

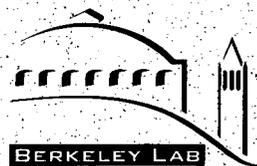


THE NATIVE AMERICAN
RENEWABLE ENERGY
EDUCATION PROJECT

AMERICAN INDIAN TRIBES AND ELECTRIC INDUSTRY RESTRUCTURING: ISSUES AND OPPORTUNITIES

DAVID HOWARTH, JOHN BUSCH, AND TOM STARRS

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**AMERICAN INDIAN TRIBES AND ELECTRIC INDUSTRY
RESTRUCTURING: ISSUES AND OPPORTUNITIES**

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EXECUTIVE SUMMARY

The U.S. electric utility industry is undergoing a period of fundamental change that has significant implications for Native American tribes. Although many details remain to be determined, the future electric power industry will be very different from that of the present. It is anticipated that the new competitive electric industry will be more efficient, which some believe will benefit all participants by lowering electricity costs. Recent developments in the industry, however, indicate that the restructuring process will likely benefit some parties at the expense of others. Given the historical experience and current situation of Native American tribes in the United States, there is good reason to pay attention to electric industry changes to ensure that the situation of tribes is improved and not worsened as a result of electric restructuring. This paper provides a review of electricity restructuring in the U.S. and identifies ways in which tribes may be affected and how tribes may seek to protect and serve their interests.

"Restructuring" encompasses an assortment of changes in electric utility industry regulation and organization and is taking place in both the wholesale and retail markets. Competition in wholesale electricity markets is being encouraged by changes in federal regulation of the transmission system to provide for non-discriminatory access to transmission to serve third parties. State utility commissions have recently begun to take actions intended to extend competition into the retail sector. Ultimately, electricity customers may be able to choose electricity providers in a deregulated environment, just as they are able to select their long-distance and even local telecommunications company. As electricity customers, generators, and utility operators, and as governmental bodies, tribes will be affected by industry changes at both the wholesale and retail level. It is somewhat early in the process to specifically determine who will ultimately benefit from restructuring and who will bear the pain. There are, however, the following general indications of what will happen and how tribes will be affected.

Regulatory changes in the wholesale power market will directly affect tribal utilities and electricity generators. Open and non-discriminatory access to electric transmission expands opportunities for buyers and sellers of bulk power to participate in new markets. Power

markets will become more regional in nature, and with increased participation, more competitive. Benefits from wholesale competition are expected to be universal, with the exception of electric generators unable to compete on price. To the extent that tribes have found transmission access to be a barrier to participation in the electricity supply market, the impacts of open transmission access may be felt more strongly by tribal utilities and power project developers than other, more established industry players. Tribes endowed with energy resources may benefit directly from developments that allow power plants to be sited where electricity may be produced least expensively (i.e., near the fuel source) rather than being required to locate within the service territory of the purchasing utility.

In contrast to wholesale competition, which is unlikely to harm tribes, state-level restructuring offers a mix of potential opportunities and serious challenges for tribes. Electric utility commissions are already considering or have initiated proceedings to deregulate electric utilities and permit competition for electricity customers. Retail competition may reduce prices for some customers, however it appears that the customers most likely to benefit are large industrial companies. Efforts to reduce prices will be limited by utility efforts to recover costs that could otherwise be stranded under competition. Although efforts are being made to ensure that these transition costs are collected from all customers, residential customers may experience a disproportionate burden for paying outstanding utility costs. Rural customers, for whom the cost of providing electric service is relatively high, may experience an increase in electricity prices as a result of the shift from regulated retail prices to market-based prices. Most power marketers able to offer electricity cost savings may overlook rural and low-income customers. The transformation of the retail electricity market presents an opportunity for marketers to profit from confusion and misinformation. As has happened in the telephone industry, rural and low-income customers may suffer from the actions of disreputable companies. Public benefit programs, such as lifeline rates and home weatherization, may not survive in a competitive market to the detriment of those who depend on the assistance they provide. It appears that tribes may be among

those least likely to benefit from retail competition and the most likely to be harmed. The opportunities for greater tribal participation created by wholesale competition may, in a deregulated retail electric industry, become more of a necessity to protect and serve tribal interests.

Tribes may respond to electric restructuring by increasing their participation beyond continuing electric service from the local distribution utility or an electricity marketer.

- **Create a tribal utility.** A number of tribes operate or are contemplating forming utilities. As the operator of a utility, a tribe may determine whether to purchase or generate electricity, what rates to charge, who to employ, and what public service and energy efficiency programs to offer. Tribal operation of an electric utility also facilitates recirculation of funds within the local economy. There are, however, substantial costs and risks associated with tribal utility formation that may include the economic risk of investing in utility facilities as well as the challenge of building an institution that potentially comes at the expense of other tribal efforts (e.g., community health care).
- **Aggregate tribal customers.** The tribal government or another institution may represent the collective interest of tribal customers and act as an agent to purchase electricity. Aggregation could conceivably go beyond members of a single tribe to include multiple tribes geographically distinct from one another. Potential benefits are limited to the extent that tribal aggregators may reduce electricity costs and/or select suppliers that fulfill other tribal goals. The commodity cost of electricity is expected to be relatively small compared to the total cost, particularly in the next few years as utilities are allowed to recover stranded costs in rates, so the potential savings may be modest. As an alternative to continuing to take service from a non-tribal utility, customer aggregation presents relatively few risks and provides an opportunity for tribes to increase control over electric service to their members.
- **Regulate electricity service providers.** Tribes may require power marketers to serve all tribal customers rather than a select few, and require companies to provide accurate information about prices and service options. Tribes may also exert greater control over the operations of electric distribution companies by enacting tribal utility codes or other rules

for granting rights-of-way or regulating facility siting. Tribal governments may also develop programs to inform tribal members about the changes in the energy industry and even to provide energy-related services, such as energy efficiency loans and technical support.

- **Increase involvement in power supply.** There may be greater opportunities for developing tribal energy resources for electricity supply. Retail restructuring also creates opportunities to sell wholesale electricity to a host of new customers. Whereas a power producer could previously sell only to the local utility, it may now sell electricity to marketers, purchasing cooperatives, and even individual customers. Given the growing market for socially responsible products, there may be a niche market for Native American-produced electricity. If renewable resources are used, the marketing value may be that much greater. "Green Pricing" may help establish a market for renewable electricity even as costs remain higher than for electricity from other sources.
- **Develop grid-independent community or home energy systems.** This option may be particularly attractive to remote customers presently unserved by utilities. It is unlikely that power marketers will adequately serve these customers, and if distribution systems are extended it will be at great cost to the customers. For some, this option may be viewed as a last resort if the system breaks down, whereas others may seek this as an opportunity to foster independence and protect their way of life.

It is important that information about the restructuring process is provided to all who will be affected while there is still opportunity to prepare for change and to shape public policy. There may be more options in a restructured electric industry, but if information about the options is not widely available, or if some options are specifically designed to benefit certain parties, the final result will not be equitable. Four major stakeholders are presently determining electricity policy: utilities, industrial customers, regulators, and consumer advocacy groups. In such a process, benefits flow to those who exert political power. Tribes can participate in this restructuring process to learn first-hand what is happening, and perhaps to influence policy decisions. Knowledge about the potential opportunities and pitfalls of electric restructuring becomes the power to take actions to protect and serve tribal interests.

CHAPTER 1 INTRODUCTION

The U.S. electric utility industry is undergoing a period of fundamental change that has significant implications for Native American tribes. Although many details remain to be determined, the electric power industry of the future will be very different from that of the present. It is anticipated that the new competitive electric industry will be more efficient, which some believe will benefit all participants by lowering electricity costs. Recent developments in the industry, however, indicate that the restructuring process will likely benefit some parties at the expense of others. The basic premise of this paper is that the U.S. electric industry is engaged in a period of fundamental change that will create both opportunities and potential pitfalls for tribes. To successfully navigate and take full advantage of the restructuring of this industry, tribes must have a complete understanding of the scope and direction of these changes. Given the historical experience and current situation of Native American tribes in the United States, there is good reason to pay attention to electric industry changes to ensure that the situation of tribes is improved and not worsened. The paper is organized as follows:

Chapter 2 describes the current status of energy production and service on reservations. It is intended to help readers understand the context in which tribes seek to increase their level of control and reap a greater share of the benefits associated with energy development. Presently unserved energy needs are likely to shape tribal involvement in the electric industry.

Chapter 3 provides an overview of the evolution of the electric industry to its present form and introduces the regulatory and structural changes presently taking place. Much of this information is exchanged mainly within the industry and is not widely available to the lay public. To understand the strategic implications of regulatory and institutional changes in the electric industry requires an understanding of the regulatory and structural evolution that is taking place.

Chapter 4 provides a more detailed discussion of changes in the U.S. electric industry with a specific focus on the implications of these changes for tribes. As customers, as governments, as energy developers, and sometimes as utility service providers, tribes have a vested stake in the outcome of electric industry restructuring. In many very general ways, tribes will be affected by changes in the electric industry no differently than other affected groups. The specific circumstances of each of the more than 500 federally-recognized tribes in the U.S. dictate unique responses to the opportunities and challenges presented by the restructuring process.

Chapter 5 presents a summary of the conclusions reached in this paper. The reader is encouraged to use the information provided in this paper to begin his or her own investigation of the issues and perhaps to become actively involved in advocating for the needs and rights of tribes in the electric industry restructuring process.

CHAPTER 2 CURRENT STATUS OF ENERGY PRODUCTION AND SERVICE ON RESERVATIONS

Although Native American tribes own significant energy resources and have borne a disproportionate share of the burden from energy development in the United States, Native American communities are among those who benefit least from the development of energy resources. The history of tribal involvement in energy development is long and rich. The following section provides a brief review of energy development on tribal reservations and discusses potential directions for future energy development by tribes. This chapter concludes with a discussion of the current provision of electricity services to tribes.

Reservation-Based Energy Development

Native American tribes possess a significant share of the energy minerals located in the United States. Although they own just two percent of the U.S. land base (53 million acres in trust), tribes hold title to 30 percent of the coal resources located West of the Mississippi River, 37 percent of potential uranium resources, and three percent of known oil and gas resources in the United States (Ambler 1990). Tribes located along the Missouri River and in the Pacific Northwest, as well as in many other areas, hold historic rights to water resources presently used or potentially available to produce hydroelectric energy. Although some tribes have profited from the development of these energy resources (for example, in 1994 tribes received approximately \$150 million from royalties on the sale of coal, gas, and oil), the royalties represent just a small fraction of the total sales value of the resources (which in 1994 was about \$1.1 billion) (Task Force 1996).

The number of tribes that have benefited from the development of energy resources on reservations is relatively small. Only about 40 of the 300 federally recognized Indian reservations possess conventional energy resources, and in some cases ownership is held by individual allottees rather than the tribes. Overall, development of energy resources has contributed little to most tribal economies as energy-related employment has been low and tribes and energy development companies have not reinvested revenues to broaden the tribal economic base. Like many dependent on mineral extraction-based economies, energy tribes have survived boom and

bust cycles that have prevented long-term economic development (Ambler 1990).

The presence of valuable energy resources on reservations has made Native American tribes targets of exploitation. History holds numerous examples of the use of coercion, duplicity, and outright theft to gain control of tribally-held resources (Ambler, 1990). While the benefits from the development of reservation energy resources generally flowed off the reservation, the mostly detrimental impacts were felt by those living on the reservation. The environmental effects of energy development, including poisoned water, air pollution, and scarred landscapes, most often create a legacy that long outlives any economic returns. For example, 23% of the almost 1.5 million acres of Missouri River land taken for the Pick-Sloan project were owned by tribes. Although tribes located in this watershed have suffered the greatest harm from this project, including the loss of prime farmland and habitat and degraded water quality, they have been denied a fair share of economic benefits (Mni Sose 1996).

Prior to 1982, tribes were able to exert relatively little direct control over the development of their energy resources. The Indian Mineral Development Act, passed in that year, allowed tribes to produce energy themselves rather than simply lease their rights for royalty payments. Unfortunately, at about the same time the energy resource industry entered a bust period from which it has only recently emerged (Ambler 1990). The importance of tribal involvement in and control over the development of their energy resources was recognized in the Energy Policy Act of 1992 (EPAct). Title XXVI of EPAct was created to promote tribal involvement in all aspects of energy development enterprises intended to capture a greater share of benefits and exert increased control over development activities. In addition to providing funds to assist tribes' efforts to process their natural resources into useful forms of energy, Title XXVI established a program to fund tribal efforts to identify and develop renewable energy and energy efficiency projects.

These two areas of interest, comprehensive energy development (referred to as "vertical integration" in the Act) and alternative energy, indicate the direction in which energy development is apparently proceeding for many tribes. As evidenced by proposals by energy

resource tribes seeking Title XXVI vertical integration funding, tribes are interested in increasing their involvement in electricity generation. Perhaps a hundred or more Indian reservations contain potentially usable renewable energy resources such as solar, wind, hydro, biomass, and geothermal. The electric power industry represents an important market for sales of conventional or renewable energy produced by tribal energy industries. Tribes may now generate electric power for internal use by their members or for bulk power sales off-reservation. As such, changes in the electric power industry will create new opportunities and risks that may influence tribal energy development decisions.

Electricity Service on Reservations

Tribes are served by a variety of types of utility companies, including investor-owned utilities, cooperatives, public and municipal agencies, and tribal utilities. Historically, tribes have had little say in determining which utility will provide electric service to their members. Table 2-1 identifies the type of electric utility serving the 196 reservations for which this information was available. Investor-owned utilities dominate the U.S. electric industry, serving 75 percent of all customers, while public and cooperative utilities serve the remaining 25 percent. Although the proportion of public and cooperative utilities serving reservations is higher than the national average, the data presented in Table 2 - 1 indicate that investor-owned utilities are also the dominant provider of electricity to reservations.

The database providing the above information identifies three reservations as being served by

tribal utilities. In fact, at least four tribal utilities are presently in operation, including the Navajo Tribal Utility Authority, The Tohono O'odham Tribal Utility Authority, The Fort Mojave Indian Tribe, and the Mission Valley Power Company operated by the Salish & Kootenai Tribes. Data for the first three of these tribal utilities is presented in Table 2 - 2. These tribal utilities range in size from very small, probably less than 1,000 customers, up to almost 30,000 customers. None, however, generates their own electricity. Instead they rely on bulk power purchases from other sources. Additional information about tribal utilities and issues that pertain to their establishment and operation are addressed in Chapter 4.

Whether served by tribal utilities or by investor-owned or public utilities, most tribal customers spend a disproportionate share of their income on electricity. One reason is that these customers have relatively low incomes, but another is that these customers are often not provided a full range of energy services, such as home weatherization and other basic energy efficiency measures. Even more indicative of the need for attention to the energy needs of Native Americans is the high number of reservation households that are presently without electricity. For example, 18,000 homes in the Navajo Nation are currently unserved by utilities, as are countless others on reservations across the country (Task Force 1996). Ensuring that these basic needs are met is just one of the challenges facing the electric industry as it enters a new period of change.

TABLE 2 - 1. TYPES OF UTILITIES SERVING RESERVATIONS

Type of Electric Utility	Number of Reservations	Percent of Total (%)
Investor-Owned	114	58
Cooperative	55	28
Public, Municipal, and Federal	22	11
Tribally-Owned	3	2
No Electric Service	2	1
Total	196	100

Source: Collins et al. 1994, unpublished

TABLE 2 - 2. TRIBAL UTILITY DATA (1994)

	Navajo Tribal Utility Authority	Tohono O'Odham Utility Authority	Fort Mojave Indian Tribe
Residential Customers			
Number	23,957	2,484	NA
Energy Sales (MWh)	114,143	17,043	
Rates (cents/kWh)	7.53	8.58	
Commercial Customers			
Number	2,711	382	NA
Energy Sales (MWh)	152,741	18,327	
Rates (cents/kWh)	7.91	8.19	
Industrial Customers			
Number	3	1	NA
Energy Sales (MWh)	218,597	46,033	
Rates (cents/kWh)	6.18	9.38	
Other Customers			
Number	401	15	NA
Energy Sales (MWh)	13,005	4,523	
Rates (cents/kWh)	8.18	9.04	
Total			
Number	27,072	2,877	NA
Energy Sales (MWh)	498,486	86,067	
Rates (cents/kWh)	7.07	8.95	
Wholesale Energy			
Purchases (MWh)	548,932	90,113	8,823
Cost (cents/kWh)	3.55	6.67	1.09
Employees	98	25	NA

Source: Assorted data reported to Federal Energy Regulatory Commission (FERC) and the Rural Electrification Administration (REA). NA = not available

CHAPTER 3 EVOLUTION OF THE U.S. ELECTRIC UTILITY INDUSTRY TO THE PRESENT

Although electricity has become an important and integral component of industrial society, very few are familiar with the complex regulatory and institutional structures that have evolved over the 120-year history of the industry. This section provides a brief review of the evolution of the electric power industry to the present, for the purpose of preparing the reader for the discussion of restructuring issues pertinent to Native American tribes contained in Chapter 4.

Electric Utility Industry Prior to 1970

When Thomas Edison first developed a system for the generation, distribution, and use of electric power in the 1880s, it was believed that free market competition would adequately regulate this new industry. City councils governed the distribution of franchises for the use of public rights-of-way, and many granted multiple, overlapping franchises. Although rivalries between developers spawned great technical advances, cutthroat competition between electricity providers resulted in the duplication of distribution facilities, poor reliability, and discrimination against low-income and suburban residents. Financially-weakened electric companies often fell prey to stronger firms seeking a monopoly in a given city. The electric industry, like many other industries of that time, was marked by corruption and bribery of local government officials. Electric companies operated at the whim of the city councils who could revoke their franchise if bribes were not maintained. Many cities and towns formed their own municipal utilities as an alternative to private ownership, often because no utility was interested in serving them, but also because electricity came to be considered a public service similar to water (Hyman 1994, Rudolph and Ridley 1986).

Over the first two decades of this century, public dissatisfaction with the operation of the private electric utility industry, and disgust with local government corruption, led to the call with state-run, "scientific" regulation of what was observed to be a "natural" monopoly. Economies of scale and scope made it such that a single, vertically-integrated company could provide electric service at least cost. The call for state regulation was also carried by the leaders of the electric industry, who sought protection from

competition and needed stability to attract financial backing for the large capital investments that were required to expand their systems. State regulation provided electric companies monopoly status, and although rates were regulated to limit profits, over the next two decades a reasonable return on investment became guaranteed (Hyman 1994, Rudolph and Ridley 1986).

The early years of regulation of the electric utility industry showed limited success as expanding electric companies found ways to circumvent the control of regulators. Utility holding companies were formed that owned operating companies and other subsidiaries in multiple states and were free from state regulation. By charging excessive fees to the regulated operating companies, which were passed on as costs to customers, holding companies were able to reap extraordinary profits. The holding companies also formed financial pyramids that were supported by continued expansion of the operating companies. When the Great Depression of the 1930s halted industry expansion, the utility company pyramids collapsed and their corruption was exposed (Hyman 1994, Kahn 1991, Rudolph and Ridley 1986).

The federal government responded by passing the Public Utility Holding Company Act of 1933 (PUHCA) to place limits on the operations of holding companies. Among numerous other restrictions, holding companies were required to operate a single, interconnected system and limit their holdings to a single or adjoining states. Legislation was also passed to amend the Federal Power Act in 1935 to broaden the authority of the Federal Power Commission (FPC). The FPC was assigned primary responsibility for regulating the interstate transmission system and the wholesale trade of electricity. The FPC was also empowered to regulate utility rates and earnings, prescribe accepted accounting systems, and approve utility mergers and sales of facilities. If deemed to be in the best interests of utility customers, the FPC could exempt holding companies from PUHCA regulations (Hyman 1994).

The structure and regulation of the electric utility industry solidified during the 1930s and changed very little during the next four decades. The industry was dominated by vertically-integrated, investor-owned utilities that were regulated by state and federal commissions. Over

two thousand cities and towns operated municipal utilities, most of which were regulated only by local government. During the 1930s the Rural Electrification Administration was formed to encourage the formation of rural electric cooperatives, providing electric service to areas unserved by private and municipal utilities. Although regulation of private utilities based on giving them a reasonable rate of return on investment was a very complicated undertaking, and potentially open to abuse, steadily declining costs fueled by industry expansion and technological advance averted public attention from the regulatory process. Decisions made during this period of relative calm and industry optimism set the stage for the tumultuous times that have since enveloped the electric power industry.

Resource planning in the electric power industry during the 1940s through the 1970s was based on the presumption of exponential growth in electricity demand. The U.S. economy was steadily growing and becoming more electrified with the introduction of new household appliances, such as the refrigerator and air conditioner, and industrial processes such as steelmaking. To meet this historically increasing demand for electricity and take advantages of economies of scale, electric utilities built very large (up to 1 to 2 gigawatt capacity) central station power plants. The industry also increasingly turned its attention to nuclear power, which offered the promise of even lower-cost electricity. As long-distance transmission technology was improved, previously independent utility systems became more interconnected to pool resources and increased their operating efficiency. For many years, the strategy pursued by the electric power industry proved successful and rates were kept low (Kahn 1991).

A variety of factors, some internal and some external to the industry, came together around 1970 to cause a transition from decreasing to increasing costs of electricity. Environmental laws protecting the Nation's air and water required expensive retrofitting of some plants and also increased operating costs. Operating costs for fossil fuel plants, particularly those fueled by oil, rose sharply during the energy crisis of the 1970s. Rather than providing economies of scale, the size and complexity of many large plants contributed to inefficiencies that led to higher costs per kilowatt-hour. The large coal and nuclear plants constructed by utilities were inherently lengthy projects that were often set back even further by delays. The nuclear plant accident at Three Mile

Island initiated the redesign of many facilities under construction and delayed their completion. Increasing inflation and interest rates during this period exacerbated the construction problems and caused costs to skyrocket. Adding insult to injury, projections of increased demand for electricity did not materialize as higher prices drove consumers to improve efficiency and switch to other energy sources. Excessive capacity was underutilized, adding to the already high cost of electricity (Kahn 1991).

Electric utility regulators, long having been in the position of presiding over declining electricity costs, were now faced with having to determine what costs should be passed on to consumers in the form of higher electric rates. Many recognized that poor utility management and ineffective regulation were responsible for many of the problems facing the electric power industry. A variety of interest groups turned their focus to the electric power industry, including consumer rights advocates, anti-nuclear and environmental groups, energy-consuming industries, and economists. The ensuing struggle produced a series of legislative and regulatory actions and the current evolution of the industry structure.

Regulatory Change and Restructuring: Phase I (1970s and 1980s)

The primary problem facing the electric power industry in the 1970s and 1980s was the increasing cost of supplying electricity. Responses included policies to introduce competition in electricity supply, improve resource planning, and increase attention to demand-side efficiency measures. The Public Utility Regulatory Policies Act of 1978 (PURPA) provided a framework for changes in electric utility regulation.

Public Utility Regulatory Policies Act of 1978

By the late 1970s it was clear that the structure and regulation of the U.S. electric power industry made it ill-equipped to respond to challenges presented by spiraling energy costs, high interest rates, and inflation. Congress responded to the energy crisis by passing a broad package of legislation in the 1978 National Energy Act, including PURPA, which amended the Federal Power Act. Many of the provisions contained within the six titles of PURPA direct state utility commissions to pursue policies designed to make utility operations more efficient and better aligned with societal goals. Titles I and II apply most directly to electric utilities, while the provisions of Titles III and VI pertain more to natural gas regulation and miscellaneous federal programs.

Title I of PURPA has had a significant impact on electricity prices, especially the relative prices among different classes of customers. Under PURPA Title I, state utility commissions were directed to implement six ratemaking standards and consider a variety of policy goals. The six standards designed to reform the ratemaking process were: 1) rates should reflect the actual cost of providing service to each customer class; 2) rates should not decline as consumption increases, except to the extent that the cost of service is decreased; 3) rates should be based on costs at the time of use; 4) rates should vary seasonally to the extent that costs also vary seasonally; 5) industrial and commercial customers should be offered interruptible rates that reflect the cost of providing that service; 6) customers should be offered load management options if there are net benefits from doing so.

In addition to these ratemaking reforms, public utility commissions were directed to consider a variety of other policies intended to make utility service more equitable. Suggested policies included review of automatic rate adjustment clauses, providing information to consumers, limitations on termination of service, restrictions on the inclusion of advertising costs in rates, and rate structures that provide basic needs at below-average costs (lifeline rates).

Title II of PURPA has had a significant impact on the structure of the electric utility industry. Three entirely new sections (210, 211, and 212) were added to the Federal Power Act to promote the development of small, independent power projects and to end utility discrimination against non-utility generators. These sections created a new class of power producers, called qualifying facilities (QFs), and specified the terms by which utilities would be required to purchase QF power. QFs were made exempt from many federal and state utility regulations, removing a significant barrier to their establishment. To promote independent ownership and operation, electric utilities were prohibited from owning a controlling share of any QF.

To achieve QF status, power projects had to produce electricity using renewable resources or cogeneration. Renewable energy power projects had to be small, initially with a capacity of no more than 35 MW (later increased to 80 MW). Hybrid fossil-renewable plants were permitted, but the non-renewable input was limited to 25 percent. Cogeneration plants, which produce both electricity and useful thermal energy (e.g., steam), could be any size, but were required to meet

minimum efficiency standards and other operational requirements to qualify.

PURPA requires electric utilities to purchase power from QFs, and to interconnect facilities and supply back-up power. According to the legislation, rates for the purchase of QF power should be set at a level that is just and reasonable to utility customers and does not discriminate against the QF. It added that under no circumstances shall rates prescribed under PURPA exceed the utility's avoided cost. Under sections 211 and 212, FERC was also given limited authority to order wheeling by a third party between a QF and purchasing utility. Numerous restrictions on this authority made implementation difficult, so nearly all QFs were forced to sell power to the utility in whose service territory they were located.

The effectiveness of PURPA rules in encouraging QF project development hinges on the power purchase tariff. The PURPA legislation set utility avoided costs as the maximum for QF rates, but reserved the determination of criteria for setting rates to FERC rulemaking. In its implementing regulations, FERC defined "avoided costs" as all costs that a utility would otherwise have incurred had it not purchased power from a QF and specified a series of factors that should be considered in their calculation. FERC also determined that QF rates satisfy PURPA requirements only if they equal the full avoided cost of the purchasing utility. This interpretation, as it was applied in the various states, tended to establish avoided costs as both the floor and the ceiling for QF rates, and was intended to maximize the incentive for cogeneration and renewable energy development rather than pass direct rate savings on to customers (Miles 1984, Parmesano 1987).

While FERC established regulations to guide the implementation of PURPA rules, specific requirements for the purchase of QF power and rate-setting were left to individual state utility commissions. Some states objected to what was perceived to be an unconstitutional assertion of federal power and appealed to the courts for a ruling. Although PURPA was eventually upheld by the Supreme Court, litigation delayed its implementation well into the 1980s. Many states never fully embraced PURPA reforms, while others, such as California and New York, implemented PURPA policies in a manner that actively encouraged the development of renewable power and cogeneration (Devine et al. 1987). These reform-minded states also formed the

vanguard in a movement to change the way in which utility resource planning was conducted.

Integrated Resource Planning (IRP)

The utility regulation provisions of PURPA Title I focused on promoting energy conservation and reforming rates to better reflect the cost of service and improve equity. These provisions, however, merely scratched the surface of a much larger issue. For decades, utilities operated out of the view of the public and with little opposition from regulators. As long as rates were declining, it seemed to matter little whether utilities were operating in the very best interest of the public or their shareholders because both groups were satisfied. The events of the 1970s re-focused public attention on the electric utility industry, and identified past mistakes in utility resource planning. While large, capital-intensive power plants provided a stable return on utility shareholder investment, they proved to be very costly to consumers and society. Rallying to the call for least-cost utility planning, public interest groups intervened in utility rate cases across the country and achieved numerous reforms in electric utility regulation. The regulatory decision-making process developed through these efforts has come to be called "integrated resource planning" (IRP).

The first effort of utility reformers was to seek exclusion from the utility rate base of investments that had been imprudently pursued by utilities in the past. No longer relying on the oversight of utility regulators who had approved past utility investments, public interest groups sought to have utility resource planning made an openly public process. Beginning in some states as early as 1975, utilities and regulators would be required to clearly define their goals and reveal previously obscured assumptions and information. The planning goals would have to be quantifiable and based on easily measurable figures of merit used to evaluate the outcome of the resource planning process. Analytical techniques and models used to forecast load growth and resource requirements also came under intense scrutiny from public interest groups. In some cases, public interest groups developed their own utility planning models to incorporate the goals of IRP (Kahn 1991).

The primary goal of IRP is to develop a strategy for the least-cost provision of utility energy services. Defining "least-cost" depends on the analytical perspective and differs for the utility, the customer, and society as a whole. Because utilities are regulated for the public good, IRP was undertaken as an exercise to develop resource

plans exhibiting the lowest total social cost. In addition to the expense of utility service, social costs include externalities, which are environmental and other costs that affect society but are not included in the price of electricity. The determination of social costs is inherently normative, requiring consensus on social goals and values, making this one of the more controversial aspects of integrated resource planning.

One issue on which there has been almost universal agreement and which has long been the cornerstone of IRP is that demand-side efficiency and load management should be compared equally with supply options during planning. Electricity itself has no utility, so there is no rationale for simply desiring more electricity. What is desired is the provision of electricity services, including light, heat, and mechanical energy, at least cost. Utility end-use efficiency and load management, collectively known as demand-side management (DSM), has been demonstrated to be a viable alternative to new supply. In addition to being a least-cost resource, DSM is characterized by a variety of other attributes that make it appropriate for utility involvement, including public good benefits of energy conservation (e.g., environmental benefits and energy security) and market imperfections (e.g., electricity price distortions and differences between private and social discount rates).

IRP provides a mechanism for the integration of supply and demand characteristics in long-term utility planning. The potential effectiveness of IRP depends on the clarity with which planning goals are defined, the quality of the analytical models and underlying data and assumptions, the adequacy and detail of short-term action plans, and the integration of various stakeholder interests (Hirst 1990). Many utilities now use some form of IRP to conduct long-term resource planning.

Implementation of PURPA and IRP: Competitive Bidding

PURPA and IRP had a profound effect on the operation of the electric utility industry. Prior to these developments, large investor-owned electric utilities dominated the industry from load forecasting, to resource planning, and all the way through construction, ownership, and operation of power plants. The rules promulgated under PURPA ended the utility monopoly over the construction and ownership of generating facilities. Exclusive control over new-requirements forecasting and resource selection was wrested

from the utilities by IRP. In the 1980s, decisions affecting the development of the electric power industry were made by a host of industry participants, including utilities, regulators, QF developers, and public interest groups. The relative importance of each group varied from state to state depending on how these regulatory changes were implemented.

Although rules regarding treatment of QFs were established by federal legislation, implementation was left by FERC to the individual state public utility commissions. Determination of avoided cost rates proved to be the most important factor influencing QF development, although the general climate for QFs also depended on other state policies, such as tax incentives. Supported by high avoided cost tariffs, lucrative tax incentives, standardized long-term contracts with fixed price components, and other policies, the QF industry in California and New York experienced a development boom during the 1980s that was unmatched by other states.

Integrated resource planning, while certainly benefiting from cross-fertilization, was developed and implemented at the individual state level. Given the importance of value-based decisions in shaping IRP, it should be expected that the character of IRP would vary across states. Some states responded quickly, while others have yet to develop "full-featured" IRP programs (Hirst 1992). Most states completely avoided the controversial issue of estimating environmental values, while a dozen or so pursued qualitative and/or quantitative approaches to addressing social and environmental planning issues.

Implementation of PURPA and IRP required public utility commissions to address two important issues. The first was that utility revenues, and therefore profits, were directly coupled with electricity generation and sales. Utilities could be harmed by cogeneration and DSM that resulted in reduced utility sales of electricity. The second issue related to the selection of new resources. Under IRP, new resource requirements were determined through a collaborative process, but it was no longer necessary, or even necessarily desired, for the utility to build all new generating capacity.

Some utility commissions responded by implementing ratemaking procedures designed to decouple utility profits from sales volume, thereby removing regulatory disincentives for utility DSM. The response to the second issue had an even greater effect on the structure and operation of the electric power industry. In many cases, utility commissions required that new resource

requirements identified through IRP or other planning processes be met through a competitive bidding process. Electric utilities, some of which were hesitant to engage in capacity building following previous difficulties and disallowances, were required to compete directly with independent power producers (IPPs) for new capacity. Independent power producers who were not QFs were, however, also subject to utility regulations under the Federal Power Act and PUHCA. Regardless of these limitations, competitive bidding provided the opportunity for IPPs to enter the electric power industry and become firmly established during the 1980s. In some cases, private DSM providers (energy service companies called ESCOs) were allowed to compete through similar bidding processes. The development and success of this industry sector set the stage for further change during the 1990s.

Regulatory Change and Competition: Phase II (1990s)

The successful development of the U.S. independent power industry during the 1980s resulted from the contribution of a variety of factors, including direct regulatory support as well as continuing changes in generating technology and fuel supply that have characterized the entire history of the industry. Independent power production was supported by purchase requirements under PURPA and opportunities provided by competitive bidding. In some cases, independent power production was further encouraged by FERC rulings that authorized market-based wholesale rates as an alternative to traditional cost-of-service ratemaking. Advances in combustion turbine technology, specifically the development of high-efficiency, low-cost aeroderivative turbines and combined-cycle power plants (which employ both gas combustion and steam turbines), reduced the minimum efficient scale by almost an order of magnitude, from up to one gigawatt down to roughly 100 megawatts. A decline in natural gas prices also contributed to the selection of combustion turbine technology for new power plants. Smaller-scale combined-cycle, peaking, and cogeneration facilities are relatively easy to site, have short construction periods, and overall low financing costs. These attributes have removed many of the advantages that vertically-integrated utilities held over independent developers. By 1992, IPPs accounted for more than 50 percent of newly-installed generating capacity (EIA 1994).

Although the cost of electricity from new gas-fired powerplants is relatively low, five to six cents per kWh on average and as low as three cents per kWh, electricity rates have remained at high levels. Utility customers continue to pay for past decisions to build large baseload nuclear and coal power plants that are presently underutilized. Because different utilities and state regulators pursued different strategies during the 1970s and 1980s, electricity prices and levels of excess capacity vary greatly among states and even between adjacent utilities. Advances in transmission technology make it now possible to transmit electricity over longer distances, with lower line losses, and at lower cost, making power systems more regional in scope. As owners of the transmission system, electric utilities have enjoyed advantages not available to IPPs. These advantages represented a significant barrier to entry in wholesale electricity markets. The U.S. Congress passed the Energy Policy Act of 1992 in part to remove barriers to increased competition in wholesale electricity markets. Recent FERC rulemaking has established a framework for open and non-discriminatory access to the interstate electric transmission system.

Many of the same forces prompting change in the regulation of wholesale electricity markets have been responsible for raising interest in broadening the scope of competition to the retail level. Large industrial customers, seeing the disparity in rates between utilities and also able to self-generate electricity using cogeneration, demanded direct access to low-cost electricity providers. Following a wave of industry deregulation, including natural gas, telecommunications, railroads, and airlines, public utility commissions in many states have been quick to join efforts to reform regulation of the electricity services industry. Numerous states are considering or are already implementing policies to extend competition to retail electricity service. Given the rapid pace of change in electricity markets, many issues remain unresolved. The following sections review recent developments in electric utility regulation and present some of these unresolved issues.

Energy Policy Act of 1992 (EPAct)

The Energy Policy Act of 1992 (EPAct) is similar to the National Energy Act of 1978 in that it consists of a wide array of policies intended to improve regulation and increase the efficiency of the U.S. energy sector. The diversity of the Energy Policy Act is contained in thirty individual titles, ranging from energy efficiency

standards to nuclear plant licensing. Although only one title of EPAct is directed specifically at the regulation of the electric power industry, many other policies are expected to indirectly influence the structure and operation of this industry sector. Selected provisions of the EPAct are summarized as follows:

Title I - Energy Efficiency. Establishes efficiency standards for buildings, equipment, and industrial processes and promotes government support of energy efficiency. Requires state regulators to consider implementing integrated resource planning and removing regulatory disincentives to utility investment in energy efficiency measures.

Title II - Natural Gas. Lessens restrictions on imports and exports of natural gas products. Includes statement of policy that the interests of the national economy are best served by a competitive natural gas wellhead market.

Title VII - Electricity. Grants PUHCA exemption by FERC to entities that generate electricity exclusively for wholesale trade, referred to as "exempt wholesale generators" (EWGs). Limitations are placed on sales from an EWG directly to the public or an affiliated electric utility. Amends Section 211 and 212 of the FPA to broaden the authority of FERC to require owners of electric power transmission facilities to provide transmission services to another wholesale provider. The transmission-owning utility is required to provide service to other parties that is comparable to that which it provides to itself. Transmission-owning utilities are required to submit annual reports to FERC identifying potentially-available transmission capacity and known constraints. FERC is specifically prohibited from ordering transmission for sale to an ultimate customer (i.e., retail wheeling).

Title XXVI - Indian Energy Resources. Requires that DOE establish a program intended to promote energy self-sufficiency and vertically-integrated energy development on Indian reservations. DOE is required to establish a program for making low-interest loans to tribes and to support the efforts of tribes to regulate the development of energy resources. Title XXVI also provides financial assistance to tribes for the study and implementation of energy efficiency and renewable energy projects on tribal lands. Although funding for Title XXVI has been discontinued, there are efforts underway to

reinstate this or similar federal assistance to Indian tribes.

Various Titles. In addition to the above titles, EPAAct established a variety of other policies that affect the electric utility industry. Titles VIII-XI establish policies and programs concerning uranium processing and the storage of radioactive waste from nuclear plants. Funding is provided by assorted titles for research and development into advances in renewable energy, clean coal, and natural gas technologies. Production tax credits were established under Title XIX for electricity generation using wind and closed-loop biomass. Title XXIV specifies rules for the licensing and operation of hydropower facilities, including FERC authority to exempt facilities in Alaska with less than 5 MW capacity from provisions of the Federal Power Act.

Although regulation of the electric power industry was addressed by just one of thirty titles of EPAAct, the implications of this legislation have been profound. It was clear that Congress intended to push the electric power industry toward a more competitive, market-driven system. Implementation of this policy goal was, however, left to the FERC.

FERC Rules to Promote Wholesale Competition

FERC is responsible for regulating the interstate transmission of oil, natural gas, and electricity and for licensing hydroelectric facilities, as provided in the Federal Power Act, the Natural Gas Act, the Interstate Commerce Act, and subsequent legislation. EPAAct and other recent legislation have directed FERC to establish rules designed to increase competition in the transmission and wholesale of natural gas and electricity. In 1992, FERC issued Order 636, which partially decontrolled wellhead prices for natural gas and required pipeline owners to provide non-discriminatory transmission service. The effect of this rulemaking has been an increase in competition and a decrease in gas prices to end users. Based partly on lessons learned during implementation of Order 636, FERC has in recent years been deliberating similar actions to open the electricity transmission network to competing suppliers.

On April 24, 1996, following a lengthy process of information gathering, proposed rulemaking, and comment review, FERC issued Orders 888 and 889, which are designed to remove impediments to competition in the

wholesale bulk power market. FERC Order 888 comprises two separate rules: 1) Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities and 2) Recovery of Stranded Costs by Public Utilities and Transmitting Utilities. Order 889 is an accompanying rule on Open Access Same-Time Information System and Standards of Conduct. This rule addresses technical issues necessary for the implementation of open access policies, which are beyond the scope of this paper. The provisions of Order 888 have profound implications for the structure and regulation of the electric power industry and are reviewed in the following sections.

FERC Rule 888 - Open Access Non-Discriminatory Transmission Services. The Energy Policy Act of 1992 expanded the authority of FERC to order public utilities to provide transmission access to third parties and wheel power between buyer and seller. Since 1992, the Commission has issued orders requiring wheeling in 12 out of 14 cases (FERC 1996). Although these rulings opened the door to transmission access, it was clear that transmission owners enjoyed a distinct advantage in level and scope of service compared to those required to petition for transmission access. Ruling on a case-by-case basis is a slow and costly process that favors the holders of transmission rights. For these and other reasons, FERC issued orders that "require all public utilities that own, control or operate facilities used for transmitting electric energy in interstate commerce to file open access non-discriminatory transmission tariffs that contain minimum terms and conditions of non-discriminatory service; and to take transmission service (including ancillary services) for their own new wholesale sales and purchases of electric energy under the open access tariffs (FERC 1996)."

The FERC ruling provides a great deal of direction on the non-price minimum terms and conditions for open access transmission tariffs, and even contains a pro forma tariff, although utilities may propose their own rates in filing. Existing contracts are generally upheld under the ruling, but may require termination or modification on a case-by-case basis to remove unduly discriminatory provisions. The FERC rule does not require corporate restructuring, such as separation of transmission and generation functions through divestiture, although voluntary measures are encouraged. Likewise, the rule

does not require turning regional transmission systems over to an independent system operator, but such actions are strongly encouraged. Owners and operators of transmission facilities that fall outside of FERC jurisdiction, such as municipal utilities, are not subject to the requirements of this rule. Under reciprocity provisions of the FERC order, however, these utilities must provide comparable open access to their transmission systems in order to gain open access to FERC-jurisdictional systems.

FERC Rule 888 - Recovery of Stranded Costs.

Traditional regulation of public electric utilities involves the determination of total costs upon which rates are based. The "rate base" generally include all costs that were deemed by regulators to have been prudently incurred in the course of providing electricity service. Many of the assets used in the electric power industry have very long lives, requiring that only a portion be recovered each year. These investments and other obligations incurred by electric utilities, such as long-term power purchase contracts, represent long-term commitments that may be put at risk by changes in industry structure. It is possible for costs previously determined to be prudently incurred to become "stranded" as a result of open access transmission, because wholesale purchasers may now be able to seek lower-cost providers. In some cases, this risk is addressed within the contract between buyer and seller, but many existing wholesale contracts do not address this issue. The FERC ruling permits utilities to seek recovery of these stranded costs. Although Order 888 primarily addresses costs stranded by opportunities arising from wholesale wheeling, it also provides for FERC jurisdiction over costs stranded as a result of retail wheeling in circumstances where state regulators do not have the authority to order stranded cost recovery.

Utility costs may also be stranded as a result of groups of retail customers turning into wholesale customers and shopping for power elsewhere. Retail customers may turn wholesale by establishing a new electric utility, as has historically been accomplished via municipalization. FERC has determined that because its rulings on open access transmission have made municipalization more attractive, it should be the primary forum for utilities to seek recovery of stranded costs associated with retail-turned-wholesale transmission customers. The issue of stranded cost recovery is just one of many jurisdictional questions facing regulators as the

electric power industry is restructured by FERC at the wholesale level, and increasingly by state regulators at the retail level.

State Actions to Restructure Retail Electricity Services

Under traditional utility regulation, electricity customers seeking alternatives to taking electricity service from their local utility had a limited set of options: generate their own electricity, switch to another energy source, or move to another location. In the past none of these alternatives was particularly attractive; however each option has recently become the subject of increasing interest. Changes in generating technology, particularly advances in small gas-fired cogeneration plants have made self-generation a viable alternative for larger industrial consumers. Declining natural gas prices have made this fuel more attractive and has encouraged energy source switching in industrial, commercial, and even residential applications. Finally, the disparity in utility rates across regions and even between adjacent utilities has led large electricity customers to demand rate reductions or access to wholesale suppliers, while threatening to leave states and move to where electricity rates are lower. These forces are responsible for recent state actions designed to restructure the retail electricity services sector.

Almost every state is now in the process of considering ways to extend the benefits of competition to electricity consumers. Many states are focusing on some variation of "retail wheeling," also known as "direct access," which is the sale of electricity from a generator directly to the consumer. As with wholesale wheeling, third-party transmission and distribution facilities are used to facilitate the physical delivery of power flows. In most states, the mechanism being considered for implementing direct access is to allow all customers to choose their local electricity provider. The changes being considered in the retail electricity service industry are much more complicated than those administered by FERC at the wholesale level. In addition to the inherent complexity of the retail electricity sector, every state faces a slightly different situation, which will likely influence the course they choose to follow through restructuring. For example, Nebraska has no private utility companies; the Northeast and Midwest have many expensive nuclear plants; and the Northwest utilizes extensive low-cost hydroelectric resources. Given the profound differences in industry structure

among states, it is unlikely that a federally-mandated retail restructuring model would be satisfactory. The ultimate fate of the retail electricity service industry in the United States is likely to unfold over the next decade. Some of the major changes being considered are reviewed in the following sections.

Direct Access. Direct access refers to retail customer participation in power markets. Allowing customers to choose among electricity providers effectively eliminates the exclusive franchise traditionally granted to public utility monopolies as well as the regulation of electricity rates. Direct access can come in a variety of forms, beginning with true direct access where customers purchase their electricity directly from power generators, much like the current long-distance telephone system. Local distribution utilities would simply provide transmission and distribution services, for which they receive a fee. A more likely alternative to direct sales from generator to customer is to have customers purchase power from distribution utilities or brokers at market-based rates. This alternative has been dubbed "virtual direct access" in California because it is expected that customers would be charged the same rate as if they purchased directly from generators, the only difference is that the local utility or broker acts as an intermediary. Regardless of the details of its implementation, direct access represents a significant change in the structure and regulation of the electricity services industry.

Power Pool and Independent System Operator. The power pool, into which electricity providers would bid and from which customers would purchase, is proposed as a way to create an open structure for electric power transactions. Power pools currently exist in some regions to facilitate power sales between utilities and coordinate operations to improve reliability and efficiency. Restructuring proposals involving pools essentially extend this concept to non-utility generators and purchasers. There has been extensive debate on how ownership and control of transmission facilities should be treated in a restructured electric power industry. It is widely agreed that measures must be undertaken to ensure that existing vertically-integrated utilities do not enjoy an advantage compared to other electricity generators. A level of protection may be provided by transferring control over the transmission system to an independent system operator (ISO) with no financial interest in transmission or

generation facilities. It has also been suggested that transmission ownership be transferred to a public agency or sold to a private company whose operations would be regulated or controlled by the ISO.

Divestiture and Unbundling. The most dramatic restructuring of the electric power industry could come as a result of efforts to separate generation, transmission, distribution, and retail service functions to minimize the anti-competitive effects of market power. Similarly, separation of these functions is sought to facilitate regulation over those activities which are deemed to remain a natural monopoly (transmission and distribution) while deregulating functions amenable to competition (generation and customer service). Vertically-integrated utilities may be required to divest themselves of some business functions, or at least functionally separate these activities within their corporate structure. Just as electric utilities have traditionally been engaged in a variety of activities associated with providing electricity services, electricity service itself consists of multiple components. Services provided by electric utilities include connection to the grid, flow of electricity, power reliability and quality, metering, billing, information, energy efficiency programs, environmental protection, research and development, and social services. It is believed to be necessary to unbundle and separately price these services so that electricity itself may be treated as a commodity traded on the open market.

Power Exchange and Financial Contracts. A power exchange, which provides a financial market for the sale of electricity, is a necessary adjunct to a power pool. While the independent system operator oversees the physical operation of the transmission system, the power exchange provides a mechanism for generators to submit bids that are used to determine market-clearing prices. The power exchange can provide hourly or half-hourly spot prices and may also provide a forum for associated financial markets involved in long-term contracts and hedging. Financial instruments, such as "contracts for differences" can be used to establish a fixed price between buyer and seller, even as the spot price moves up and down. It is anticipated that the power exchange and associated financial markets will become important elements in an increasingly sophisticated market for electricity services.

Jurisdictional Issues

The structure and regulation of the electric power industry have co-evolved throughout its 120-year history. Over the past five years, the pace of change has increased substantially as federal and state regulators have reconsidered their role. Electric utilities no longer enjoy a natural monopoly in electricity generation, allowing wholesale competition to replace rate-of-return regulation of prices for bulk power transactions. The remaining functions of electric utilities are now being scrutinized to determine what, if any, other aspects of electricity service may be made more competitive. The goal of this exercise is to shift the focus of regulation, increase efficiency, and reduce electricity prices. Many of the implications of this restructuring effort are evident or may be predicted, however numerous issues, especially those related to retail competition, remain unresolved.

Among the issues that remain unresolved are questions relating to the jurisdiction of federal, state, and tribal governments over the provision of electricity services on tribal lands. Changes in industry structure and regulation will affect both tribal and non-tribal utilities, as well as other energy service companies seeking to conduct business on tribal lands. Whether the influence of federal and state regulators is felt directly or indirectly will be determined by the ability of regulators to assert jurisdiction over the various utilities operating on reservations. In the federalist system of the United States, state and federal agencies have been made responsible for regulating different aspects of the electric utility industry. The unique legal status of tribes in the United States complicates this issue of regulatory jurisdiction.

As discussed earlier in this section, the Federal Energy Regulatory Commission is responsible for regulating the wholesale trade and interstate transmission of electricity. Public utility commissions are generally responsible for regulating the operations of utility companies located within each state. Utility commissions in some states regulate all electric utilities, including public and privately-owned utilities, whereas their jurisdiction in other states is limited to investor-owned utilities. Local governments may also be able to exert limited control over utility operations, as many local municipalities hold franchise agreements with electric utilities that specify the terms of service and require payment of a franchise fee to the city. Local governments may also be in a position to impose a tax on the sale of electricity to city residents. How these general

jurisdictional rules apply on Indian reservations is addressed in the following sections.

Federal Regulation. Under the Federal Power Act, FERC may assert authority over any "person" engaged in the wholesale or interstate transmission of electric power. This jurisdictional authority would generally extend to any utility not specifically exempt from FERC regulation. "Person" is not, however, defined in the FPA to include Native American tribes, raising the issue of whether FERC may assert jurisdiction over tribal utilities. Many court decisions have upheld federal jurisdiction in cases where a statute seeks to implement a uniform national scheme, however other courts have been hesitant to apply a general statute to sovereign tribes without specific legislative direction. Although sovereign and entitled to self-government, tribes maintain a "dependent status" in the U.S. federal system and would likely come under FERC jurisdiction should a tribal utility be engaged in interstate commerce (i.e., any transaction that extended beyond reservation boundaries). There is, however, no basis for extending FERC jurisdiction beyond wholesale and transmission activities to retail electricity service on reservations (Kirkwood 1993).

FERC's jurisdiction over tribal utilities was recently tested in a case brought before FERC by People's Electric Cooperative (60 FERC ¶ 63,004 1992). People's was seeking FERC approval of an agreement with the newly-formed Chickasaw Tribal Utility Authority (CTUA) to make People's the primary provider of wholesale electricity to CTUA. Investor-owned utilities intervened in the case, claiming that it was a sham transaction intended to enable People's to serve additional customers outside of its state-prescribed service territory. The FERC administrative law judge agreed, stating that the proposed sale was a retail transaction, and was not subject to FERC jurisdiction. This case is significant because FERC considered CTUA to be a purchasing agent acting for a collective, rather than an electric utility engaged in reselling electricity. This decision is presently under appeal and, because of the specific circumstances of this case, does not necessarily establish FERC policy on tribal utility formation (Kirkwood 1993). If, however, FERC bases future decisions on this precedent, the formation of new tribal utilities may be made much more difficult. At the very least, tribes interested in creating tribal utilities must endeavor to avoid even the appearance of intending to

bypass FERC policies prohibiting sham wholesale transactions.

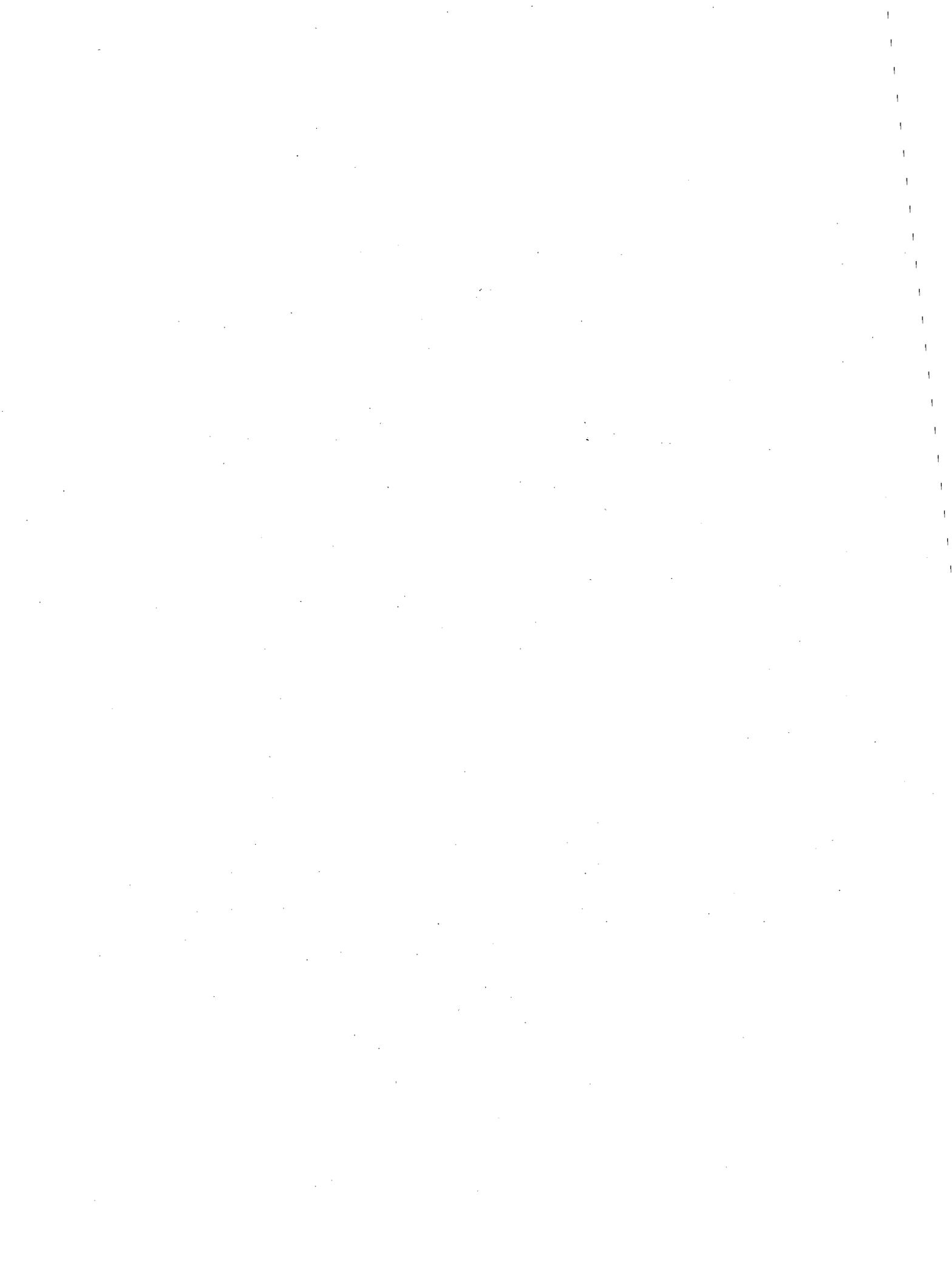
State Regulation. The issue of state utility regulation in cases where Native American interests are present is much more complicated than the issue of federal regulation. Indian tribes are sovereign nations with an established relationship with the U.S. federal government, but not with states. States are generally precluded from exerting authority over tribal lands, although they have been permitted to intervene in situations affecting non-tribal-members on reservation lands. The U.S. Supreme Court has held that state laws may be applied on tribal territory unless they interfere with Native American self-government or rights granted by federal law, requiring a balancing of state and tribal interests. Under these guidelines, it is unlikely that a state would be able to claim jurisdiction over a tribal utility serving tribal members located on tribal lands. A state may be able to regulate a tribal utility that seeks to serve non-members located on non-tribal lands; however the various permutations (such as a tribal utility serving non-members on tribal lands) require a case-by-case analysis to determine whether the interests of the state outweigh the burden imposed on the tribe (Kirkwood 1993).

Public utility commissions have jurisdiction over all non-tribal utilities subject to utility regulations in each state, regardless of whether or not they serve tribal customers. Tribes may, however, seek to choose which non-tribal utility provides service to tribal lands, creating the potential for conflict between tribe and state. The North Dakota Supreme Court determined in such a case that the interests of the state in determining service territories outweighed the burden placed on the tribe in not being able to select its provider (Kirkwood 1993). Of course, if retail wheeling plans are adopted that allow customers to choose their electricity provider, the importance of this issue will be reduced. The regulation of distribution companies, however, remains an issue for electricity service on reservations.

Tribal Regulation. There is little question that tribes have the sole authority to regulate the operations of tribal utilities serving only tribal members on reservation land and which are not engaged in interstate commerce. The more common situation is one in which tribal customers are served by utilities that also serve non-tribal customers and which are primarily regulated by state utility commissions. In this situation, tribes may wish to protect the interests

of tribal members by regulating the activities of utilities operating on their lands. A tribe's success in regulating non-tribal utilities generally depends on the level of impact on utility operations off the reservation. In the North Dakota case described in the previous section, the interests of the state were determined to outweigh the benefit to the tribe of choosing their utility provider because the affected utility would be left with useless equipment purchased to serve the tribe. The tribe was therefore not permitted to participate in defining the franchise territory of non-tribal utilities serving their lands. A tribe may regulate the activities of the utility on reservation lands, however, just as many cities do by imposing franchise requirements. Typically, franchise requirements pertain to the siting of distribution facilities, such as substations and wires, but they may be expanded to apply to other activities. The potential for an expanded tribal role in utility regulation is explored in greater detail below in Chapter 4 on implications for tribal governments.

The implications of these jurisdictional questions for tribes are profound. Any entity that participates in the electric power industry, including suppliers, utilities, and consumers, will be affected by restructuring of the electricity industry. Most of these entities are pressing for regulatory changes at the federal and state levels that reflect their own positions and priorities. Tribes will be affected by some of these regulatory changes, but will also be able to exert their own governmental authority over activities on tribal lands. Tribes may benefit from these changes through expanded access to markets or reduced energy costs. On the other hand, tribes may be made worse-off by the reallocation of costs among different groups of customers, or by the decline in public services offered by electricity providers. In short, tribes have a vested stake in the outcome of electricity restructuring.



CHAPTER 4 IMPLICATIONS OF ELECTRICITY RESTRUCTURING FOR TRIBES

Although many details remain to be determined, the electric power industry of the future will be very different from that of the present. It is possible to envision scenarios in which all parties are made better-off by electric industry restructuring, however it is equally possible to describe scenarios in which some parties benefit at the expense of others. Given the historical experience and current situation of Native American tribes in the United States, there is good reason to pay attention to electric industry changes to ensure that the situation of tribes is improved and not worsened as a result of restructuring. Concerns, interests, economic and social conditions, opportunities, and challenges vary greatly among the more than 500 tribes in the United States. For this reason, it is impossible to identify a single set of issues pertinent to all Native Americans. This paper focuses on the situation of tribes located on reservations, and considers tribal members a similarly-affected group capable of joint or coordinated response. Even limited to this scope, this paper does not approach the level of detail needed to assess the implications of electric industry restructuring for a given person, business, or tribe. It is hoped that the discussion of issues that follows provides the necessary foundation for the reader to consider these questions.

This section presents a survey of electricity restructuring issues that may be relevant to tribes. Although many of the issues are interrelated, the discussion is organized into five subsections corresponding to a common set of interests. The first identifies issues for non-tribal providers of electricity service to Indian reservations. The next section discusses the specific issues for tribal utilities, followed by a section that identifies implications of restructuring for tribal electricity customers. The next section addresses the implications and potential roles of tribal government. And the last section provides a discussion of electricity restructuring from the perspective of energy project developers on tribal lands.

Implications for Non-Tribal Utilities Serving Reservations

In almost all cases, Indian reservations are served by non-tribal, investor-owned, rural cooperatives,

or public utilities. Recent and proposed changes in federal and state utility regulation will affect the operations of utilities serving tribal customers on reservations. Competition is being introduced at the wholesale level with the introduction of new rules governing transmission access. Similar changes are occurring at the state level that may have even greater implications for utility companies. Utility issues stemming from wholesale and retail competition are presented in that order in the following sections. To the extent that tribes are affected by the operations of non-tribal utilities, changes in utility operations resulting from deregulation and restructuring are relevant to tribes. Many of these issues have yet to be resolved and are being considered by federal and state policy-makers. Tribes recognizing a vested interest in any of these issues may wish to make their positions known during the policy-making process by submitting comments to FERC and to their state legislators on proposed changes in regulation.

Wholesale Issues

The Energy Policy Act of 1992 and associated FERC rulemaking has expanded the opportunity for electric utilities to engage in wholesale transactions with other utilities and power producers. Previously, utilities were forced to negotiate with transmission owners if they wished to purchase bulk power from a distant generator. Transmission owners were not compelled to cooperate and often refused to provide wheeling services to potential competitors. The transactions costs associated with securing transmission capacity hampered efforts to seek new suppliers and limited competition in wholesale power markets. The new ruling by FERC requiring that transmission-owners file uniform and non-discriminatory terms of service is expected to reduce this barrier to trade and increase competition. The resulting issues are addressed as follows.

Transmission Access. Non-discriminatory transmission access is expected to greatly improve the situation for smaller utilities lacking extensive transmission systems. These utilities have been limited to purchasing power from utilities and local generators to whom they are directly

connected, regardless of how their prices compare to other inaccessible producers. Many of the small cooperative utilities serving tribal reservations will benefit from being able to choose from among competing suppliers by reducing the cost of purchased electricity. Electric utilities with a surplus of power-generating capacity may now be able to sell to new wholesale customers and reduce costs by operating their equipment more efficiently. The ability of a utility to take advantage of transmission access to shop for bulk power will depend largely on the terms of their existing power purchase contracts. For instance, large exit payments may make it too expensive for a wholesale purchaser to cancel its existing contracts. Although transmission access must now be non-discriminatory, transmission services are not free. The cost of transmission in many cases will determine whether wholesale transactions are economic compared to local generation or purchases.

Transmission Pricing. If the interstate transmission system is to be operated as a common carrier, providing transmission services to third-party buyers and sellers, it will be necessary to develop an equitable and transparent pricing system. Three different pricing schemes are being considered, and in some places implemented. "Postage stamp" prices provide a fixed price for transmission capacity within a defined area, which could be a single utility service territory or an entire regional control area. "Megawatt-mile" pricing schemes link transmission costs to the amount of power transmitted and the line distance between buyer and seller. "Nodal" pricing pegs transmission charges to the differences in market electricity prices at two points in the system. Each pricing scheme has different implications for wholesale power markets and utility operations. For example, although postage stamp prices are relatively simple to implement, a transaction crossing multiple pricing areas may result in cumulative charges (i.e., pancaking) that exceed the true cost of transmission service. Transmission pricing is an example of how the as yet unresolved details of implementation will determine the ultimate implications of electricity restructuring. The impact of transmission pricing on tribes will depend on the location of each tribe, the pricing system that is chosen, and the characteristics of the transmission system connecting the utility serving the tribe.

Stranded Costs. The issue of how to treat parties harmed by regulatory changes is another area deemed important, but presently unresolved. If a utility builds generation capacity to serve the requirements of a wholesale customer who subsequently takes advantage of newly-opened transmission access to switch suppliers, that utility may be left with "stranded" costs. FERC addressed this issue in their rulemaking, suggesting that parties first try to mitigate stranded costs and negotiate a settlement, but that ultimately the departing customer would be responsible for reimbursement of lost revenues (i.e., the difference between revenues the supplier would have received from the old customer and the revenues it will receive from new customers in a competitive market). FERC holds jurisdiction over the determination and treatment of costs stranded by changes in the regulation of wholesale electricity markets. Stranded wholesale costs may limit the extent to which tribes may benefit from wholesale wheeling, depending on the specific terms of contracts held by utilities serving tribal lands. FERC has also claimed jurisdiction over stranded costs in the case of retail-turned-wholesale customers (i.e., municipalization). Retail-turned-wholesale stranded costs have particular significance for tribal utility formation and will be addressed in greater detail below.

Retail Issues

Specific issues stemming from efforts to restructure the retail electric service industry will depend largely on the nature of these changes, which are far from being resolved in many states. The issues addressed in this section are necessarily speculative, but are present in the minds of many industry participants. It is possible that the traditional regulated utility monopoly will no longer exist and that individual customers will ultimately be able to choose their electricity provider. It is also possible, though less likely, that the present industry structure will remain with only slight changes in the way it is regulated. It is beyond the scope of this paper to suggest what will or should happen in retail electricity restructuring. Issues relevant to this process, and which may influence utility operations and thereby affect tribes, are discussed in the following sections.

Competitive Markets. As discussed in the preceding section, wholesale electricity markets are being made more competitive by regulations requiring open transmission access. State regulators are working on institutional

mechanisms to facilitate participation in wholesale markets, and in some cases have expanded the scope to include competitive retail sales. The most common institution being considered is the power pool, into which suppliers will sell and from which purchasers will buy. The power pool may be limited to wholesale transactions, but is often being considered as a way to allow individual customers to access power markets. Alternatively, retail customers may be permitted to contract directly with power generators and wheel the power through the transmission and distribution system (i.e., retail wheeling). The primary goal of these efforts is to increase market competition in the hope of improving economic efficiency. Retail competition requires changes to traditional utility regulation, which raise a variety of related issues that will determine whether tribes are included among those who benefit from electricity restructuring.

Franchise Territories. In most, but not all cases, electric utilities have an exclusive franchise to provide service within a defined territory. Although it is unlikely that the exclusivity of franchises governing distribution systems will be altered by industry restructuring, utility functions unrelated to distribution wires, such as sales, billing, and end-use services (e.g., energy efficiency) may be opened to competitors. These competitors may include other utilities and non-utility energy service companies. Revenues lost to these competitors can adversely affect remaining customers and/or utility shareholders. For example, if a utility serving tribal lands loses its large industrial customers to a competitor, tribal customers of that utility may have to pay higher prices as a result.

Stranded Costs. As with wholesale competition, utility assets may be "stranded" if retail customers are permitted to take service from another provider. Retail stranded costs are closely tied to the "regulatory compact" which holds that utilities would be guaranteed a fair return on investments incurred to fulfill their obligation to serve customers within their franchise territory. Regulators appear to be especially concerned about taking actions that undo this compact and harm the utilities they have regulated. Consumer groups are concerned that utilities not be rewarded for past mistakes that resulted in the construction of uneconomic power plants, especially nuclear plants that were opposed at the time of construction. The additional costs to tribal customers described in the preceding section may

be reduced if departing customers must pay for stranded costs; however, if the tribe is departing it may be held responsible for the ensuing costs to the utility.

Asset Divestiture and Restructuring. Many regulators and public interest groups are concerned that existing utilities may enjoy market power in a deregulated market because they own or control much of the existing generating capacity. In response, transition options are being considered that include utility companies separating electricity generation from other functions by spinning off assets to utility subsidiaries. Other proposals go even further and suggest that utilities be required to sell a portion of their generating facilities to independent buyers to decrease market concentration. Tribes interested in entering the electricity generation industry may consider purchasing divested utility assets, especially if they are located on tribal lands, but should be aware that the required investment will be very large.

Unbundling. For electricity to be treated as a market commodity, its component parts and services must be "unbundled" so that they may be provided and priced individually. The cost of transmission and distribution must be separated from generation. Likewise, non-commodity services provided by the distribution utility are likely to be treated differently in a more competitive market. These include ancillary services such as voltage and frequency support, metering and billing, environmental protection and risk mitigation, low-income assistance, demand-side management, and research and development. In some cases, these functions may be undertaken by portions of existing utilities that remain under regulation, although this may not necessarily be the case. Once utility costs are unbundled it may be easier for regulators to reallocate or even eliminate specific utility functions.

Planning. Operating an electric utility requires planning. Operating a public utility requires planning in the public interest. Integrated resource planning was introduced in Chapter 3 and has become widely accepted in the utility industry as a model for planning under regulation. It is unclear what role planning will play in a competitive industry where electricity is sold on the spot market. If competition takes place only on the wholesale level, regulated utilities may be required to conduct IRP similar to current

practice. Retail competition, where customers choose electricity sources rather than utilities, presents a new set of challenges to planning. Whereas IRP treats all aspects of electric service in the same framework, unbundling may require separate planning efforts. Transmission and distribution planning will likely remain under the control of utility regulators. Many other functions may no longer fall under utility planning per se, but be transferred to other governmental agencies. Examples include environmental and siting review, low-income assistance, and demand-side efficiency program planning and evaluation. Some of these responsibilities may fall to tribes themselves for implementation. Generation facility building and operation may not involve any government planning and be left to market forces (Hirst et al. 1995).

Renewable Energy. IRP is used to identify utility options that provide electricity services at the lowest social cost. Renewable energy resources are often identified as being part of the least-cost portfolio because of their environmental advantages, as well as their ability to mitigate the risk of rising fuel prices. Some of these advantages may be valued in a competitive market, but it is more likely that renewable energy resources with high up-front costs would suffer compared to other low-cost resources. Recognizing the public benefits of supporting renewable energy development, various public utility commissions and regulatory intervenors are developing renewable energy policies for a restructured utility industry. One policy being seriously considered in California is the "renewable portfolio standard." This policy would require that the resource portfolio of any retail electricity provider contain a minimum level of renewable energy. Suppliers selling more than the minimum amount of renewable electricity would be provided credits that they could sell to suppliers with fewer renewables. A variety of implementation issues, including renewables certification, treatment of off-grid customers, and jurisdictional boundaries remain to be determined. Other options for supporting renewable energy in a competitive electricity industry generally involve the payment of a subsidy to renewable energy companies. The funds for this subsidy may be raised from a public benefits charge added to the bill of every customer. Funds may be disbursed by a state agency that selects recipients, or recipients may participate in a kind of auction for renewable energy subsidies.

Demand-Side Management. It has generally required regulatory policy to impel utilities to provide demand-side efficiency and load management programs for its customers. This hesitancy on the part of utilities was originally based partly on unfamiliarity with the technology and the role of the utility, and also on the disincentive, or at least the lack of positive financial incentive, for participation. Disincentives have largely been removed and utility participation in DSM programs has increased across the country. The utility role in energy efficiency is likely to change in a competitive market. Like electricity generation, energy efficiency may be left to unregulated market forces. Electricity service providers may find advantages in packaging electricity sales with energy efficiency as a way to deliver lowest-cost electricity service. For smaller customers, where higher transactions costs make energy efficiency less attractive in purely economic terms but not necessarily from the perspective of society, there may be opportunities for a continuing government role. At this point it is unclear whether the remnants of existing utilities and regulators or other institutions will be responsible for public-good energy efficiency programs. In any event, it is unlikely that utilities will provide subsidized energy efficiency services to tribal communities at a desirable level in a competitive market.

Low-Income Assistance. Electricity is considered an essential public service. In some parts of the country, especially on many Indian reservations, electricity service can be a matter of life and death. For this reason, public utility commissions generally require that utilities set two-tiered rates, with basic requirements set at a lower price, known as "lifeline" rates. If electricity is purchased as a market commodity, lifeline rates may no longer be provided by utilities. Other forms of low-income assistance, such as home weatherization programs and flexible payment plans, may also be affected by restructuring. The regulated distribution utility may, however, continue to provide low-income assistance programs using funding from rates. If these programs are discontinued, Native Americans are likely to be among those most dramatically affected by the resulting increase in residential energy costs.

Public Benefits Charge. As electricity services are unbundled, electricity bills may contain greater detail about the cost of different utility programs. The commodity price of electricity will most

likely be reported separately, as will the cost of transmission. Utility social good programs, such as low income assistance, research and development, and demand-side management, that are maintained under restructuring will likely be funded via a public benefits charge that is added to the bill of each customer. As mentioned previously, once the cost of these programs are identified separately they may become direct targets for reduction or elimination. Protection of these programs may have to continue beyond the current period of industry restructuring.

Implications for Tribal Utilities

Tribal utilities currently operate on up to a half-dozen reservations. Numerous other tribes are considering or are in the process of forming additional tribal utilities. The renewed interest in utility tribalization may be encouraged at least in part by recent FERC rulings on open transmission access. Previously, tribal utility formation would have required that the tribe negotiate with the utility from which it had just departed to arrange for power purchases. This barrier to utility tribalization is removed by the FERC rulings on open transmission access, however additional barriers remain. Given the unique relationship between tribes and federal and state regulators, there are a variety of industry restructuring issues that may be particularly significant for tribal utilities. These issues, organized according to whether they are generally wholesale or retail in nature, are discussed below, following an introduction to tribal utilities and their formation.

Tribal Utilities and Their Formation

A tribe, or group of tribes, may own and operate electric utilities to serve the power needs of customers located on, and possibly around, tribal lands. Tribal utilities are public entities that are very similar to municipal or cooperative utilities. A tribal utility authority may be operated directly by the tribal government or by a separate public agency created by the tribal government. As mentioned previously, tribal utilities are subject to federal regulation under the Federal Power Act or Public Utility Holding Company Act only to the extent that they engage in interstate commerce. Likewise, state regulations apply to tribal utility authorities only in situations where the benefits to the state of applying the regulation outweigh the burden imposed on the tribe. Additionally, tribal utility authorities established using loans from the Rural Electrification Administration may be subject to financial covenants that influence their operations. Otherwise, the regulations governing

operation of the utilities are determined by the tribes themselves.

The first tribal electric utility was established in 1959 when the Navajo Nation created the Navajo Tribal Utility Authority (NTUA). Three other tribal utilities have since been established, including those operated on reservations in Arizona by the Tohono O'Odham Tribe and the Fort Mojave Tribe, and by the Salish & Kootenai Tribes on the Flathead Reservation in Montana. Of these four tribal utilities, only the Mission Valley Power Company operated by the Salish & Kootenai Tribes produces electricity, and that generation represents less than one percent of their total sales. Existing tribal utilities are wholly dependent on purchased wholesale power to supply their customers. These tribal utilities are essentially electricity distribution companies providing retail service and support to their customers. Power is purchased primarily from Federal Power Marketing Authorities, such as the Western Area Power Authority (WAPA), and from investor-owned utilities.

In 1985, the Navajo Nation created the Dine Power Authority, and made it distinct from the tribal government, as a means of entering into the generation and transmission of electric power. A large coal-fired power plant to be partly owned by the Dine Power Authority has been planned, but the project has been put on hold during the current period of power surplus in the area. Plans for a large transmission project are, however, being developed by the Dine Power Authority in an effort to connect Navajo-area power plants to other geographical markets, such as Las Vegas and California, where there is greater demand for electricity.

In recent years, additional tribes have expressed interest in creating, or have already begun the process to form, their own tribal utilities. A partial list of Tribes investigating tribal utility formation include the Three Affiliated Tribes of the Fort Berthold Reservation, the Standing Rock Sioux Tribe, the Ute Mountain Ute Tribe, and the Yurok Tribe. Each tribe likely has its own reasons for wanting to create a tribal utility depending on its particular circumstances and goals. In general, the motivations for tribal utility formation are likely to be economic or political in nature, although many motivations may be difficult to categorize, let alone express.

Creating a tribal utility is one action that a tribe may take to increase its financial independence. A non-tribal, investor-owned utility operates to make a profit from the sale of electricity to its customers which it then

distributes to its stockholders. Most, if not all, of the money spent by tribal customers for electricity leaves the tribal economy when it is paid to a non-tribal utility company. Even if a tribal utility must purchase its electricity from another utility, funds used to pay for billing, service, and line maintenance are paid to employees of the tribal utility and remain in the local economy. The recirculation of money in the local economy multiplies the economic benefits of reducing the flow of money from the tribe.

Tribal utility formation may, or may not, reduce the cost of electricity to tribal customers. Economies of scale generally allow large utility companies to operate more efficiently than smaller utilities because there are many fixed costs associated with distribution and customer service. Large utilities may, however, have high overhead expenses, such as power plant costs or power purchase contracts, that increase their total cost of service. If a tribe is able to purchase low-cost electricity, and establish an efficient distribution company, it may be able to provide electricity at a lower price than the prior utility, especially since the tribal utility would not require a profit. The economics of tribal utility formation depend largely on the initial cost of establishing the utility. Tribal utility establishment involves the purchase or construction of distribution facilities, such as wires and transformers, and the creation of an institution capable of carrying out the business activities of the utility. Additional costs would be incurred should a tribe also be interested in generating electricity.

Social or political motivations for tribal utility formation are especially difficult to categorize because each tribe, or even tribal member, may have unique sets of interests and goals. In addition to increasing economic independence, tribal utility formation fosters increased tribal control over an important public service. The tribal utility may be used as an institution to pursue some of the political and social goals of the tribe. For example, many homes on Indian reservations have not been provided electricity service by existing utilities. These tribes may determine that rural electrification is an important social goal and use the tribal utility to make it happen. Perhaps more importantly, having a tribal utility may provide the tribe greater control in determining the way in which new homes will be electrified. Providing electricity service involves many choices, such as whether to extend the grid or to install home- or village-based power systems for electrification. If tribes are served by non-tribal utilities, these decisions are made by utility management and

state utility commissions, whereas with a tribal utility they would be made by the tribe. Similarly, tribal utilities may make employment decisions that differ from those of the non-tribal utility, a decision that may be motivated by social as well as economic criteria. Other decisions over which tribal utilities provide increased control include low-income assistance, utility involvement in energy efficiency, environmental protection, and protecting cultural resources.

The decision to form a tribal utility is not an easy one and usually requires many months or years of analysis and consideration. One reason that tribes have moved slowly into the utility industry is that there are many different types of risks involved. First is the economic risk associated with the investment required to establish a tribal utility. The tribe may be able to purchase existing utility facilities or build new ones, but either approach will usually require an investment in the millions of dollars. For most tribes, an investment of this magnitude requires taking on debt, which subjects the tribal utility to the terms of its creditors, including private banks and/or the Rural Electrification Administration. If tribal takeover of the local electric utility results in increased costs, tribal members will have to pay more for their electricity. The economic viability of a tribal utility depends on a variety of factors, including establishment and operating costs, interest rates, inflation, fuel and wholesale electricity prices, electricity demand, local economic growth, and the weather (in the case of hydropower). Very few of these economic risks may be controlled by the tribe, but all must be considered when deciding to form a tribal utility.

The challenge of building an institution to successfully manage utility operations represents another risk to tribes considering tribal utility formation. Delivering electricity to retail customers is a very complex undertaking. A distribution utility must negotiate power purchase agreements to match short- and long-term power needs, arrange for transmission of the electricity to its distribution system, maintain the distribution system, read customer meters, bill customers, and provide customer service. Generating electricity adds an additional layer of complexity for those utilities engaged in this aspect of utility operation.

Operating an electric utility requires expertise in power systems, legal and regulatory issues, accounting, sales, billing, and management. Many tribes have little experience building these institutions on the scale required to operate an electric utility. Creating these institutions would likely require the efforts of a tribe's best people,

potentially taking them away from other important projects. Electric utility issues may not be among the most pressing concerns of many tribes and must be weighed against all other demands for tribal resources.

Many of the factors upon which the decision to form a tribal utility may be based are affected by the ongoing changes in the electric power industry. The following sections identify issues affecting tribal utilities and their formation and are organized according to whether they primarily affect wholesale or retail utility operations.

Wholesale Issues

As purchasers of practically 100 percent of their wholesale electricity requirements, existing tribal utilities have historically been limited in their supply options. Some important wholesale electricity suppliers to existing tribal utilities have been federal power projects, with additional purchases coming from local investor-owned utilities. The wholesale supply of power to tribal utilities may be affected by a variety of changes occurring in the electric power industry. Some of these issues are regulatory in nature, while others stem from institutional changes in the industry.

Preference Power. The legislation authorizing most federal hydropower projects generally requires that federal power marketing administrations sell electricity to public bodies and cooperatives on a preferential basis. This practice extends back to the Roosevelt Administration, which saw public power as an important antidote to the excesses of investor-owned utilities. Although not specifically required by legislation, preference power sales have generally been made only to municipal and cooperative utilities and not to other public bodies. This practice has resulted in the exclusion of all but the few tribes with their own utilities from the benefits of federal power projects.

The tribes of the Missouri River Basin, represented by the Mni Sose Coalition, have recently been successful in negotiating an allocation of power from the Pick-Sloan hydropower projects administered by the Western Area Power Administration (WAPA). The Pick-Sloan project resulted in the inundation of 350,000 acres of Indian land along the Missouri River. Although the affected tribes were initially promised an allocation of hydropower from the project, this allocation has been withheld because the tribes have lacked their own electric utilities. One of the important results from the negotiations between the Mni Sose Coalition and WAPA has

been the decision to withdraw the utility requirement for allocating preference power to tribes. During the past year, however, Congressional representatives have proposed the privatization and sale of WAPA and other federal power marketing authorities, which would threaten this and other opportunities for tribes to receive their allocation of federal preference power (Mni Sose 1996).

Transmission Access. Ultimately, tribal utility authorities may be limited in wholesale markets only by their physical access to transmission capacity. Highly developed load centers will likely have access to multiple transmission paths, increasing their chance of finding a combination of bulk power supply and transmission that work together to make wholesale wheeling economic. Remote tribal utilities may not have the same opportunities, limiting the bulk power suppliers from which they may purchase or increasing the cost of transmission services. Detailed analysis of wholesale power markets and transmission availability is required to determine the extent of benefits provided to tribal utilities by FERC open transmission access rulings. If transmission networks used to serve tribal utilities are at or near full capacity, the benefits of wholesale competition will not be available to these tribes. Tribes in this situation may consider building transmission lines to gain access to wholesale markets. The cost of new transmission capacity is very high and is unlikely to be economic for tribal utilities seeking to purchase limited amounts of wholesale electricity. Building transmission capacity is more likely to be economic in the case of a tribe seeking to sell large amounts of electricity on wholesale markets, a situation described below.

Stranded Costs. The FERC ruling on open transmission access contained a companion decision on the treatment of stranded costs because FERC was concerned that existing parties would be harmed by regulatory changes. Stranded asset recovery is viewed as being necessary for the orderly transition to competitive wholesale markets. In fact, stranded asset recovery will delay the benefits of competition for most parties, most likely including tribes considering utility formation. Claiming that new public utilities would likely not be formed but for the FERC decision to provide open transmission access, FERC is asserting jurisdiction over the issue of retail-turned-wholesale stranded costs. By requiring that departing customers reimburse their prior provider for lost revenues, FERC will

discourage utility formation by increasing the expenses involved. It is likely that utility tribalization would be viewed by FERC as being the same as municipalization and subject to stranded cost payments. The unique legal status of tribes may, however, provide an exception to this rule. As with many other restructuring issues, the liability of tribal utilities for stranded cost payments will likely be determined by the courts.

Retail Issues

As described previously, tribal utilities limited to operations on tribal lands are subject to very little direct regulation by state public utility commissions. As such, these tribal utilities would not be directly affected by changes in the retail electricity services industry. There is, however, the potential for utility commissions to exert their influence over the operations of tribal utilities and introduce many of the retail issues discussed previously. State utility commissions may seek to intervene if tribal utilities serve non-members of the tribe on or off reservation lands, especially if new tribal utilities take customers away from existing regulated utilities. In this case, tribal utilities may have to contend with such issues as retail wheeling and direct access, stranded costs, unbundling, and changes in public benefit programs.

Additionally, there is pending federal legislation that would require all states, and presumably other government bodies, to implement a uniform national system for retail competition in electricity services. Tribal utilities may be directly affected by such legislation if the enacted version requires all utilities to allow customers their choice of electricity providers. Whether tribal utilities would be subject to such a ruling depends on the language of the final bill and its interpretation in the courts.

Even if not directly affected by changes in the structure and regulation of retail electricity markets, tribal utilities may have to contend with these changes. Some states, such as California, which are individually advancing towards retail competition, have included provisions in their proposed regulatory model to encourage a reciprocal relationship with unregulated utilities. Utilities not currently subject to state regulation (e.g., municipal or cooperative utility) that are interested in participating in a power pool created by state regulators would be required to provide their customers with the same level of direct access as regulated utilities. Unregulated utilities, such as tribal utilities, would have to weigh the benefits of participating in state institutions

against the potential loss of autonomy. Participating in a state power pool may simplify power purchasing for tribal utilities, but may also remove tribal control over the choice of power suppliers from which they purchase.

Retail electricity restructuring involves a comprehensive review of utility functions to determine which activities may be deregulated and made competitive. The commodity that is electricity will be separated from the public services provided by the regulated monopoly. In a free market, the commodity provider of electricity will hold no public trust or responsibility. Tribal utilities formed in part with the intention of increasing tribal control over electricity service, including the commodity and public good aspects of electricity, may be moving against the prevailing current in the industry. If tribal utilities are unable to retain control over the commodity, because their customers may choose other providers, they may lose leverage needed to provide the services required by their community.

Retail restructuring changes the definition of the electric utility in a way that may make it more difficult for tribes to pursue empowerment through tribal utility formation. Meanwhile, tribal members are being directly affected by electricity restructuring and tribal governments are faced with new challenges and opportunities. The following section reviews the implications of electricity restructuring for tribes, including individual members and their collective governments.

Implications for Tribal Electricity Customers

Most tribes rely on electricity in some manner and will therefore be affected by the ongoing changes in this industry. Tribes are comprised of individual members and families, many of whom depend on electricity for lighting, heating, and other residential needs. Electricity is also consumed for the operation of commercial, industrial, and governmental facilities. In many ways the situation of tribes as electricity customers is no different than that of all other customers. It is hoped that increased competition in electricity markets will create benefits for all customers. This outcome will, however, depend on the details of changes in regulation and industry restructuring and on the specific characteristics of different customers. It is quite possible that some types of electricity customers will benefit greatly from electricity competition, while others will see little benefit, or even a reduction from their current situation. Given the inherent uncertainty of restructuring and tribal

diversity, it is difficult to predict the outcome for specific customers. To the extent possible, the following section explores issues that may become especially relevant for tribal electricity customers.

All U.S. electricity customers, including tribal electricity customers, are expected to benefit from changes in federal regulation of the wholesale electric industry. It is expected that increased competition at the wholesale level will tend to reduce the cost of purchased power for all utilities that engage these markets. These cost savings are expected to be passed on directly to customers in reduced rates based on the lower cost of service. Issues of stranded costs and transmission pricing discussed previously may, however, limit the benefits of wholesale competition in the near term. The most significant impacts on tribal electricity customers are expected to come from state efforts to reform utility regulation and restructure the retail electricity industry.

Retail electricity restructuring is promoted on the assumption that increased competition will lead to efficiency improvements that will decrease electricity costs to all customers. This assumption may prove to be true and all customers may eventually benefit from retail electricity restructuring. Tribal electricity customers may, however, wish to consider alternative scenarios and the specific issues that will determine who is most likely to benefit from restructuring. Even if the assumption of universal savings proves to be true, it is likely that electricity restructuring will benefit some customers much more than others. If the assumption of universal benefits proves to be false, tribes may wish to consider the possibility that they will be counted among those who are harmed by deregulation of the electricity industry.

Few states have developed detailed models of their proposed changes in industry structure, and those who have gone forward have not yet resolved many of the implementation issues. Even after regulatory structures have been established, it will take some time before new markets are fully working and the net effect on customers may be observed. The following issues are often raised in discussions of electricity restructuring and, again depending on the details of restructuring and customer characteristics, may be especially pertinent to the situation of tribal customers.

Marginal Cost of Service

As mentioned in the overview of the electric utility industry, electricity rates have essentially been determined by dividing the annual cost of providing utility service by total electricity sales. Customers are therefore charged the average cost of

utility service, which is economically inefficient because it does not indicate the cost of providing each incremental unit of service. The primary goal of electricity restructuring is to increase efficiency, which in economic terms means marginal cost pricing in an open market. Some utility commissions have already permitted utilities to experiment with market-based prices, a practice that would be greatly expanded under restructuring. The marginal cost of electricity generation is presently below average utility costs, an anomalous situation that can be attributed to past utility mistakes, improvements in generation technology, and low natural gas prices. It is therefore expected that market competition for electricity generation and marginal cost pricing will benefit consumers by reducing electricity prices from current levels.

Whether competitive wholesale electricity markets benefit all customers or just some depends partly on the extent to which marginal cost pricing is applied within the retail electricity services sector. Retail electricity service requires generation, but it also includes transmission, distribution, and customer service. On a per-unit basis, it costs less to serve large loads such as industrial facilities, because many of the costs are fixed and are divided into a larger electricity demand. Fewer distribution facilities are also required which also reduces the marginal cost of serving industrial loads. These cost differences are incorporated in current rates and many utilities have rate sheets that specify electricity costs for a variety of customer classes. Industrial customers typically enjoy the lowest rates while residential customers pay the highest price for electricity.

Even within customer classes there may be large differences in the marginal cost of providing electricity service to different geographic locations. For example, the residential customer class includes urban households located near large load centers and rural customers at the end of very long distribution lines. The costs of serving these residential customers are currently averaged. If, however, marginal cost distribution pricing is implemented under retail restructuring, the cost of electricity to rural customers could increase dramatically. Because tribal lands are primarily located in rural areas, marginal cost pricing of distribution services can be expected to increase the electricity rates of tribal customers relative to other population groups.

The effect of pure marginal cost pricing on tribal customers is seen most clearly with rural electrification. Electric utilities have historically subsidized the connection of new customers to the

grid by providing free hook-up to customers located within a specified distance from an existing feeder line. This free hook-up distance is being shortened in an effort to align prices with utility marginal costs, reducing the subsidy to new rural customers but not necessarily to urban customers. Deregulation of electric utilities is expected to complete the shift to pure marginal cost pricing and remove subsidies to all customers, thereby increasing the cost of providing electricity service to new rural customers. Because tribes are located in rural areas and have large numbers of unelectrified homes, they will experience a disproportionate share of the redistribution of electricity costs that will occur under restructuring. The increased cost of connecting to the grid may change the economics of living independently from the electricity grid by using remote power systems. Tribes may be affected in other ways by marginal cost and market-based electricity pricing that increase their costs under restructuring and make grid-independent energy systems more attractive.

Time-of-Use Pricing

One component of marginal cost pricing is the practice of charging different rates depending on the time of electricity use. The marginal cost of generating electricity is dependent on the mix of generating facilities in use, which varies seasonally and throughout the day. To have true marginal cost pricing it is necessary to meter electricity demand according to the time of use. Some utilities currently provide limited time-of-use pricing to customers using these meters, a practice encouraged by the Energy Policy Act of 1992. Presently, time-of-use prices are estimated based on average generation costs. With competitive electricity markets and a functioning power exchange, time-of-use prices may be based on the dynamic spot price for electricity and thereby represent a true marginal-cost-based price.

Power pools and exchanges are expected to generate hourly, or even half-hourly, market-clearing prices. To purchase electricity at the pool price, a customer must have a time-of-use meter. For customers with low electricity demand, the expected benefits of time-of-use pricing may not outweigh the added expense of purchasing a new meter. Similarly, the ability to shift electricity consumption patterns to take advantage of real-time pricing information is largely dependent on appliance automation and the use of home computers, an up-front expense likely to be outside the budget of most lower-income families, thereby reducing the potential benefit to tribes.

Larger commercial and industrial customers may, however, benefit greatly from real-time pricing and direct access.

Market Power

As suggested in the previous two sections, there may exist barriers to market entry by small or low-income customers. In the absence of any compensating policies, the benefits of market competition for electricity may be limited to large commercial and industrial customers. This market power may be exacerbated by proposals for a phased transition to market competition, in which large electricity customers are initially granted direct access, followed some years later by other consumers. Under such a scenario, large customers may lock up contracts with low-cost electricity providers, resulting in higher costs for other customers. Even if small consumers are provided market access on even terms with large customers, high transactions costs may still prevent full participation. Under some retail direct access scenarios, electricity generators would market electricity services to ultimate customers. It is expected that competition for large customers will be fierce, while few generating companies will market services to small or low-income residential customers. This practice of "cream-skimming" is yet another example of how large consumers may enjoy market power to the detriment of others, including tribal customers.

Market Aggregation

It is unlikely that residential and even commercial customers would contract directly with a generating company for electricity because the transactions costs would be high. Energy brokers or marketers are anticipated to enter the new competitive market for electricity, buying electricity and selling it to groups of customers. By aggregating customers, power marketers may be able to reduce transactions costs and expand the circle of customers benefiting from competition. As profit-driven firms, power marketers may engage in the same cream-skimming activities described above and will be less inclined to market their services to small, rural, and low-income consumers.

Clearly, some form of small customer aggregation is required for there to be full participation in newly competitive markets for electricity services. Regulated distribution companies may maintain responsibility for serving customers that do not choose direct access. Municipal utilities have traditionally served as a form of non-profit customer aggregator and are

being used as a model in the restructuring debates. New forms of customer aggregation may also be developed, which would have an emphasis on promoting customer interests rather than profit-making. Local government entities, such as tribal governments, may serve as small customer aggregators to increase their market power, with little or no ownership of electrical distribution facilities.

Consumer Protection

Deregulation of the electricity services industry and entry of new service providers creates the potential for consumer protection problems. Abuse of market power is just one potential problem created by deregulation. Unaccustomed to changes in electricity markets, customers may be susceptible to fraud and deceptive marketing practices, as has been observed in the long-distance telephone industry. Electricity bills will be complicated by unbundling of services, providing the opportunity for dishonest businesses to take advantage of consumer confusion. Additionally, without specific consumer protection laws and enforcement, there may be little protection from discriminatory business practices of some electricity service providers. As largely rural, low-income, and minority customers, Native Americans are among the most vulnerable to deregulation of the electricity services industry. Continued state regulation of electricity providers may offer some level of protection for tribal customers, as would increased tribal control over electricity distribution on tribal lands.

Utility Public Service Programs

Under the existing utility regulatory structure, electricity is treated as an essential public service. As such, regulated private electric utilities are operated as a quasi-governmental entity and are used to carry out a variety of public policy programs. These programs are designed to benefit the interests of society and include environmental protection, energy efficiency, and research and development. Utility programs are also aimed at improving social equity and include lifeline electricity rates and low-income home weatherization. In a deregulated, competitive electricity market it is unclear what entity, if any, will continue to administer these social and environmental programs. As an issue, these concerns have slowly moved to the forefront of the restructuring debate and are beginning to be considered on even terms with economic efficiency issues. Some programs, such as environmental

protection, may be removed from the electricity sphere and administered by other public agencies. Other public service functions, including support for energy efficiency, may be funded by charges added to the electricity bills of all customers and administered by the remaining regulated distribution utility. These public service programs will be protected only to the extent that the public, including tribal customers, demands that they be maintained in a restructured electricity industry.

Implications for Tribal Government

Tribal governments will also be affected by changes in the regulation and structure of the electric power industry. Although much of this change is occurring at the federal and state level, there are implications for local governments and especially tribes. There may be an opportunity for tribes to exert greater control over energy issues on reservations, but at the same time, tribes may be burdened with additional responsibilities, without additional funding or support.

One of the primary functions of tribal government is to represent and protect the interests of tribal members. As outlined in the preceding sections, deregulation and restructuring of the electric power industry may create a new set of challenges to tribal government. These challenges may also be viewed as an opportunity for tribes to increase their influence over an important local industry. There exists a range of potential tribal responses to electricity restructuring, depending on the circumstances and goals of the tribe and the ultimate state of the electric power industry. If the potential impacts appear slight, a tribe may choose to do nothing and concentrate its efforts in other areas. If, however, a tribe determines that there is significant potential for harm, or conversely, significant opportunity for gain, it may decide to increase its involvement in the industry. A selection of potential roles for tribal government are discussed in the following sections, including regulation and direct involvement in the electricity industry.

Regulation

As mentioned previously, tribes may regulate the activities of businesses operating on tribal lands. This authority has, however, been limited by state and federal courts in instances where tribal regulation of non-tribal businesses interferes with the interests of the state. Tribes have therefore exerted little influence over the operation of non-tribal electric utilities serving tribal lands. Given

the rapid pace of change in electric utility regulation, tribes may wish to investigate opportunities to expand their regulatory powers in this arena. Electricity policy can be an important part of economic and industrial development programs and is one way to increase tribal self-determination.

The electric utility franchise, which establishes the terms of local service, has historically been controlled by local government, although specifics vary from state to state. Retail restructuring may redefine the terms of electricity franchises by unbundling services, introducing competition, and reducing obligations of electricity providers. Where they have them, tribes may wish to retain franchise rights and continue to set the terms of electricity service to tribal members. One example is the provision for universal service. Tribes may require that any company selling electricity to one tribal customer, e.g., an industrial plant or casino, also provide electricity to all tribal customers on reasonable terms. Such a policy could reduce the potential impacts of cream-skimming by electricity providers, but it could also reduce the number of electricity providers interested in serving tribal lands.

Tribes may also consider regulating other aspects of electricity service on reservations. For example, energy efficiency standards may be incorporated into tribal building codes. The tribe may also require that distribution utilities specifically consider off-grid electric systems when making decisions regarding extension of the grid into unserved areas.

Other forms of regulation may be available to tribes interested in controlling non-tribal utility operations on tribal lands. Tribes may use their authority to grant or deny rights-of-way for utility facilities, including electric transmission and distribution facilities, natural gas pipelines, and telecommunications equipment. Tribes are increasingly asserting their authority over rights-of-way as a means for generating revenues, since many non-tribal entities may have a tremendous economic interest in having their facilities traverse tribal lands. Tribes also may seek to regulate the siting and use of other utility facilities, such as electric generating equipment. Regulation of both utility rights-of-way and utility facility siting are best done through the enactment of tribal utility codes. Utility codes encourage tribes to be systematic in implementing and enforcing rules for conducting utility-related business on tribal lands, and help non-tribal utilities by providing written rules to guide their activities.

The authority to tax business activity is a fundamental authority held by local government. Taxes may be used to fund governmental programs, which may include low-income energy assistance and energy efficiency and renewable energy programs, or to finance remediation of damages caused by the taxed activity. Taxes may not necessarily increase the flow of funds into the tribal economy if non-tribal businesses are able to pass along the tax in higher prices to tribal members, and should be considered carefully. Where market forces act to subvert the intentions of tribal regulation, the tribe may consider becoming directly involved in producing the desired outcome.

Direct Involvement

As the electricity industry is restructured, tribes may have the opportunity, or perhaps the responsibility, to become more directly involved in certain aspects of providing energy services to tribal members. Tribal utility formation is one opportunity that has been discussed previously. Other activities of the tribal government may include customer aggregation, non-utility energy development, low-income assistance, public benefit programs such as energy efficiency/home weatherization, and customer education.

Aggregation. Retail restructuring is expected to introduce power marketers as a new entity in the electricity services industry. As was discussed previously, however, the benefits of private-sector aggregation may not be made available to all rural and low-income customers. Public-sector aggregation may be considered by tribes as a potential response to protect rural and low-income customers from harm in a competitive electricity services industry. Local government, in this case, tribal government, may be the institution most capable of aggregating customers in the near term. Unlike traditional municipal and tribal utilities, local government customer aggregators may not be required to own utility distribution facilities, but would simply represent its members in electricity markets. The benefits of this approach are that the risk of forming a traditional utility are avoided and the tribe is afforded a great deal of flexibility in its approach to customer aggregation and power purchasing. Although the potential liabilities are reduced through tribal customer aggregation, not having a tribal utility reduces the power of the tribe to engage in traditional utility activities such as distribution, system planning, maintenance and repair, and hiring.

Non-utility energy development. The forthcoming period of change in the electric power industry may provide tribes the opportunity to reassess their approaches to energy services. Connection to the electricity grid may have social and cultural implications that the tribe finds undesirable. Changes in technology and energy practices provide a variety of alternatives to grid-connected electricity. For example, a number of Hopi villages have avoided having undesirable power lines in their communities by electrifying homes using photovoltaic panels. The tribal government may involve itself in energy planning for the tribe, and even participate in developing alternatives to electric utility service. A tribe would not necessarily need to create a utility to pursue energy projects on tribal lands. Interested tribes should, however, be aware that certain activities, such as development of a village power system, may introduce the legal issue of what constitutes an electric utility. This threshold has not yet been defined for many circumstances, and should not be a problem if the scale of the project is relatively small.

Low-income assistance. Equity concerns have been addressed within the existing utility structure through the use of lifeline rates, which provide basic electricity needs at a reduced cost. If electricity is purchased as a commodity at market prices, this program may no longer be provided by electric service companies. Subsidies are generally inconsistent with economic efficiency, which is often stated as the primary goal of restructuring. If state-mandated lifeline rates are eliminated, tribal governments may choose to address equity concerns by directly assisting low-income customers using revenues from electricity taxes or another source.

Public benefit programs. Tribal governments may also be able to assist tribal customers who experience a reduction in utility service under restructuring by developing programs for residential energy efficiency and weatherization. The up-front cost of energy efficiency technologies is often a barrier to implementation, especially for low-income customers. Tribal governments may be able to provide grants, low-interest loans, or even loan guarantees to help customers make their homes and businesses more energy-efficient. The potential savings from energy efficiency may be much greater than the potential reduction in electricity rates from restructuring. Although energy efficiency marketers are also expected to enter the industry, perhaps by packaging energy

efficiency services with electricity sales, they too are expected to concentrate on those customers who offer the greatest potential for profit. The transactions costs associated with serving small, rural, and low-income customers mean that private companies will be slow to enter and that the opportunity for tribal government participation may be great.

Education. Tribal governments may also be able to represent and protect the interests of tribal members through education. Energy education may, in fact, be the single most important and cost-effective activity that tribal governments can carry out to benefit their members. Even prior to the current period of change, most electricity customers were not provided sufficient information to make the best energy decisions. For example, most consumers know very little about the energy consumption of different appliances and the opportunities to save energy. It takes too much effort to obtain the information, and even then many people do not know how to use the information to make energy decisions. The pace of change in electricity services is likely to only increase the divide between those with and without access to and understanding of pertinent energy information. Tribal governments may be able to take the control of information from electricity service providers, who will use it only to further their own goals, and provide it to tribal members in a way that promotes tribal interests. For example, tribes may research power markets to identify the low-cost providers operating in their region and publish descriptions of their services and rates. This action will serve to increase fair competition and ensure that everybody has the same opportunities. Similarly, a tribal government could hire or train an energy auditor to visit the homes of tribal members and advise them of ways to save energy and reduce their electricity and heating bills.

Implications for Energy Project Developers on Tribal Lands

Numerous tribes, especially those in the interior West of the United States, are engaged in the development of energy resources located on their lands. These resources include conventional fuels, including coal, oil and gas, and uranium, as well as renewable resources such as hydropower, solar, wind, biomass, and geothermal. Many other tribes possess such resources, but have not yet chosen to develop them. Because energy markets are interconnected, all types of energy development

will likely be affected by changes in the electric power industry. Tribes have not substantially involved themselves in the generation of electricity using resources on their lands. This may change in the future as electricity restructuring and changes in technology provide new opportunities and challenges. The following is a brief review of issues concerning the development of tribal energy resources.

Primary Energy Development

Conventional energy resources can be used in a variety of sectors, including electric power, transportation, and industry. Coal is predominately used for electricity generation. Uranium is used for electricity generation and in the production of nuclear weapons. Natural gas is especially versatile and is used for energy in electricity generation, industrial processes, residential and commercial end uses, transportation, and as a chemical raw material. Petroleum is used primarily for transportation and as a raw material. Relatively little petroleum is used for electricity, so it may be insulated somewhat from changes in the electric industry. Coal, uranium, natural gas, and petroleum are all located on the lands of various tribes.

Although all energy markets will be affected to some degree by ongoing changes in the electric power generation sector, these changes are likely to have the greatest impact on the natural gas market. Increased competition in wholesale electricity markets focuses attention on prices, and especially on short-run prices. Natural gas plants have a variety of advantages compared to other generation technologies, including relatively low capital costs, ease of siting, and short construction times. Growth of the independent power industry in recent years has been largely based on the use of natural gas combustion turbines.

Another factor that has turned the focus of power generators to natural gas has been the relatively low cost of gas. Until 1992, natural gas prices were held at high levels by government regulation of the market, which encouraged exploration and development and led to an oversupply of natural gas. When the market was deregulated, natural gas prices dropped to very low levels, from which they have only recently recovered. The low price of natural gas attracted a great deal of interest from within the electric power industry, and is partly responsible for many of the changes currently being considered. It is unknown for how long the relative abundance of natural gas will be maintained, but it is fairly certain that the market for natural gas has been permanently

altered by developments in the electric industry. The natural gas market is now very active and contains numerous buyers, sellers, and intermediaries. Deregulation of the electric power industry has resulted in increased integration of the independent power industry, with large firms such as Enron controlling production from the wellhead to the sale of electricity. There is also a trend towards concentration in the natural gas/electricity market as established firms expand and merge to increase their market power and decrease costs.

Coal is also likely to be affected somewhat by restructuring in the electricity industry, especially if utility environmental controls are relaxed. The Clean Air Act certainly has the greatest impact on coal markets, causing a shift to the use of low-sulfur Western coal. Because coal-fired power plants have some of the lowest generation costs, their use may increase under restructuring. Utilities with excess coal-fired generating capacity may be able to use open transmission access to find new wholesale purchasers. Increased use of existing coal-fired power plants will have a direct impact on increased coal consumption, assuming other coal-fired plants are not being displaced.

Changes in the competitive conditions of different fuels may have some effect on tribes owning conventional energy resource rights. Whether tribes have developed the resource themselves or have sold the rights to a developer, income to the tribe will be affected by an increase or decrease in the demand for their resources from existing purchasers. Efficient plants able to produce electricity at low cost will operate more often and require more fuel, whereas older less-efficient plants may shut down and cancel fuel purchase contracts. These developments will have marginal, though not necessarily insignificant, implications for energy resource tribes.

The greatest potential for significant change affecting energy resource tribes comes from a fundamental shift in the markets for energy and power. Prior to electricity deregulation and competition, it was often necessary for power plants to be located within the service territory of the utility for which the output was intended. This restriction resulted from the inability of many utilities to wheel power through the transmission systems of other utilities. The FERC ruling on open transmission access removes this impediment to power plant siting. New power plants may now be sited in the most economic location, which in many cases may be close to the fuel source. If more power plants are sited close to fuel sources, energy resource tribes

may benefit from increased fuel sales, employment, and tax revenues.

A tribe with extensive fuel resources and ready access to transmission capacity is ideally situated for the siting of new power plants. This situation is especially true for tribes with coal resources, because the cost of transporting coal can be relatively high. It may be more economic to establish or expand transmission capacity and build the power plant near the coal mine on tribal lands than to site the facility elsewhere. If a gas-producing tribe has access to the natural gas pipeline network, there may be less incentive to locate power plants close to the fuel source because the cost of transportation is relatively low. Access to a gas pipeline is itself an important factor in the siting of new power plants, so a tribe in this situation would likely benefit from either electricity or natural gas development on tribal lands.

Non-Utility Electricity Generation

The most fundamental change in the electric power industry to date has been the introduction and facilitation of competition in electricity generation. Beginning with PURPA qualifying facilities and then the creation of exempt wholesale generators under EPAct, an independent power industry has developed that effectively rivals vertically integrated utilities for generation. The presence and success of independent power producers has eliminated the basis for monopoly regulation of electricity generation. By reforming regulation of the interstate transmission system, FERC is attempting to remove one of the last remaining barriers to full competition in generation. Following this lead, state utility commissions, which regulate privately owned, vertically integrated utilities, are working to restructure the industry to promote competition. When these efforts are complete, electricity generation will function outside the scope of utility regulation and operate according to the rules of free markets.

The restructuring of the electricity industry represents a broadening of opportunities for independent power producers. It once was that electricity could be generated for use on site (self-generation) or for sale to the local electric utility (non-utility generation). Recent federal changes in wholesale transmission access allow power producers to sell to utilities outside of the service territory in which they are located. With retail restructuring, power producers will be able to sell directly to customers, using the utilities only to transmit the power. Until retail competition issues

are resolved by the states, which may take a number of years, most electricity generators will, however, continue to be limited to selling to electric utilities.

Restructuring is expected to fundamentally change the relationship between electricity buyers and sellers. The opportunity to engage in long-term power contracts will likely remain, however new institutions to facilitate short-term and even spot-market trades will be developed. The most likely institution to be developed under restructuring is the expanded power pool. Rather than being limited to utilities, power pools may be opened to all producers, marketers, and even customers. Operation of the power pool will define the market for power producers.

The term "power pool" is a misnomer because it implies homogeneity, as if electricity can be pumped into and drained from a single pool. In reality, electricity is provided by a complex system of generators connected to loads by an interconnected transmission grid that must be maintained in a precise balance of supply and demand. Power pools are unlikely to develop systems that produce a single price. Electricity prices will be determined for various nodes in the transmission system, or locations where sizable power transactions occur, such as at the California-Oregon border. The value of electricity will therefore be dependent on the time it is produced and on the location of the producer relative to other producers and electric loads.

Transmission bottlenecks may occur in areas where more power is supplied or demanded than can be carried. Transmission pricing schemes have not yet been developed to fully address these issues, but it is expected that a pricing system will be developed that will provide correct price signals to buyers and sellers of electricity. Electricity is therefore likely to be more valued in locations less able to be supplied through long-distance transmission and less valued where there is an oversupply in the system. Detailed modeling of power supply systems is required to determine the location of transmission bottlenecks and open areas and should be completed prior to the siting of any tribal generating facilities.

In addition to transmission pricing issues there is the question of transmission access. The Energy Policy Act of 1992 and associated FERC regulations require that transmission owners provide non-discriminatory access. A transmission owner cannot, however, provide more capacity than it has available, so there are physical constraints to transmission access. Because the cost of building new transmission lines can be

prohibitive, and siting difficult to obtain, these constraints are likely to persist in many cases. Electricity generators, including tribes, must therefore carefully consider the availability and price of transmission access when deciding whether and where to enter the wholesale electricity market.

In some situations, transmission constraints may represent the only obstacle to the development of power plants on tribal lands. After weighing the benefits of such development against the costs of building a new transmission line, including the economic costs as well as the social and environmental impacts, tribes may decide to pursue large-scale interconnection with other utility systems. One such project under consideration by the Navajo Nation is to connect existing and planned power plants on or near their lands with the growing load center of Southern Nevada.

Although competitive markets for electricity create the opportunity for tribes to sell electricity to others, this is not the only development strategy available to tribes. If a tribe possesses energy resources, or has access to such resources such as through a natural gas pipeline, it may wish to generate electricity for sale to tribal members. This strategy may be especially attractive if the tribe can take advantage of cogeneration opportunities. If an industrial facility or other heat energy consumer is located on or near tribal lands, the tribe may be able to cogenerate electricity and useful heat energy very efficiently. A tribal utility may be required if the tribe is interested in distributing electricity it generates to tribal customers, but again this raises the legal issue of scale and the threshold that defines a utility.

Electricity generation for use by the tribe may be accomplished by the construction of a large central facility, but may also be achieved through smaller, more distributed technology. Parts of many reservations are not served by utility systems, although there may be interest in having electricity services. Electricity restructuring is not going to bring electricity to these customers, leaving them to fend for themselves or to work with the tribe for a solution. An alternative to utility service that is becoming increasingly economic are grid-independent energy systems. These electric power systems, such as diesel generators, can be used to power a single home or group of homes. These grid-independent electric systems are an especially attractive application for renewable energy technologies.

Renewable Electricity Generation

Native American tribes interested in developing renewable energy resources located on their lands will most likely be affected by ongoing changes in the electric power industry. The deregulation of electric utilities and the changing relationship between electricity buyers and sellers will significantly alter prospects for renewable energy development in the United States. It is not clear yet whether the net effect on renewable energy will be positive or negative, however, current trends point towards a more difficult period than might otherwise have developed. The most important change in the electricity industry concerns the selection of supply resources. As described previously, the industry is moving away from utility planning under regulation and towards competitive electricity supply markets, potentially reducing the role of utility resource planning. Another recent change affecting renewable energy is that electricity is now being marketed as a commodity by energy service companies, which operate in a much different environment from traditional electric utilities. The nature of renewable energy development will also continue to be transformed by a continuing shift in the electric industry towards customers taking greater control over their energy supply. The implications of changes in utility regulation, electricity marketing, and customer choice for tribal renewable energy development are explored in greater detail in the following sections.

Utility Regulation and Renewable Energy Supply. Electric utilities have traditionally been a significant purchaser of electricity generated from renewable resources. This utility role was established by PURPA and its requirement that utilities purchase electricity from qualifying facilities located within their service territories. Many states have incorporated consideration of renewable energy into utility resource planning, most notably California and its Biennial Resource Plan Update (BRPU). Utility resource planning provides the opportunity to consider unpriced benefits of renewable energy, such as environmental benefits and long-run fuel price risks. The increasing focus on electric power supply competition has affected resource selection because states are more limited in considering non-price factors. The most recent BRPU in California was overturned by the FERC because renewable energy resources were selected, and contract prices established, using prices that exceeded utility avoided costs. This ruling limits the benefits afforded to renewable energy facilities by PURPA. Because the cost of electricity from

non-renewable sources such as natural gas combined-cycle turbines is relatively low, renewable energy resources have difficulty competing. Consequently, new investment in renewable energy resources has declined from its peak during the mid-1980s.

The competitive position of renewable energy will probably weaken in the coming years as electricity prices and resources are determined by markets rather than regulators. The market price of electricity in the near term will likely approach the variable cost of generating electricity using existing resources because there is a general glut of electricity in most regions and because the fixed costs of many utility assets have already been recovered from ratepayers. Even with production tax credits and other subsidies, new renewable generation facilities are unable to compete with the variable costs of fossil or large hydropower facilities. Tribes able to generate and sell renewable electricity at very low prices, possibly by using hydropower or excellent wind resources, may be able to compete in competitive electricity markets, but the opportunities are uncertain.

The utility market for electricity from renewable resources has not, however, been eliminated by industry restructuring. Some states continue to realize the benefits of renewable energy and have acted to ensure that development continues even during the industry transition. Renewable energy is generally supported by set-asides in utility resource planning, where capacity is reserved for renewable electricity. These set-asides are often aimed at satisfying a particular public policy goal. For example, in Minnesota the purchase of wind-generated electricity is tied to a settlement permitting the utility to maintain nuclear fuel storage on the Native American lands of Prairie Island. Other renewable energy purchases by regulated utilities, such as windpower in Texas, are intended to support technology demonstration and verification. Tribes may be able to create and/or take advantage of these opportunities by exerting political leverage or by teaming with technology developers in appropriate situations. If renewable energy is pursued by a state as a response to existing environmental damages, such as from coal development, tribes may be able to gain participation, especially if the environmental damages are primarily located on their lands.

There is still a role for public policy in the utility industry, but it will only serve the public interest to the extent that there is public participation. Even in the restructuring process, which is primarily aimed at increasing

competition, proponents of renewable energy and energy efficiency have won concessions from utilities and regulators. Arizona included in its restructuring framework a policy that requires electricity providers to purchase a minimum amount of solar electricity generated within the state. California supported a similar renewable portfolio standard before it was replaced by renewable energy subsidies in the restructuring legislation. Continued involvement in the restructuring process by renewable energy supporters may serve to protect its position within the industry.

The renewable electricity industry has focused on utility-scale development because a market existed for these resources. Changes in utility resource selection and other industry developments suggest that greater opportunities for renewable energy may lie in other areas. For example, the dispersed nature of renewable energy means that utility-scale resources may be located far from load centers, resulting in high transmission costs that make large-scale development less economic. Rather than developing large renewable energy projects for bulk power sales, developers may benefit from a more targeted approach. For example, renewable resources such as solar energy may be ideally suited for distributed applications at the end of distribution lines. Supplying electricity to a substation using PV panels may defer expensive transmission line upgrades and make the use of renewable energy more economic. The key is to identify these opportunities and sell the idea to utilities and regulators.

Although privately-owned utilities are primarily responsible for maximizing investor profits, and are therefore unlikely to invest in renewable energy development, other types of utilities may represent an ongoing source of support. Public utilities, such as municipal utilities, cooperatives, and tribal utilities are primarily concerned with the welfare of their customers. The cost of electricity is certainly a primary consideration, however other goals such as local economic development and environmental protection may be accomplished by developing renewable electric resources. Publicly-owned utilities may, in many cases, have more flexibility in pursuing renewable energy development than regulated utilities. They may also be more interested in providing opportunities for the wishes of customers to be realized through direct participation. For example, Traverse City Light and Power in Michigan established a program that attracted 200 customers interested in paying an

additional \$7.50 per month for three years to help pay for construction of a 500 kW wind turbine. Similarly, the Sacramento Municipal Utility District created a "Photovoltaic (PV) Pioneers" program that invites customers to volunteer to have grid-connected PV panels installed on their roofs and pay a 15 percent premium (about \$6.00 per month) on their electricity bill for 10 years. These programs suggest that there is a demand for renewable electricity. The challenge is to satisfy it within the evolving regulatory and institutional framework.

Renewable Electricity Marketing. From the perspective of electricity customers, the most fundamental change in the electricity industry is the introduction of retail competition. Customers will have the opportunity to purchase electricity from somebody other than their local utility. In theory, customers will be able to choose from among several or many competing companies. These companies will need a way to differentiate themselves from each other to attract and keep customers. Some may see renewable electricity as one way to effectively market a differentiated product.

Unfortunately for renewable electricity developers, price is likely to be the primary consideration in the competition between electricity providers. Because renewable electricity is currently more expensive than other electricity sources, most electricity marketers will not provide any more than they are required to by regulation (if any). Recent studies, however, indicate that there may be a potential market for "green" electricity. Surveys show that a portion of the population is willing to pay more for electricity if it is generated using renewable and/or environmentally benign resources. The Traverse City and Sacramento utility programs described above are examples of situations where customers were willing to pay more to support renewable energy development. Not only are residential customers interested in "green" electricity, but commercial customers interested in demonstrating a commitment to the environment and the community have actively supported utility pricing programs that promote renewable energy development. In Traverse City, commercial customers have demonstrated a willingness to pay more for renewable energy than residential customers (Byrnes et al. 1996).

Given the interest of many people in socially-responsible economic development, and the opportunity to sell electricity as a commodity requiring some sort of differentiation, tribes may

be in a good position to benefit. If customers are interested in renewable electricity because it promotes their social and environmental values, they may also be interested in purchasing their electricity from economically-disadvantaged Native American communities. Tribes may develop and market renewable electricity themselves, or may associate themselves with utilities and power marketers seeking a socially-responsible market identity. In a restructured electricity industry, renewable energy development may largely depend on marketing initiatives rather than on political or technical developments. Electricity suppliers will be required to satisfy the needs of customers, which may include a demand for renewable energy developed by Native American tribes.

Customer-Oriented Renewable Energy Development. Electricity restructuring promises to deliver competition and choice to electricity customers. It remains to be seen whether the choices made available by competition will satisfy all customers, especially those who exist at the margin. In an effort to capture the largest possible market share, electricity retailers can be expected to seek out customers that are easiest and most profitable to serve, such as commercial businesses and affluent urban residences. The potential reduction in service and/or increase in cost to rural customers may create a unique opportunity for renewable development as an alternative to commercial electricity.

Businesses have been self-generating electricity for decades, and produced their own mechanical power using water resources hundreds of years before. In addition to supporting renewables, PURPA provided an incentive to cogenerate electricity on-site at industrial facilities. Technological developments in recent years have made it even more feasible for large energy consumers to supply their own electricity. Similarly, developments in small-scale renewable technology provide the opportunity for residential and commercial customers to supply their own electricity independent from the commercial electricity grid.

Recognizing the potential to lose customers to self-generation, some utilities have been proactive in providing energy end-use services that are matched to customer needs. Grid-independent energy systems are now often considered by utilities and customers as a viable alternative to extending existing transmission and distribution systems. The technical characteristics of many renewable energy resources, especially solar

energy, make them well suited for use in remote applications.

Tribal customers, because of their socio-economic and geographic characteristics, are often among those considered at the margin of traditional electricity service. In a competitive market, tribal customers may be among the last to be hooked up to the electricity system, to have their lines repaired after a storm, and to be offered participation in money saving programs. For these reasons, it may make sense for them to be among the first to leave the commercial electricity system and develop grid-independent home and village power systems. Tribes may develop renewable energy for sale into the electricity system, or they may develop renewable energy systems to provide

services to their members. Whether one approach or another is best for a tribe depends on the specific circumstances and needs, as well as a consideration of market and economic conditions. Each approach has its advantages, disadvantages, risks, and benefits and must be evaluated with consideration of the needs and goals of those people expected to be most directly affected by the decisions. The benefit of renewable energy development by Native American tribes is that these decisions may be made largely independent of the controlling influences of the electric power industry.

CHAPTER 5 CONCLUSIONS

The U.S. electric industry has until recently been dominated by large investor-owned utilities engaged in the generation, transmission, and distribution of electricity. At a minimum, the generation of electricity has opened to increased competition. These regulatory changes in the wholesale power market will directly affect tribal utilities and electricity generators. Open and non-discriminatory access to electric transmission expands opportunities for buyers and sellers of bulk power to participate in new markets. Power markets will become more regional in nature, and with increased participation, more competitive. Benefits from wholesale competition are expected to be universal, with the exception of electric generators unable to compete on price. To the extent that tribes have found transmission access to be a barrier to participation, the impacts of open transmission access may be felt more strongly by tribal utilities and power project developers than other, more established industry players. Energy resource tribes may benefit directly from developments that allow power plants to be sited where electricity may be produced least expensively (i.e., near the fuel source) rather than being required to locate within the service territory of the purchasing utility.

In contrast to wholesale competition, which is unlikely to harm tribes, state-level restructuring offers a mix of potential opportunities and serious challenges for tribes. Electric utility commissions in many states are considering or have already initiated proceedings to deregulate electric utilities and permit competition for electric customers. Retail competition may reduce prices for some customers, however it appears that the customers most likely to benefit are large industrial companies. Efforts to reduce prices will be limited by utility efforts to recover costs that are stranded during the transition to competition. Although efforts are being made to ensure that these transition costs are collected from all customers, residential customers may experience a disproportionate burden for paying outstanding utility costs. Rural customers, for whom the cost of providing electric service is relatively high, may experience an increase in electricity prices as a result of the shift from average-cost to marginal-cost pricing. Rural and low-income customers may become the "customers of last resort" that are overlooked by most power marketers able to offer electricity savings. The transformation of the retail

electricity market presents an opportunity for marketers to profit from confusion and misinformation. As has happened in the telephone industry, marginalized customers may suffer from the actions of disreputable companies. Public benefit programs, such as lifeline rates and home weatherization, may not survive in a competitive market, further harming those who depend on the assistance they provide. Similarly, utility-supported energy efficiency programs and renewable energy development will likely not continue in a deregulated industry and will be left to other public agencies or the private market. Given the scope of changes, it appears that tribes may be among those least likely to benefit from retail competition and the most likely to be harmed.

Although Native American tribes have a significant interest in the outcome of electric restructuring in the United States, there has been relatively little opportunity for tribal participation in the restructuring process. Federal and state regulators and electric industry representatives, with some input from consumer advocates, are currently defining the future electric industry. Unfortunately for tribes, the interests of these participants may not necessarily be aligned with those of Native American communities. Electric restructuring will, however, continue and increasing portions of the industry will be released to competition. Tribes may rely on state and federal policymakers to protect their interests in a restructured electric industry, or they may take an active role in protecting and advancing their own interests. Some of the changes in the electric industry may create opportunities for tribes to take actions that insulate them from potential harm.

Tribes may respond to electric restructuring by increasing their level of participation in the industry to gain greater control over their situation. The traditional approach to increasing participation in the electric industry would be to create a tribal utility. A number of tribes operate or are contemplating forming utilities. As the operator of a utility, a tribe may determine whether to purchase or generate electricity, what rates to charge, who to employ, and what public service and energy efficiency programs to offer. Tribal operation of an electric utility also facilitates recirculation of funds within the local economy. There are, however, substantial costs and risks associated with tribal utility formation

that may include the economic risk of investing in utility facilities as well as the challenge of building an institution that potentially comes at the expense of other tribal efforts (e.g., community health care).

Another direct approach to increasing participation in the electric industry is tribal customer aggregation. The tribal government or another institution may represent the collective interest of tribal customers and act as an agent to purchase electricity. Potential benefits are limited to the extent that tribal aggregators may reduce electricity costs and/or select suppliers that fulfill other tribal goals. The commodity cost of electricity is expected to be relatively small compared to the total cost, which will include distribution charges and other utility fees, so the potential for savings is slim. As an alternative to continuing to take service from a non-tribal utility, customer aggregation presents relatively few risks and provides an opportunity for tribes to increase control over electric service to their members.

Outside of direct participation, there is also a potential role for tribal government in the regulation of electricity service providers. Tribes may require that power marketers serve all tribal customers rather than a select few, and that companies provide accurate information about prices and service options. Tribes may also exert greater control over the operations of electric distribution companies by making decisions that affect facility siting and maintenance operations. Tribal governments may also develop programs to inform tribal members about the changes in the energy industry and even to provide energy-related services, such as energy efficiency loans and technical support.

Tribes may also consider increasing involvement in the power supply side of the industry. As mentioned previously, there may be greater opportunity for developing tribal energy resources for electricity supply. Retail restructuring also creates opportunities to sell wholesale electricity to a host of new customers. Whereas a power producer could previously sell only to the local utility, it may now sell electricity to marketers, purchasing cooperatives, and even individual customers. Given the growing

market for socially-responsible products, there may be a niche market for Native American-produced electricity. If renewable resources are used, the marketing value may be that much greater. "Green Pricing" may help establish a market for renewable electricity even as costs remain higher than for electricity from other sources.

A tribe, or individual tribal customers, may decide to leave the utility system altogether and develop grid-independent village or home energy systems. This option may be particularly attractive to remote customers presently unserved by utilities. It is unlikely that power marketers will adequately serve these customers, and if distribution systems are extended, it will be at great cost to the customers. For some, this option may be viewed as a last resort if the system breaks down, whereas others may seek this as an opportunity to foster independence and protect their way of life.

For many, though, the only real option is to continue taking electric service from the local distribution utility or possibly an electricity marketer. These customers stand to benefit the most from electric restructuring, if the proponents of restructuring are correct, but they are also the most at risk of being harmed if their services are reduced or costs rise. It is important that information about the restructuring process is provided to all who will be affected while there is still opportunity to prepare for change and to shape public policy. There may be more options in a restructured electric industry, but if information about the options is not widely available, or if some options are specifically designed to benefit certain parties, then the final result will not be equitable. Electricity policy is presently being determined by four major stakeholders: utilities, industrial customers, regulators, and public interest groups. In a process such as this, benefits flow to those who exert political power. There is an opportunity for tribes to participate in this restructuring process to learn first-hand what is happening, and perhaps to influence policy decisions. Knowledge about the potential opportunities and pitfalls of electric restructuring becomes the power to take actions to protect and serve tribal interests and should be pursued vigorously.

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