

Employment and other trends in the electric services industry

Deregulation of the electric utilities industry is proceeding in many States and regions of the United States, requiring companies to open their power lines to competitors and for the first time allowing companies to compete for retail consumers of electricity

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In the last decade of the 20th century, deregulation has come to the electric utilities industry. Deregulation allows utilities companies to compete for retail customers, a process affecting both employment and prices in the industry. Also, because the industry has developed distinct regional differences in electric power generating technology and in pricing, the impact of deregulation may vary considerably by region as well.

The Energy Policy Act of 1992 began to open the electricity market to competition by making it easier for power generated by one company to be transmitted across power lines belonging to other companies. Then in 1996, the Federal Energy Regulatory Commission issued Executive Order 888, which required electric utilities companies to open their interstate transmission lines to competitors, paving the way for competition among the companies for customers.¹ The exact nature of the competition may vary by State and region, but the general framework allows competition among businesses generating electricity while preserving local monopolies in the distribution of electricity. This framework allows customers to choose the company producing their electricity without creating the inefficiencies associated with running multiple sets of transmission lines to every neighborhood or building.

In order for retail competition to operate, companies generating electricity will need access to the network of wires that distribute electricity to individual customers in the same way that deregulation of the telephone industry required that customers be provided access to the long distance

carrier of their choice over lines maintained by the local phone company. In the absence of open access to the distribution network, utilities owning distribution networks could effectively block competitors from entering the market. New regulatory regimes have been developed to solve this problem by effectively dividing the industry into two separate entities—power generation, which is open to competition, and power distribution, which continues to operate as a local monopoly.

Employment

Under the Standard Industrial Classification (SIC) system, electrical generating and distribution activities are classified in SIC 4911, electric services, reflecting the traditional combination of these activities in a single firm.² Although some electric power generation and distribution is provided by combination utilities, this article focuses on the electric services industry, which employed nearly 370,000 workers in 1997 and had an annual payroll of more than \$20 billion.³ Employment in this industry is distributed among the States roughly in proportion to population and economic activity.⁴ In most States, the electric services industry accounts for between 0.25 and 0.50 percent of total covered employment.⁵ (See table 1.)

The Mid-Atlantic States are a noteworthy exception to the uniform distribution of employment, with less than one-tenth of one percent of total employment accounted for by the electric services industry. The share of generating capacity in

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Table 1. Employment in electric service by Census region, division and State, 1991, 1997, annual averages

Census region, division, and State	Total employment in electric services, 1997	Total covered employment, 1997	Electric services as percent of total employment	Employment change, 1991-97	Percent change in employment, 1991-97
Northeast					
New England ¹	25,205	6,025,171	0.42	-5,780	-18.7
Connecticut	7,322	1,598,491	.46	-1,012	-12.1
Maine	3,366	544,260	.62	-952	-22.0
Massachusetts	9,847	3,050,444	.32	-2,968	-23.2
New Hampshire	2,933	557,681	.53	-703	-19.3
Rhode Island	(²)	441,010	(²)	(²)	(²)
Vermont	1,737	274,295	.63	-145	-7.7
Middle Atlantic	29,863	16,788,263	.18	-6,368	-17.6
New Jersey	4,727	3,610,129	.13	-2,103	-30.8
New York	3,263	7,905,926	.04	378	13.1
Pennsylvania	21,873	5,272,208	.41	-4,643	-17.5
South					
South Atlantic ¹	89,536	21,365,015	.42	-22,323	-20.0
Delaware	181	378,661	.05	(²)	(²)
District of Columbia	(²)	601,743	(²)	(²)	(²)
Florida	23,571	6,404,407	.37	-6,342	-21.2
Georgia	16,851	3,561,886	.47	-4,026	-19.3
Maryland	3,278	2,231,292	.15	-642	-16.4
North Carolina	19,635	3,627,088	.54	-5,443	-21.7
South Carolina	7,539	1,702,953	.44	-1,926	-20.3
Virginia	13,386	3,168,130	.42	-2,782	-17.2
West Virginia	5,276	669,259	.79	-1,162	-18.0
East South Central	27,023	7,091,422	.38	-2,409	-8.2
Alabama	12,190	1,819,532	.67	-1,371	-10.1
Kentucky	6,504	1,657,674	.39	-218	-3.2
Mississippi	6,166	1,088,747	.57	-875	-12.4
Tennessee	2,163	2,525,469	.09	55	2.6
West South Central	46,551	12,720,824	.37	-14,647	-23.9
Arkansas	5,432	1,078,596	.50	-1,405	-20.5
Louisiana	3,966	1,798,095	.22	-1,772	-30.9
Oklahoma	5,968	1,363,819	.44	-1,768	-22.9
Texas	31,185	8,480,314	.37	-9,702	-23.7
Midwest					
East North Central ¹	44,573	15,021,763	.30	-9,064	-16.9
Illinois	(²)	5,662,832	(²)	(²)	(²)
Indiana	10,121	2,797,264	.36	-1,860	-15.5
Michigan	13,607	4,355,848	.31	-823	-5.7
Ohio	15,297	5,287,758	.29	-5,151	-25.2
Wisconsin	5,548	2,580,893	.21	-1,230	-18.1
West North Central	29,590	9,059,389	.33	-1,335	-4.3
Iowa	2,419	1,370,204	.18	-489	-16.8
Kansas	3,951	1,243,693	.32	-705	-15.1
Minnesota	8,061	2,423,593	.33	-539	-6.3
Missouri	11,032	2,556,912	.43	528	5.0
Nebraska	208	828,861	.03	45	27.6
North Dakota	2,566	296,517	.87	-151	-5.6
South Dakota	1,353	339,609	.40	-24	-1.7
West					
Mountain ¹	22,775	6,657,242	.34	-1,921	-7.8
Arizona	7,578	1,977,502	.38	-732	-8.8
Colorado	2,734	1,952,487	.14	120	4.6
Idaho	2,449	509,528	.48	43	1.8
Montana	832	354,406	.23	40	5.1
Nevada	(²)	888,286	(²)	(²)	(²)
New Mexico	3,302	683,390	.48	-580	-14.9
Utah	3,818	963,067	.40	-568	-13.0
Wyoming	2,062	216,862	.95	-244	-10.6
Pacific ¹	12,828	4,826,170	.27	-756	-5.6
Alaska	1,384	261,595	.53	30	2.2
California	(²)	13,541,463	(²)	(²)	(²)
Hawaii	2,436	534,157	.46	238	10.8
Oregon	6,040	1,521,726	.40	-299	-4.7
Washington	2,968	2,508,692	.12	-725	-19.6

¹ Data not available for some States in these regions; regional totals include only those States reporting for all data elements.² Data not available.

these States is smaller than their share of total employment. They account for about 14 percent of total U.S. employment but generate only about 10 percent of the total electricity. In addition, about half of the Nation's imported electricity (mostly from Canada) is imported through the Northeast, accounting for about 10 percent of the electricity consumed in the region.⁶ In addition, the Mid-Atlantic States are home to a large concentration of utilities that combine electricity sales with other services. More than 36,000 employees of these combination utilities work in New York State alone.

Employment trends in the electricity industry often run counter to overall movements in the rest of the economy. During the recession of the early 1980s, for example, total nonfarm employment declined, but employment in the electricity industry continued to grow steadily. (See table 2.) Job growth in the industry did not peak until around 1990. During the 1991 recession, employment dropped in the electricity industry as well as in the economy overall. In the subsequent recovery period, total nonfarm employment has grown steadily, but jobs in the electric utilities industry continued to slide, and by 1997 were at their lowest level since 1979.⁷ On a State-by-State basis, there were few exceptions to the general downtrend, mostly in the West. These developments suggest that restructuring and downsizing in the industry were well underway prior to deregulation.

At the same time that employment in the electric utilities industry was falling, the Nation's output of electricity was rising. Total output grew 14 percent from 1991 to 1996, while employment fell 14 percent over the same period.⁸ These declines may be partly attributable to certain key events. In anticipation of possible deregulation and the need to compete for customers, electricity producers had taken a variety of measures to reduce costs. Mergers in the industry, often intended to produce larger utilities that are better able to compete in a deregulated environment, have sometimes led to job losses in the industry. As will be seen, some of these are actual job losses, while others reflect movement of positions from one industry classification to another.

For example, if a holding company acquires a generating facility formerly owned by another utility, it may transfer some of the employees of that generating facility to the holding company. These employees then would not be counted in the electric services industry, but rather would appear in SIC 6719, offices of holding companies. In an industry undergoing consolidation, employee transfers of this sort are to be expected. As deregulation approached, some highly integrated firms were reorganized as several separate firms along functional lines, with the result that some employees in the electricity industry retained their jobs but found themselves in new firms classified in accounting services, engineering services or other support industries. The share of the electricity market accounted for by nonutility power producers (of-

Table 2. Employment change, total nonfarm and electric services, 1976-97

Year	Total nonfarm		Electric services	
	Employment level [in thousands]	Cumulative percent change	Employment level [in thousands]	Cumulative percent change
1976	79,382		327.4	
1977	82,471	3.9	336.4	2.7
1978	86,697	9.2	354.4	8.2
1979	89,823	13.2	373.7	14.1
1980	90,406	13.9	391.0	19.4
1981	91,152	14.8	406.1	24.0
1982	89,544	12.8	421.7	28.8
1983	90,152	13.6	433.2	32.3
1984	94,408	18.9	441.0	34.7
1985	97,387	22.7	448.1	36.9
1986	99,344	25.1	449.0	37.1
1987	101,958	28.4	448.5	37.0
1988	105,209	32.5	451.5	37.9
1989	107,884	35.9	448.2	36.9
1990	109,403	37.8	454.4	38.8
1991	108,249	36.4	447.7	36.7
1992	108,601	36.8	440.3	34.5
1993	110,713	39.5	428.2	30.8
1994	114,163	43.8	416.5	27.2
1995	117,191	47.6	404.1	23.4
1996	119,608	50.7	383.2	17.0
1997	122,690	54.6	368.3	12.5

ten large industrial facilities that produce electricity for their own use and then sell any surplus) grew from 7 percent to 11 percent between 1991 and 1996.⁹ Employees in these establishments are counted in the industry that runs the plant, not in the electric services industry.

Price variation

As shown in the following tabulation, electricity prices vary significantly by region.¹⁰ The average price for electricity delivered to a residential customer, as determined by the Consumer Price Index, ranges from 12.0 cents per kilowatt-hour in the Northeast to 7.3 cents in the South. The Midwest and West experience price levels very close to the national average of 9.0 cents.¹¹

<i>Region</i>	<i>Average price per kilowatt hour</i>
U.S. city average	\$0.090
Northeast urban120
Midwest urban086
South urban073
West urban099

Over the last two decades, electricity prices have increased most dramatically in the West, rising more than 150 percent. In the late 1970s, electricity prices in the West were comparable to those of the United States overall. Over the next 20 years, the West experienced rapid employment growth, requiring

construction of large amounts of generating capacity to supplement traditionally low-cost hydropower already in place.

Electricity prices rose about 100 percent in the Northeast and South, close to the price increase for the Nation. The Northeast experienced low employment growth over the period.¹² Electricity prices were above the national average in the late 1970s in the Northeast and remained above average in 1997. The South, in contrast, had high rates of employment growth over the last 20 years but generates considerably more electricity from fossil fuel plants than the national average. The South began the period with the lowest retail electricity prices in the Nation, and this is still the case in 1997. Finally, the Midwest region experienced the slowest growth in retail electricity costs.

Case studies in deregulation

Operating as regulated utilities and with the concurrence of their regulators, some utilities entered into long-term commitments to acquire sufficient power to meet the needs of their customers. In addition, the Public Utilities Regulatory Policies Act of 1978 created incentives for electric utilities to purchase power from nonutility generators. Many of these contracts were negotiated at a time of high and rising fuel prices. As fuel prices fell from their highs of the mid-1980s, many of those long-term contracts and investments in high-cost generating facilities began to provide power at higher prices than those charged by new coal or gas turbine power plants. The commitments to relatively high-cost sources of electricity that could not compete in a deregulated industry are termed “stranded costs.” The utilities companies and their stockholders, as well as consumers and taxpayers all may share in paying for these stranded costs.

The stranded cost issue is particularly acute in the Northeast, where residential customers pay 30 percent more than the national average for electricity. A number of explanations have been advanced to explain this differential, including high-cost power plants, regulatory costs, and long-term purchase contracts at high prices. In a deregulated industry, relatively low-cost electricity producers from the South and Midwest could compete for customers with producers from the Northeast.

Between 1991 and 1997, U.S. employment in electric services fell more than 15 percent, but the losses were disproportionately severe on the East and Gulf coasts where the majority of States experienced employment declines of 20 percent or more. At the same time, the Mountain and West North Central regions experienced very little employment loss. In spite of the limitations of the data noted above, the geographic impact of job losses is still apparent—employment losses in the industry have been most severe on the East

and Gulf coasts and least acute in the Western Plains and the Mountain West.

Deregulation can have different consequences depending upon many factors, including the strategies with which utilities, governments and regulatory commissions respond. Three States, Maine, Pennsylvania, and Texas, illustrate this point.

The Maine experience. Maine began the deregulatory period with relatively high electricity rates and a mix of electricity sources noteworthy both for the presence of imports from Canada and having a large fraction of nuclear-generated power. The State is proceeding relatively quickly with retail deregulation, and about 900 jobs were lost in the electricity industry between 1991 and 1997. Maine passed legislation requiring major investor-owned electric utilities to sell their generating facilities by March 2000. At that time, customers will be free to buy electricity from any generating company licensed to sell in the State, and they will receive their electricity via the distribution system that the former utilities will continue to own and operate. In response, Central Maine Power Company announced plans to sell its generating capacity to FPL Group, Inc., a Florida corporation that is parent to Florida Power and Light.¹³ If those transactions are completed, former Central Maine customers will still get electricity over Central Maine wires, but the electricity may come from a plant owned by FPL, or from some other supplier the customer chooses.¹⁴

The law in Maine addresses the stranded cost issue by allowing utilities to recover stranded costs after they have sold their generating assets. The law directs the Public Utility Commission to allow utilities to charge their customers for stranded costs, subject to Commission review in much the same way that present electricity rates are subject to review, for an unspecified length of time after divestiture. The law calls for review of stranded costs every 3 years after 2003, suggesting that the period in which costs will be recovered will span many years. The law also requires the Public Utility Commission to take into account how aggressively a utility tried to reduce its stranded costs when deciding how those costs will be handled. The harder a utility tried to get rid of its expensive electricity sources, the more of its remaining stranded costs it will be allowed to pass on to consumers.¹⁵

Utilities have had to deal with the stranded cost issue in Maine as well. A consortium of eight New England utilities owned the Maine Yankee plant, a nuclear facility in Wiscasset, Maine. In early 1997, the owners contracted with Entergy Corporation, a New Orleans firm, to operate the plant.¹⁶ The plant was shut down for repairs in late 1996, and remained off-line through the first half of 1997. The owners, concerned about increasing maintenance costs and declining revenue as the plant closed for repairs, faced a classic stranded cost situation. An investment that made sense in 1968, when construc-

tion of the plant began, had become a potential burden to the utilities and stockholders. In late May 1997, after trying to sell the plant to another utility, the Maine Yankee board of directors voted to shut the plant down and began laying off some contract staff who had been operating and repairing the facility.¹⁷ Interestingly, the former employees of the plant will be eligible for NAFTA-related transitional assistance on the grounds that the loss of their jobs was partly due to increased competition from Canadian energy.¹⁸

The Pennsylvania experience. Pennsylvania was one of the first States to pass legislation providing for retail deregulation. The Pennsylvania law requires that a third of each class of customers (residential, commercial, and industrial) be allowed to choose their electricity supplier by January 1, 1999. Pennsylvania has attracted a variety of electricity suppliers, including some who market their service based on claims that their power is produced by environmentally friendly technologies. The presence of these "Green Power" suppliers provides an alternative solution for those consumers concerned with purchasing power produced from renewable sources.

Pennsylvania was quick to recognize that deregulation could create job losses. The legislation calling for deregulation explicitly acknowledges that job losses could occur and obliges utilities to minimize the impact of employment losses on their communities. At the same time, the legislation created a Competitive Transition Charge to be levied on rate payers to compensate utilities for stranded costs, and it suggested that retraining or severance costs for dislocated employees could be included in the Competitive Transition Charge. As in Maine, the Public Utility Commission is required to consider how aggressively utilities have tried to reduce their stranded costs when considering how much of those stranded costs can be charged to consumers through the Competitive Transition Charge.

When utilities submit their restructuring plans to the Public Utility Commission, some cite their employment reductions as evidence of their effort to reduce stranded costs. One prominent utility company reports "reducing employment significantly," while another cites a 37-percent reduction in employment.¹⁹ From 1991 to 1997, employment in the industry declined by more than 4,600 jobs.

The Texas experience. Texas began the deregulatory era of the 1990s in very different circumstances than Maine or Pennsylvania, but it nevertheless has experienced employment losses of similar proportions. Texas has relatively low electricity prices and obtains a disproportionately large amount

of power from fossil fuel sources.

Although the retail electricity market has not been deregulated in Texas, industry executives appear to be seeking mergers and cost-saving opportunities nonetheless. For example, in one prominent merger plan, Central and Southwest Corporation of Dallas and American Electric Power announced plans to merge, citing expected administrative savings of about \$2 billion but with more than 1,000 lost jobs over a 10-year period. In another situation, Texas Utilities announced plans to acquire Ensearch Corporation and to reduce costs throughout the organization.²⁰ Even with low electricity rates and no retail deregulation legislation, Texas lost more than 9,000 jobs in the electricity industry between 1991 and 1997.

THE EFFECT OF DEREGULATION on employment and price levels is a complicated process. Individual States continue to develop new legislation designed to implement deregulation. Regulators may decide to build regional power pools, in which high-cost generating plants are allowed to continue to operate while their high cost is diluted by a controlled amount of power from low-cost sources, or to require new competitors to share responsibility for some stranded costs. California, for example, proposes raising rates back up to 1996 levels, with the extra revenue to be directed to paying off stranded costs. Customers who switch to new low-cost suppliers may also be obliged to pay a premium over normal rates to retire the stranded costs of existing utilities.²¹ In a similar way, Pennsylvania authorizes utility companies to collect the competitive transition charge for up to 10 years to recover stranded costs. This kind of regulation allows high-cost generating capacity to remain in production and may limit further employment losses in high-cost States. At the same time, these cost-sharing efforts could discourage new firms from entering the retail electricity market by depriving them of the cost advantage they would have enjoyed over firms with high stranded costs.

Limitations on inter-regional electrical transmission capacity will limit the extent to which electricity from a distant region can be substituted for locally generated power. These limits, which are both technological (constrained by how much electricity any wire can carry) and regulatory (constrained by the challenges of licensing new cross-country power lines) may provide some additional protection to employment in high-cost States. As deregulation proceeds, employment in the industry will continue to be impacted by many factors, including those beyond the scope of this article. □

Notes

¹ Elizabeth Moler, "Fed's New Regulatory Role in Emerging Power Markets," *Forum for Applied Research and Public Policy*, summer 1997.

² The Standard Industrial Classification (SIC) system is the statistical clas-

sification standard underlying all establishment-based Federal economic statistics classified by industry. Developed in the 1930s, the SIC provides a consistent framework for assigning descriptive industry codes to each business or government establishment, facilitating the collection, tabulation, and analy-

sis of economic statistics by government agencies and private research firms. For more on the SIC, see *Standard Industrial Classification Manual: 1987* (Office of Management and Budget, 1987).

³ These data are from the Covered Employment and Wages (ES-202) program of the Bureau of Labor Statistics. U.S. totals are aggregated to include information that must be suppressed at the State level to protect the confidentiality of the respondents.

⁴ As noted, the discussion of employment levels and trends in this article is limited to establishments exclusively providing electrical services. The portion of employment in industry 4931—electric and other services combined—dedicated to the provision of electric services is not available separately and thus is not included here. As a result, electric services employment understates total employment involved in electricity production and distribution and regional comparisons may be impacted. The data presented are for workers in establishments covered by State unemployment insurance laws and are the product of a joint BLS/State cooperative program. For several States, data for the electric services industry do not meet BLS or State agency disclosure standards and thus are not presented separately.

⁵ In some States, the share is much higher—0.95 percent of total employment in Wyoming, for example. Wyoming is home to many large coal mines and neighboring power plants, and much of its generated electricity is sold outside of the State.

⁶ Electricity import data are published by regions established by the North American Electric Reliability Council, and they do not correspond exactly to Census regions.

⁷ At the time of completion of this article, 1997 was the latest year for which detailed industry data were available by State and region. The downward trend in total U.S. employment for the industry continued through 1998.

⁸ US Department of Energy, Energy Information Administration, data from Forms EIA-759, *Monthly Power Plant Report* and EIA-867, *Annual Non-utility Power Producers*.

⁹ Energy Information Administration, data from Form EIA-759, *Monthly*

Power Plant Report and EIA-867, *Annual Non-utility Power Producers*.

¹⁰ The consumer price index data alone generally is not suitable for place-to-place price comparisons, due to regional variation in consumption amounts and rate schedules. The comparisons shown here also are consistent with the Energy Information Administration's Monthly Electric Utility Sales and Revenue Report with State Distributions.

¹¹ These data are products of the Consumer Price Index program, which publishes data on price change for a wide range of consumer products and services, and average price data on a small range of foods and fuels.

¹² Data from US Department of Energy, Energy Information Administration website, on the Internet at <http://www.eia.doe.gov/cneaf/electricity/ipp/te2p01.txt>.

¹³ *Bangor Daily News*, Friday, Mar. 27, 1998

¹⁴ Upon completion of this article, legal disputes between FPL Energy Maine, Inc. and CMP leave the sale in some jeopardy. The State divestiture requirement remains in place, however.

¹⁵ Title 35-A, *Maine Revised Statutes*, Chapter 32, Section 3208

¹⁶ Securities and Exchange Commission, 10-K filing for Entergy Corporation.

¹⁷ "Tux Turkel, Maine Yankee's Day of Decision," *Maine Sunday Telegram*, Jun. 1, 1997.

¹⁸ *Federal Register*, Mar. 16, 1998, p. 12836.

¹⁹ Pennsylvania Public Utility Commission, docket number R-00973954 and docket number R-00973953.

²⁰ Securities and Exchange Commission, 10-K filings for Central and Southwest Corporation and Texas Utilities.

²¹ Daniel Nix, "Electricity Industry Deregulation," California Energy Commission, Energy Information and Analysis Division, on the Internet at <http://www.energy.ca.gov/restructuring/restructureFAQ.html> (accessed Sept. 22, 1999).