



NATIONAL GUIDELINES
FOR
RESTRUCTURING
THE
ELECTRIC GENERATION,
TRANSMISSION AND DISTRIBUTION
INDUSTRIES



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Executive Summary

Since the invention of the light bulb in 1882, the US electricity industry has grown into one of the largest, most important industries in the world. As a result of spectacular growth in the demand for both electricity and the technology to generate and deliver it, the period between 1880 and 1970 was characterized by ever expanding generation capacity and declining average costs. By 1950, virtually every American household had electrical service. These factors were the underpinnings of the regulatory compact through which cost-of-service based regulations were implemented across the United States.

However, with the 1970s oil price shocks, the economics of the US electric industry changed radically. The cost of electric generating capacity skyrocketed from an average of \$161/kW in 1970 to a high of \$5,810 by the early 1980s. Many basic economic assumptions of electricity regulation were obsolete. Economies of scale disappeared while lower-cost providers emerged. As a result, the historic regulation of electric utilities, that once protected consumers from monopoly pricing, instead, protected monopolies from competitive pricing.

These circumstances created the impetus for revolutionary changes in the laws and regulations governing electric generation and delivery. Bold leadership at both the state and federal levels has set the stage for one of the largest industrial restructurings in United States history.

The National Energy Marketers Association (NEM) was created specifically to work with representatives of state and federal governments, large and small consumer groups and utilities to devise fair and effective ways to implement restructuring of both the natural gas and electricity markets. NEM is committed to the implementation of laws, regulations, standards of conduct, rates, tariffs and operating procedures that (a) provide all customers meaningful choice, (b) implement open, efficient, liquid and price-competitive energy markets, and (c) that encourage the development of new and innovative energy services and technologies, at the earliest possible date. This document sets forth the legislative and regulatory framework necessary at both the federal and state levels to achieve these goals within two years.

In summary, the federal government has significant constitutional, national security and budgetary interests in restructuring the US electricity industry. To further these interests, Congress should resolve outstanding jurisdictional issues and require FERC to promulgate uniform, non-discriminatory, open access transmission tariffs; clarify current tax laws to expand existing stranded cost recoveries; and mandate a date certain by which the states must complete the transition to a competitive energy market.

FERC should expand and clarify Orders 888 and 889. It should require that all jurisdictional transmission services be unbundled; that all service providers reserve, purchase, schedule and curtail transmission services under the same uniform, non-discriminatory, open-access transmission tariff; and mandate compliance with and strictly enforce Order 889. FERC should make transmission services sufficiently uniform to be transferable and tradable and it should regionalize the US electric grid under truly independent management and operational control with incentives to optimize service, accountability and throughput.

State Governments also have significant legal, economic and consumer protection interests in electricity restructuring. State legislatures should clarify existing laws and empower state Public Utility Commissions (PUCs) to implement customer choice and retail access to all classes of customers, at the earliest possible time. State legislatures should also require government to purchase power from competitive providers, and thereby implement immediate tax and budget reductions.

In turn, state PUCs should act promptly to remove the numerous operational, behavioral and tariff barriers to competition and should establish a date certain by which to complete the transition to a competitive market. Regulatory commissions should immediately separate regulated and unregulated services, so that consumers may choose, on a line-item basis, both the price and amount of each competitive service that they wish to purchase. Regulatory commissions should also implement NEM's Uniform Code of Conduct for competitive suppliers of energy services and technologies. Lastly, government should stop acting as the risk manager for the new energy marketplace.

The ability to switch energy suppliers is the ultimate consumer protection. Choice must exist in order to serve the public interest and it should not be complicated or expensive. True measures of a competitive market are the number of customers that have choice and the number of providers ready to serve those customers. One measure of the quality of choice is the number of customers that, in fact, exercise choice. NEM urges that all customers be given meaningful, competitive choices at the earliest possible date.

Competitively priced energy and related services serve the public interest, save consumers, governments and taxpayers billions of dollars and promote significant efficiency, innovation and productivity gains, nationwide. Experts from NEM's policy writing committees are available to meet with policymakers around the country to help structure new laws, regulations, tariffs and operating procedures to permit competition on the bases of price and quality of service, to encourage new technologies and to bring meaningful savings to US energy consumers.

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I

Introduction

The National Energy Marketers Association (NEM) is a national, non-profit trade association representing a regionally diverse cross-section of both wholesale and retail marketers of natural gas and electricity. NEM also represents producers, generators, transporters and marketers of energy-related information, services and technology throughout the United States.

NEM is committed to working with representatives of state and federal governments, large and small consumer groups and utilities, to devise fair and effective ways to implement the restructuring of natural gas and electricity markets. NEM and its members appear before state Public Utility Commissions, the Federal Energy Regulatory Commission and legislative bodies throughout the nation. NEM members urge lawmakers and regulators to implement:

- Laws and regulations that open markets for natural gas and electricity;
- Rates, tariffs and operating procedures that reduce the cost of energy;
- Standards of conduct that protect consumers;
- Rules to permit competition based on price and quality of service; and
- Policies that encourage new technologies, including the integration of energy, telecommunications and Internet services.

II

Historical Background of US Electric Utility Regulation

Reliable electricity is the lifeblood of economic growth and technological progress. Indeed, the availability of reliable, reasonably-priced electricity often defines the limits of growth and prosperity for both developed and developing countries. Over the last 100 years, changes in the economics and technology of both the generation and delivery of electricity precipitated one of the largest industrial restructurings in United States history.ⁱ

1880 to 1970 Light Bulbs to Price Shocks *A Period of Invention, Growth and Declining Average Costs*

In 1882, Thomas Edison used electricity to power his invention, the light bulb and thereafter established a number of small “light companies.” By 1925, virtually every home in Chicago was connected to a central station and more than 30 million electrical lamps had been installed.ⁱⁱ By the 1930s, these “light companies” evolved into what are now known as “electric utilities.”

Samuel Insull, former secretary to Thomas Edison and first president of Commonwealth Edison of Chicago, argued that as with railroads, the production, transmission and distribution of electricity was a natural monopoly. He premised his arguments on “economies of scale,” arguing that declining average costs allowed one firm to provide electricity less expensively than multiple competing firms.ⁱⁱⁱ

These economic principles became the theoretical basis for defining “natural monopolies” and justified the government’s grant of exclusive rights to supply electricity within “franchise monopolies.” Within a government-approved, exclusive franchise territory, one company was permitted to provide power without competition, but subject to state regulation of rates and profits. Between 1907 and 1922, states established new government agencies known as “Public Utility Commissions” (PUCs) to implement this form of electricity regulation.

By the 1930s, the federal government’s involvement with electricity^{iv} and significant advances in both generation and transmission technology reinforced the “economies of scale” theory upon which electric regulation was premised, namely that larger units could produce electricity for decreasing costs. During the “Roaring Twenties,” a flurry of mergers created seven large, multi-state utility holding companies that controlled 60 percent of America’s power sources. After the stock market crash of 1929, great financial and social concern about these holding companies spurred significant New Deal legislation. In 1935, Congress passed the Public Utility Holding Company Act and the Federal Power Act. These two statutes govern utility regulation to this day.

Between the Great Depression and the 1970s Oil Price Shocks, both aggregate and per capita electricity use grew exponentially. By mid-century, virtually the entire country received reliable service at reasonable prices.^v Gener-

ating units grew ever larger; high-voltage transmission lines, switching and control technology were developed; and computers capable of coordinating the network were invented and installed. These factors contributed to the decreasing average costs and supported the prohibition on competition, that is the grant of franchise monopolies to local utilities and the promotion of commercial integration of the generation, transmission and distribution functions.

By 1979, the regulatory paradigm of decreasing average costs, ever increasing plant sizes and steady regulated rates had come to an end. From the inception of the electric industry until the 1970s oil price shocks, the “regulatory compact” protected society against monopoly pricing; utilities provided reliable service and in exchange, regulated rates permitted utilities to recover the cost of capital invested in plant and equipment. As long as underlying economic and technological factors continued to reduce average costs, this compact served the public interest. However, by the end of the 1970s, this regulatory paradigm had changed radically.

1970 to Present Price Shocks to Order 888

A New Economic and Regulatory Paradigm

The 1970s saw increases in cost factors that were largely outside the control of utilities. Oil prices increased ten-fold, natural gas prices increased seven-fold and the price of coal quadrupled, while interest rates soared to record levels.^{vi} However, utilities failed to manage costs within their control, as the construction costs for new plants also skyrocketed. This combination of factors undermined the economic principles underlying US electricity regulation and the government’s grant of franchise monopolies.

In response to the skyrocketing fuel costs, interest rates and large plant construction, Congress passed the Public Utility Regulatory Policy Act of 1978 (PURPA).^{vii} PURPA introduced limited competition and encouraged the emergence of a new industry comprised of co-generators and independent power producers (IPPs).^{viii} Co-generation, IPPs and a new class of Exempt Wholesale Generators (EWGs) permitted by the Energy Policy Act of 1992,^{ix} established competitive, non-regulated generation which, in turn, demonstrated the availability of significant efficiencies and cost savings for the public.

The era of declining average utility costs had ended. As the costs of larger, centrally dispatched generation skyrocketed and average costs increased, cost-of-service

based rate-making encouraged utilities to undertake expensive new plant additions despite the availability of less expensive alternatives. At the same time, economists at Bell Laboratories advanced a new economic theory of “subadditive costs”.^x Under this new theory, researchers demonstrated that “subadditive costs” could render a supply monopoly difficult to preserve in a competitive marketplace.

Simply stated, subadditive costs occur when customers have access to below average cost supplies or to a supplier that can sell additional product at a price slightly below the average (but still at a profit), thereby undercutting utility prices.^{xi} The non-regulated plants generating electricity more economically than average utility costs rendered government mandated monopoly franchises economically unstable because the monopoly is then the higher-cost supply option. Under such circumstances, electric regulation ceases to protect the public from monopoly pricing and instead, protects monopolies from competitive generation pricing.

In response to these major shifts in the underlying economics, equities and efficiencies of US electric utility regulation, the Federal Energy Regulatory Commission (FERC) issued Orders 888^{xii} and 889.^{xiii} These Orders, together with actions taken by numerous states throughout the country, initiated the first significant steps necessary to implement the largest industrial restructuring in the history of the United States and possibly the world.^{xiv}

III The Role of the Federal Government in Electricity Restructuring

Significant Constitutional, National Security and Budgetary Interests

Since World War I, the federal government has had significant social and national security interests in the production and transmission of electrical power. Reliable interstate transmission is the backbone of interstate commerce and is vital to national security. Rural electrification programs achieved universal service, bringing electricity to areas of the country that were historically uneconomic for private power investments. Special tax-free financing status exists for certain federal, state, municipal and cooperative authorities and projects.^{xv}

The consolidated US market for energy and related services and technologies is one of the largest such markets in the world, with a size estimated as much as \$830 billion per year. Federal and state governments are among the nation's largest consumers of energy. Consequently, even modest cost savings or efficiency gains could result in tens of billions of dollars in savings to US consumers and billions more in federal and state tax and budget relief. Simply, each year of energy cost savings has the economic effect of a major tax reduction.

Given the constitutional, national security and significant economic interests inherent in a competitively-structured electric power market, it is vital that federal legislation resolve outstanding legal, economic and social policy issues as soon as possible. This document does not attempt to address each such issue. Instead, the following guidelines are what are minimally necessary to restructure the US generation, transmission and distribution industries in a manner that promotes maximum price competition, reliability and quality of service to all classes of customers in the shortest period of time.

A. Congress should resolve outstanding jurisdictional issues; require FERC to promulgate uniform, non-discriminatory, open access transmission tariffs; and clarify current tax laws to expand existing stranded cost recoveries.

Congress should resolve that competition in the sale of electricity is in the best interests of consumers and direct FERC to take significant steps toward encouraging such competition. FERC should act in a timely fashion to create fully functional, efficient electricity markets as soon as possible. Toward that end, Congress needs to ensure that FERC has the requisite authority to require all owners of transmission facilities to provide all transmission services on a comparable, non-discriminatory basis. This authority should include the ability to mandate participation in regional transmission organizations. FERC's actions should provide owners and/or operators of transmission facilities with a heightened sense of accountability through a meaningful and balanced system of incentives and penalties that is aggressively administered by FERC.

The current ownership of generation assets creates potential opportunities for a generation owner to exercise market power. Vertically, the owner may work in conjunction with transmission and/or distribution assets; horizontally, an owner may utilize a concentration of assets in a particular region. Regulators must prevent the exer-

cise of such market power. NEM supports the divestiture of generation assets to non-affiliated entities to the extent it is necessary to fully mitigate residual horizontal and vertical market power. In accomplishing this objective, valid stranded costs associated with generation assets should be collected to the extent that market values for such assets have been determined by reference to legitimate arm's-length sales offerings. Further, such stranded costs should be measured on an aggregated basis (i.e. market values that are greater than net book values should be netted against negative market values). In addition, to the extent any company is or becomes an owner of generation and transmission and/or distribution facilities, these functions should operate independently, consistent with NEM's *Uniform Code of Conduct*.

To facilitate the transition to fully competitive electrical services, the federal government should make minor revisions in existing tax laws. It should permit traditional capital cost recoveries for so-called "stranded assets" that after good-faith and diligent sales efforts, are found not to be saleable at any price. A low-cost provision could be added to permit a special, one-time write-down of assets "as if divestiture occurred" if a PUC determines that divestiture is impossible due to a lack of buyers. These assets could include items such as nuclear power plants or purchase power agreements that have a diminished economic value, but cannot be sold due to a lack of buyers. The legislation should also request the Internal Revenue Service (IRS) to clarify the treatment of "stranded costs" that are divested or "marked-to-market" under existing tax laws.

B. FERC should expand and clarify Orders 888 and 889, and take specific actions to eliminate current burdens on and discrimination against interstate commerce.

FERC has exhibited bold leadership by promulgating Orders Nos. 888 and 889. However, as was necessary to restructure the natural gas industry, the time has come to expand, clarify and enforce specific provisions that will enhance the competitive viability of the wholesale electricity market and provide the foundation for meaningful retail access and customer choice for all classes of customers at the earliest possible date.

With the expansion and clarification of Orders 888 and 889, it is vital that FERC should take actions to ensure that all customers have equal, non-discriminatory access. A competitive market with true customer choice is not

characterized by captive customers. Indeed, captive customers do not exist in a competitive market. Current rules that discriminate in reservations, scheduling, and future plant expansions are serious roadblocks to the stated goals of Orders 888 and 889.

Specifically, to achieve a workably competitive market for electricity, FERC should revise Orders 888 and 889 in the following ways:

1. **FERC should require that all jurisdictional transmission services be unbundled and that all electricity providers reserve, purchase, schedule and curtail transmission services under the same uniform, non-discriminatory, open-access transmission tariff.** This tariff would be applicable on a uniform, non-discriminatory basis to all transactions, including those currently designated as “native load.” Existing regulatory preferences that foster discrimination in favor of native load are inhibiting the growth of an efficient, liquid and workably competitive market. Competitive energy suppliers are experiencing significant difficulties in obtaining transmission access and scheduling power deliveries, particularly when the operating entity responsible for transmission scheduling owns or dispatches either generation assets or transmission service or both.^{xvi} Providing all transmission service on comparable, uniform, non-discriminatory terms and conditions, regardless of corporate affiliation or destination of load is a prerequisite to a competitive electrical power market. Future load growth and plant additions should be motivated by competitive market forces.
2. **FERC should mandate compliance with and strictly enforce Order 889.** Reliable “real time” information is vital to commercial transactions, the operation of a competitive marketplace, and is the linchpin of Order 888. In many instances, transmission providers are either inaccurately posting “Available Transmission Capacity” (ATC) or not posting it at all. Transmission operators tend to overestimate native load and reserve “margins,” thereby underestimating the level of transmission service that is available for use by competing suppliers. Specifically, FERC should require, under strict and enforceable penalties for non-compliance, that all transactions (including those involving captive, preexisting or “grand-fathered” transmission customers) be reported and available to the marketplace in “real time” on the Open Access Same Time Information System (“OASIS”).
3. **FERC should make transmission services sufficiently uniform to be transferable and tradable.** Liquidity of transactions in the wholesale electric market is the linchpin of an efficient competitive retail marketplace. Non-discriminatory, uniform, comparable and transferable rights to transmission services are vital to accomplish these competitive goals. FERC should remove any potential barriers to the creation of voluntary power exchanges, “trading hubs” or “market centers.”
4. **FERC should expand Order 888 and 889 to require separation between a utility’s regulated functions and its energy sales (marketing/merchant) functions.** Currently, a lack of formal separation between functions that justify an exclusive franchise monopoly and those functions that are competitive have created both the opportunity to abuse market power and significant financial conflicts of interest that often operate to the detriment of competitors attempting to do business within a utility’s franchise territory. In this respect, the FERC should promulgate a national *Uniform Code of Conduct* similar to the one developed by the NEM.^{xvii} Indeed, many competitive energy suppliers assert that market power abuses have become endemic through the market structure permitted by Orders 888 and 889 and that FERC and state commissions should seriously consider revisiting the issue of divestiture.^{xviii}
5. **FERC should regionalize the US electric grid under independent management and operational control, with incentives to optimize throughput.** A key element in linking geographically separate electricity markets is the integrity of the transmission network. This network facilitates the movement of bulk power transactions to ensure reliability, economic efficiency and market liquidity. Unlike generation, transmission remains a “natural monopoly” function.^{xix} Given the current commercial bottlenecks (constraints) in transmission service, the owners of such service must be scrupulously monitored to avoid use of these constraints unfairly as market power to its own financial advantage or to the disadvantage of competitors.

FERC has recently endorsed the independent control of transmission access as a means of achieving regional operation of transmission grids with some measure of separation from generation ownership. Unfortunately, the current management structure of ISOs is neither sufficiently

independent nor free from conflicts of interest to implement Orders 888 and 889. It is not sufficiently accountable to transmission customers. There are no incentives to optimize transmission, nor are there meaningful penalties for failure to comply with rules established for fair and non-discriminatory operations. Independent grid managers should have incentives to optimize transmission throughput and service reliability, and be held accountable for their operational decisions.

Sound public policy mandates that the transmission network be operated regionally under independent management, without financial conflicts of interest among the owners of affected transmission, distribution and generation assets. Independence means that operational decisions will be made solely upon operational considerations and that commercial protocols will be uniformly applied in a non-discriminatory fashion regardless of corporate affiliation. Additionally, in emergencies, no direct or indirect financial benefit should be derived by the operator of the transmission network.

FERC should fully utilize its current authority to order regionalization of the nation's power grid under independent and accountable management. The FERC should (1) take the bold steps necessary to create larger regional transmission organizations (RTOs) and to force maximum participation into these organizations under truly independent operational control with appropriate incentives and accountability, (2) financially structure regional grid management and operations to optimize throughput and operational integrity, (3) require all ATC calculations be made on a regional basis, (4) prohibit pancaking of rates within any region, and (5) prohibit financial conflicts of interest among the owners of generation, transmission and distribution assets within the region.

IV The Role of State Governments in Electricity Restructuring

A. State legislatures should clarify existing laws and mandate utility commissions to restructure promptly and fairly.

1. State legislators should clarify and empower state PUCs to implement customer choice and retail access to all classes of customers at the earliest possible time. In some states, utilities have

challenged the authority of regulatory commissions to implement retail restructuring. Legislatures should authorize and mandate PUCs to implement retail access and customer choice to all classes of customers at the earliest possible date.

2. State legislators should require government to purchase power from competitive suppliers, thereby implementing tax and budget reductions immediately. All classes of customers should be permitted to receive the benefits of price competition at the earliest possible date. However, it is likely that imposing competitive purchasing rules for the purchase of electricity onto federal, state and local governments will speed the advent of retail competition for all other purchasers. Government already has competitive procurement rules that should apply equally to electricity purchases. This measure would significantly lower energy costs to society and provide immediate tax and budget relief.

3. State legislators should require specific codes of conduct and standards to implement retail access. Independent marketers have complained of undue advantage provided by utilities to their marketing affiliates. Conversely, affiliated marketers have complained of too-strict standards of separation or other limitations on their ability to compete. NEM represents both affiliated and unaffiliated marketers of energy and related services and technologies. NEM has developed competitively neutral standards of conduct to govern transactions among all market participants regardless of corporate affiliation. State PUCs should adopt standards consistent with NEM's *Uniform Code of Conduct*. Copies are available at www.energymarketers.com.

B. States should act promptly to implement open access and competition without operational, behavioral and tariff barriers.

Restructuring fails without system integrity and reliability. Regulated utilities have a vital commercial role to play in the new energy marketplace. NEM submits that maintenance and construction of transmission and distribution wires continue to exhibit scale economies that merit society sanctioning a single provider. NEM also recognizes that significant investments have been made in systems and personnel that require equitable cost recoveries during the transition of these services to a competitive market. Indeed, NEM members aspire to be the

utilities' best customers, suppliers and partners, helping them profitably expand their systems to meet the needs of the Twenty-first Century.

Reliability can be achieved, however, without ownership of generation assets. Indeed, when a vertically integrated utility owns both generation and wires, it can use generation to restrict availability of wires service for competition. Regulatory commissions should establish procedures to encourage divestiture of generation assets by transmission-owning utilities. Divestiture by sales of assets in the open market will quantify and aggressively mitigate stranded costs. Divestiture will assure that generation is run efficiently by those who bear the financial risk were it not to run. In addition, divestiture will assure that there are no stranded costs associated with the divested assets in the future. To the extent there are unrecovered stranded costs, PUCs should maximize the use of existing tax laws and minimize the use of competitive transition charges.

1. **States should establish a date certain by which to complete the transition to a competitive market.** The maximum consumer benefits of open access and competition take place when markets make a complete transition to competition. All classes of consumers must be free to purchase as many or as few competitive services as they wish, as soon as possible, without fear of losing quality or reliability. Each PUC should apply cost-of-service regulation only to those specific functions that remain natural monopoly services, based on true "economies of scale" and declining average costs. These functions do not include competitive commodity supply functions. Additionally, as regulated utilities unbundle energy supply and service functions, the provider-of-last-resort functions can be provided by qualified competitive suppliers, and the obligation-to-serve can be modified into an obligation to connect and deliver. NEM believes that all of the issues regarding complete open access can be resolved within two years.
2. **Regulatory Commissions should order unbundling of services, so that consumers may choose competitive services on a line-item basis.** Regulations, tariff structures and operational protocols should promptly be designed to permit competitive, non-utility suppliers to provide each of the functions and services that are not natural monopoly functions. All other functions should be opened to competition.

At a minimum, the following services can be opened to competition:

- Supplying electric generation,
 - Qualified suppliers of last resort,
 - Customer billing and metering,
 - Energy imbalance services,
 - Demand side management and efficiency services, and
 - Providing ancillary services.^{xx}
3. **Regulatory commissions should institute rule-making procedures to establish uniform codes of conduct to govern relationships between affiliated and non-affiliated suppliers of competitive energy services and technologies.** As noted above, NEM urges adoption of standards of conduct consistent with its *Uniform Code of Conduct*. Restructuring fails if financial conflicts of interest are not eliminated among owners of generation, transmission and distribution assets. In this process, direct and indirect subsidies and tying arrangements must be prohibited. Penalties for violation of these rules must be swift, effective and designed to ensure that repeated violations do not become merely a cost of doing business for violators.
 4. **Restructuring will fail if Government remains the risk manager for the new energy marketplace.** Market prices and downside risk shape competitive markets. By law, regulators minimize or eliminate many forms of utility business risk. However in a competitive market, unregulated entities must take all forms of risk to succeed and profit. Regulators must permit competitive suppliers to take risks and design regulations, rates, tariffs and operational protocols to separate the regulated and unregulated business functions, so that unregulated entities are not indirectly subsidized by a utility's rate structure, lack of risk or guaranteed returns.
 5. **Customer choice must be easy to execute. The right to switch energy suppliers is the ultimate consumer protection.** Choice must exist in order to serve the public interest and it should not be complicated or expensive. True measures of a competitive market are the number of customers that have choice, and the number of customers that, in fact, exercise choice. All customers should be given meaningful, competitive choices at the earliest possible date.

V Conclusion

Major shifts in the economics and social costs of traditional electric utility regulation clearly support restructuring this industry into a more competitive one. Restructuring will not work well if competitive suppliers and regulated utilities do not find win-win solutions to the many issues raised in this document. The actions outlined above need to be implemented promptly to permit a robust and liquid wholesale market for electricity and to lay the foundation for an efficient retail market.

Competitively priced energy and related services will serve the public interest, save consumers, governments and taxpayers billions of dollars and will promote significant efficiency, innovation and productivity gains, nationwide. Experts from NEM's policy writing committees are available to meet with policymakers throughout the country to help structure the new laws, regulations, tariffs and operating procedures that permit competition based on price and quality of service, encourage new technologies and that bring meaningful savings to US consumers of energy.

ENDNOTES

i. For a discussion of the regulatory and economic history of the US electrical power industry, see generally Fox-P. 1997, *Electric Utility Restructuring, A Guide to the Competitive Era*, Public Utility Reports.

ii. Platt, H. 1991. *The Electric City*, Chicago, University of Chicago Press.

iii. The economic theory of "economies of scale" posits that costs of certain products such as electrical power decline as output increases. Advocates argue that competitive forces would result in price wars that would eventually reduce competition to a single firm, which in turn, would become a monopoly. Therefore, granting one firm a monopoly in the first instance would reduce the social costs of failed businesses in exchange for prices that were regulated to avoid monopoly profits. This concept was first applied to the railroad industry after the Civil War and later to the regulation of the natural gas industry. As the use of electrical power grew, Insull's predictions of reducing costs by integrating the electrical network into a single power network proved correct until the price shocks of the 1970s.

iv. Electrical use during World War I grew substantially.

The Federal Water Power Act was passed in 1920 and granted exclusive rights to the federal government to develop hydroelectric facilities. The Tennessee Valley Authority and the Bonneville Power Administration were created in 1933.

v. By 1956, the US Census Bureau reported that 98.8 percent of All-American households had electrical service. See US Census Bureau, *Historical Statistics of the United States from Colonial Times to the Present* (1974).

vi. Several other factors also contributed to the high cost of power in the U.S. The Fuel Use Act of 1978 essentially prohibited the use of natural gas in new electric generation facilities. Environmental laws and regulations limited the use of coal and fuel oil as fuels for new generation plants. Projected economic development and utility forecasts indicated the need for significant amounts of new generation capacity. Utilities believed that they had little choice but to construct nuclear electric generation plants to meet the projected demand. At the same time, safety concerns following the incident at the Three Mile Island nuclear plant in Pennsylvania led to significant regulatory scrutiny and oversight of nuclear facilities. Extensive permitting processes and local opposition to nuclear plant development created long delays in completing nuclear plants. These delays significantly increased the overall cost of building nuclear plants. This build up in nuclear generation capacity was followed by lower than expected economic growth in the U.S. during the early 1980s. The economic slow down virtually eliminated the need for new generation and resulted in a substantial surplus of generation capacity. These various factors combined to increase the electric rates on a per unit basis to extremely high levels in certain parts of the United States.

The costs of new nuclear power plants on which construction was completed between 1968 and 1971 averaged \$161/kW of installed capacity. The Three Mile Island incident occurred in 1979. Between 1979 and 1984, average costs rose nearly ten-fold to \$1,373/kW. Costs of the most expensive plants built during this time ranged from \$1,607/kW to \$5,810/kW. See Joskow, P.L. "Regulatory Failure, Regulatory Reform and Structural Change in the Electric Power Industry", In *Brookings Papers on Microeconomic Activity* 125-200 (1989) at 151, and Charles River Associates, et al (1986)

vii. PURPA permitted "Qualified Facilities" (QFs) to use waste heat and steam to "co-generate" electricity for use by end-users without being subject to state utility regulation. QFs were granted special status if they were designed more efficiently than existing or proposed utility units and, in turn, utilities were required to purchase this power at

“avoided costs.” In theory, society would be better off because cogenerated power had to meet higher efficiency standards and use waste heat energy. Theoretically, utilities were indifferent to the transaction if the price was truly reflective of “avoided costs,” particularly if construction overruns are disallowed by regulators. Over time, however, government-mandated avoided costs were established on the basis of forecasts that proved inaccurate. Resulting avoided cost payments created economic incentives that encouraged the development of smaller, more efficient, lower-cost, distributed generation units that were designed to serve very localized loads.

viii. Advancements in the development of combined-cycle natural gas-fired generation technology significantly increased the efficiency of gas-fired generation. This, in turn, dramatically lowered the overall cost of electricity produced from gas-fired generation facilities, especially when compared to the high cost of power generated from nuclear plants. Industrial companies that consumed large volumes of electricity in manufacturing processes soon noticed the disparity between the rates of the incumbent utility and the rates of utilities in other parts of the country as well as the cost of new combined cycle gas-fired generation. The industrial community actively sought access to lower cost electricity because of the enormous potential cost savings and an increasingly competitive global economy.

ix. H.R. 776, 1992 U.S.C.C.A.N. 2534-2.

x. See Zajac, E.E. 1978. *Fairness or Efficiency: An Introduction to Public Utility Pricing*. Cambridge, MA., Ballinger Publishing; see also Faulhaber, G.R. 1987. *The FCC's Path to Deregulation: Turnpike or Quagmire?*, *Public Utilities Fortnightly* 120 at page 5.

xi. This phenomenon contributed to the drastic reduction in the economic component of the New York Power Pool (NYPP). Prior to the late 1980s, utilities in NYPP traded large volumes of electricity on a “split savings” formula. This then created a situation in which any two members could agree on a trade slightly below the average cost result of the NYPP formula. Although some NYPP members challenged this practice at FERC, individual, two-party transactions were allowed outside the pool structure. The ability of any two parties to price below the multi-party average created a need to restructure the NYPP and eventually led to the development of what has become the New York ISO.

The example given by Faulhaber, *supra* at pages 22-26, is the situation in which three towns can supply water jointly for \$660, whereas, any single town can supply its own water for \$300 and two towns could join together and supply water

from one facility for \$400. While it may be cheaper to force all three towns to join together to supply the water at \$660, there is no fixed price at which a single firm can keep the market because it is always cheaper for two towns to split off and supply themselves at a lower average cost (i.e. \$660/3 vs. \$400/2)

xii. Order No. 888, Promoting Wholesale Competition Through Open Access Non Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 61 Fed. Reg. 21-540 (May 10, 1996), 1991-1996 FERC STATS. & REGS. PREAMBLES ¶ 31,036 (Apr. 24, 1996), order on reh'g, 62 Fed. Reg. 12,274 (March 14, 1997), 78 FERC ¶ 61,220 (March 4, 1997), order on reh'g, 62 Fed. Reg. 64,688 (December 9, 1997), 81 FERC ¶ 61,248 (November 25, 1997), order on reh'g, 82 FERC ¶ 61,046 (January 20, 1998).

xiii. Order No. 889, Open Access Same-Time Information System (Formerly Real-Time Information Network) and Standards of Conduct, 61 Fed. Reg. 21737 (May 10, 1996), 1991-1996 FERC STATS. & REGS. PREAMBLES ¶ 31,035 (April 24, 1996); Order No. 889-A, order on reh'g, 62 Fed. Reg. 12484 (March 14, 1997), III FERC STATS. & REGS. ¶ 31,049 (March 4, 1997); Order No. 889-B, reh'g denied, 62 Fed. Reg. 64715 (December 9, 1997); III FERC STATS. & REGS. ¶ 31,253 (November 25, 1997).

xiv. Responding to the same shifts in economics and technology, state legislators and PUCs are considering or in the process of restructuring the electricity industry in virtually every state except Florida, Alaska and South Dakota. As noted *infra*, the consolidated US wholesale and retail markets for energy-related commodities, services and technologies is one of the largest industries in the world. Estimates range as high as \$830 billion per year. Cost savings in other deregulated industries have averaged 30-40 percent. See Crandall and Ellig (1997). Given the experience with deregulating other industries, costs saving attributable to restructuring the US energy markets could exceed \$100 billion per year.

xv. The federal and state power authorities, in particular, have a unique position in that they possess many of the characteristics of traditional utilities. They own generation and transmission and sell electricity to both retail and wholesale customers, but are not subject to the same regulatory oversight. In order to effect a consistent competitive framework, these entities should implement open access to their systems by applying the principles similar to those developed for traditional utilities. Because of their unique status, these authorities must remain competitively neutral and operate in a fashion that is consistent with their originating charter.

With their special, tax free financing status, government initiatives, such as federal and state authorities and municipal systems and cooperatives have played an important role in the development of the electric utility industry. For example, rural electrification programs brought universal service to areas of the country that were historically uneconomic for investor owned utilities. Government entities should provide comparable access to their transmission systems and to the extent they offer electric supplies or related services that marketers can offer, such supply and service should be offered on competitively neutral terms.

xvi. See Petition for Proposed Rulemaking on Electric Industry Structure, Incentives of Market Participants and Improvement of Open-Access Commercial Practices in FERC Docket No. RM95-8-000 & RM98-5-000, filed March 25, 1998.

xvii. Copies of NEM's *Uniform Code of Conduct for Regulated and Unregulated Suppliers of Energy and Related Services and Technologies* (UCC) and its *National Guidelines for Unbundling and Restructuring the Natural Gas Distribution Function* are available at www.energymarketers.com.

xviii. See Endnote xviii, supra.

xix. Electrical physics suggests that line losses decrease exponentially with the increase in transfer capability and it currently appears that there may be efficiencies gained in the operation of larger transmission facilities. Consequently, at this writing, NEM believes that economies of scale continue to apply to the construction of transmission facilities and justify cost-of-service or performance-based regulation of transmission facilities as natural monopolies with due consideration to all of the market power issues inherent therein.

xx. At this writing, ancillary services include operating reserve: spinning reserve service, operating reserve: supplemental reserve service, reactive supply and voltage control from generating sources, regulation and frequency response services, load following, backup supply services, real power loss services, restoration services, and system black start capability.

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