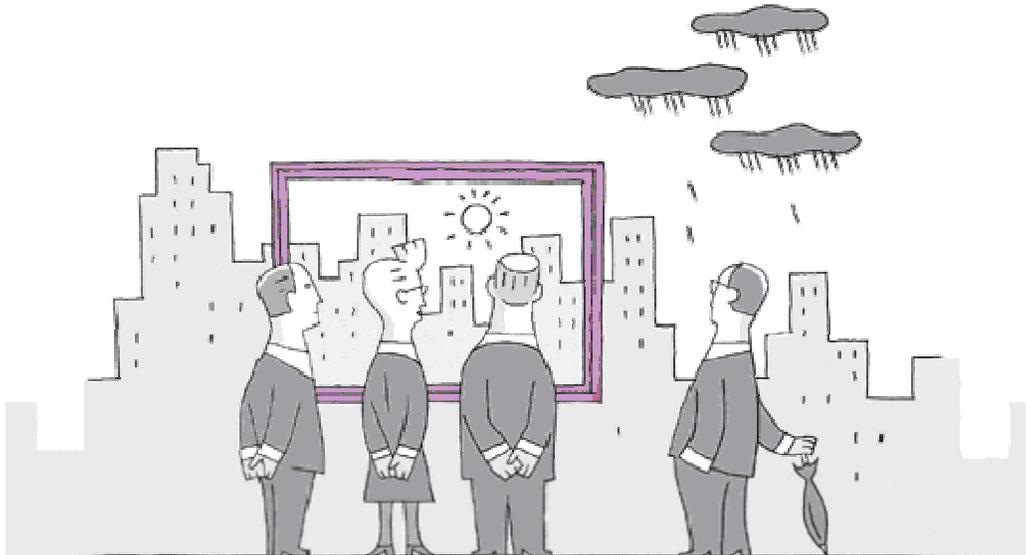


IBISWORLD INDUSTRY REPORT

Electric Power Transmission, Control and Distribution in the US 22112

1 March 2006



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Note:

Unless otherwise specified, an asterisk (*) associated with a number in a table indicates an IBISWorld estimate.
Unless otherwise specified, references to dollars are to US dollars.

INDUSTRY DEFINITION

This industry comprises establishments primarily engaged in operating electric power transmission systems, controlling (i.e., regulating voltages) the transmission of electricity, and/or distributing electricity. The transmission system includes lines and transformer stations. These establishments arrange, facilitate, or coordinate the transmission of electricity from the generating source to the distribution centers, other electric utilities, or final consumers. The distribution system consists of lines, poles, meters, and wiring that deliver the electricity to final consumers.

ACTIVITIES (PRODUCTS AND SERVICES)

The primary activities of companies in this industry are:

- Electric bulk power transmission and control
- Electric power distribution

The major products and services covered in this market research report are:

- Electricity distribution
- High voltage transmission

SIMILAR INDUSTRIES

Industry: [22111 - Electric Power Generation in the US](#)

Description: Establishments primarily engaged in generating electric energy are classified in Industry 22111, Electric Power Generation

DEMAND & SUPPLY INDUSTRIES

For further market analysis, refer to the following upstream and downstream reports:

[22111 - Electric Power Generation in the US](#)

31-33 - Manufacturing in the US

42 - Wholesale Trade in the US

KEY STATISTICS**CONSTANT PRICES**

	2000	2001	2002	2003	2004	
Industry Revenue	*252,414.1	*268,738.0	*269,178.3	*274,348.2	*280,379.0	\$Mill
Industry Gross Product	*118,634.2	*126,306.6	*126,513.9	*126,200.6	*131,778.0	\$Mill
Number of Establishments	7,032.0	6,999.0	7,538.0	*7,500.0	*7,500.0	Units
Number of Enterprises	1,278.0	*1,280.0	*1,280.0	*1,285.0	*1,285.0	Units
Employment	376,927.0	376,734.0	416,774.0	*416,800.0	*416,800.0	Units
Exports	N/A	N/A	N/A	N/A	N/A	
Imports	N/A	N/A	N/A	N/A	N/A	
Total Wages	25,667.3	25,526.8	27,790.2	*28,111.5	*28,356.0	\$Mill
Domestic Demand	NC	NC	NC	NC	NC	\$Mill

CURRENT PRICES

	2000	2001	2002	2003	2004	
Industry Revenue	*233,205.0	*254,243.0	*258,870.0	*268,673.0	*280,379.0	\$Mill
Industry Gross Product	*109,606.0	*119,494.0	*121,669.0	*123,590.0	*131,778.0	\$Mill
Number of Establishments	7,032.0	6,999.0	7,538.0	*7,500.0	*7,500.0	Units
Number of Enterprises	1,278.0	*1,280.0	*1,280.0	*1,285.0	*1,285.0	Units
Employment	376,927.0	376,734.0	416,774.0	*416,800.0	*416,800.0	Units
Exports	N/A	N/A	N/A	N/A	N/A	
Imports	N/A	N/A	N/A	N/A	N/A	
Total Wages	23,714.0	24,150.0	26,726.0	*27,530.0	*28,356.0	\$Mill
Domestic Demand	NC	NC	NC	NC	NC	\$Mill

REAL GROWTH

	2000	2001	2002	2003	2004	
Industry Revenue	*6.9	*6.5	*0.2	*1.9	*2.2	%
Industry Gross Product	*6.9	*6.5	*0.2	*-0.2	*4.4	%
Number of Establishments	3.1	-0.5	7.7	*-0.5	*0.0	%
Number of Enterprises	0.0	*0.2	*0.0	*0.4	*0.0	%
Employment	-2.3	-0.1	10.6	*0.0	*0.0	%
Exports	N/A	N/A	N/A	N/A	N/A	%
Imports	N/A	N/A	N/A	N/A	N/A	%
Total Wages	1.0	-0.5	8.9	*1.2	*0.9	%
Domestic Demand	NC	NC	NC	NC	NC	%

RATIO TABLE

	2000	2001	2002	2003	2004	
Imports share of domestic demand	N/A	N/A	N/A	N/A	N/A	%
Exports share of revenue	N/A	N/A	N/A	N/A	N/A	%
Average revenue/employee	0.67	0.71	0.65	*0.66	*0.67	\$Mill
Wages & salaries share of revenue	10.17	9.50	10.32	*10.25	*10.11	%

MARKET CHARACTERISTICS

MARKET SIZE

- The revenue and value added of the electricity transmission and distribution industry amounted to an estimated \$296 billion and \$139 billion, respectively in 2005 (2004 prices).
- The industry sold 3,717 billion kilowatt hours of electricity in 2004, up from 3,657 billion kilowatt hours in 2003. Sales are estimated to have amounted to 3,818 billion kilowatt hours in 2005.
- Electricity is not exported or imported in any substantial quantity, and trade in electricity is included in the electricity generation industry.
- The industry is believed to have employed 416,500 people in 2005 and paid wages amounting to \$28.5 billion (2004 prices).

LINKAGES

Demand Linkages

- [31-33 - Manufacturing in the US](#)

The industrial sector accounts for around 28 per cent of electricity consumption.

- [42 - Wholesale Trade in the US](#)

Wholesale trade, together with other services industries (retail, communications, government services, education, health services and recreation) account for over 30 per cent of electricity usage.

Supply Linkages

- [22111 - Electric Power Generation in the US](#)

This industry produces the electricity transmitted and distributed.

DEMAND DETERMINANTS

- The demand for electricity transmission and distribution services is a derived demand; it depends upon the demand for electricity and ultimately, upon the various uses for power.
- Households, industry and the commercial sector are the major uses of electricity, together accounting for around 95 per cent of demand.
- Households, which account for 35 per cent of electricity demand, form the largest user group. The factors that play a role in household electricity consumption include shifts in household disposable incomes, changes in the price of electricity and competing fuels and the availability of a wider range of fuels. Fuel availability has been increased through the extension of gas pipelines and improvements in technology that have made solar power more accessible.
- The growth in demand for power by industry (which accounts for around 28 per cent of electricity use) largely depends on the growth in output of electricity intensive products (most metals, but particularly aluminum). Where firms are able to switch between fuel types (for example, between electricity and gas) movements in fuel prices also have an impact on demand.

DOMESTIC AND INTERNATIONAL MARKETS

Domestic and International Markets Exports

The export level is low
The export trend is steady

Domestic and International Markets Imports

The import level is low
The import trend is steady

Domestic And International Markets Analysis

- The bulk power system in the US has evolved into three major networks (or power grids), which also include smaller groupings (or power pools). Each of the major networks - the Eastern Interconnected System, the Western Interconnected System, and the Texas Interconnected System - consists of extra-high-voltage connections between individual generators or utilities. These connections are designed to permit the efficient transfer of electrical energy from one part of the network to another.
- However, transfers within networks are sometimes restricted by the absence of contractual arrangements between some firms and by inadequate transmission capability in some areas.
- Links between the three networks are very limited, but both the Western and the Texas Interconnect are linked with different parts of Mexico. The Eastern and Western Interconnects are completely integrated with most of Canada or have links to the Quebec Province power grid. Virtually all electricity utilities in the continental US are interconnected with at least one other utility via these three major grids.
- The interconnected utilities within each power grid coordinate operations and trade power among themselves. The bulk power system makes it possible for electricity utilities and other generators to engage in wholesale electric power trade. Wholesale trade has historically played an important role by allowing utilities to reduce power costs, increase power supply options, and improve reliability.
- The United States engages in very limited trade in electricity. Imports, although very small, are larger than exports. Most imports of power come from Canada and the remainder from Mexico.
- Overall reliability planning and coordination of the interconnected power systems are the responsibility of National Electric Reliability Council (NERC). NERC was formed in 1968 by the electric utility industry in response to a major power failure that occurred in the Northeast in 1965. NERC has nine regional councils that cover the 48 contiguous States, part of Alaska, and portions of Canada and Mexico. The councils are responsible for the overall coordination of bulk power policies that affect the reliability and adequacy of service in their areas. They also regularly exchange operating and planning information among their member utilities. The boundaries of the NERC regions follow the service areas of electric utilities. As a result, regional boundaries often do not coincide with state boundaries.
- The industry is in a state of transition. Access to transmission lines has been opened by Federal Energy Regulatory Commission (FERC) rulings. The rulings allow for third party access to transmission lines and have encouraged an increase in the wholesale trade of power.
- The combination of open access and reluctance by some regions to permit the construction of new power generation plants has led to much more intensive use of power transmission lines. Electricity is being transported on a nearly continuous basis from power rich regions to those with deficits. The electricity grid was not designed or constructed with this intensity of use in mind. Nor has capital spending on transmission infrastructure kept pace with increased usage. For some time, there have been concerns that the transmission infrastructure was vulnerable to overload. It appears that these concerns became reality in mid August 2003, when a large section of the grid ceased to function. This incident is discussed in detail under the Current Performance section of this report.

BASIS OF COMPETITION

- Firms engaged in electricity transmission and distribution traditionally operated as regulated monopolies within designated supply areas. Operational rights over a region were granted to electricity utilities on a franchise basis by state governments.
- Until the second half of the 1990s, purchasers of electricity had no choice regarding their electricity supplier; they were simply supplied by the utility that had been granted the franchise covering their area. However, this situation began to change during the second half of the 1990s, as some state governments introduced competition between electricity generators and choice of electricity supplier for customers.
- Because the price paid for electricity by consumers remains regulated, competition between distributors on price is limited, even in those states where consumers can choose their own electricity supplier. In these circumstances, other factors such as convenience become important. The ability of an electricity supplier to also supply gas and provide telephone services provides an important competitive advantage.

LIFE CYCLE

Life Cycle Stage

The life cycle stage is mature

Life Cycle Reasons

- Customers are increasingly being given the right to choose their electricity supplier.
- Electricity transmission and distribution are being split from generation.
- Industry infrastructure, and the service it offers, are both well-established.
- The demand for electricity reflects broad trends in economic growth.

Life Cycle Analysis

- The electricity transmission and distribution industry is a mature industry. Its infrastructure, and the service it offers, are both well-established. The demand for electricity reflects broad trends in economic growth.
- However, the industry's structure is undergoing substantial change in many states. Electricity transmission and distribution are being split from generation and a competitive market is being established in generation.
- Increasingly, customers are also being given the right to choose their electricity supplier, rather than simply being allocated to their regional electricity utility.
- In some cases, most notably California, the regulatory framework which has accompanied these changes has been inadequate, and led to further changes in industry structure.

SEGMENTATION

PRODUCTS AND SERVICE SEGMENTATION

Product/Services	Share
Electricity distribution	99.0%
High voltage transmission	1.0%

▪ Although this industry deals with one product - electricity - it has two sectors. Distribution, which relates to the low voltage electricity network, is by far the largest of these sectors and accounts for around 99 per cent of industry revenue. Bulk power transmission (usually at high voltage to minimize transmission losses) accounts for only around 1 per cent of industry revenue.

MAJOR MARKET SEGMENTS

Market Segment	Share
Households	36.0%
Commercial sector	32.0%
Industrial users	29.0%
Other	3.0%

Analysis:

- The usage of electricity in 2004 was dominated by households (35 per cent), the commercial sector (33 per cent) and industrial users (28 per cent). Other users represented just 5 per cent of power consumption. This category covers street lighting, other sales to public authorities, sales to railroads, sales for irrigation and interdepartmental sales.
- Industrial users pay by far the lowest prices. Industrial users paid an average 5.11 cents per kilowatt hour and accounted for just under 20 per cent of retail electricity revenue in 2004. Commercial users paid 8.17 cents per kilowatt hour and accounted for 37 per cent of revenue, while households paid 8.94 cents per kilowatt hour and accounted for 43 per cent of revenue.
- At a minimum, substantial price discrimination is occurring. Although this may reflect lower costs associated with supplying electricity to bulk users, electricity usage at off peak times by industrial users and the additional costs of providing small users without backup generation facilities a higher standard of service, it is also likely to be due to the greater bargaining power wielded by industrial purchasers compared to commercial users or households. The scale of the price differential is so large as to suggest that these two categories of users may be cross-subsidizing industrial buyers.

INDUSTRY CONCENTRATION

The level of concentration is low

- In the past, the electricity industry (generation, transmission and distribution combined) was highly concentrated, with effectively only one producer/supplier operating in most states.
- However, this situation has changed rapidly over recent years, as separate power generation, transmission and distribution firms were split from single businesses.
- Industry concentration is now no more than moderate for the electricity transmission and distribution industry within particular regions and low across the US as a whole.

GEOGRAPHIC SPREAD

Year: 2004

Table: Electricity Consumption by Region

Region	Percentage
South East	31.9
Great Lakes	15.8
South West	13.2
Mid East	12.8
Far West	11.8
Plains	7.3
New England	3.5
Rocky Mountains	3.4

- The major electricity-using region of the US is the South East (32 per cent of consumption in 2004). There is also substantial power consumption in the Great Lakes region (16 per cent), the South West (13 per cent), the Mid East (13 per cent) and the Far West (12 per cent). The geographic focus of consumption (the South East, the Mid East and the Great Lakes) reflects both population spread and the fact that electricity intensive industries such as steel production and motor vehicle manufacture are located these areas.

- The geographic dispersion of industry employment is broadly similar to that of electricity consumption. The major employing region in 2002 was the South East, which accounted for almost 27 per cent of total employment in the electricity transmission industry. The Mid East and the Great Lakes accounted for a further 19 per cent and 17 per cent of employment, respectively. New York (Mid East) alone accounts for over 8 per cent of industry employment and Michigan (Great Lakes) for around 5 per cent. The Far West accounted for 13 per cent of industry employment, the Plains for nearly 8 per cent and the South West for just over 8 per cent. In these areas, major employing states were California (Far West), with nearly 10 per cent and Texas (South West), with over 6 per cent. New England accounted for nearly 5 per cent of industry employment, and the Rocky Mountains for 3 per cent.

INDUSTRY CONDITIONS

BARRIERS TO ENTRY

The level of barrier is high

The trend of barrier is decreasing

- Prospective entrants must have large amounts of capital and considerable expertise to enter the industry.
- Increasing freedom of choice regarding power supplier is reducing entry barriers.

Analysis

- Barriers to entry to electricity transmission and distribution industry remain high, although regulatory changes have led to the lowering of some barriers.
- Prospective entrants must have large amounts of capital and considerable expertise to enter the industry. However, the introduction of freedom of choice regarding power supplier in some states, and its anticipated spread to others, has made it possible for firms other than the power utility with the regional franchise to enter the market.

TAXATION

There are no specific taxation issues for this industry

- State and local authorities tax the value of electricity transmission and distributing firms' landholdings (property taxes), their revenues (gross receipts taxes), purchases of materials and services (sales and use taxes), and a range of other items that vary according to the particular taxing authority.
- Electricity transmitters and distributors are also responsible for remitting some federal taxes (mainly federal income tax and employees' share of social security taxes) on behalf of their employees. These do not form part of the firm's own 'tax costs'.
- Electricity distributors are also required by various taxing authorities to collect and remit taxes (such as sales tax) imposed on their consumers. These "pass through" taxes do not represent a cost to the firm and are not recorded in its operating revenues. However, taxing authorities differ on whether a specific tax is assessed to the business or to the consumer.

INDUSTRY ASSISTANCE

The level of Industry Assistance is low

The trend of Industry Assistance is steady

There are no specific tariffs for this industry.

- The electricity transmission industry is not protected by either tariffs or non-tariff barriers. Indeed, it faces no import competition.
- The industry does not receive government subsidies or grants.

REGULATION AND DEREGULATION

The level of Regulations is high

The trend of Regulations is steady

- The coordination of the three interconnected power systems in the US (the Eastern Interconnected System, the Western Interconnected System, and the Texas Interconnected System) is the responsibility of the National Electric Reliability Council (NERC), a body formed by the electricity utilities. NERC's nine regional councils cover the 48 contiguous states, part of Alaska, and parts of Canada and Mexico. The councils are responsible for the overall coordination of bulk power policies that affect the reliability and adequacy of service in their areas. They also regularly exchange operating and planning information among their member utilities. The boundaries of the NERC regions follow the service areas of the electric utilities in the region, many of which do not follow state boundaries.
- Historically, almost all wholesale trade was within the National Electric Reliability Council (NERC) regions, but moves to foster increased competition in electricity generation and to provide supplier choice for retail customers are expanding wholesale trade beyond those traditional boundaries.
- The Federal Energy Regulatory Commission (FERC) deals with electricity matters that extend across state boundaries. In early 1996, FERC issued two orders designed to increase competition in the electricity industry. One addressed equal access to the transmission grid for all wholesale buyers and sellers, transmission pricing, and the recovery of stranded costs. Stranded costs relate to investments (mostly in generation) made by utilities under the regulated environment that cannot be recovered in a competitive environment with market-based rates. The second order required utilities that own or operate transmission facilities to provide information about their available transmission capacities.
- By the end of 2000, 23 states and the District of Columbia had enacted legislation enabling customers to choose their electricity supplier either immediately or in a phased manner over the next few years. In addition, New York had issued a comprehensive regulatory order to the same effect. However, by January 2002, six of these states had moved to delay restructuring, largely in response to the California electricity crisis. By early 2003, 24 states and the District of Columbia had enacted legislation permitting consumer choice of supplier, but restructuring remained on hold in five states. This position remains unchanged.
- Despite changes at the wholesale and retail level, electricity transmission and distribution remain regulated functions.
- The electricity utilities also formed a number of new groups in response to the FERC orders. These include Independent System Operators (ISOs) which operate the transmission grid, regional transmission groups, and open access same-time information systems (OASIS) that utilities use to provide data relating to the available capacity on their lines. Open transmission access has also led to the creation of new participants in the electric power industry, such as power marketers and power brokers. Power marketers buy and sell wholesale electricity. Since they take ownership of electricity and are engaged in interstate trade, they fall under the jurisdiction of FERC. Power marketers generally do not own generation or transmission facilities or sell power to retail customers. However, continuing deregulation of the industry is allowing power marketers the possibility of entering retail electricity markets. Power brokers sell electricity on behalf of others. Since they do not take ownership of the electricity, they are not regulated by the FERC, even if the electricity is sold across state lines. The growth in wholesale trade in electricity has increased markedly over recent years.
- The introduction of competition has significantly affected the way in which electricity is generated, transmitted, and distributed to wholesale and retail customers. The changes in patterns of wholesale and retail trade have led to more intensive use of the transmission grid, by both existing and new market participants. Increases in transmission volumes have not been associated with increases in the capacity of the system. Indeed, there have been declines in spending on maintenance of the system and on capital works. There is concern that competition

will reduce cooperation among transmission owners and add to the complexity of maintaining the system's reliability.

- The regional development of independent system operators (ISOs) has been uneven across the states, and there are unresolved difficulties in forming multi-state ISOs. FERC identified two main transmission-related impediments to competition. First, engineering and economic inefficiencies in the current system hindered development of fully competitive power markets and impose avoidable costs on consumers. Second, despite regulations guaranteeing access to transmission systems, opportunities remained for transmission owners to discriminate in favor of their own affiliates.
- FERC attempted to overcome these problems by requiring the creation of regional transmission organizations (RTOs) nationwide (in an Order issued in December 1999). Transmission owners are encouraged, but not required, to join an RTO. Although different types of RTOs are permitted, all are required to abide by four core characteristics and provide eight key functions. The core characteristics are independence, scope and regional configuration, operational authority, and short-term reliability. The eight key functions are tariff administration and design, congestion management, parallel path flows, ancillary services, Open Access Same-Time Information System (OASIS), market monitoring, planning and expansion, and interregional cooperation.
- The distribution of electric power is an intrastate function under the jurisdiction of State public utility commissions. These commissions set retail rates for electricity in ratemaking rulings. The rates set are based on the cost of service, and include: the cost of generated and purchased power; the capital costs of power, transmission, and distribution plants; all operating and maintenance expenses; the cost of providing programs mandated by public utility commissions for consumer protection and energy efficiency; and taxes.
- Industry restructuring was expected to see some public utility commissions cease regulation of the retail rates for generated or purchased power. Instead, prices would be set by competition. However, political concerns have seen the ratemaking role of utility commissions continue.
- Public utility commissions also play a role in determining the location of distribution lines, substations, and generators. Metering and billing are also under jurisdiction of the public utility commissions.

COST STRUCTURE

Year: 2002

Item	Cost %
Fuel	40.0%*
Depreciation	10.0%*
Wages	10.0%
Other	4.0%*
Profit	36.0%*

Analysis

- The single largest cost incurred by the electricity transmission industry is fuel, which is believed to absorb around 40 per cent of revenue. This cost relates to electricity purchased from wholesalers or generators for retail sale.
- Salaries and wages represent a further 10 per cent of revenue. Depreciation and finance charges account for around 10 per cent and 3 per cent of revenue respectively. The substantial size of depreciation charges reflects the importance of capital to the industry.
- Other operating costs absorb a further 4 or so per cent of revenue, leaving around 36 per cent to provide a before tax profit.

CAPITAL AND LABOR INTENSITY

The level of capital intensity is high.

- Heavy reliance on infrastructure such as substations, transmission lines and poles.
- Labor costs are only a small proportion of overall costs.

Analysis

- The electricity transmission industry is extremely capital intensive. Costs relating to capital (such as depreciation, interest, maintenance and returns) are substantially larger than wage and salary costs.
- Capital invested largely takes the form of "poles and wires" networks used to transport power. These consist of both transmission systems (used for the bulk transport of high voltage power) and distribution systems (lower voltage networks which deliver power to end users).

TECHNOLOGY AND SYSTEMS

The rate of technology change in technology systems is low.

- The high voltage electricity network enables the efficient (that is, with minimum power losses) transfer of power from generators to distributors, or between other types of buyers and sellers in the wholesale electricity market. The low voltage electricity distribution network delivers electricity from suppliers to retail consumers. Infrastructure essentially consists of high and low voltage 'poles and wires' networks, plus associated transformers and sub-stations.
- Although changes in the technology employed by the industry to transfer power occur only slowly, in recent years there has been considerable development of the systems used to assess system capacity and provide this information to the market. These changes have been driven by regulations opening up transmission and distribution systems.
- The blackouts across much of the eastern US and into Canada in August 2003 focused attention on the adequacy, or otherwise, of the major transmission grids. In 1986, NERC reported that the inability of utilities to add needed generating plants in certain regions, due to public opposition, had led to 'wheeling' (the transport of power from more power-rich regions to those with deficits) on a nearly continuous basis. New York purchased power from Canada and California from Texas. Large-scale, long-distance transport put the transmission grid, which was not designed for such intensive use, under considerable pressure. Following the August 2003 blackout, NERC indicated that the US-Canadian Great Lakes Loop transmission system had problematic for some years. Plans to beef up the system, using cables underneath Lake Erie, had not been carried out.
- Many of the electricity transmission lines in the US, which have a life expectancy of 30 to 50 years if properly maintained, have met or exceeded their anticipated life.

INDUSTRY VOLATILITY

The level of Volatility is low.

- The volume of electricity transported and sold grows in line with GDP.
- Trends in revenue are also affected by price movements; over the past decade, retail electricity prices have fallen in real terms.
- Fluctuations in Industry value added may become more marked as wholesale electricity prices become more volatile.

- Retail price caps in most States will prevent or limit the extent to which cost rises can be passed on.

GLOBALIZATION

The level of Globalization is medium.

The trend of Globalization is increasing.

- The electricity transmission and distribution industry has a moderate level of globalization.
- Virtually all the firms that operate in it are based in the US, but these firms do have overseas electricity interests.
- A number of US firms expanded strongly into power generation markets overseas during the 1990s. More recently, firms have sold, or offered for sale, some of the assets acquired during this period in order to reduce debt and focus on core domestic markets.

PERFORMANCE

CURRENT PERFORMANCE

The performance of the electricity transmission and distribution industry depends heavily on the demand for electricity, which is itself closely linked to levels of economic activity. Other important factors include sharp changes in climatic conditions, which may also have substantial, but generally short-lived impacts on demand, and the price of electricity.

After a period of solid growth in the late 1990s and early 2000s, retail sales of electricity eased to around 3,370 billion kilowatt hours in 2001, in response to both higher real prices (which rose to around 7.74 cents per kilowatt hour in 2004 prices) and much weaker economic conditions. GDP growth in 2001 amounted to only around 0.3 per cent. Despite the weak demand conditions, higher prices more than offset lower sales and industry revenue increased.

The demand for electricity returned to growth in 2002, reflecting improved economic conditions and a somewhat lower real price for electricity. Retail sales amounted to 3,463 billion kilowatt hours and the average retail price declined down to 7.50 cents per kilowatt hour (2004 prices). Industry revenue continued to expand in 2002, but at a much slower pace than in 2000 and 2001. Higher sales volumes only just offset the impact of lower prices. Retail sales of electricity rose to 3,489 billion kilowatt hours in 2003. However, electricity prices rose to round 7.58 cents per kilowatt hour for the year (2004 prices). The higher price reflects a substantial increase in fuel input costs (especially natural gas) for power generators. Industry revenue is believed to have expanded as a result of the higher prices, but the higher cost of power also flowed into costs, suggesting that industry value added was largely unchanged.

Electricity prices remained essentially flat in 2004 and retail sales of electricity expanded to 3,548 billion kilowatt hours. Sales continued to expand in 2005 (to an estimated 3,648 kilowatt hours), despite a marked increase in electricity prices, itself primarily the result of higher fuel costs. To a large extent, the increase in consumption reflects attempts to shift away from gas and towards electricity where possible, due to the even larger increase in gas prices. Both industry turnover and value added are believed to have increased modestly in 2004, and then more strongly in 2005.

Many states have been actively involved in promoting competition in the retail market for electricity since the mid to late 1990s. Legislation has been passed to restructure the electric power industry, giving consumers the right to choose their electricity supplier.

Several factors underpinned the shift from a highly regulated monopolistic industry to a less regulated one. Relatively high prices for electricity in California and in the New England states prompted consumers to support the development of competitive retail markets for electric power generation. Advances in generator technology and falling fuel prices made gas turbines competitive with large base load generators. In addition, the deregulation of other industries, such as telecommunications and the airlines, showed that competition could lower prices and lead to the introduction of new products.

By September 2001, 23 states and the District of Columbia had passed legislation giving their consumers access to competitive electricity retail markets. In addition, New York had issued a comprehensive regulatory order to the same effect.

A range of issues had to be addressed prior to the introduction of competition. The quantification and recovery of electricity utilities' stranded costs is one of the most contentious issues. Stranded

costs represent utilities' investments in generators, power contracts, liabilities, and other assets that were to be recovered over time through regulated rates. Under restructuring, the generation portion of the industry will not be regulated, and market forces will set the price for energy. There was concern that the lower prices for generation services expected to flow from a competitive environment would prevent utilities from recovering their investments in generation assets. These costs are called stranded costs. Most states that have initiated restructuring have allowed investor-owned utilities to recover (either fully or partially) their stranded costs.

Retail prices for electricity fell during the 1990s. The decline reflects a number of factors. Although most states which pursued electricity deregulation gave utilities an opportunity to at least partly recover stranded costs, in exchange firms were generally required to lower electricity rates and not raise them during a set transition period. Such arrangements effectively insulated retail prices from price changes at the wholesale level. The price falls also reflected a decline in the delivered price of coal over most of the period and a significant increase in the capacity utilization of nuclear power plants. In addition, productivity enhancements led to lower operating and management costs.

The track record of the regulatory changes of the 1990s has been mixed. In California, the combination of a deregulated wholesale market overlaid with ongoing regulation of pricing at the retail level drove electricity distributor/retailers to the edge of bankruptcy. An additional complication was the requirement that distributor/retailers buy all their electricity at short-term or spot prices from the California Power Exchange. Although wholesale electricity prices in the state soared during the second half of 2000 as fuel costs rose, retail electricity prices remained fixed. Not only were distributor/retailers caught in a cost/price squeeze of massive proportions, but fixed electricity prices provided consumers no incentive to limit the growth in power usage. Demand continued to rise strongly. The 10 per cent increase in retail prices permitted by the state government in late 2000 was too little, and it came too late to alleviate the situation. By early 2001, it was clear that the state's two major power distributors, Southern California Edison (SCE) and Pacific Gas and Electric (PG&E), were effectively bankrupt, with debt amounting to billions of dollars and further access to credit denied.

The Governor of California and the federal government took a number of steps to address the problem. To keep power flowing, the California Legislature authorized the state Department of Water Resources to make purchases on behalf of utility customers and retail electricity prices were lifted. However, PG&E filed for Chapter 11 bankruptcy protection from its creditors on April 6, 2001. Three days later, SCE and Governor Davis announced that they had signed of a Memorandum of Understanding that aimed to help restore the utility's creditworthiness and financial stability. The agreement required SCE to sell its transmission assets to the California State Government.

In May 2001, the Governor of California signed Senate Bill 6X, creating the California Consumer Power and Conservation Financing Authority. The California Power Authority has broad powers to construct, own, and operate electric power facilities, and finance energy conservation projects. Although this bill was passed in the context of a power emergency, it opens the door to both re-regulation of the state's power system and ongoing government ownership of electricity assets. Later that month, the then Governor signed another emergency bill, Senate Bill 28X, designed to shorten the time taken to review applications for both new power plants and power plant upgrades.

Federal as well as state authorities attempted to ease the problems faced by the state of California. On April 25, 2001 FERC announced a plan to bring more stability, better control, and price relief to California's energy market. The plan gives the California Independent System Operator more control of power plant outages, establishes price mitigation measures based on market principles, and requires new reporting obligations designed to allow FERC to better

monitor the energy market in California. In mid-May, FERC announced regulatory actions to increase reliable energy supplies in California and other western states. It also streamlined regulatory procedures for wholesale power sales and for the certification of natural gas projects, and urged all hydroelectric licensees to assess the potential for increased generation capacity at their respective facilities.

Late in May 2001, the US Department of Energy Secretary ordered the Western Area Power Administration (WAPA), a 15-state power marketing arm of the Department of Energy, to both complete planning and seek outside financing for increasing California's transmission capacity. This action aims to reduce power transmission bottlenecks on the high-voltage power line connecting northern and southern California.

In June 2001, FERC imposed price limits on wholesale electricity sales in ten western states, with the aim of preventing electricity prices in California from soaring. The move restricted electricity rates in the states to a proxy price based on the operating costs of California's least efficient power generator plus a 10 per cent surcharge to compensate for the state's deteriorating credit rating.

In other states, notably Texas and Pennsylvania, deregulation has been less one-sided and more successful. Electricity suppliers are free to enter into long-term contracts that provide a buffer against short-term price volatility. Greater price movements are also permitted at the retail level, providing consumers with incentives both to "shop around" for a supplier and to conserve power.

The California power crisis has, without doubt, had an impact on attitudes to de-regulation. Only two additional states enacted restructuring legislation during 2000 - Michigan and West Virginia - and no states had such legislation or regulatory orders pending. By early 2002, six of the 23 states with restructuring legislation or regulatory orders pending had moved to delay their implementation. Little change occurred in this area during 2002: By January 2003, 24 states and the District of Columbia had enacted restructuring legislation, and five of these states were still delaying the restructuring process. This situation has remained unchanged.

The power blackout of August 2003 called into question other aspects of the deregulatory push in the US electricity sector. On August 14, 2003, approximately 50 million people, in six states in the Northeast and Midwest of the United States and in Canada, lost power.

The blackout had its origins in the transmission system known as the Great Lakes Loop, which circles Lakes Erie and Ontario. The loop runs from upstate New York to Ohio, Detroit, Ontario, and back to New York. The upstate New York grid is then connected to New York City and environs. A destabilization in that transmission loop propagated through the multi-state regional Eastern Connection, and led to the automatic shut-down of more than a dozen nuclear power plants in Canada and the United States and more than 80 fossil fuel generating plants.

A US-Canadian task force report released in April 2004 found the blackout started with three power line failures in Ohio. FirstEnergy Corp, the operator of the power lines, had failed to keep trees clear of the lines, causing them to trip. In addition, the report found that other systematic problems had permitted the outage to cascade: FirstEnergy did not conduct sufficient voltage analyses for its Ohio control area, FirstEnergy was unaware of the deteriorating state of its system and the Midwest Independent System Operator, the reliability coordinator for the region, did not provide effective real-time diagnostic support.

The blackout highlights a fundamental problem with the US transmission system: a lack of both investment and incentives to invest. The FERC requirement that non-utilities have access to the transmission grid and continued regulation by state regulatory commissions of the rates which can be charged for power transmission have had the unintended consequence of reducing the

incentives for utilities to invest in transmission assets. Put briefly, utilities are reluctant to invest in assets, often extensively used by others when they may not be able to recoup the cost of that investment because regulatory commissions aim to keep transmission rates as low as possible.

Federal and state governments, FERC and state regulatory bodies have not provided the power industry with a clear, coordinated set of guidelines to govern the development and operation of the US transmission grid. Without clear legislative and policy direction, and an assurance that capital expenditures can be recovered through rates in a timely fashion, utilities will be reluctant or financially unable to make the investment required to maintain reliability.

Electricity transmission services in the Gulf of Mexico area were severely disrupted in late August 2005 when Hurricane Katrina swept through several States. While services in most areas were rapidly restored, the worst-hit areas of New Orleans remained without electricity supplies at year-end 2005.

Table: Electricity Consumed

	Kilowatts billion kilowatt hours
1995	3164
1996	3254
1997	3302
1998	3425
1999	3484
2000	3592
2001	3532
2002	3629
2003	3657
2004	3717
2005	3818

HISTORICAL PERFORMANCE

The electricity industry was dominated by large investor-owned electricity utilities until the latter part of the 1990s. These businesses accounted for the bulk of electricity generation, transmission and distribution (over 75 per cent) as well as industry revenue (around 79 per cent). Other types of utilities (publicly owned or rural co-operatives) accounted for the remainder of output and sales. Customers were simply allocated to their local electricity utility, which supplied them with power.

Prior to the late 1990s, most investor-owned utilities were vertically integrated operations, which generated electricity and were also responsible for its transmission and retail sale. The introduction of laws designed to increase competition in the electricity generation market (that is, the market for electricity at the wholesale level) led to a separation of generation from transmission and distribution in a number of states. Although retail prices for electricity remained subject to price regulation, consumers in a number of states became able to choose their supplier.

The demand for electricity rose strongly during both 1998 and 1999 - due in large part to unusually warm summers. Retail sales of electricity amounted 3,312 billion kilowatt hours in 1999, with another 183 billion kilowatt hours of electricity being sold direct to end users. Sales continued

to rise in 2000, reaching 3,421 billion kilowatt hours. Industry performance is also believed to have improved during this period.

Table: Revenue Growth

	Revenue \$ Million	Growth%
1995	215,309.4	N/A
1996	219,677.8	2.0
1997	222,023.5	1.1
1998	227,925.8	2.7
1999	236,095.7	3.6
2000	252,414.1	6.9
2001	268,738.0	6.5
2002	269,178.3	0.2
2003	274,348.2	1.9
2004	280,379.0	2.2

Table: Gross Product Growth

	Gross Product \$ Million	Growth%
1995	101,195.6	N/A
1996	103,247.9	2.0
1997	104,351.0	1.1
1998	107,125.1	2.7
1999	110,965.4	3.6
2000	118,634.2	6.9
2001	126,306.6	6.5
2002	126,513.9	0.2
2003	126,200.6	-0.2
2004	131,778.0	4.4

KEY COMPETITORS

MAJOR PLAYERS

Table: Market Share

Major Player	Market Share Range
Exelon Corporation	3.43% (2004)
FPL Group Inc	3.13% (2004)
Edison International	3.03% (2004)
Entergy Corporation	2.85% (2004)
PG&E Corporation	2.83% (2004)
Texas Utilities Company	0.80% - 0.81% (2004)

PLAYER PERFORMANCE

[Exelon Corporation](#)

Market Share: 3.43%

Exelon was formed in October 2000 by the merger of two substantial energy companies: Unicom Corporation and the PECO Energy Company. Unicom's main electricity distribution business is the Commonwealth Edison Company, based in Chicago. PECO's distribution business is based in Philadelphia. The merger gave Exelon five million electricity and gas customers and saw these operations generate revenue of around \$14.9 billion in 2001.

Exelon's corporate headquarters is located in Chicago. It is comprised of three business units: energy generation; energy delivery; and unregulated enterprises.

Exelon's energy delivery business unit distributes electricity to customers in Illinois and Pennsylvania, and gas to customers in Pennsylvania via PECO and ComEd. ComEd's customer base is around 3.4 million in the northern Illinois region and its retail sales of electricity produced income of \$6.69 billion in 1998. PECO delivers electricity to around 1.5 million customers in the area around Philadelphia. PECO's transmission and distribution income amounted to \$3.26 billion in 1999, compared with \$3.78 billion in 1998 and \$3.83 billion in 1997. Earnings before interest and tax were \$1.38 million in 1999, and \$1.37 billion in 1998 and \$1.75 billion in 1997.

Exelon's energy delivery business generated revenue of \$4.51 billion in 2000 and earnings before interest and tax of \$1.50 billion. Revenue rose to \$10.17 billion in 2001, and earnings before interest and tax to \$2.62 billion. Most of the gains in 2001 were due to the merger. Adjusted revenue for 2000 (as though the merger had occurred on January 1, 2001) amounted to \$9.68 billion. Revenue increased to \$10.46 billion in 2002 on the back of increased delivery volumes and earnings before interest and tax rose to \$2.86 billion. The great bulk of the revenue earned by the energy delivery business stems from electricity, rather than gas, operations. Electricity accounted for \$9.91 billion of energy delivery revenue in 2002, compared with \$9.52 billion in 2001 and \$9.15 billion of adjusted revenue for 2000.

Exelon's revenue edged down to \$10.2 billion in 2003, and earnings before interest and tax also fell to \$2.63 billion. Revenue from electricity sales amounted to \$9.56 billion, 3.5 per cent less than in 2002. While deliveries of electricity fell from 123,593 million kilowatt hours in 2002 to 122,454 million kilowatt hours in 2003, the bulk of the fall in revenue was due to lower average

prices. Revenue from Exelon's retail operations rose to \$10.29 billion in 2004. However, its revenue from electricity sales edged down to \$9.54 billion despite somewhat higher electricity deliveries (124,861 million kilowatt hours).

FPL Group Inc

Brand/Trading Name(s): Florida Power and Light, Market Share: 3.13%

Florida Power and Light is the main subsidiary of the FPL Group, which is based in Florida. It provides power to around 4.2 million customers in the eastern and southern part of Florida and owns and operates over 71,000 miles of power lines (46,929 miles of overhead lines and 24,254 miles of submarine and trench cables).

The company's electricity transmission network lay in the path of Hurricane Katrina, which hit southern Florida on August 25 2005. By September 1 2005, power had been restored to virtually all of the 1.45 million customers that had lost power due to the hurricane. Despite the disruption, Florida Power and Light's revenue rose in the first nine months of 2005, compared with the corresponding period in 2004 (\$7.23 billion, compared with \$6.6 billion).

Florida Power and Light earned revenue of \$8.73 billion in 2004, and sold 103,635 million kilowatt hours of electricity. Revenue was higher than the \$8.29 billion generated in 2003, but sales volumes were little changed from the 2003 levels of 103,202 million kilowatt hours. The major factor underpinning higher revenue in 2004 was an increase in the average price of power sold. The volume of electricity sold did rise in 2003, from 98,605 million kilowatt hours in 2002, as did the average price received. Revenue amounted to \$7.38 billion in 2002, below the \$7.48 billion generated in 2001. The decline in 2002 reflected lower electricity prices, which more than offset an increase in the power sales (from 93,488 million kilowatt hours in 2001).

Revenue and sales volumes amounted to \$6.36 billion and 91,969 million kilowatt hours in 2000. Although sales volumes rose in 2001, the major factor behind the increase in revenue over the 2000 level was a higher average electricity price. In turn, this reflected higher fuel costs. Revenue and sales volumes amounted to \$6.06 billion and 88,067 million kilowatt hours in 1999 and \$6.37 billion and 89,362 million kilowatt hours in 1998. The decline in revenue in 1999 reflects the regulatory requirement that the company reduce its electricity charges to consumers.

In mid 2000, FPL Group and another major US power company, Entergy Corporation, announced their intention to merge. The regulated utility business within the merged company would have served more than 6.3 million customers through its affiliates Florida Power and Light, Entergy Arkansas, Entergy Gulf States, Entergy Louisiana, Entergy Mississippi and Entergy New Orleans. However, subsequently, the companies decided not to proceed with the merger. FPL Group stated that a number of factors had led its management and board of directors to conclude the merger would not achieve the synergies or create the shareholder value originally anticipated. FPL Group cited discrepancies in Entergy's financial forecasts and Entergy's refusal to provide financial documents and other information requested by FPL pursuant to the merger agreement. FPL also stated that regulatory authorities seems likely to impose restrictions that would constrain the growth of the combined companies, that there were disagreements on how to operate and manage the combined companies, and that there were concerns regarding the prospects and direction of various aspects of the combined companies' business.

Edison International

Market Share: 3.03%

Southern California Edison (SCE) is a subsidiary of Edison International and operates in central, coastal and southern California. It supplies electricity to 4.7 million business and residential customers over a 50,000 square mile service area in coastal, central, and southern California. In 2004, SCE's total operating revenue was derived as follows: 39 per cent commercial customers; 32 per cent residential customers; 8 per cent other electric revenue; 7 per cent industrial customers; 7 per cent resale sales; 6 per cent public authorities; and 1 per cent agricultural and other customers. At year end 2004, the operation had consolidated assets of \$23.3 billion and 13,463 full-time employees.

Restructuring of the electric industry in California (in particular, requirements that generation be split from transmission and distribution) led SCE to sell 12 fossil fuel generating stations in 1997. Although it still owns and operates hydro and nuclear power facilities in California, its main business is now the transmission and distribution of electricity.

Industry deregulation has meant that, since April 1998, investor owned electricity utilities in California (including SCE), have sold all the electricity they generate to the California Power Exchange. The exchange then makes the electricity available for purchase to suppliers operating in the state, according to their level of customer demand. SCE purchases the bulk of the electricity it supplies from the California Power Exchange.

SCE's revenue from electricity sales amounted to \$7.87 billion in 2000, compared with \$7.55 billion in 1999 and \$7.50 million in 1998. However, over the same period, its operating expenses rose to \$9.52 billion (from \$6.69 billion in 1999 and \$6.58 billion in 1998). Revenue rose to \$8.13 billion in 2001, and operating costs were cut to \$3.51 billion. In part, the cost reduction reflects the new power buying arrangements put in place by SCE and the California State Government to keep power flowing. However, most of the decline was due to an agreement between SCE and the California Public Utilities Commission which enabled SCE to recover around \$3.6 billion in stranded costs. The bulk of these funds were recovered in 2001. Revenue continued to rise in 2002, reaching \$8.71 billion, but, without a repeat of the cost recovery available in 2001, operating costs rose to \$6.58 billion. SCE's revenue continued to rise in 2003, reaching \$8.85 billion. Strong growth in the volume of electricity sold underpinned the increase. Although the volume of electricity sold continued to expand in 2004, as did the number of customers supplied, SCE's revenue slipped to \$8.45 billion in 2004.

The differential between the cost of SCE's electricity purchases and the price it could charge its customers escalated sharply in late 2000 and early 2001. The company incurred billions of dollars in debt, its credit lines were fully exhausted and it was facing bankruptcy. In January 2001 it suspended payments to creditors and took other stringent cash conservation measures (including failing to pay dividends) to avoid bankruptcy. SCE's debt rating was reduced to "junk" status, shutting off access to capital markets. As a result, generators and marketers refused to sell power to the utility.

To keep power flowing, the California Legislature authorized the state Department of Water Resources to make purchases on behalf of utility customers. At the same time, moves directed at restoring the utilities to creditworthiness commenced. In March 2001, the California Public Utilities Commission (CPUC) voted to increase retail electricity rates by 3 cents/kWh for both SCE and PG&E customers. The decision also made permanent an emergency procurement surcharge of 1 cent/kWh that the CPUC had authorized in January. A few days later, the governor announced a modified rate plan.

In mid April 2001, SCE and the Governor of California announced the signing of a Memorandum of Understanding which, if adopted by the California Legislature and state and federal policymakers, will assist in restoring the utility's creditworthiness and financial stability. The compromise agreement requires SCE to sell its transmission assets to the state government and to make some other concessions.

In September 2001, the California Assembly passed by a bare majority legislation intended to help SCE regain financial stability. If passed by the Senate, the bill would have allowed SCE to issue bonds to pay off \$2.9 billion of the \$3.9 billion debt it incurred to purchase power for customers before running out of resources in January. The bonds would be guaranteed by the utility's largest business customers. However, before the bill could be considered by the Senate, other events occurred.

In October 2001, SCE and the CPUC announced an agreement that would both allow the utility to pay off creditors without a rate increase, and provide a path to restore it to financial health. The agreement settled a lawsuit SCE filed against CPUC in US District Court in November 2000. In the lawsuit, SCE sought authority under the federal Filed Rate Doctrine to recover a multibillion-dollar undercollection incurred when it was forced to buy electricity from the state's dysfunctional wholesale markets. As a result of the agreement, the bill will no longer be heard by the Senate.

Under the terms of the settlement:

- The CPUC will create a plan for SCE to recover its procurement-related obligations from ratepayers. No rate increase is contemplated. The CPUC will verify the amount to be recovered, estimated at \$3.3 billion.
- The CPUC agreed to maintain gross retail rates, including surcharges, at current levels through December 31, 2003, or until SCE recovers the undercollections in full, whichever is earlier. Any undercollections remaining at the end of 2003 will be amortized in rates for up to two more years, or through 2005.
- SCE can apply for CPUC approval to spend up to \$250 million to cover possible fuel cost increases associated with producing the power it still generates, and with purchase contracts needed to obtain the remaining power needed by its customers.
- SCE is prevented from paying any common stock dividends to shareholders of its parent company, Edison International, until the utility has recovered its power procurement undercollections prior to December 31, 2004, whichever is earlier.
- During the recovery period, the CPUC will not penalize SCE if the company's stock-to-debt ratio varies from the CPUC's requirements.
- SCE can include up to \$900 million in capital expenditures for the years 2002 and 2003 as recoverable costs.
- SCE will cooperate with the CPUC and the California Attorney General to resolve claims against power sellers and others, and apply any refunds during the period of recovering its past undercollections to pay off its debt. After 2005, 90 per cent of any refunds will be returned to SCE's customers.

Entergy Corporation

Market Share: 2.85%

Entergy Corporation is headquartered in New Orleans, Louisiana.

Entergy owns, manages, or invests in power plants generating more than 30,000 megawatts of electricity domestically and internationally, and delivers electricity to around 2.7 million customers

in Arkansas, Louisiana, Mississippi and Texas. Its transmission system is comprised of more than 15,500 miles of high-voltage transmission lines and 1,450 transmission substations.

Entergy's retail sales of electricity amounted to 102,226 million kilowatt hours in 2004, compared with 99,968 million kilowatt hours in 2003, 101,631 million kilowatt hours in 2002, 99,956 million kilowatt hours in 2001 and 103,216 million kilowatt hours in 2000. Retail sales volumes amounted to 100,519 million kilowatt hours in 1999 and 100,224 million kilowatt hours in 1998. Typically, a further 9,000 to 10,000 million kilowatt hours are sold at the wholesale level

Entergy's electricity sales business generated revenue of \$7.25 billion in 2001, (compared with \$7.22 billion in 2000, \$6.27 billion in 1999 and \$6.14 billion in 1998). Revenue fell to \$6.65 billion in 2002, in response to lower prices, but recovered to \$7.40 billion in the following year and to \$7.93 billion in 2004.

Half-year information for 2005 indicates that Entergy's electricity business generated revenue of \$3.87 billion, up from \$3.65 billion for the first half of 2004. The increase was entirely due to higher prices; volumes sold declined slightly. The supply of electricity by Entergy in the second half of 2005 was severely disrupted by Hurricane Katrina. In late August, after the hurricane hit, some 1.1 million of Entergy's customers were without power. Entergy stated that the hurricane had crippled its electrical system within the city of New Orleans and extensively damaged the electrical system throughout Louisiana and Mississippi. By the end of the second week in September, Entergy had restored power to over 875,000 customers, but noted that it could take months to restore supplies to the most damaged areas of New Orleans.

PG&E Corporation

Market Share: 2.83%

PG&E Corporation is based in California. Prior to 1999, PG&E's electricity business was vertically integrated. PG&E's predecessor, the Pacific Gas and Electric Company, both generated electricity and sold it into the retail market. PG&E Corporation's subsidiary, National Energy and Gas Transmission Inc, (NEGT, formerly known as National Energy Group) was established in 1999 to hold and operate PG&E's electricity generating assets and also its gas assets.

Industry deregulation meant that from April 1998 onwards, NEGТ, together with other investor owned electricity utilities in California, sold power generated in that state to the California Power Exchange. The power was then distributed to utilities based on customer demand. Amongst these utilities was PG&E's Pacific Gas and Electric Company. Pacific Gas and Electric Company filed for Chapter 11 bankruptcy protection in early 2001. The company was caught between a fixed retail electricity price and sky-rocketing wholesale prices.

NEGT also filed for Chapter 11 bankruptcy protection in July 2003 and plans were announced to separate it from PG&E Corporation. The company's Plan of Reorganization provides for NEGТ to issue 100 percent of its equity to its unsecured creditors, together with \$1 billion in notes and excess cash. Essentially, PG&E Corp abandoned NEGТ in order to concentrate on bringing its utility, Pacific Gas & Electric, out of separate bankruptcy proceedings (achieved on 12 April 2004). The restructuring arrangements approved by the bankruptcy court for Pacific Gas and Electric have seen the operation emerge as a vertically integrated electricity utility. It has interests in generating plants that give it access to over 6,400 megawatts of primarily hydroelectric and nuclear-powered capacity.

Pacific Gas and Electric delivers electricity across 70,000 square miles in northern and central California via 136,500 circuit miles of transmission and distribution cable. At the end of 2004, it had around 4.9 million electricity customers.

Pacific Gas and Electric generated revenue of \$9.64 billion and made a pre-tax loss of \$5.64 billion in 2000 from electricity and gas sales. This compares with revenue and a pre-tax profit of \$9.23 billion and \$1.44 billion in 1999 and revenue and a pre-tax profit of \$8.92 billion and \$1.36 billion in 1998. Revenue from electricity and gas sales rose to \$10.46 billion in 2001, and the business made a pre-tax profit of \$1.61 billion. Although revenue remained broadly unchanged at \$10.51 billion in 2002, pre-tax profit rose to just under \$3 billion. The major factor behind the improvement was a sharp fall in the wholesale price of electricity. In 2003, revenue edged down to \$10.44 billion, but profit before tax fell sharply to around \$1.43 billion as the cost of natural gas and purchased electricity rose sharply.

Pacific Gas and Electric's revenue and profit before tax rose strongly in 2004, reaching \$11.1 billion and \$6.5 billion, respectively. The main factor behind the surge in profit was recognition of regulatory assets as provided for under the Settlement Agreement associated with Chapter 11 proceedings. The Settlement Agreement established a \$2.2 billion, after-tax, regulatory asset (equivalent to a \$3.7 billion, pre-tax, regulatory asset) as a new, separate and additional part of the firm's rate base. This was recognized as a one-time, non-cash gain of \$3.7 billion, pre-tax, for the Settlement Regulatory Asset in the first quarter of 2004. The asset is being amortized on a 'mortgage-style' basis over nine years beginning January 1, 2004.

Around 70 to 80 per cent of PG&E's revenue relates to electricity and the remainder to gas. Electricity sales accounted for \$7.33 billion of total revenue in 2001, \$8.18 billion in 2002, \$7.58 billion in 2003 and \$7.87 billion in 2004. The fall in revenue in 2003 occurred despite an increase in the volume of electricity supplied - 80.2 billion kilowatt hours in 2003, compared with 78.2 billion kilowatt hours in 2002. The volume of electricity supplied continued to rise in 2004, reaching 82.9 billion kilowatt hours.

Texas Utilities Company

Market Share: 0.81%

TXU US Holdings Company (itself a wholly-owned subsidiary of TXU Corp.) is a holding company for TXU Energy Company LLC (TXU Energy) and TXU Electric Delivery Company (formerly known as Oncor Electric Delivery Company, or Oncor). Prior to January 1, 2002, TXU US Holdings was a regulated, integrated utility company directly engaged in the generation, purchase, transmission, distribution and sale of electric energy in the north-central, eastern and western parts of Texas.

Legislation passed in the 1999 session of the Texas Legislature restructured the electric utility industry in Texas and provided for a transition to increased competition in the generation and retail sale of electricity. TXU Corp. restructured its electricity operations in Texas in order to satisfy its obligations to unbundle its generation and distribution activities. The restructuring was approved by the Public Utility Commission of Texas (PUCT). As of January 1, 2002, TXU US Holdings transferred its electric transmission and distribution operations to TXU Electric Delivery Company (a utility regulated by PUCT), its power generation operations to subsidiaries of TXU Energy and its retail customers to a subsidiary retail electric provider of TXU Energy.

TXU Electric Delivery Company owns and operates 99,638 miles of electric distribution lines and 14,191 miles of electric transmission lines. Its operating assets are located principally in the north-central, eastern and western parts of Texas.

TXU Electric Delivery Company's transmission revenues are earned under tariffs approved by PUCT and FERC. There are several categories of transmission revenue. Network transmission revenues are derived from the delivery of power over lines operating at 60,000 volts and above. Transformation service revenues are earned from distribution substation facilities that transform power from high-voltage transmission to distribution voltages below 60,000 volts. TXU Electric Delivery Company's transmission customers consist of municipalities, electric cooperatives and other distribution companies.

TXU Electric Delivery Company's distribution system receives electricity from the transmission system through power distribution substations and distributes electricity to end users and wholesale customers through 2,943 distribution feeders.

The electricity distribution business is responsible for the overall safe and efficient operation of distribution facilities, including power delivery, power quality and system reliability. It consists of the ownership, management, construction, maintenance and operation of the distribution network within TXU Electric Delivery Company's certificated service area. TXU Electric Delivery Company's distribution system supplies electricity to around 3 million points of delivery. Over the past five years, the number of TXU Electric Delivery Company's distribution system premises served has been growing an average of more than 2 per cent per year.

The TXU Electric Delivery Company distribution network consists of 55,718 miles of overhead primary conductors, 22,114 miles of overhead secondary and street light conductors, 13,527 miles of underground primary conductors and 8,279 miles of underground secondary and street light conductors. The majority of the distribution system operates at 25 kilovolts and 12.5 kilovolts.

Since January 1, 2002, the retail customers who purchase and consume electricity and are connected to TXU Electric Delivery's system have been free to choose their electricity retailer. These retailers, which number around 35, have effectively become TXU Electric Delivery Company's customers. The major retailer supplied by TXU Electric Delivery Company is a subsidiary of its affiliate, TXU Energy.

TXU Electric Delivery Company delivered 101,928 million kilowatt hours of electricity in 2004, compared with 101,810 million kilowatt hours in 2003, 102,481 million kilowatt hours in 2002, 99,139 million kilowatt hours in 2001 and 100,545 million kilowatt hours in 2000. Its operating revenue amounted to \$2.26 billion in 2004, compared with \$2.09 billion in 2003, \$1.99 billion in 2002, \$2.31 billion in 2001 and \$2.08 billion in 2000. The increase in revenue in 2004 reflected increased distribution tariffs to recover higher transmission costs, transmission rate increases approved in both 2003 and 2004, and income associated with issuance of securitization bonds in August 2003 and June 2004. Revenue rose in 2003 in response to higher electricity tariffs and increased connect/disconnect fees. The apparent fall in revenue for 2002 occurred because some revenue formerly included with electricity delivery operations was reallocated to the Energy segment. Almost 80 per cent of TXU Electric Delivery Company's revenue is derived from deliveries to TXU's retail business.

Other Players

KEY FACTORS

KEY SENSITIVITIES

The key sensitivities affecting the performance of the **Electric Power Transmission, Control and Distribution in the US** industry include:

Downstream Demand - Primary and Fabricated Metal Product Manufacturing

Metal product manufacturing in general, and aluminum smelting in particular, is very electricity intensive. Increased output by these industries leads to higher demand for electricity.

Number of Households

Description: The level of household formation.

The number of households has a direct impact on revenue earned from this sector.

Real GDP

Description: Real GDP (Gross Domestic Product) is a measure of general economic activity. Economic growth is a key driver of the expansion in electricity demand. Stronger growth is closely linked with higher rates of increase in electricity demand.

World Prices - Minerals - Energy - Natural Gas

Description: The world price of natural gas.

Natural gas is becoming a fuel of choice for electricity generation. It is both clean burning and permits the construction of smaller power plants.

KEY SUCCESS FACTORS

- Ability to pass on cost increases

In around half the States, deregulation has led to a competitive market for power generation. Electricity utilities purchase electricity at prices set by market forces. However, retail price caps limit the extent to which cost increases can be recovered.

- Ensuring pricing policy is appropriate

In general, maximum retail electricity prices are set by State Governments.

- Superior financial management and debt management

The level of borrowing and of interest rates has a major impact on the profitability of the operation.

OUTLOOK

Table: Revenue Growth

	Revenue \$ Million	Growth%
2004	280,379.0	2.2
2005	295,821.0	5.5
2006	298,803.0	1.0
2007	302,987.0	1.4
2008	309,022.0	2.0
2009	315,404.0	2.1
2010	322,019.0	2.1

Table: Gross Product Growth

	Gross Product \$ Million	Growth%
2004	131,778.0	4.4
2005	139,036.0	5.5
2006	140,438.0	1.0
2007	142,404.0	1.4
2008	145,240.0	2.0
2009	148,240.0	2.1
2010	151,349.0	2.1

Overall, the US economy is expected to expand at around 3.0 per cent per year over the outlook period - compared with an average pace of growth of 2.6 per cent for the five years ending in 2005. The differences extend beyond the headline figure; growth is expected to be considerably more even during the forecast period than in the recent past. As a result, electricity demand is expected to expand more strongly over the outlook period, and to display less volatility.

The power crisis in California in the early 2000s and the major blackout along the east coast in 2003 will ensure that retail electricity prices remain subject to regulation over the period to 2010. Rising demand and output, together with moderate overall retail price rises in a regulated environment point to ongoing gains in industry performance. Overall, revenue is expected to expand at an average annual rate of around 1.7 per cent during the outlook period to 2010, with yearly growth lying in the band 1 per cent to 2 per cent.

However, this picture of rising industry revenue masks the difficulties faced by some firms in the electricity transmission and distribution industry. The combination of higher fuel prices, rising demand for electricity and a tightening supply/demand balance for power during the second half of 2000 and well into 2001 underpinned a sharp increase in wholesale electricity prices. In some states, most notably California, regulated retail prices prevented distributors from passing on this cost to their customers, creating financial pressures. The clear message is that the combination of a competitive power generation market and a regulated retail market is untenable.

Electricity utilities in most states were expected to have separated their generation and distribution activities by the end of 2002, as part of the move towards deregulation and increased retail competition. However, the energy crisis in California and the concerns over deregulation that it raised, prevented this timetable from being met. A number of states have suspended restructuring in response to events in California and others have had their reluctance to proceed down the restructuring route confirmed. The collapse of the energy trading house, Enron Corp, at

the end of 2001 added to the concern over deregulation. Enron was a substantial trader of power, gas, metals, coal, paper, chemicals and fiber optic bandwidth. It also provided gas pipeline transportation, energy project financing, risk-management consulting and engineering and construction services.

Continued high retail electricity prices and increased electricity consumption during 2004 and, more particularly 2005, boosted the revenue of the electricity transmission and distribution industry. The solid, if unspectacular, economic growth anticipated for the United States over the outlook period will lead to further increases in the demand for electricity. Electricity prices rose markedly in 2005, pushed up by higher fuel costs. Hurricane Katrina, which hit the Gulf of Mexico region in August 2005, reduced oil and gas supplies, adding to upward price pressure. Prices are expected to ease somewhat over the next two years and then stabilize - trend that reflects anticipated movements in fuel input costs (most notably natural gas) for power generators. The moderate electricity price outlook will help to underpin growth in demand for electricity. Industry revenue is expected to reach \$322 billion by 2010 (2004 prices), with annual growth averaging 1.7 per cent over the outlook period.

The blackouts that occurred in the north east of the US and Canada in August 2003 are a strong indication that the US grid requires considerable investment in order to continue transporting electricity reliably. However, for this investment to occur, firms require a clear legal and operational framework enabling capital costs to be recouped through transmission charges in a timely manner. In a recent report on electricity transmission (National Transmission Grid Study), the US Department of Energy outlined areas of concern and made a large number of recommendations. However, none of these directly addressed the issue of providing a stable framework within which the investment necessary is likely to be encouraged.