellular telephone service. They will have access to the latest price information, so they can make intelligent decisions about buying for the short term or contracting for the longer term.

New service options tailored to the consumer’s needs will be available, such as interruptible power — allowing the utility to cut off or reduce power during peak demand periods. For example, in New Zealand and Australia consumers pay less for electricity under a service option that allows utilities to turn off residential hot water heaters by remote control at peak demand periods.

Also, customers will be able to bypass the grid and generate their own electric power. Efficient gas generators, fuel cells and sun-powered cells are available now, and entrepreneurs already are working on other power sources. Competition will spur innovation and hasten the introduction of new technologies.

The primary focus of local wires companies will be on service. Competition will prevail in the production of the commodity (electricity), but familiar local hands will restore power in emergencies.

However there is the danger that reform can produce *reregulation* instead of *deregulation*. In California, the first state to allow all residential customers to buy competitive retail electric power, many consumers saw their electricity bills increase after reform, due to fees for utilities’ stranded costs, subsidies for green power, and more regulators to manage competition.

If Congress and the states took the divestiture route we propose, most — or even all — of the stranded costs utilities claim would disappear. No expansion of state or federal regulatory powers is necessary to manage competition — it will occur naturally — and consumers can realize the full benefits of market competition: better service at lower cost.

Introduction

All over the world, governments are deregulating their economies to increase competition, lower costs and promote innovation. In the United States, beginning in the 1970s controls were relaxed or largely eliminated on five major industries: natural gas, trucking, long-distance phone service, railroads and air travel. The savings to consumers, manufacturers and businesses have been enormous. Competition has spurred the introduction of new technologies, with resulting productivity gains. Meanwhile, safety records have steadily improved and the environment has benefited from fewer emissions.

However, in other industries such as local telecommunications services deregulation and decontrol have proceeded fitfully over the past 20 years, and reforms have even been reversed. For example, cable television rates were decontrolled, recontrolled, then decontrolled again; and federal regulators say that so far there is no effective competition in local telephone service. Thus consumers have yet to realize the full benefits of improved service, quality and competitive pricing in these industries.

In the past few years, state legislatures and the U.S. Congress have begun debating deregulation of the largest, most highly regulated monopolistic industry: electric power. Whether, how and to what extent this industry is deregulated will determine the benefits residential consumers and businesses receive.

Regulation of electric power is complex and fragmented because local, state and federal legislators and regulatory bodies all claim a role. It is extensive because electric power has been treated for nearly a century as a natural monopoly, allegedly requiring government oversight to protect consumers. Indeed, progressives and socialists were so concerned about the monopoly power and political clout of the electric power industry that for many decades they advocated total government ownership of electric power utilities, and today some 25 percent of electrical power in the United States is produced by generators owned by local and federal agencies.

Commercial and residential customers spend more than \$200 billion a year for electricity. Of that amount \$20 billion to \$50 billion is unnecessary spending caused by regulatory inefficiencies.¹ Regulation also causes electricity prices to vary widely from state to state. Thus:

- The annual cost of electricity for a typical family can vary by as much as \$950 from one section of the country to another.²
- The average cost of electricity is 10 cents per kilowatt hour (kwh) in New York and almost 10 cents in California, but is only 5 to 7 cents per kwh through much of the country's midsection.³
- In Chicago electricity costs 13 cents per kwh, compared to 6 cents in neighboring cities in Indiana.⁴

“The annual cost of electricity for a typical family can vary by as much as \$950 from one section of the country to another.”

Changes in federal law and regulations have allowed some customers to reap the benefits of competitive electric power. Wholesale electric power markets now allow utilities and independent producers to buy and sell electricity at competitive market rates. Also, technology enables many large industrial customers to produce electricity on-site for a price below that of the local utility or to bargain with utilities for a price nearer the wholesale competitive price.

However, small businesses and residential customers who purchase electricity at the retail level have not had the option of buying competitive power or producing their own power at competitive rates. Thus it is low-volume, high-cost customers who are being left to pay monopolistic electric power prices.

In the past few years, some states have passed legislation to restructure the industry and allow consumer choice. The limited competition implemented so far bears comparison with the “managed competition” health care proposal of the Clinton administration: it is so highly regulated and burdened with mandates that consumers have few alternatives. Deregulation in other states has been bogged down by demands to subsidize some ratepayers at the expense of others and to favor so-called green energy sources. It has also been held up by utilities’ attempts to recoup the estimated cost of uneconomical investments made under prior regulatory regimes.

Today, the danger is that instead of being deregulated, the industry will be reregulated. An industry restructured to conform to yet another regulatory framework will not provide the potential benefits of market competition. If deregulation is not effective, customers will not enjoy the potential reductions in price and improvements in service. Worse, market failure will probably be blamed for the inadequacy of reforms.

“There is a danger that the industry will be reregulated rather than deregulated.”

Benefits of Deregulation

Two types of evidence suggest the potential benefits of electric power deregulation: (1) the experiences of other recently deregulated industries and (2) direct estimates based on the economics of electric power.

Evidence from Other Deregulated Industries. Like electric power, the five industries that have been deregulated — natural gas, trucking, long-distance phone service, railroads and air travel — were once considered “natural monopolies” or essential public services. In exchange for restrictions on new competitors, they surrendered their pricing freedom and met some public service requirements. The lessened competition and price controls impeded new investment and productivity measures, raising prices and lowering the quality of service. However, after 10 years of deregulation in these industries, the total annual benefits to consumers from price reductions and

service quality improvements exceeded \$50 billion. According to economists Robert Crandall and Jerry Ellig:⁵

- Consumer prices for natural gas have declined between 27 percent and 57 percent after inflation since deregulation of that industry began in 1978, and without the threat of artificially created shortages caused by price controls the quality of service improved.
- In the trucking industry, prices have plunged between 28 percent and 56 percent since deregulation in 1980 — while the number of carriers doubled in the first six years and consumers benefited from such innovations as tracking and monitoring services.
- Since the 1984 breakup of AT&T Corporation, long-distance prices have been cut 40 percent to 47 percent, and the building of nationwide fiber optic networks has speeded up due to competition.
- Following deregulation, railroad shipping prices declined 44 percent, while increased productivity allowed the railroads to ship more goods with about half as many employees.
- Air fares have fallen by 33 percent since 1976, and service has improved with more frequent flights and fewer trips that require changing airlines.

Crandall and Ellig conclude, “Given the history of natural gas, telecommunications, airline, railroad, and trucking regulation, is it reasonable to expect that customer choice in electricity could generate consumer benefits? The experience of all these industries suggests that the answer is a resounding ‘Yes.’”

Direct Estimates of the Benefits of Competitive Electric Power.

The Department of Energy’s Energy Information Administration has estimated that competition in the industry could lower electricity prices on average by as much as 6 percent to 13 percent within two years. A Clemson University study estimates that competition would lower electricity prices by at least 13 percent and perhaps as much as 26 percent.⁶ Figure I shows this implies:

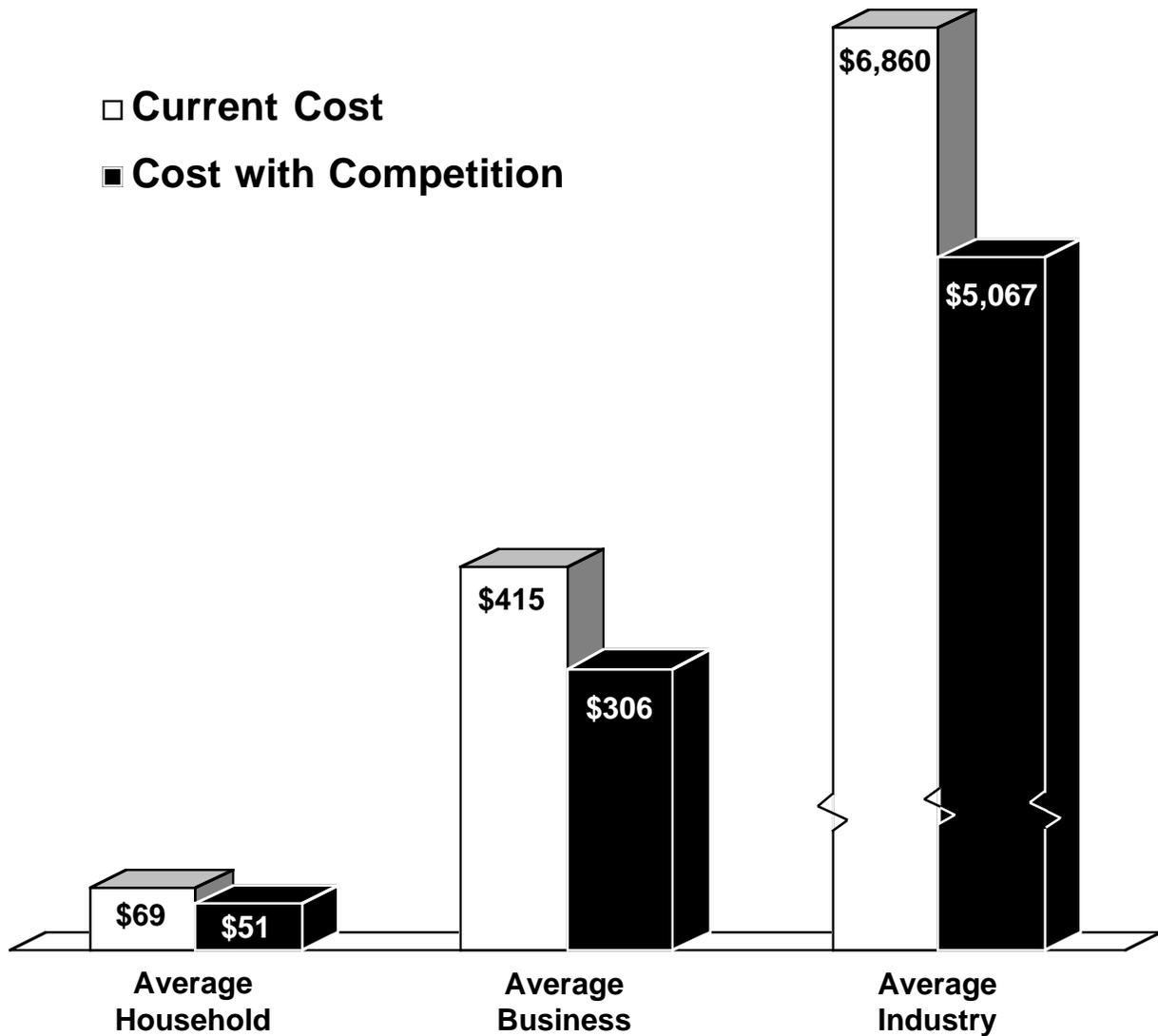
- A typical household would see its monthly electric bill fall \$18, from \$69 to \$51.
- The average monthly bill for a business would drop \$109, from \$415 to \$306.
- The average monthly bill for an industrial customer would drop \$1,793, from \$6,860 to \$5,067.

When residential and business customers alike can buy their electricity from more than one source, experience with competition in other industries

“The benefits to consumers of deregulating other industries exceed \$50 billion over 10 years.”

FIGURE I

The Effect of Competition on Monthly Electric Bills



Source: Michael T. Maloney, Robert E. McCormick and Raymond D. Sauer, *Customer Choice, Consumer Value: An Analysis of Retail Competition in America's Electricity Industry* (Washington, D.C.: Citizens for a Sound Economy Foundation, 1996).

“Under competition, a typical household would see its monthly electric bill fall \$18.”

suggests that electricity prices will fall and service quality will improve. Also, the prices of other goods and services will fall as overhead costs from electricity decrease.⁷

Additional retail price reductions will become possible because of rapid technological improvements that have cut the potential cost of electricity production in half. Today, gas-fired combined cycle plants can generate electricity for baseload operations (where the turbines run continuously) at around 3 cents per kwh. Natural gas microturbines can produce from 500

watts to several hundred kilowatts for as little as 4.5 cents per kwh when the generated steam is also utilized. Moderate usage without cogeneration doubles the nominal cost to about 9 cents.⁸

By comparison, electricity can be generated by state-of-the-art scrubbed-coal plants for around 4.5 cents per kwh, by combined cycle plants run on liquefied natural gas for around 5 cents per kwh and by advanced light-water nuclear reactors for about 7.5 cents per kwh.⁹ [See the sidebar on Gas Turbine Technology.]

Evolution of State Electric Utility Regulation

Local electric companies were not always monopolies — firms with the power to make money by restricting production and raising prices. Before 1910, the United States had competing local electric companies:¹⁰

- In 1887 alone, six electric companies organized in New York City.
- By 1907, 25 electric companies were operating in Chicago.
- Duluth, Minn., had five electric lighting companies operating before 1895, and by 1906, Scranton, Pa., had four.
- As late as the 1930s, Cleveland and Columbus, Ohio, each had direct competition between two private electric companies.

Furthermore, power generating capacity was widely dispersed and broadly owned. Thus in 1900 over 59 percent of electricity-generating capacity in the United States was located at industrial sites.¹¹ Electricity production surged from 4.5 million to 17.2 million megawatt hours between 1900 and 1910 while prices fell by more than 26 percent, and because of competition, consumers benefited from new services — offered without government help or mandates. For example:

- Private companies began offering electric trolley service, balancing out the nighttime demand for electricity with a daytime market.
- Unlike the regulated natural gas utilities, which offered service for a fixed monthly price, the electric industry introduced metering and pricing based on usage.
- Through voluntary teamwork, a committee of the Institute of Electrical Engineers found ways to standardize electrical machinery, which lowered costs and improved service.
- The National Board of Fire Underwriters, a private insurance association, helped develop safety procedures.

Development of State Regulation. States began regulating electricity pricing and market entry in the first two decades of the 20th century, for a variety of reasons.

“Local electric companies were not always monopolies.”

Gas Turbine Technology

Gas turbines of the 1960s and 1970s had thermal efficiencies — the rate at which an electric generator can turn fuel into electricity — comparable to conventional power plants, around 30 percent. They were used to carry peak loads at times of day when energy usage is high. Since then, the thermal efficiencies of gas turbines have increased:

- In the later 1970s thermal efficiencies jumped from around 30 percent to 34 percent.
- From 1980 to 1990 efficiencies jumped again to around 37 percent, and the newest turbines have efficiencies of 40 percent.

Further increases in thermal efficiency came when the exhaust gas of turbines was recycled in combined cycle units.

- Harnessing exhaust heat increases electricity output by 50 percent, which means the thermal efficiencies of combined cycle units are 50 to 55 percent when the turbine itself has an efficiency of 34 to 37 percent.
- Thus combined units with the most advanced turbines attain efficiency of 60 percent — twice that of old conventional steam units.

This cuts in half the fuel cost of generating electricity, and coupled with the much lower construction costs for turbines, cuts the cost of generating power in half.

Highly efficient turbine generators apply jet engine technology developed to reduce airlines' fuel costs, and they have been bought by those who produce power for competitive markets. Monopoly utilities, of course, do not have the same incentives to innovate. However, some electric utilities have spun off subsidiaries that use the new combined cycle generators that produce lower-cost electricity they can sell in the competitive wholesale market, while they continue to produce higher-priced electricity from older generating plants for their captive local customers.

Natural gas microturbines can produce from 500 watts to several hundred kilowatts for as little as 4.5 cents per kwh when the generated steam is also utilized. Because less energy is lost in natural gas pipeline transmission than in transmitting electricity via powerlines, it is most efficient for turbines fueled by natural gas to be located near the point of use. Microturbines currently cost \$15,000 to \$30,000, and some experts say gas and diesel fueled microturbines may be cost competitive for commercial users such as shopping malls and office buildings that want to bypass electric utilities. With further product development, microturbines may become economical for home use, allowing residential consumers to bypass their local electric utility.

Sources: Michael T. Maloney and Wayne Brough, "Promise for the Future, Penalties from the Past: The Nature and Causes of Stranded Costs in the Electric Industry," Citizens for a Sound Economy Foundation and the International Mass Retail Association, 1999, "Appendix A: Technological Advances in Electricity Generation"; and Matthew Carolan and Raymond J. Keating, "Microturbines: The Engine of Deregulation," *Investor's Business Daily*, December 29, 1998.

- As early as 1897, Samuel Insull, head of the Chicago Edison Company, president of the industry's National Electric Light Association and a persistent advocate of regulation, began calling for exclusive licensing of electric utilities and for "fair profit" price control by state governments.¹²
- For many years, economists assumed that electrical service — like other utility networks such as water, natural gas and telephone service — was a "natural monopoly," which meant that having a single provider was the most efficient use of resources.
- Technological innovations gave rise to economies of scale in generation and reduced the amount of energy lost in transmission, allowing a single firm to serve more and more customers at a lower average cost.
- Proponents of regulation argued that when marginal costs are decreasing, a single firm could supply an entire market more cheaply than two firms and capture the entire market anyway — as bankruptcies and consolidations in the industry seemed to indicate.

Thus in exchange for monopoly franchises, many utilities were willing to accept regulated pricing — provided it was "fair." Utility executives argued that regulators who acted "scientifically" and had exceptional "social consciences" could determine rates better than the market could.¹³

By 1913, 27 states and the District of Columbia had state commissions regulating electricity rates — and cities began issuing exclusive franchises. After states began regulating electricity, prices increased and production decreased. In fact, a study of the period 1900-1920 shows that the first states to adopt regulation were those in which electric rates and profits were lowest and output highest — in other words, where competition tended to be vigorous.¹⁴

When progressive reformers in the 1920s tried to tighten regulation or substitute municipal for private ownership, the power companies fought back effectively. The companies had every incentive to protect their interests. Stockholders could receive up to 40 percent in profits. Utilities used a holding company structure that bewildered state regulators, making possible returns of 2,000 or 3,000 percent in exceptional cases.¹⁵

For decades, state regulatory commissions allowed utilities to earn monopoly profits. A well-known study by Harvey Averch and Leland Johnson found that in the 1960s utilities were allowed to earn a rate of return higher than necessary to attract needed investment. As a result, they argued, utilities had an incentive to build more generating capacity than they needed. Regulators allowed utilities to raise rates to cover the cost of the unneeded capacity, with allowance for profit, and consumers suffered.¹⁶

"Utility executives argued that regulators could determine rates better than the market could."

“Holding rates down benefited consumers in the short run, but caused higher rates in the long run.”

“Consumer Interest” Regulation. After the early 1970s, however, regulators tended to suppress rates below the level that allowed a fair return on invested capital. At about the same time, a belief that the supply of fossil fuels was disappearing and concerns in the wake of the OPEC oil embargo induced many utilities to build nuclear power plants. The cost of these plants skyrocketed to unprecedented levels due to environmental, safety and regulatory requirements. The oil embargo also brought an era of rising fossil fuel prices, and regulators did not increase the rates utilities were allowed to charge quickly enough to cover costs. Finally, consumer groups advocating lower rates gained new influence over regulatory commissions previously dominated by the electric industry and large industries.

In the late 1970s and the 1980s, rate suppression caused utilities to invest too little, keeping older equipment on line longer. Meanwhile, their reserve capacity to meet emergencies and peak loads became thinner and thinner. While consumers benefited from lower rates in the short run, in the long run they paid fuel-cost penalties because utilities could not afford to replace old plants with more efficient ones or switch to lower-cost fuels. In the 1980s, Peter Navarro estimated rate suppression policies would cause rates to be 11 percent to 33 percent higher by 2000 than they would be had regulators permitted utilities to earn a fair rate of return.¹⁷

Although monopoly electric service providers are the norm, even today in Lubbock, Texas (pop. 186,000), two electric companies with separate poles and lines serve the entire city. Consumers in Lubbock pay less than customers in nearby Amarillo, a city of comparable size but with no competition. Some 22 other American cities have such competitive service.¹⁸

Evolution of Federal Electric Utility Regulation

For most of this century, electric power was largely regulated at the state and local level. However, the federal government became involved in electric power beginning in the 1930s, as both regulator and producer.

Public Utility Holding Company Act. Concerns about utility failures and the economic power of large utility holding companies that bought up many independent electric companies during the Great Depression led to the passage of the Public Utility Holding Company Act of 1935 (PUHCA). This act regulates the practices of large multistate utility holding companies and restricts them from entering other energy-related businesses. Because of these restrictions, PUHCA is considered a major impediment to the development of competitive power markets. One industry study estimated that PUHCA imposes costs on the electric industry of \$3 billion to \$12.6 billion annually.¹⁹

Federal Energy Regulatory Commission. Congress also passed the Federal Power Act of 1935, establishing the Federal Power Commission. It

was succeeded by the Federal Energy Regulatory Commission (FERC), an independent body now within the Department of Energy.

FERC's powers were expanded by the Public Utility Regulatory Policies Act (PURPA) in 1978 and the Energy Policy Act of 1992 (EPAct). Today, the FERC approves rates for wholesale sales of electricity and for electricity transmission in interstate commerce for investor-owned utilities, power marketers, power pools, power exchanges and independent system operators. It reviews rates set by the federal power marketing administrations, confers exempt wholesale generator status under the EPAct and certifies small power production and cogeneration facilities. In addition, mergers between certain electric utilities require FERC approval — which can take years.²⁰

The Tennessee Valley Authority and Power Marketing Administrations. The federal government is the largest electric power producer in the country — through the Tennessee Valley Authority (TVA) and four regional power marketing administrations (PMAs)²¹ that generate electric power from dams built and maintained by the U.S. Army Corps of Engineers and the Bureau of Reclamation and several nuclear power plants.

The TVA was created in 1933 to generate and distribute electric power in the Tennessee Valley region. As America's largest power company, the TVA provides service to more than eight million customers in Tennessee and six other states. A combination of generous tax breaks and special regulatory exemptions keeps prices and rates artificially low.

The power generated by the PMAs represents as little as 2 percent of electricity used in the region served by the Southeastern PMA and as much as 65 percent of that used in the Pacific Northwest area served by the Bonneville PMA. The electricity is sold at highly subsidized nonmarket rates that vary with the type of user.²²

Opening the Door to Wholesale Competition. Although Congress cracked down on many utility company abuses in 1935, the basic regulatory structure remained largely unchanged until the 1970s, when energy shortages hit the nation.

In response to the energy crisis, Congress passed the Public Utility Regulatory Policies Act (PURPA) in 1978, opening the door to competition in electric power generation. Among the goals of PURPA were to improve energy efficiency and increase the reliability of electric power supplies. PURPA required utilities to purchase electricity produced by renewable energy sources and cogeneration (where an existing industrial plant generating steam for some other purpose also uses it to generate electric power).

In addition, the act required utilities that owned long distance, high-voltage power lines connected to the growing national grid to convey electricity purchased by local utilities from other utilities or nonutility generators

“The federal government is the largest electric power producer.”

(NUGs) to improve service reliability. This “wheeling” was encouraged by new Federal Energy Regulatory Commission (FERC) regulations that required utilities to account for all the wholesale purchases and sales of electricity. This allowed municipal authorities that did not have generators of their own, or needed additional power for peak demand, to shop for electricity from any utility or NUG.

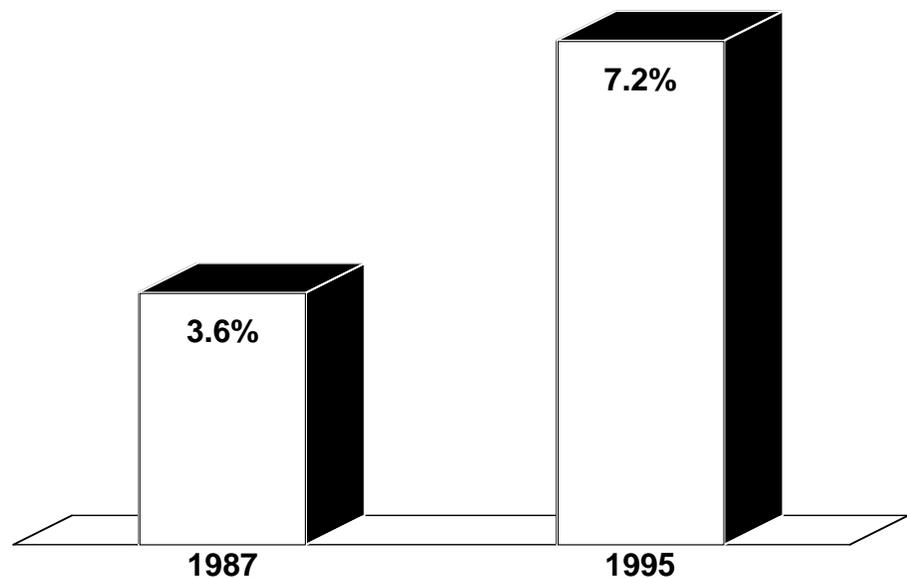
The trend toward independent generation accelerated with the Energy Policy Act of 1992, which allowed the FERC to open wholesale markets for competitive purposes. FERC eventually adopted rules (Orders 888 and 889) requiring all utilities owning transmission lines to provide open and equal access to all electricity generators.²³ Wholesale power marketers and brokers began to do business.

By 1978, industrial electricity capacity had fallen to a low of 2.7 percent of capacity.²⁴ As Figure II shows, independents (nonutility generators), which had 3.6 percent of the nationwide generating capacity in 1987, had 7.2 percent by 1995. Currently they have around 10 percent.²⁵ Since 1990, NUGs have made more than half of all investments in additional plant capacity.

“Nonutility generators had 3.6 percent of the nationwide generating capacity in 1987, and 7.2 percent by 1995.”

FIGURE II

Independent Generators’ Share of the Electricity Market



Source: Energy Information Administration.

“The lowest-cost municipal systems have average residential rates 25 percent lower than systems with long-term contracts.”

Another reason for NUGs’ growing share of generating capacity was the requirement that power be purchased at rates as high as the utility’s “avoided cost” — the marginal cost to the utility of building new generating capacity or purchasing electricity elsewhere. Regulators in some states set that price artificially high and required utilities to enter into long-term fixed-price contracts with producers, creating the potential for large profits and encouraging rapid entry into the market. Nonutility generating companies built new, technologically advanced plants at low cost, while the utility companies were saddled with old plants still being depreciated over a long term. The result is a “robust wholesale competition” that is saving customers an estimated \$3.5 billion to \$5 billion annually, according to FERC.²⁶ Most municipally owned utilities do not generate their own power. So instead of buying electricity from a neighboring monopoly, those municipal authorities that are not locked into long-term power contracts with another utility have access to the wholesale electricity market. They have passed some of the savings on to their customers and are now typically the lowest-cost provider in every state:

- Nationwide, the residential rate for electric power in the median municipal authority averages 7.1 cents per kwh, which is close to the 7.5 cents per kwh charged by the median investor-owned utility.
- However, the *lowest-cost* municipal systems — those free to buy wholesale competitive power — have average residential rates of 5.6 cents per kwh, which is 25 percent below the rates of either investor-owned utilities or municipal power authorities with long-term contracts.

For example, instead of renewing its contract with the Tennessee Valley Authority, a major federally owned power generator, the municipal electric utility of Bristol, Va., was able to solicit bids from competing producers. As a result, it was able to reduce its power costs by 35 percent.²⁷

The High Cost of Green Power. Other provisions of PURPA have hurt consumers. The mandate in PURPA for utilities to purchase renewable energy, such as solar and wind power technologies, at their “avoided cost” is a subsidy consumers pay in the form of higher energy prices.²⁸ For example:

- PURPA requires Southern California Edison to spend approximately \$800 million a year buying electric power from solar power fields at 15 cents per kwh, well above the prevailing market price.
- Pacific Gas & Electric must pay 11 cents per kwh for wind power generated outside San Francisco at a windmill farm where millions must be spent to prevent birds from flying into the windmills.
- In total, PURPA will inflate utilities’ costs by \$37 billion through the year 2000.²⁹

A Model for Deregulation

The public policy goal of deregulation is to allow competitive markets to evolve so consumers can reap the benefits of increased efficiency in the production and delivery of goods or services. With respect to electric power, this means substituting competition for regulation in the generation and, potentially, the delivery of electricity. As previously noted, the wholesale market for electric power has been deregulated to the extent that utilities and nonutility generators can buy and sell power in some markets, and large industrial consumers can buy power directly from nonutility generators. However, the prices and conditions under which electricity is transmitted, and the prices and conditions under which residential consumers and businesses purchase distributed power, are controlled by federal, state and municipal regulators.

Most states are moving toward retail competition, which will allow consumers to purchase electricity from competing generators. However, retail competition is not deregulation unless there is competition in the prices offered to consumers. Price competition is impeded if all consumers are required to pay arbitrary fees to reimburse utilities for their so-called stranded costs. Nor is there much consumer choice if there are price controls on power transmission or if local distributors are able to exercise monopoly power.

Thus, proposals to bring retail competition to the electric industry must address two major issues:

- What should be the relationship between generation and transmission? (Many utilities generate and deliver electricity through their own transmission networks.)
- What should be done about stranded assets — utility investments such as nuclear power plants whose value under competition is discovered to be substantially less than their cost?

A solution to these difficulties is divestiture. This would allow the successful deregulation of the electric power industry.

Today's electric utilities should divest themselves of power generation facilities and restructure the industry. Divestiture would create two discrete kinds of businesses [see Figure III]:

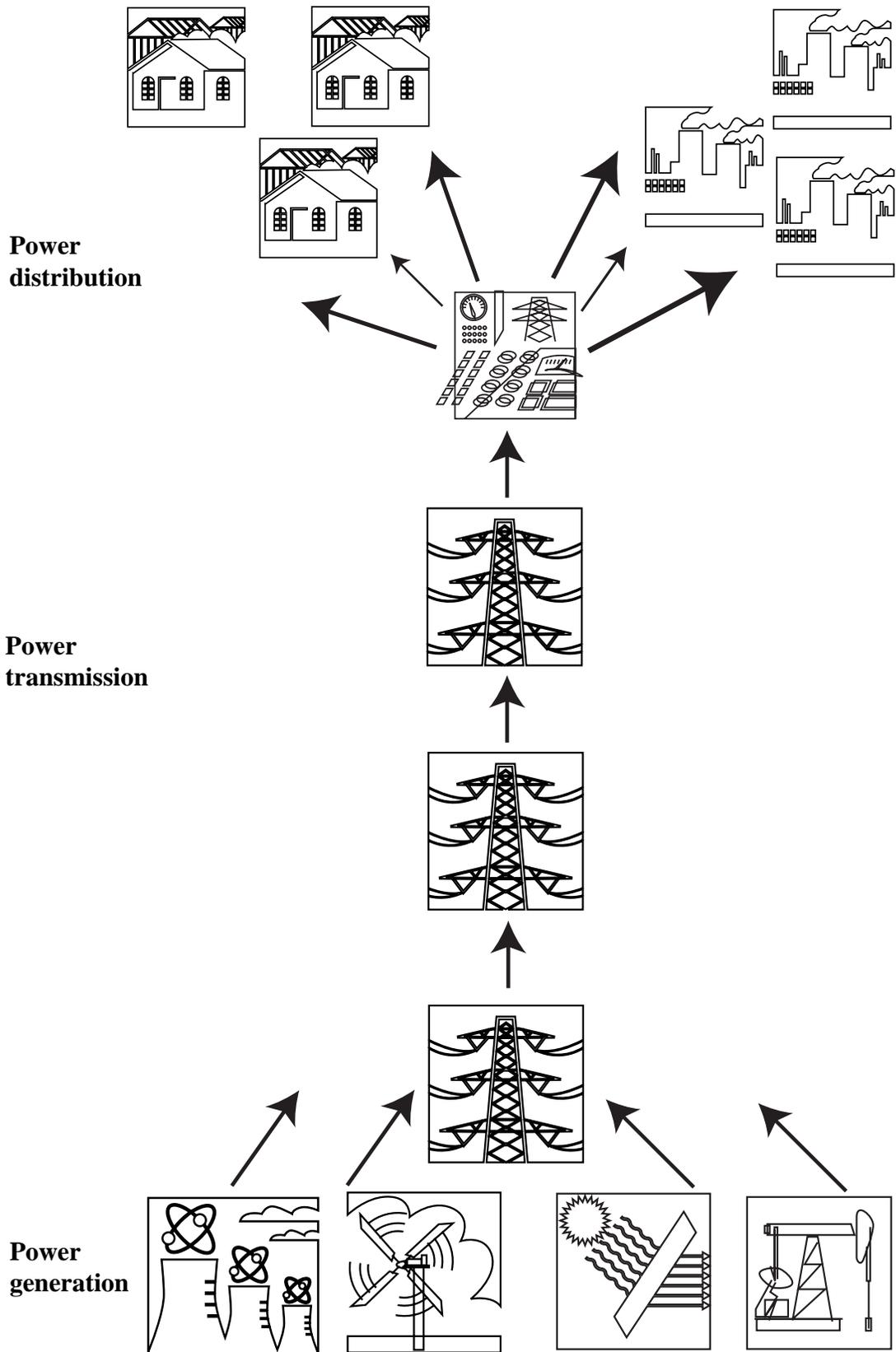
- "Supply" companies involved in power generation.
- "Wires" companies involved in transmission and distribution.

Technique presents no important difficulties. The breakups could be accomplished through asset sales or spin-offs. Let us examine how an industry so structured would function.

"In a restructured industry, 'supply' companies would generate power and 'wires' companies would transmit and distribute it."

FIGURE III

The Restructured Electric Power Industry



Supply Companies

Creating a separate electric power supply industry is essential to deregulating successfully because it will address concerns about large power suppliers monopolizing some geographic markets.³⁰ In addition to helping discourage antitrust action, divestiture will encourage the transition from regulated monopolies to competitive markets by driving down costs and attracting new entrants. Since much of the cost of electric service is related to generation, deregulating that end of the business will produce immediate and substantial benefits to consumers and open new opportunities to entrepreneurs.

One way creating supply companies will drive costs down is by removing any incentive for wires companies to discriminate among suppliers once power prices are deregulated. Utilities that own both the power sources and the transmission and delivery facilities have incentives to favor their own power sources and discriminate against outside generators. Separating generation from transmission makes it more likely that competition, not regulation, will set the price of energy.

Why might electric utility companies embrace such a divestiture plan? Because states could require them to separate into wires and supply companies in order to get compensation for stranded assets.

Stranded Assets. Stranded assets are utility investments that, while apparently justified under regulation, are uneconomical under competition. The problem of stranded assets is political and is perhaps the most critical issue in deregulation. Conventional wisdom holds that overcapacity in generation has created assets whose depreciated cost, or book value, far exceeds their market value, but the problem varies greatly from region to region. Nuclear facilities, in particular, are believed to be unable to command market values commensurate with their book values. Estimates of the value of such assets range as high as \$300 billion in an industry with \$175 billion in shareholder equity.³¹ Thus utilities want some way of recovering the cost of those assets without distorting competition for marginal energy sources. They propose that their electric power consumers be assessed fees until the companies recoup their stranded costs.

However, we should not compound artificial price differences that arise from regulation. If a deregulation plan leaves each company to absorb uncushioned losses due to stranded assets, prices for some utilities' customers will escalate, worsening a problem deregulation is intended to solve. Separating stranded generation assets from newly formed wires companies would reduce and eventually eliminate such price differences, as explained below.

Determining Stranded Costs. Most proposals for dealing with stranded assets have called for a regulatory body to fix their value after a formal hearing, taking into account the utility's efforts to mitigate the impact of the assets on rates. This procedure has a dual disadvantage. First, the costs

“Having separate supply companies would remove any incentive for wires companies to discriminate among suppliers.”

“The market should be allowed to determine the dollar value of stranded assets.”

already are reflected in the utility’s rates. Second, regulatory obligations are exactly what the transition to competition is supposed to phase out.

A better approach — addressing both views mentioned above — is to let the market determine the dollar value of the stranded assets. For the most part, these assets are related to the generation of electricity. Since divestiture would require the spin-off or outright sale of those assets by integrated utilities, generator value would be determined in the market by the price of new shares (in a spin-off) or by the successful bid (in a sale). Given the enormous importance of the electric power industry, buyers likely will emerge in great enough numbers to prevent price depression.

Although the book value exceeds the market value of some generation assets, this is not true of transmission or distribution assets. Acquiring new rights-of-way for transmission lines today is expensive or impossible. Thus the value of these assets will be substantially above historical costs if the rights to use the transmission system are permitted to reflect real conditions. Regulatory distortions have produced rates that overvalue a utility’s generation assets and undervalue its transmission assets. This discrepancy in value can offset compensation costs for many stranded generation assets.

Some argue — although the power companies do not agree — that utilities have no right to recover stranded costs. They argue that air, rail and trucking companies were not reimbursed for such costs when they were deregulated. They also contend that government regulation does not confer a property right: when investors buy shares in a regulated industry, they gamble that regulations might be changed.

Others counter that while government limited entry and fixed prices in most regulated industries, it did not set prices to generate a specific return on capital. They contend this type of regulation gave electric utilities an extra incentive to make heavy capital investments.

Reconciling these sharply conflicting views is the greatest single challenge to deregulation of the industry.³² Because the political environment varies from state to state, utilities will differ in the form and terms of the bargains they seek to strike with regulators. Whatever the final arrangements, the objective of the utility will be to accept full deregulation and divestment of its generating assets in return for some form of compensation for a net capital loss, if any, on those assets.³³ This could remove a major roadblock to the complete acceptance of deregulation and hasten the creation of market-based pricing and allocation of electrical energy. Several recent sales of generation assets have brought prices higher than depreciated costs. In these cases, so-called stranded costs turned into profitable assets.³⁴

Competitive Pricing of Transmission. The overvaluation of generation assets and the undervaluation of transmission assets presents another market-based opportunity. Regulators can give utilities greater freedom to

“Competition would discipline both supply and transmission rates.”

price both transmission and generation competitively. This will almost certainly lower the price of energy while raising the price of transmission in the short run. Competition would discipline both supply and transmission rates — supply by direct competition among sources, transmission by competition among rival paths and the ability of customers to bypass the electric grid by generating their own power. Any short-run abuse of market power in transmission would simply speed up the process of bypass.

New Institutions. Creating supply companies will engender new market-based institutions. Supply companies will be free to sell electric power on a spot market resembling the commodities exchange or by contract with major buyers or any combination of the two. As discussed below, contracts should be financial hedges, with both parties bidding to buy or supply real power in the spot market. Competition in the wholesale market is spurring participants to devise new methods and institutions for trading power as a commodity. For example:

- The Continental Power Exchange (CPEX), begun in July 1995, is a computerized electricity trading market that facilitates power transactions from participating entities coast to coast, and its trading volume already makes it one of the largest power markets in the world.
- The recently chartered Automated Interchange Matching System (AIMS) includes more than 31 entities trading power from Florida into the North Central states.
- The Western Systems Power Pool, begun as an experiment in 1990, has expanded to include power generators, marketers and utilities from British Columbia to Mexico and from the Pacific Coast to Georgia.
- Wholesale electricity spot markets are now operating at several sites, and the *Wall Street Journal* carries daily price indexes.

These developments, along with the entry of hundreds of new companies into the electric business, show that even in a heavily regulated framework, markets respond to new opportunities. The contours of a future commodity market are well established in the supply business. If generation assets were sold or organized into stand-alone companies, these trends would accelerate.

Wires Companies

In a deregulated market with separate generation and delivery systems, wires companies — the transmission and distribution systems — will schedule power in their areas to minimize customers’ energy costs and will deliver power to the points where interregional networks connect. The wires companies will provide construction, operation and maintenance of the systems,

including poles, wires, substations, transformers, meters and service connections.³⁵

When a third party cannot or will not supply the promised power, and backup power is unavailable, the wires companies will take steps to maintain operation of the electric system. If a company cannot obtain power, it will curtail service according to predetermined standards. But such contingency planning primarily will serve as assurance of a smooth transition from regulation to competition. If the price is right there will be no problem enticing adequate supplies at competitive market rates.

Retail customers will be able to buy electricity as a commodity or, if they prefer, the wires company can do so on their behalf and charge them for the power.³⁶ Since the supply and wires businesses will be separate, supply companies will be free to compete for long-term contracts with individual customers or they can bid to supply power for pooled demand in a wires company's territory through the spot scheduling center discussed below. The dispatch center associated with the wires company will manage the flow of power to the consumer.

Better Service. With no ties to the supply companies, wires companies will be indifferent to the supplier chosen by customers. Their primary focus will be on service. In that way, customers will benefit from commodity markets. But for the immediate future, local utilities will continue to discharge their legal obligations to maintain a stable power supply, build infrastructure, provide service and pursue social programs. Competition will prevail in the production of the commodity (electricity), but familiar local hands will restore power in emergencies.

Scheduling. Scheduling is the core service of the delivery company. Since electricity cannot be stored, a supply cannot be built up to meet future peak periods.³⁷ That is one reason why utilities are willing to give discounts to large users that contract for interruptible supply — allowing the utility to cut off or reduce power during peak demand periods. With interruptible supply contracts, the utility can survive peak demand periods without maintaining expensive generating facilities that stand idle at other times. Interruptible supply is also possible for individual retail consumers. For example, New Zealand and Australian utilities can turn off residential hot water heaters by remote control at peak demand periods. These interruptions usually are brief — perhaps 15 minutes — but they add up to lower costs for consumers and less facilities demand for the supplier.

Utilities use algorithms (special calculations according to formulas) to determine the minimum cost of delivering power based on the generators used, their location and the users' location. The electricity comes from a mix of "base load" and "load-following" power station units. Base load units are always on-line, supplying the minimum amount of energy always in use.

"Scheduling is the core service of the delivery company."

Load-following units are on automatic generator control and their output fluctuates to synchronize supply with demand by changing the fuel feed rates. This instantaneous response precludes system instability, blackouts and brownouts during times of peak demand.³⁸ However, the response of load-following units can be subject to market discipline through bids to supply peaking power in the spot market. Alternatively, wires companies can supply load-following generation until generation and distribution are completely separated.

The Spot Market for Electricity. Power will always be available through a spot scheduling market, open for bidding to both customers and generators. The spot prices for power at a specific location (based on the results of the bidding) will be public information, so customers and generators can make intelligent bids and informed decisions about buying for the short term or contracting for the longer term.

Institutions and practices in the electricity business will evolve naturally and flexibly depending on need, as they have in the long-distance telephone business. To keep costs as low as possible, all who consume or produce power should participate in the spot market, with all other contracts being financial hedges (like futures market trading) to protect the participants against spot-market price volatility. This is desirable for two reasons:

- The cost of power lost in transmission is a function of total rather than individual flows and can be allocated to each individual's activity if all location prices are determined simultaneously.
- When transmission line flows are constrained, bids and offers in the spot market provide a natural basis for determining who must be curtailed since upstream generators with the lowest bid prices are accepted up to the last bid needed to provide the constrained flow. Nonmarket-based priority and rationing schemes and secondary markets in constrained capacity contracts will be unnecessary.

Interruptible bulk customers could participate in the spot scheduling market using special bids with price limits. These bids will have a lower priority during times of peak demand than will spot market price bids by the delivery company's other customers.³⁹ The latter will pay whatever price is necessary to obtain spot market power and have priority over all limit price bids. If the spot price exceeds the bid limit price of a bulk customer, that customer will be interrupted. The bid limit prices signal the terms on which those customers accept interruption.

Rate Regulation. Wires companies thus will be able to charge wholesale prices determined by the market, plus a fee for maintaining and operating the grid. For the time being, that carrying charge could continue to be regulated by state utility commissions on the traditional cost-of-service basis or, more imaginatively, incentive- and performance-based regulation.

“Institutions and practices in the electricity business will evolve naturally and flexibly depending on need, as they have in the long-distance telephone business.”

“The role of regulatory agencies will be limited.”

Less invasively, price ceilings could be used. In the United Kingdom, charges for the wires of both local distribution systems and transmission are subject to ceiling price caps. These can increase annually by a certain factor: the retail price index (RPI), less a target rate of real price decrease (X) to reflect productivity gains. The price level and the “X” factor are subject to review every five years or so. This “RPI minus X” pricing provides an incentive to control costs within these ceilings. If a company is able to reduce costs, it can keep the money saved.

Quality Regulation. The role of regulatory agencies will be limited. State public utility commissions will establish minimum standards for service and perhaps reserve margins to protect customers. The FERC will establish rules to guarantee generators and customers have access to transmission services but will not set prices. Reliable transmission will continue to be assured through standards established by regional electric reliability councils and the North American Electric Reliability Council.

No additional regulations or federal controls will be necessary. Delivery companies will only prosper if they and their customers get electricity, so they will have every incentive to sell access to their wires and to operate their systems efficiently and reliably.

Further, with generation assets spun off to unregulated companies, concerns about monopoly power will recede. At any rate, monopoly will be subject to antitrust rules, enforced by the U.S. Department of Justice.

Alternatives to Regulation. Initially, regulation of the wires business could continue as mentioned above, with rates for supply left to the forces of supply and demand. However, rate regulation of the wires business should be only an interim step. Once deregulation of supply occurs and its benefits accrue to consumers and businesses, states should explore ways to reduce rate regulation and enhance competition in wires. States should pay particular attention to new developments in technology, contractual arrangements and property rights — and assure themselves a role as laboratories of innovation.

Freedom of Entry. Whether the wires business is regulated and how long any regulation lasts should not infringe on a customer’s right to bypass the grid and generate his own electric power. Efficient gas generators, fuel cells and sun-powered cells are available now, and entrepreneurs already are working on other power sources. Customer choice will help control prices for generating and delivering electricity.

The Danger of Reregulation

The advantages of deregulation are increasingly clear, even to many who have taken for granted the need for electric regulation. A prominent fly in the ointment, however, is the possibility that reform can produce *reregulation* instead of *deregulation*.

Deregulation or Reregulation? Reregulation can produce new regulations that might adopt the language of deregulation but would ultimately rely on regulators more than consumers to direct the growth of the electric utility industry. Managed competition, by which government concocts a limited menu of choices for customers and manages those who supply the choices, is as much a contradiction in terms in electric utility reform as in health care reform.

The prudent course at both the state and federal levels is to establish as flexible a legal framework as possible so that competition and contractual solutions can evolve freely in the marketplace. However, some proposals under consideration fall short of this goal. The reason: there is some consensus on the competitive opportunities of electricity *generation*, but little agreement concerning electricity *delivery*.

Some policymakers support reregulation that separates transmission and distribution along the current state and federal lines and regulates transmission more heavily than ever. For example, in the name of increasing competition in electricity generation, FERC orders 888 and 889 expanded regulation of electricity transmission and strongly encouraged, if not implicitly required, the restructuring of utilities subject to its jurisdiction.

Another example of reregulation is the establishment of independent system operators (ISOs), which are nonprofit organizations set up under the regulatory oversight of the FERC. ISOs are thought to be necessary to deal with monopoly market power questions that arise when transmission and generation are combined.⁴⁰ ISOs operate but do not own the transmission lines and equipment of utilities in some states. They control vast transmission networks — without ownership responsibility or market discipline. Thus new regulatory policies replace older ones.

California Case Study: How Not to Deregulate. On March 31, 1998, California became the first state to allow all residential customers to buy competitive retail electric power. The state's experience is a lesson in what happens when deregulation turns into reregulation.

- Initially, more than 300 companies expressed interest in marketing electricity directly to consumers, and the nation's largest competitive electricity provider, the Enron Corporation of Houston, Texas, spent millions of dollars on advertising to consumers.
- A year later, all but 33 marketers had pulled out, including Enron, and according to the California Public Utilities Commission only 144,000 households — just 1.2 percent of utility customers — had switched from their local utility to a competitor.

The reasons are clear. California's retail competition plan lowered existing residential and small business electric rates by 10 percent from 1996 levels and capped them for up to four years, so utilities could recoup stranded

“In California, deregulation has turned into reregulation.”

costs. The rate rollback was financed with some \$6 billion in state bonds to be paid off by charges on all electric customers' bills. In addition, all electric bills carry a charge to pay \$28 billion to the utilities, under an agreement with the state to compensate them for their stranded costs.

A typical family using 500 kwh a month saw its bill reduced from \$60.99 to \$54.89 before taxes, for a savings of \$6.10. But a customer with close to that electricity usage saw *added* charges of \$7.13 to pay off the bonds and \$14.78 to cover the stranded costs — making the total bill more than it was before deregulation!

One large utility, Pacific Gas & Electric, announced that once its stranded costs were paid off, it would trim residential rates by another 11 percent, with another cut of 5 percent to 10 percent likely in 2008. PG&E also sold some of its generating assets, at prices above depreciated cost, which may help it pay off its stranded costs and cut rates before 2002.

The rates charged by competitors are close to the rates charged by PG&E — with the exception of “green power” providers. Green power — produced by wind, solar, geothermal, biomass or small hydroelectric plants — costs more than power generated by the utilities, even though the state offers customers who switch to green power a rate cut up to 1.5 cents per kwh through 2001.

So one reason why there is little price competition in California is the extra charges on every retail customer's bill. Another is that electricity generation is the only part of the system that is subject to competition, and generating costs are only about one-fourth of the cost of electricity. Thus, for a customer with a \$61 monthly electric utility bill, only \$15.25 is for the cost of generating the power. An efficient independent provider might be able to charge 25 percent less for generation, say \$11.43, for a potential saving to this consumer of \$3.81 a month. But with an average of \$25 in extra charges and taxes (which nationally average about 11 percent), the consumer's potential saving is only 4 percent — not enough price differential to convince most consumers to switch.⁴¹

A third reason why consumers are not switching is uncertainty about future electricity prices. Customers will see a lot of price fluctuation, says Terry Winter, president of Cal-ISO. “You may get a \$20 bill in April and a \$1,000 bill in August. It's called supply and demand.”⁴²

Reregulation in California. Not only have California consumers not benefited from competition, they have faced more regulation in some areas. Specifically, the restructuring plan created a new regulatory body, the California Independent Service Operator (Cal-ISO). Acting for “stakeholders” — rather than owners of transmission lines and facilities — Cal-ISO controls electricity transmission throughout California and between California, neighboring states and Mexico.

“One reason there is little price competition is the extra charges on every retail customer's bill.”

“Independent system operators control vast transmission networks — without ownership responsibility or market discipline.”

California’s electricity restructuring law required the state’s three major investor-owned utilities to release control, but not ownership, of their long distance transmission lines to Cal-ISO. Thus Cal-ISO controls over 75 percent of the electricity grid. Operating under the supervision of federal regulators at the FERC, Cal-ISO controls the prices and terms under which electricity generators move power across the grid to consumers.

Cal-ISO has effectively taken over the role of the Western Systems Coordinating Council (WSCC), an industry group that set guidelines and governed transmission and power flows through decentralized coordination. Research by economists Arthur S. De Vany and David Walls found that the “impressive efficiency and stability of pricing indicate that the decentralized coordination employed by the WSCC is highly effective.”⁴³ But supporters of ISOs argued that because the major investor-owned utilities (Pacific Gas & Electric, Southern California Edison and San Diego Gas & Electric) own generating plants and transmission and distribution lines, control over transmission should be invested in an “unbiased, not-for-profit corporation,” that would act in the interest of consumers and independent producers. This same argument is being made nationally for ISOs. It echoes the arguments for scientific management made almost 100 years ago.

Cal-ISO also in charged with planning, enforcing and overseeing future electric grid improvements and expansions. Experts have noted that ISOs already are showing “the same inefficiencies and strategic behavior that characterize existing regulatory institutions.”⁴⁴

Transmission pricing is crucial to determining whether capital is allocated to new transmission capacity or to new generating capacity. That is because long-distance transmission takes place only because of regional differences in generating costs. “If transmission prices do not accurately reflect the costs of transmission, including transmission constraints, participants in the market will not be able to correctly determine whether those constraints are best addressed through expansion of transmission capacity or the installation of new generation capacity closer to the customers,” economist Thomas Lenard has pointed out.⁴⁵

The pricing distortions caused when regulators preempt the market increase over time, leading to less competition if transmission prices are too high — or less reliability of electric service if needed transmission grid improvements are undercapitalized. In either case, consumers suffer the consequences.

How California Could Have Done Better. Since restructuring began, sales of generating assets by utilities in California and other states have shown stranded assets are mostly a political issue. Generating assets have consistently sold *above* their book value. Some companies are even buying nuclear power plants — although at discounted prices. And as previously discussed, transmission lines almost certainly are undervalued.

Thus if California and other states took the divestiture route we have proposed, most — or even all — of the stranded costs utilities claim would disappear. And because electricity can be transmitted by various paths over the grid, and an increasing proportion of customers can bypass the grid altogether by generating their own power, the market places an upper limit on both generating and transmission pricing. Thus no expansion of state or federal regulatory powers is necessary to manage competition — it will occur naturally.

If residential and business consumers are not saddled with utility stranded cost claims, green power subsidies and mandates or the inefficiency of increased regulation, they can realize the full benefits of market competition — better service at lower cost.

Conclusion

Given the poor track record of regulation and the success of deregulation when applied to other industries or monopolies, policy makers should pare or repeal regulations establishing rates for electric generation or restricting entry into the generation business. This would allow the electric utility industry to quickly introduce new technologies, develop new services and devise new service delivery mechanisms. Deregulation initiatives should be adopted now, one at a time if necessary. At the federal level, repealing PURPA and the Public Utility Holding Company Act (PUHCA) and privatizing government-owned power facilities would be a good start. The states should follow the same path.

The time to substitute competition for regulation in the generation and delivery of electric power is now. Consumers will benefit if industry leaders and policy makers seize the moment. But the benefits will shrink and perhaps disappear if new legislation substitutes one regulatory regime for another. In return for swift and lasting deregulation and a market-based valuation of stranded assets, companies should restructure and join their customers in advocating choice in the provision of electricity.

“If states took the divestiture route proposed here, most — or even all — of the stranded costs utilities claim would disappear.”

NOTE: Nothing written here should be construed as necessarily reflecting the views of the National Center for Policy Analysis or as an attempt to aid or hinder the passage of any bill before Congress.

Notes

- ¹ Michael T. Maloney, Robert E. McCormick and Raymond D. Sauer, *Customer Choice, Consumer Value: An Analysis of Retail Competition in America's Electricity Industry* (Washington, D.C.: Citizens for A Sound Economy Foundation, 1996).
- ² Doug Bandow, "Competition in Electric Power: Strategies for Reform," John Locke Foundation, Policy Report No. 14, July 1996, p. 13.
- ³ U.S. Department of Energy, Energy Information Administration, "Electricity Prices in a Competitive Environment: Marginal Cost Pricing of Generation Services and Financial Status of Electric Utilities: A Preliminary Analysis Through 2015," Washington, D.C., August 1997, available at <http://www.eia.doe.gov/oiaf/elepri97/comp.html>.
- ⁴ Ronald L. McMahan and Richard F. O'Donnell, "Freeing Electricity Markets: Who Wins; Who Loses; How Free?" Center for the New West, Denver, Colo., Points West Special Report, May 1997.
- ⁵ Robert Crandall and Jerry Ellig, *Economic Deregulation and Customer Choice: Lessons for the Electric Industry* (Fairfax, Va.: Center for Market Processes, 1997).
- ⁶ Michael T. Maloney, Robert E. McCormick and Raymond D. Sauer, *Customer Choice, Consumer Value: An Analysis of Retail Competition in America's Electricity Industry* (Washington, D.C.: Citizens for A Sound Economy Foundation, 1996), p. xxiv.
- ⁷ See Adam D. Thierer, "Energizing America: A Blueprint for Deregulating the Electricity Market," Heritage Foundation, Heritage Backgrounder No. 1100, January 23, 1997, p. 4.
- ⁸ Robert L. Bradley Jr., "The Increasing Sustainability of Conventional Energy," Policy Analysis No. 341, April 22, 1999, Cato Institute, Washington, D.C., p. 13.
- ⁹ *Ibid.*, p. 14.
- ¹⁰ This section, unless otherwise noted, is based on Edwin G. Dolan and John C. Goodman, *Economics of Public Policy, Fourth Edition* (St. Paul, Minn.: West Publishing Co., 1989).
- ¹¹ Office of Technology Assessment, 1983, cited in Michael T. Maloney & Wayne Brough, "Promise for the Future, Penalties from the Past: The Nature and Causes of Stranded Costs in the Electric Industry," Citizens for a Sound Economy Foundation and the International Mass Retail Association, 1999.
- ¹² The English-born Insull is a fascinating figure in U.S. business history. Beginning as Edison's private secretary, he rose by 1892 to head all Edison activities in Chicago. He assiduously promoted the combination of smaller companies into larger ones. Through holding companies he piled up interests in 21 states. It was said in the 1920s that to be seen talking with him outside the Continental Bank was worth a million dollars. However, in 1932, under the impact of the Depression, Insull's mighty empire collapsed and he fled the country, charged with embezzlement. Investors lost a billion dollars. John D. Hicks, *Republican Ascendancy* (New York: Harper & Bros., 1960), p.123; and Frederick Lewis Allen, *Since Yesterday* (New York: Bantam Books, 1961), p. 58.
- ¹³ See James A. Damask, "A Power(ful) Myth," Perspective on Current Issues, February 1999, Buckeye Institute for Public Policy Solutions, available at http://www.buckeyeinstitute.org/perspect/1999_2.htm.
- ¹⁴ Greg A. Jarrell, "The Demand for State Regulation of the Electric Utility Industry," *Journal of Law and Economics*, October 1978, pp. 269-95.
- ¹⁵ John D. Hicks, *Republican Ascendancy*, p. 122.
- ¹⁶ Harvey Averch and Leland Johnson, "Behavior of the Firm under Regulatory Constraint," *American Economic Review*, December 1962, pp. 1052-69.
- ¹⁷ See Peter Navarro, *The Dimming of America* (Cambridge, Mass.: Ballinger, 1984).
- ¹⁸ Dolan and Goodman, *Economics of Public Policy: Fourth Edition*, p. 108.
- ¹⁹ Paul R. Carpenter and Frank C. Graves, "Estimating the Social Costs of PUHCA Regulation," Exhibit 2, comments of Central and South West Corporation on Modernization of the Regulation of Public Utility Holding Companies, Docket No. 52-32-94, Securities and Exchange Commission, 1995.
- ²⁰ For example, FERC approval of the consolidation of First Energy, an electric-electric merger, took approximately two years; but when Tampa Energy Company purchased West Florida Gas, the transaction was completed in about six weeks; FERC was

not involved. See Paula Felts, "The Road Ahead for the American Utility Industry: Mergers and Deregulation," *Outlook*, Afiniti Communications, February 1999.

²¹ A fifth, the Alaska PMA, has been privatized.

²² Adam D. Thierer, "(271) Power Marketing Administrations," in Scott A. Hodge, ed., *Balancing America's Budget: Ending the Era of Big Government* (Washington, D.C.: Heritage Foundation, 1997).

²³ FERC Order 888 requires utilities under FERC's jurisdiction to file nondiscriminatory open access transmission tariffs and offer comparable transmission services to eligible third parties. Order 889 requires utilities to develop same-time information systems to make simultaneous transmission information available to those entities that are selling power.

²⁴ Office of Technology Assessment, 1983, cited in Maloney & Brough, "Promise for the Future, Penalties from the Past."

²⁵ David Dismules and Michael T. Maloney, "Stranded Costs in Non-Utility Generation," cited in Maloney & Brough, "Promise for the Future, Penalties from the Past."

²⁶ Felts, "The Road Ahead for the American Utility Industry: Mergers and Deregulation."

²⁷ John J. Fialka, "New Deal Undone: Using Savvy Tactics, Bristol, Va., Unplugs from a Federal Utility," *Wall Street Journal*, May 27, 1999, cited in Maloney & Brough, "Promise for the Future, Penalties from the Past."

²⁸ See Doug Bandow, "Competition in Electric Power: Strategies for Reform," John Locke Foundation, Policy Report No. 14, July 1996, pp. 21-25. Also see Michael Block and Thomas Lenard, "Creating Competitive Markets in Electric Energy," Progress and Freedom Foundation, at <http://www.pff.org/energy/toc.html>, which proposes repeal of PURPA and the Public Utility Holding Company Act. It also proposes privatization of all federally owned public power facilities.

²⁹ Jeff Bailey, "Carter-Era Law Keeps Price of Electricity Up in Spite of a Surplus," *Wall Street Journal*, May 17, 1995, p. A1.

³⁰ Also, combination makes it difficult for state regulatory commissions and FERC to separate assets subject to their jurisdiction from assets subject to market discipline.

³¹ Bandow, "Competition in Electric Power: Strategies for Reform," p. 35.

³² For a comprehensive discussion of stranded assets, see Bandow, "Competition in Electric Power: Strategies for Reform," pp. 34-42.

³³ See E. Blank, R. Gilliam and J. Wellinghoff, "Breaking Up Is Not So Hard To Do: A Disaggregation Proposal," *The Electricity Journal*, May 1996, pp. 46-55, for a proposal for disaggregation of generation and a discussion of tax and financing benefits that would accrue if Nevada Power sold its generation assets. However, we caution against disaggregation proposals that decrease private ownership of electric system assets and increase price differences based on tax differentials or regulatory treatments.

³⁴ For example, U.S. Generating, a unit of Pacific Gas & Electric, outbid competitors to buy 18 power plants from New England Electric System for \$1.59 billion, a significant premium over their \$1.1 billion book value. See Benjamin A. Holden and Ross Kerber, "PG & E to Acquire 18 Generating Plants From New England Electric System," *Wall Street Journal*, August 6, 1997, p. A3.

³⁵ Serving a single locality with more than one set of wires is feasible, as the previously mentioned experience in Lubbock, Texas, demonstrates.

³⁶ Some amendment of the Federal Power Act may be necessary to deregulate generation and reaffirm the traditional regulatory line between state and federal authority.

³⁷ Systems with hydroelectric sources of power can store to a limited extent. Power is generated in the higher-demand daytime periods by depleting water reservoirs. At night, lower-cost power is purchased from the network; generators are run as motors to pump water from downstream to upstream impoundments in preparation for the next day's high-value generation cycle. Recent dramatic improvements in toroid (electromagnetic) and flywheel (mechanical) technology promise substantial storage potential where price differentials permit.

³⁸ For a more detailed discussion see "Ancillary Services" in the Technical Appendix.

³⁹ A wires company operating a spot scheduling market would not restrict its operations to one territory — it would schedule power flows from anywhere or to any region. For a fuller discussion see "Transferring Power Between Regions" in the Technical Appendix.

⁴⁰ See California Public Utility Commission Policy Decision D.9-12-063 (December 20, 1995), as modified by D.96-01-009 (January 10, 1996). Also see Donald F. Santa, "In Search of Comparable Open Access," address to the Power Marketing

Association, December 14, 1995; and William W. Hogan, "A Wholesale Pool Spot Market Must Be Administered by the Independent System Operator: Avoiding the Separation Fallacy," *Electricity Journal*, December 1995, p. 26.

⁴¹ Steve Johnson, "Deregulation Has Been a Big Yawn," *Fort Worth Star-Telegram*, April 4, 1999, p. E1.

⁴² Ibid.

⁴³ Arthur S. De Vany, "Electricity Contenders: Coordination and Pricing on an Open Transmission Network," *Regulation*, Vol. 20, No. 2, 1998.

⁴⁴ Thomas M. Lenard, "'Electricity Legislation: Ease by Inaction,' Perspectives, *Regulation*, Vol. 21, No. 3, 1998.

⁴⁵ Thomas M. Lenard, "Innovation and Competition in the Electric Power Industry," Progress on Point, February 1997, Progress & Freedom Foundation.

Appendix

Technical Considerations

Ancillary Services

Generator units used for so-called ancillary services are required to produce and deliver continuous high-quality power. The units include load-following generators, spinning or quick-start reserves, power for voltage control and the dispersion of generation for stability. In greater detail:

- Load-following generators are units whose output can be readily varied to match load variations in the very short run.
- Spinning reserves are generators on line and loaded at less than capacity, and therefore available to quickly replace the output of any generator that breaks down. Reserves can also be supplied by quick-start gas or hydroturbine generators. (However, quick-starting generators tend to have low capital costs but high running costs, while spinning reserves are supplied by higher-capital-cost units with low running costs. Either might be used for load following.)
- Some generators and other control devices produce no usable power but control voltage to maintain the quality of power.
- Finally, using dispersed rather than concentrated generator sources facilitates stability and protection against outages. Scheduling centers might accept a higher priced bid from one generator rather than a low priced bid from another to maintain a dispersed supply.

Separating generation and delivery would avoid conflicts of interest in choosing among less expensive generators and others that provide ancillary services. However, regulators may deem it too risky to divest all ancillary generator services because they are critical to the supply of reliable service. As an interim step, regulators might prefer to have delivery companies retain control over some amount of generation. But if the wires companies are required to contract with outside sources, supply companies can compete for the contracts — until ancillary services are provided as part of the spot auction market. Reliability is no excuse for avoiding competition among independent generator sources, particularly for marginal or peak power, where market-clearing spot prices are determined.

Transferring Power Between Regions

A utility that divests its generation facilities and operates a spot scheduling market based on bids from independent generators and bulk buyers should not have to restrict its operation to buyers and generators in its own territory. Wires company should have every incentive to schedule generators from the lowest-cost sources, whatever their locations.

At every link point (intertie) between its own electric power grid and adjacent grids, it could export or import power in response to the price differentials at that intertie. Thus, if on its side of an

intertie the local spot price was higher than that of an interconnecting utility, a utility could import power in quantities sufficient to close the price gap. If at the intertie its local internal spot price was below that of the adjacent utility, it would export electricity until the prices were equalized. Utilities should have no reason to favor higher-cost over lower-cost generators. Divestiture should cut the ground from under such perverse incentives and allow delivery utilities to obtain energy at the best price.

Price differences at interties will fluctuate daily and seasonally, because adjacent territories do not typically experience peaks at the same times. For example, Arizona has a summer peak and Utah a winter peak; Arizona exports power to Utah in the winter and imports it in the summer. Such power interchanges benefit customers in both regions and are encouraged by the separation of wires and supply.

Divestiture builds naturally on existing practices, but improves incentives through greater reliance on markets. Currently, interregional power transfers are regulated by FERC. Under the divestiture proposal in this paper, FERC could play a new and smaller role in the electricity industry of the future.

About the Authors

Vernon L. Smith is Regents' Professor and McClelland Professor of Economics at the University of Arizona and Research Director of the Economic Science Laboratory, where he leads research in the areas of neuro-economics and complex trading systems. He received his bachelor's degree in Electrical Engineering from Cal Tech, and his Ph.D. in Economics from Harvard. He has been president of the Public Choice Society, the Economic Science Association, the Western Economic Association and the Association for Private Enterprise Education; and a Fellow of the Ford Foundation, the Center for Advanced Study in the Behavioral Sciences, the Econometric Society, the American Association for the Advancement of Science, the American Academy of Arts and Sciences and the American Economic Association. Professor Smith's *Papers on Experimental Economics* was published by the Cambridge University Press in 1991. He is an Andersen Consulting Professor of the Year, and the 1995 Adam Smith award recipient from the Association for Private Enterprise Education. He was elected a member of the National Academy of Sciences in 1995. He recently served on the National Electric Reliability Council Blue Ribbon Panel on Electric Reliability, and has consulted internationally on the deregulation and privatization of electric power.

Stephen Rassenti is the Associate Director of the Economic Science Laboratory, and Vice President of Cybernomics Inc., a company that consults in the use of experiments to examine strategic market dynamics. He received his bachelor's degree in mathematics from Loyola of Montreal, and his Ph.D. in Systems Engineering from the University of Arizona. He has worked for Bell Laboratories as a system performance analyst, and was, prior to receiving his Ph.D., the owner of a construction company. He is interested in the design of new market institutions and the application of smart computer assistance in complex economic environments. He is currently a co-principal investigator on a National Science Foundation/Environmental Protection Agency study of a deregulated water market for the State of California, and has conducted funded research for the Federal Energy Regulatory Commission and the Energy Information Administration concerning centrally coordinated dispatch for a national natural gas market. He has consulted with the National Grid Management Council in evaluating the proposed market rules for Australia's nationally coordinated power market, and has presented seminars and workshops on the deregulation of electric power to the Electric Power Research Institute, Edison Electric Institute and many domestic and international utilities and interest groups.

About the NCPA

The National Center for Policy Analysis is a nonprofit, nonpartisan research institute founded in 1983 and funded exclusively by private contributions. The mission of the NCPA is to seek innovative private-sector solutions to public policy problems.

The center is probably best known for developing the concept of Medical Savings Accounts (MSAs). Sen. Phil Gramm said MSAs are “the only original idea in health policy in more than a decade.” Congress approved a pilot MSA program for small businesses and the self-employed in 1996 and voted in 1997 to allow Medicare beneficiaries to have MSAs.

In fashioning the 1997 budget deal, members of Congress relied on input from the NCPA’s Center for Tax Policy. The Balanced Budget Act incorporated key NCPA ideas, including the capital gains tax cut and the Roth IRA. Both proposals were part of the pro-growth tax cuts agenda contained in the Contract with America and first proposed by the NCPA and the U.S. Chamber of Commerce in 1991. Two other provisions — an increase in the estate tax exemption and abolition of the 15 percent tax penalty on excess withdrawals from pension accounts — also reflect NCPA proposals.

The NCPA has also developed the concept of taxpayer choice — letting taxpayers rather than government decide where their welfare dollars go. Sen. Dan Coats and Rep. John Kasich have introduced a welfare reform bill incorporating the idea. It is also included in separate legislation in the House sponsored by Rep. Jim Talent and Rep. J. C. Watts.

Another important area is entitlement reform. NCPA research shows that elderly entitlements will require taxes that take between one-half and two-thirds of workers’ incomes by the time today’s college students retire. A middle-income worker entering the labor market today can expect to pay almost \$750,000 in taxes by the time he or she is 65 years of age, but will receive only \$140,000 in benefits — assuming benefits are paid. At virtually every income level, Social Security makes people worse off — paying a lower rate of return than they could have earned in private capital markets. To solve this problem, the NCPA has developed a 12-step plan for Social Security privatization.

The NCPA has also developed ways of giving parents the opportunity to choose the best school for their children, whether public or private. For example, one NCPA study recommends a dollar-for-dollar tax credit up to \$1,000 per child for money spent on tuition expenses at any qualified nongovernment school — a form of taxpayer choice for education.

The NCPA’s Environmental Center works closely with other think tanks to provide common sense alternatives to extreme positions that frequently dominate environmental policy debates. In 1991 the NCPA organized a 76-member task force, representing 64 think tanks and research institutes, to produce *Progressive Environmentalism*, a pro-free enterprise, pro-science, pro-human report on environmental issues. The task force concluded that empowering individuals rather than government bureaucracies offers the greatest promise for a cleaner environment. More recently, the NCPA produced

New Environmentalism, written by Reason Foundation scholar Lynn Scarlett. The study proposes a framework for making the nation's environmental efforts more effective while reducing regulatory burdens.

In 1990 the center created a health care task force with representatives from 40 think tanks and research institutes. The pro-free enterprise policy proposals developed by the task force became the basis for a 1992 book, *Patient Power*, by John Goodman and Gerald Musgrave. More than 300,000 copies of the book were printed and distributed by the Cato Institute.

A number of bills before Congress promise to protect patients from abuses by HMOs and other managed care plans. Although these bills are portrayed as consumer protection measures, NCPA studies show they would make insurance more costly and increase the number of uninsured Americans. An NCPA proposal to solve the problem of the growing number of Americans without health insurance would provide refundable tax credits for those who purchase their own health insurance.

NCPA studies, ideas and experts are quoted frequently in news stories nationwide. Columns written by NCPA experts appear regularly in national publications such as the *Wall Street Journal*, *Washington Times* and *Investor's Business Daily*. NCPA Policy Chairman Pete du Pont's radio commentaries are carried on 290 radio stations across America. The NCPA regularly sponsors and participates in *Firing Line Debate*, which is aired on 302 public broadcasting stations. The NCPA each year sponsors several one-hour televised debates on the PBS program *DebatesDebates*.

According to Burrelle's, the NCPA reached the average household 10 times in 1997. More than 35,000 column inches devoted to NCPA ideas appeared in newspapers and magazines in 1997. The advertising value of this print and broadcast coverage was more than \$90 million, even though the NCPA budget for 1997 was only \$3.6 million.

The NCPA has one of the most extensive Internet sites for pro-free enterprise approaches to public policy issues. All NCPA publications are available online, and the website provides numerous links to other sites containing related information. The NCPA also produces an online journal, *Daily Policy Digest*, which summarizes public policy research findings each business day and is available by e-mail to anyone who requests it.

What Others Say about the NCPA

"...influencing the national debate with studies, reports and seminars."

— **TIME**

"...steadily thrusting such ideas as 'privatization' of social services into the intellectual marketplace."

— **CHRISTIAN SCIENCE MONITOR**

"Increasingly influential."

— **EVANS AND NOVAK**