

Industrial Electric Rates

Lessons for Ohio from Other Deregulated States

Industrial Electric Rates

Lessons for Ohio from Other Deregulated States

Table of Contents

TABLE OF CONTENTS	1
EXECUTIVE SUMMARY	2
HIGHLIGHTS	2
KEY CONCLUSIONS	2
ELECTRIC DEREGULATION	3
BACKGROUND ON ELECTRIC DEREGULATION	3
ELECTRIC DEREGULATION IN OHIO	3
ELECTRIC DEREGULATION IN OTHER STATES	4
SURVEY OF INDUSTRIAL RATES	6
STATES THAT HAVE SUSPENDED OR DELAYED RESTRUCTURING	6
STATES THAT ALLOW RETAIL ACCESS	6
OHIO’S NEIGHBORING STATES	7
MIGRATION RATES FOR INDUSTRIAL CUSTOMERS	8
OHIO’S RATES COMPARED TO THE REST OF THE U.S.	9
LESSONS LEARNED	10
POLITICAL ACTION REQUIRED	10
CONCLUSIONS	11
DATA SOURCES	12
GLOSSARY OF TERMS	13
ABOUT BRAKEY CONSULTING	15
APPENDIX	16
ELECTRIC USAGE PROFILES	16
TABLE 1: RANKING OF SMALL INDUSTRIAL RATES IN STATES THAT HAVE SUSPENDED OR DELAYED RESTRUCTURING	17
TABLE 2: RANKING OF POLR SMALL INDUSTRIAL RATES IN OPEN MARKET STATES AND OHIO.....	18
TABLE 3: INDUSTRIAL ELECTRIC RATES IN OHIO AND BORDERING STATES	21
TABLE 4: PENN POWER’S 2007 POLR ELECTRIC RATES	22
SWITCHING ACTIVITY TABLES	23

Executive Summary

Highlights

In 1999, Ohio began transitioning from traditional cost-based regulation of electric generation service to a "market-based" one. States which have finished this process and proceeded to markets have seen rates skyrocket. Rate Stabilization Plans (RSPs) have allowed Ohio to continue in the market-based direction, while temporarily avoiding this rate shock. These plans will expire at the end of 2008 for most Ohio electric utilities. If no action is taken by the PUCO and Ohio legislature, Ohio will be completely subjected to market prices.

Brakey Consulting has collected data on electric rates for small to medium industrial customers of utilities in major cities of every state. In order to estimate what will happen to Ohio's industrial electric rates on January 1, 2009, we took a look at the experiences of 13 other deregulated states using six different electric profiles. We hope Ohio will learn from the experiences of other states as to what industrial customers might expect if subjected to market prices.

Key Conclusions

Based on our analysis, it is evident that subjection to market-based rates has repeatedly produced unfavorable price outcomes relative to regulation. We have found no evidence to support even a single state achieving lower prices from competitive electric markets.

Wherever and whenever rate caps have expired followed by entry into competitive electric generation markets, high increases in incumbent utility POLR industrial electric rates have followed. This has also been true for residential¹ and commercial² customers throughout the United States. Ohio stakeholders must *immediately* complete efforts to address the crisis of impending rate shock. That being said, the underlying problems of the electric "markets" are problems that states alone can not fix. Until root causes are addressed at the federal level, entry into competitive markets by any state will be disastrous for industrial energy consumers of all sizes. Ohio stakeholders (e.g., the Ohio legislature and PUCO) need to coordinate with policymakers on the federal level to produce outcomes that are in the best interest of our state.

- At the state level, the Ohio Legislature should give the Public Utility Commission more power to protect Ohio's economy and consumers.
- At the federal level, Ohio stakeholders need to actively pressure the Federal Energy Regulatory Commission (FERC) to complement Ohio's efforts to ensure that its citizens have access to reliable and reasonably priced electricity.

¹ See Residential Report on Deregulation, at www.brakeyconsulting.com, under "Reports".

² See Commercial Report on Deregulation, at www.brakeyconsulting.com, under "Reports".

Electric Deregulation

Background on Electric Deregulation

Traditionally, in a regulated environment, vertically integrated electric utilities provided the generation, transmission and distribution of electric power to the customers in one package. Under deregulation³, these services are separated or “unbundled” into individually priced functions. While distribution continues to be regulated by the state, transmission resides in the federal government as does the authority regarding wholesale sale of generation.

Where states enacted electric restructuring legislation, customers must either purchase generation from alternative suppliers, or if they can not or do not find a competitive offer, they remain with the distribution utility designated as the generation supply provider of last resort (POLR). When generation is no longer owned by the distribution utility, it may need to secure its POLR supply from the wholesale electric market subject to FERC’s ratemaking authority. The Federal Power Act requires FERC to ensure that wholesale prices are “just and reasonable”.

In an October 2006 *New York Times* article, the reporter began by stating, “A decade after competition was introduced in their industries, long-distance phone rates had fallen by half, air fares by more than a fourth and trucking rates by a fourth. But a decade after the federal government opened the business of generating electricity to competition; the market has produced no such decline.”⁴

Electric Deregulation in Ohio

When Governor Taft signed Ohio’s electric restructuring legislation (“SB 3”) in 1999, he initiated a deregulation process which was expected to lower electric costs within Ohio similarly to how deregulation did in other industries. Through SB 3, a timeline was created to transition Ohio into a competitive marketplace by January 1, 2006. The timeline was based on, what proved to be a faulty assumption, that a robust wholesale and retail market would be in place and fully functional.

In 2003, based upon the results of both electric restructuring inside and outside of Ohio, it was apparent to the Public Utilities Commission of Ohio (PUCO) and other Ohio stakeholders that SB 3’s timeline assumption was overly optimistic. Federal policymakers had not yet created a “market” that was producing the price efficiencies that one would expect to see associated with competition. Rather than lower prices and better service, customers in open market states were contending with rate shock and electric supply problems. Ohio’s answer was Rate Stabilization Plans (RSPs).

RSPs are structured arrangements with each of the Ohio investor-owned electric utilities that were proposed by the utilities and approved by the PUCO.⁵ These plans have allowed Ohio to continue to move to competitive markets without subjecting itself to rate shock. While the RSPs are providing Ohio an additional incubation period to allow the FERC and its regional transmission organizations (RTOs) more time to develop competitive markets, the RSPs will begin expiring at the end of 2008 for nearly all Ohio electric utilities. Electric customers in Ohio currently may buy

³ Deregulation is also referred to as restructuring, open markets, retail access or competition.

⁴ David Cay Johnston, “Competition Era Fails to Shrink Electric Bills”, *New York Times*, October 15, 2006.

⁵ The PUCO has held that it does not have authority to impose a rate stabilization plan on a utility.

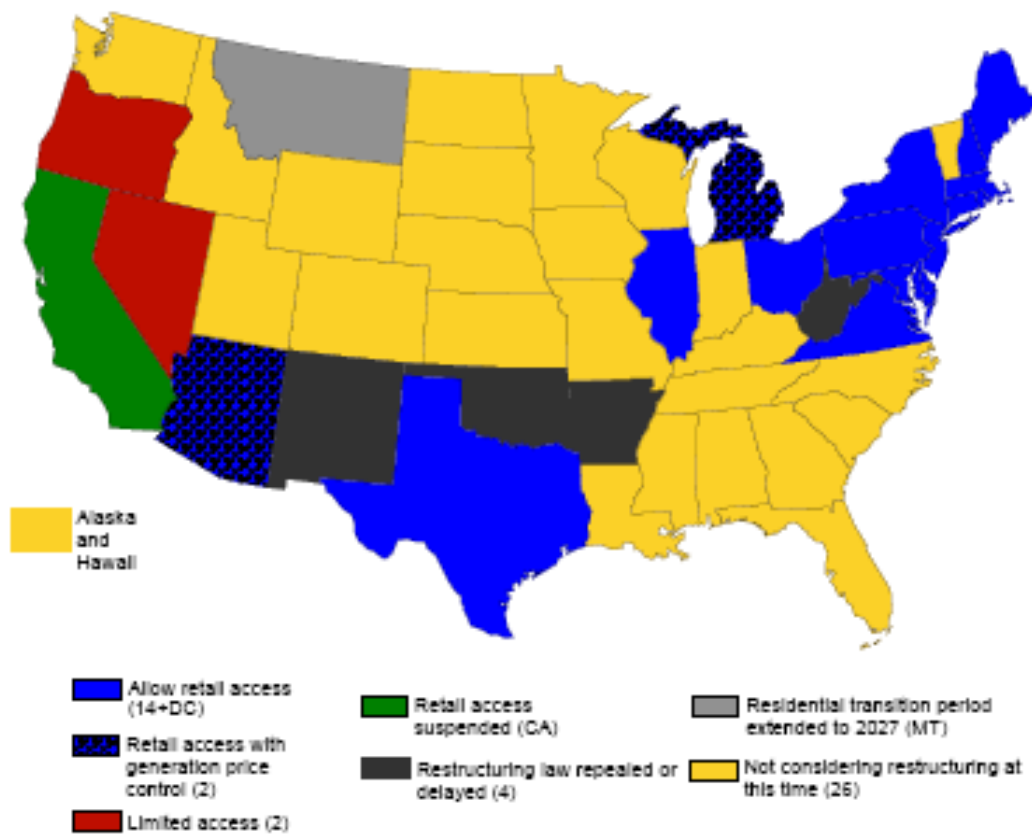
their generation services from an alternative supplier, but few marketers are able to compete with the utilities' rates under the RSPs.

Unfortunately, the intrinsic problems of the wholesale markets have not been adequately addressed by FERC. Subsequently, competition in the retail market depends on the existence of competition within the wholesale market. Based on the comparatively high prices in deregulated states relative to those in regulated states, competition does not appear to exist. Unless action is taken very soon to once again put in place a plan to protect Ohio from the dysfunctional electric market, we can expect electric rates to increase significantly on January 1, 2009.

Electric Deregulation in Other States

In the past decade, 23 states have moved towards pursuing deregulated electric markets. The map below, prepared by Dr. Kenneth Rose⁶, shows that Ohio is currently one of only 14 states (in blue) that allow consumers to purchase electric generation from alternative suppliers. Four others (in red and dark blue) allow limited access. Four states (in black) have repealed or delayed restructuring. California has suspended its transition to open markets. There are 26 states (in gold) that are not considering restructuring at this time.

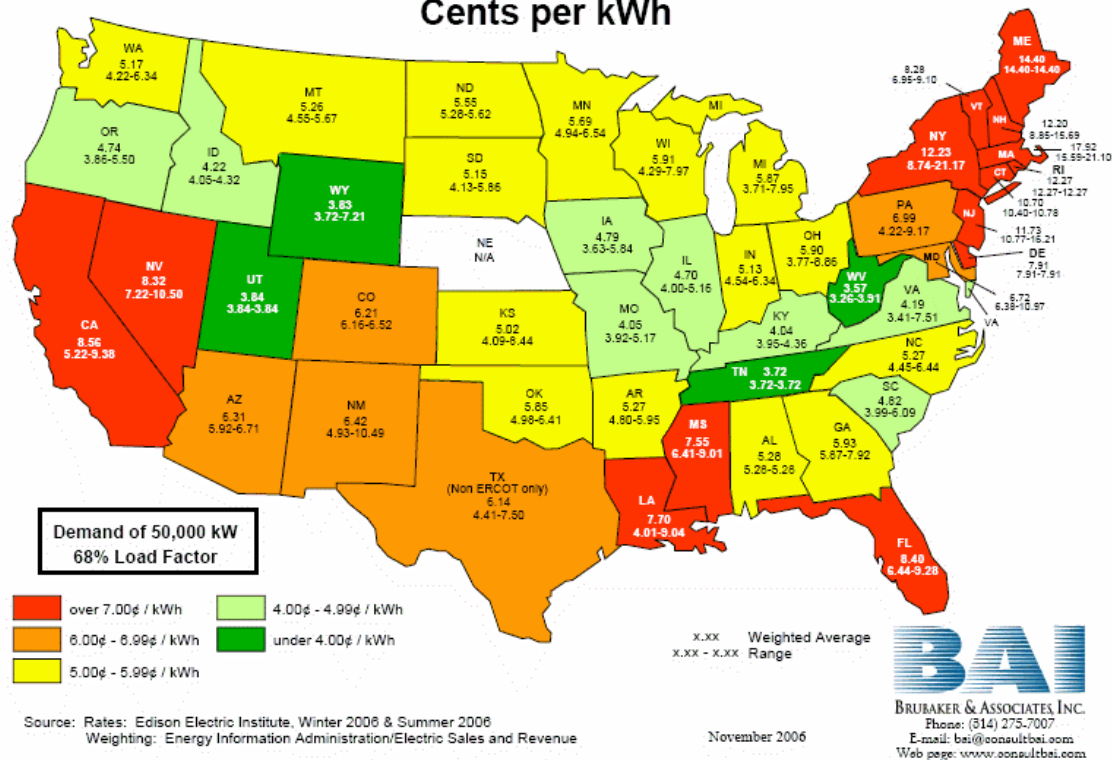
Status of State Restructuring



⁶ Kenneth Rose, Ph.D., *Perspective on the National Electricity Marketplace*, 11th Annual Ohio Energy Management & Restructuring Conference, Columbus, Ohio, February 28, 2007

When we compare this map to the one below, we see that the highest industrial⁷ electric rates in 2006 were generally in the states that allow retail access.

Year 2006 Industrial Firm Power Rates For Investor Owned Utilities Cents per kWh



The Electric Energy Market Competition Task Force⁸ has examined whether competition in wholesale electric markets has resulted in the kind of choice that is generally associated with competitive markets. In their 2006 draft report to Congress, they state:

“One of the main impediments to retail competition has been the lack of entry by alternative suppliers and marketers to serve retail customers. Most states required the distribution utility to offer customers electricity at a regulated price as a backstop or default if the customer did not choose an alternative electricity supplier or the chosen supplier went out of business – that is called ‘provider of last resort (POLR) service.’ Many of these states capped the POLR service price to ‘transitional’ multi-year periods that are now just ending. These caps have had the unintended effect of discouraging entry by competitive suppliers.”⁹

Ohio is one of the states with capped POLR service prices. These caps are scheduled to expire on December 31, 2008. We have collected data on POLR prices in states with retail markets in order to see what might happen in Ohio after the rate caps expire.

⁷ These are the most favorable rates for industrial customers considered as “titans”. These charges were for large industrial customers with peak demands of 50,000 KWD and monthly consumption approaching 25 million kilowatt-hours (68% load factor). The electric rates for small and medium size industrial customers (under 5,000 KWD), as reflected in this study, typically reflect higher rates.

⁸ The Electric Energy Market Competition Task Force was established by the Energy Policy Act of 2005 to conduct a study of competition within the wholesale and retail electric market and to submit a report to Congress.

⁹ The Electric Energy Market Competition Task Force, *Report to Congress on Competition in the Wholesale and Retail Markets for Electric Energy - Draft*, June 5, 2006, page 5.

Survey of Industrial Rates

In a nationwide study of electric costs, Dr. Kenneth Rose concluded in 2006 that wherever rate caps are expiring, high increases in electric rates follow. According to his report to the Virginia Legislature, "the economic health of these markets continues to be questionable with little effective competition evident especially for residential and small industrial consumers."¹⁰ The data we have collected and summarized in the Appendix supports this conclusion.

States that Have Suspended or Delayed Restructuring

California was an early participant in electric choice. Southern California was rocked with a then record-breaking 55% increase in electric rates in 2001 by Pacific Gas & Electric Co. (PG&E). California eventually suspended transition but not before further increases shook the state. San Francisco customers saw a 3% increase in 2006 and a 25% increase in 2007¹¹. Even with industrial rates between 10¢ and 13¢ per KWH in 2007, San Francisco's rates are still lower than in San Diego which has prices over 22¢/KWH.

Eight states, including California, have either suspended or delayed electric choice. We gathered data on 2007 industrial electric costs for 6 different electric profiles¹² in 26 cities in these 8 states. The costs are shown in Table 1 in the Appendix. The table shows that California has some of the highest industrial rates among this group. Unfortunately, Ohio's industrial rates are not too far behind.

States that Allow Retail Access

Let's look at the recent history of market-based pricing as it emerged on the east coast in states that allow retail access. Summarized below are some key observations from the data in Table 2 of the Appendix.

- Boston was hit with a 70.9% increase in its 2006 rates over 2005. In 2007, Boston industrial customers pay rates up to 26¢ per kWh.
- Springfield, Massachusetts saw a 94.6% increase in 2006.¹³ Its small industrial businesses are paying up to 22 cents per kWh.
- New York City saw a 2006 rate increase of 35.4%. New Yorkers presently pay industrial rates ranging from 19¢ to 23¢ per kWh.
- Connecticut Light & Power's electric rates rose 29 percent last year and another 16 percent in 2007. Industrial customers are paying between 10¢ and 15¢ per kWh depending upon electric profile.

Compare these to the Ohio FirstEnergy companies who have had their industrial rates between approximately 11¢ and 15¢ per kWh over the last decade for the sample electric profile with a 56% load factor.

An independent consulting company, NUS Consulting Group of Park Ridge, New Jersey, conducts an annual survey of electric prices. A recent survey found that industrial customers in California, Maryland and New York pay some of the highest electricity prices in the country. They found that the largest price escalation over the

¹⁰ Barbara R. Alexander, Consumer Affairs Consultant, "Summary of Recent State Default Service Developments", Virginia, November 2006

¹¹ The Sacramento Bee, "Hikes in PG&E Rates Looming: Biggest Power Users Can Expect Increase Sept. 1 – and Maybe Another Soon After", August 22, 2006.

¹² Electric costs vary with different electric usage profiles primarily due to the demand charges associated with scheduling efficiency. For example, a 5-day 1-shift operation (28% load factor) will have a substantially higher unit cost of electricity than a 7-day 3-shift operation (90% load factor).

¹³ Lincoln Electric Service Rate Survey, Jan 1, 2006 @ www.csu.org/customer/rates/11923.pdf

past year occurred in Illinois; ComEd industrial customers saw their electric costs increase by 36.1%. NUS Consulting Group concluded that the highest power prices are found in those states that have deregulated their retail electricity markets.¹⁴

Ohio's Neighboring States

Ohio's neighboring states that have recently opened their doors to electric choice have not fared any better.

- Illinois, under standard electric rate schedules, has seen 40% increases in 2007. Those customers previously under "special" contracts have seen their rates climb more than 100%. Some customers are given the option of amortizing the increases over three years.
- Pennsylvania customers continue to see a series of devastating rate increases which began in 2006.
 - Due to an auction that was held immediately after Hurricane Katrina in the summer of 2005, Pike County Light & Power customers saw their generation price jump 125%, which resulted in an overall electric rate increase of 75% by February, 2006.¹⁵
 - On January 1, 2007, the monthly bill for an average large industrial customer (2.9 million kWh and 5,810 kva demand) in Penn Power territory (a FirstEnergy company) increased about 61%. The POLR generation component of the electric bill is almost 9¢ per kWh (see Table 4).

What can we learn from Pennsylvania which now has experienced "choice" up close since 2006? The *Pittsburgh Business Times* reported the following in June of 2006.

"Testimony from the PUC hearing shows that local companies and organizations such as Duquesne Light Holdings, U.S. Steel Corp., AK Steel Corp., Allegheny County and the Allegheny Conference are all concerned that rising electricity prices -- which can account for as much as 30 percent of some manufacturer's production costs -- will dissuade new business from locating here, drive away existing businesses or prevent companies from investing in local facilities.

Instead of promoting competition, the current plan has simply created artificially high prices and jeopardized economic development in Duquesne's service territory," downtown-based Duquesne Light said in a written statement submitted to the PUC.¹⁶

The Citizens Utility Board of Illinois has concluded that electric rate increases in that state will have a significant impact on the state's economy, draining revenue from businesses across the state. "...the ComEd and Ameren rate hikes that took effect January 2 will result in the loss of some 20,341 Illinois jobs. In addition to causing hardship for individual employees out of work, those job losses have a ripple effect throughout the state. Individuals will have less disposable income to spend, local stores and businesses will close and communities will be deprived of vital goods and services."¹⁷

¹⁴ "Average U.S. Electricity Prices Jump 4.7 Percent", *PRNewswire*, June 4, 2007

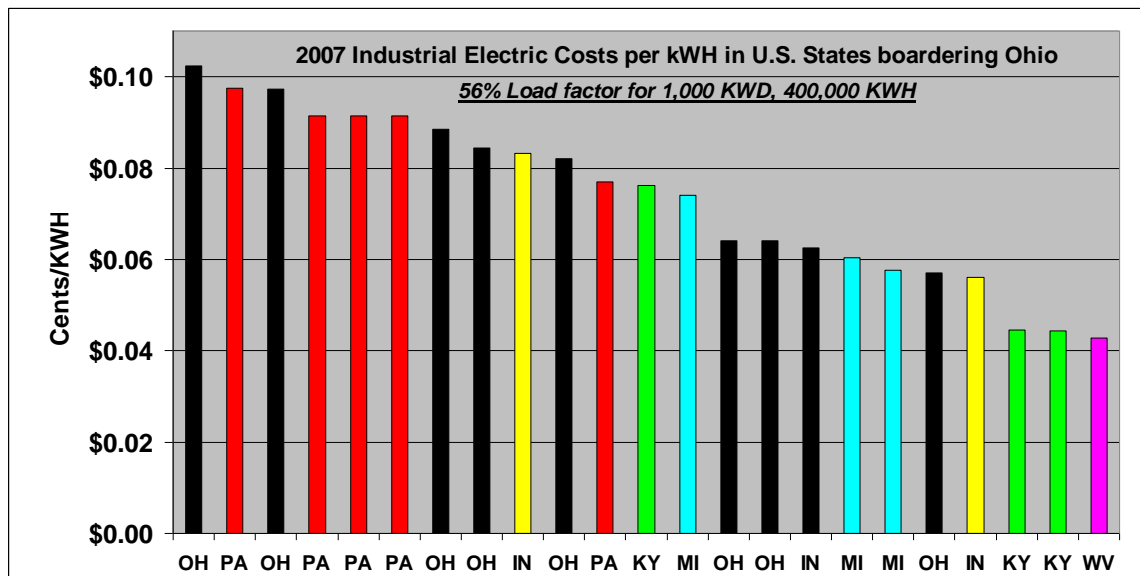
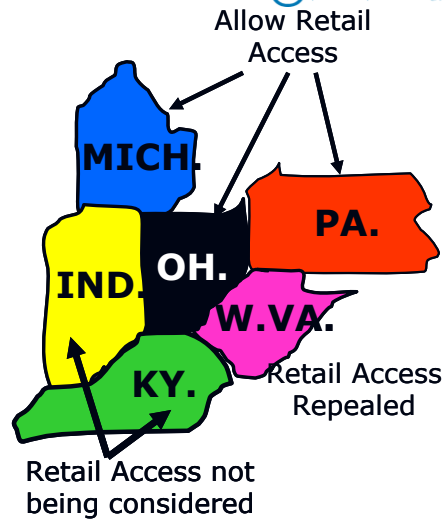
¹⁵ Barbara R. Alexander, Consumer Affairs Consultant, "Summary of Recent State Default Service Developments", Virginia, November 2006.

¹⁶ Jennifer Curry, "Local Electric Rates on the Rise...Large industrial, commercial users say cost makes Pa. less competitive", *Pittsburgh Business Times*, June 30, 2006

¹⁷ Citizens Utility Board, "Fewer Jobs for Illinois: The economic Impact of the ComEd and Ameren Rate Hikes", February 2007, page 6

If Ohio's rates increase, there would be greater pressure for businesses and employees to move to four of the five states bordering Ohio. While Michigan, Pennsylvania and Ohio are deregulating, Indiana, Kentucky and West Virginia are not; they have some of the lowest electric costs in the United States.

The graph below shows a comparison of Ohio's 2007 industrial electric rates¹⁸ (in black) for its 8 largest utilities to those in the five states bordering Ohio. Our data base includes 23 utilities from Michigan, Indiana, Kentucky, West Virginia and Pennsylvania. (See Table 3 in the Appendix for the supporting data.)



Migration Rates for Industrial Customers

Generally fewer than 50% of small commercial and industrial customers are migrating to alternative generation suppliers in deregulated states. (See the Switching Activity Tables in the Appendix for data on the migration in Illinois, Massachusetts, Pennsylvania and Texas as of January 1, 2006.)

As required by the Energy Policy Act of 2005, The Electric Energy Market Competition Task Force examined the implementation of retail electric competition in seven states. In June of 2006, they reported to Congress that, "Few alternative suppliers currently serve residential customers, although industrial customers have additional choices. To the extent that multiple suppliers serve retail customers, prices have not decreased as expected, and the range of new options and services is limited."¹⁹

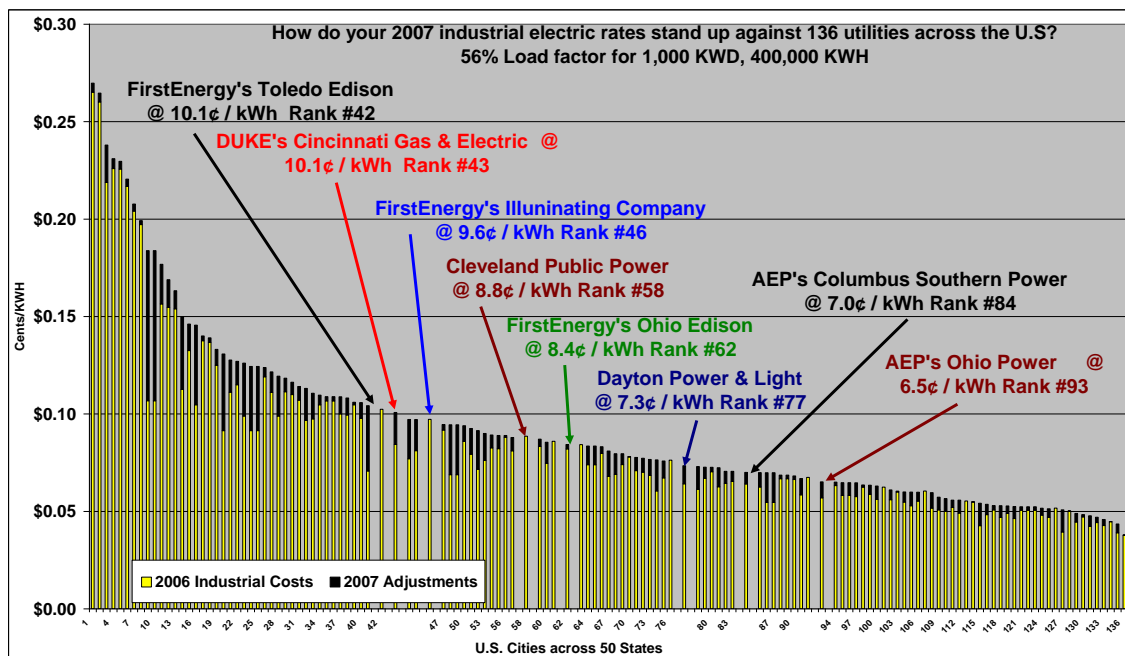
Large commercial and industrial customers tend to switch suppliers more readily than smaller customers. The task force noted that more suppliers have made efforts to solicit large customers.

¹⁸ Based on an industrial electric profile of a 1,000 kW demand and 400,000 kWh (i.e., a load factor of 56%).

¹⁹ The Electric Energy Market Competition Task Force, *Report to Congress on Competition in the Wholesale and Retail Markets for Electric Energy - Draft*, June 5, 2006, page 4.

Ohio's Rates Compared to the Rest of the U.S.

Currently, Ohio's industrial electric rates²⁰ are clustered around the median, as shown in the graph on the next page, when compared to utilities across the United States.



States that have transitioned to open markets tend to have the highest rates, while states that remain regulated tend to have the lower rates. Based upon the results of electric restructuring in other states, it appears that SB 3's timeline continues to be overly optimistic, even for a January 1, 2009 start date. Federal policymakers have not yet created a wholesale "market" that will produce the price efficiencies that one would expect to see arising from a truly competitive market.

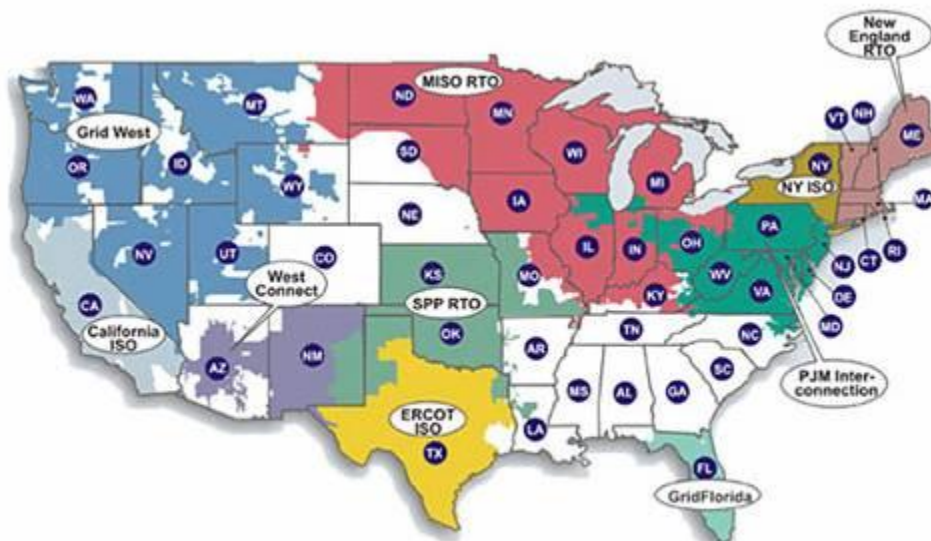
We conclude that competition has repeatedly been given a chance in one state after another over the last decade with disastrous results for customers. Many of the deficiencies in deregulated open markets are beyond the control of individual states. States cannot control FERC and the RTOs under FERC's watch.

²⁰ We used a national standard of 1,000 KWD, 400,000 KWH for a load factor of 56%.

Lessons Learned

Political Action Required

Under deregulation, local utilities are required to separate themselves from responsibility over the operation of generation and transmission assets. Based on FERC's policies and decisions, much of the responsibility for the wholesale electric market and transmission has been delegated to regional transmission organizations ("RTOs"). Ohio is one of the states that is bifurcated by two RTOs. Because RTOs involve interstate commerce²¹, jurisdiction over transmission (see FERC map below) coordination between FERC/RTO regulation and state regulation becomes more necessary and important. To date this coordination has been missing and perhaps, as an unintended consequence, leaves states with less ability to shape outcomes.



(Map courtesy of the Federal Energy Regulatory Commission)

Ohio is subject to the same "markets" and the same laws of physics as other states. There is no reason to believe that our experience would be any different beginning January 1, 2009.

The protections of Ohio's rate stabilization plans are temporary. The Ohio legislature and the PUCO have yet to address the vacuum that currently looms at the beginning of 2009 as described above. Unless decisive action is taken in 2007 to put in place a longer-term plan to protect Ohio from the existing dysfunctional electric market, we can expect electric rates to increase significantly on January 1, 2009.

Ohio Stakeholders must take action immediately to effectively manage the risk of electric "rate shock" that has already hit many states. The policies, plans and actions of federal and state agencies have to be complementary to facilitate the coordination and cooperation we must have given the division of governmental authority.

²¹ Texas' RTO is self contained and therefore not subject to FERC authority.

The Industrial Energy Users – Ohio (IEU-Ohio) has developed an approach that addresses present electric generation issues at the local, state and federal level. (See www.ieu-ohio.org/information/education.) IEU-Ohio has carefully reviewed the dynamics of the marketplace and has mapped out general strategies we need to implement before it will be possible to determine what role a competitive market can play to ensure a reliable supply at reasonable prices.

Conclusions

Ohio is one of the most energy-intensive states in the nation, and as a result, it has more at stake as a result of its energy choices. It is critical for the economic health and competitiveness of Ohio to examine the long-range consequences of the decisions and actions taken today. In order to encourage businesses to stay and locate in Ohio, we need to create energy price and service outcomes that provide a strategic energy advantage in an increasingly global economy.

The realities of today's economy mean that we must have fair electricity pricing that allows us to be competitive domestically and internationally. We understand that the pricing result we must have involves a balancing of interests that ensures competitive prices while providing sustainability for our electric suppliers.

Fortunately, Gov. Ted Strickland of Ohio and state lawmakers are expected to tackle the issues related to deregulation this year. "Strickland recently said in a speech that some sort of hybrid regulation will be needed in 2009 to balance between a full-blown free-market approach – which would allow power prices to soar as they have elsewhere, and a return to traditional regulation, under which utilities would be guaranteed a profit but would have to demonstrate the need for a given rate."²²

If no action is taken and Ohio proceeds to open market on January 1, 2009, we expect that residential, industrial and commercial customers would see rate jumps of 30% to 70% in 2009. We endorse an IEU-Ohio plan that requires urgent action on several fronts to effectively manage the risk of electric rate shock that has already arrived in many states.

- At the state level, the Ohio Legislature should give the Public Utility Commission more power to protect Ohio's economy and consumers. Without improved regulatory authority, Ohioans risk the type of instability that is devastating states throughout the U.S.
- At the federal level Ohio stakeholders need to actively pressure the FERC to compliment Ohio's efforts to ensure that its citizens have access to reliable and reasonably priced electricity.

The choice between regulation and competition is a choice between the means to better serve consumers and the public interest with reliable service and reasonable prices. If the aforementioned action is not taken, the consequences for Ohio will be disastrous. All Ohioans will experience a jolt every time they open their electric bills beginning in 2009!

²² "FirstEnergy seeks distribution rate hike", John Funk, *The Plain Dealer*, May 8, 2007

Data Sources

Lincoln Electric System, National Electric Rate Survey, Ranking of Typical Residential, Industrial and Industrial Electric Bills, January 1, 2006.

Lincoln Electric System (LES) collected data on electric rates in 106 U.S. cities (served by Municipals or Investor-owned Utilities) based on monthly electric bills by various categories of usage for residential, industrial and industrial rates in effect on January 1, 2006.

LES originally selected cities in 1984 to be included in the rankings based on the following criteria:

- Cities with a population greater than 100,000
- A minimum of one city from every state
- A maximum of three cities from any state

LES obtained the majority of the data for investor-owned utilities from the Rate Regulation Department of the Edison Electric Institute (EEI) publication, *Typical Bills and Average Rates Report, winter 2006*. The data for municipal utilities and investor-owned utilities not included in the EEI publication was obtained through a survey conducted by LES. No attempt was made to verify either the data obtained from the survey or the EEI publication.

Brakey Consulting supplemented the data from the LES survey to add more Ohio utilities. The LES survey included the Ohio cities of Cleveland (the Illuminating Company), Columbus (AEP) and Cincinnati (Cincinnati Gas & Electric). Based upon our knowledge of Ohio electric rates, we expanded the data to include the following cities and utilities:

- Akron (Ohio Edison)
- Canton (Ohio Power)
- Cleveland (Cleveland Public Power)
- Dayton (Dayton Power and Light)
- Toledo (Toledo Edison)

We also reviewed and corrected some data for Columbus (AEP).

Brakey Consulting did research on-line to supplement data with:

- Electric rates in more than 70 additional cities outside Ohio
- Information on demand windows, power factor charges, seasonal variations and ratchet clauses for more than 150 utilities.
- Rate increases since January 1, 2006

Glossary of Terms

Apparent power: The product of the voltage (in volts) and the current (in amperes). It comprises both active and reactive power. It is measured in "volt-amperes" and often expressed in "kilovolt-amperes" (kVA) or "megavolt-amperes" (MVA).

Commercial sector: An energy-consuming sector that consists of service-providing facilities and equipment of: businesses; Federal, State, and local governments; and other private and public organizations, such as religious, social, or fraternal groups. The commercial sector includes institutional living quarters. It also includes sewage treatment facilities. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a wide variety of other equipment (EIA definition).

Electric utility: Any firm that generates, transmits, or distributes electricity and that recovers the cost of its generation, transmission or distribution assets and operations, either directly or indirectly, through cost-based rates set by a separate regulatory authority (e.g., State Public Service Commission): or is owned by a governmental unit or the consumers that the entity serves. Examples of an "electric utility" include: Investor-owned entities, public power districts, public utility districts, municipalities, rural electric cooperatives, State and Federal agencies, and associations part of the aforementioned groups.

Federal Energy Regulatory Commission (FERC): A quasi-independent regulatory agency within the Department of Energy having jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, oil pipeline rates, and gas pipeline certification.

Industrial sector: An energy-consuming sector that consists of all facilities and equipment used for producing, processing, or assembling goods. The industrial sector encompasses the following types of activity: manufacturing; agriculture, forestry, fishing and hunting; mining, including oil and gas extraction; and construction. Overall energy use in this sector is largely for process heat and cooling and powering machinery, with lesser amounts used for facility heating, air conditioning, and lighting. Fossil fuels are also used as raw material inputs to manufactured products. Note: This sector includes generators that produce electricity and/or useful thermal output primarily to support the above-mentioned industrial activities.

Kilovolt-Ampere (kVa): A unit of apparent power, equal to 1,000 volt-amperes; the mathematical product of the volts and amperes in an electrical circuit.

Kilowatt hour (kWh): A measure of electricity defined as a unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. One kWh is equivalent to 3,412 Btu.

Load Factor: A measure of scheduling efficiency equal to the ratio of kilowatt-hours used per hour in the billing period to the peak demand. As you spread your electric usage more evenly across the month, the load factor approaches 100%.

MISO: Midwest Independent Transmission System Operator, a regional transmission organization (RTO).

Open Market: In an open market, rates for electric generation are established in an unregulated, competitive market through competitive bidding or through negotiations between the buyer and seller.

Peak demand: The maximum load during a specified period of time.

PJM: Pennsylvania/New Jersey/Maryland Interconnection, a regional transmission organization (RTO).

Power factor: The ratio of real power (in kilowatts) to apparent power in kilovolt-amperes for any given load and time. Power factor is a measure of how effectively your equipment is converting electric current from the generation station to useful power output.

Provider of Last Resort (POLR): The local distributing company (LDC) or utility. The POLR provides a market-based Standard Offer Service for customers whose price freeze service has ended and who have not selected an alternative generation supplier.

Rate Schedule: A series of calculations to determine the monthly electric bill. Utilities have different rate schedules for different customer types. For example, there are rate schedules that are only available to residential customers. Other rate schedules might have requirements related to the amount of electricity used, or the type of operation.

Regional Transmission Organization (RTO): A utility industry concept that the Federal Energy Regulatory Commission (FERC) embraced for the certification of voluntary groups that would be responsible for transmission planning and use on a regional basis.

Residential sector: An energy-consuming sector that consists of living quarters for private households. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a variety of other appliances. The residential sector excludes institutional living quarters (EIA definition).

Restructuring: The introduction of competition into at least the generation phase of electricity production, with a corresponding decrease in regulatory control.

Stranded costs: Costs incurred by utilities to serve their customers (e.g., for constructing generation plants) which are to be recovered over time through electric rates. These costs become "stranded" when customers leave their present utility for another generation supplier and no longer pay their share of these costs.

Unbundling: In a regulated environment, the generation, transmission, and distribution of electric power to the customer are provided as a single package. With unbundling, these services are separated into individually priced components.

Volt-ampere (va): A unit of apparent power equal to the product of 1 volt and 1 ampere. This is equivalent to 1 watt for a direct current system.

Voltage: The difference in electrical potential between any two conductors or between a conductor and ground. It is a measure of the electric energy per electron that electrons can acquire and/or give up as they move between the two conductors.

Watt (W): The unit of electrical power equal to one ampere under a pressure of one volt. A Watt is equal to 1/746 horsepower.

About Brakey Consulting

Brakey Consulting, Inc. is an Ohio-based company providing energy consulting services to about 40 industrial and commercial businesses with facilities in over 100 locations in the greater Cleveland, Akron, Toledo and Youngstown areas. Brakey Consulting fills a void for companies who do not have an energy manager on staff. Our services include:

- Helping companies identify electric cost saving opportunities, such as improving power factor or scheduling efficiency, or switching rate schedules
- Using gas marketers to implement hedging strategies for the purchase of natural gas
- Sponsoring an association, known as MICA, for whom Brakey Consulting proactively keeps up to date on energy suppliers and energy prices
- Representing MICA members at meetings of the Industrial Energy Users – Ohio (IEU), an energy lobbying group based in Columbus, Ohio
- Working closely with our sister company, EnergyManager.com, to provide on-line electric bill audits and analysis

Michael Brakey, President and founder of Brakey Consulting, has energy-related experience in the manufacturing setting. Immediately before starting Brakey Consulting in 1999, Mike held various posts over a 22-year career at Johnson Rubber Company in Middlefield, Ohio. His accomplishments there included the implementation of manufacturing strategies that led to energy cost reductions in excess of \$20 million. Mike has a B.S. in engineering physics from the University of Maine and an E.M.B.A. from Baldwin-Wallace College.

Lucinda Brakey, Vice President, joined the firm in January 2005. Prior to that, Cindy had a 20-year career as a consulting actuary for Towers Perrin in Cleveland, Ohio. Cindy also serves as vice president of EnergyManager.com. She has a B.A. in mathematics from the University of Maine and an M.A. in actuarial mathematics from the University of Michigan.

Matthew Brakey, Vice President, joined the firm in June 2004. Matt is also president of EnergyManager.com. He has a B.A. in political science from Miami University.

Appendix

Electric Usage Profiles

Industrial businesses operate on different schedules. Businesses that have a 5-day, 1-shift operation will see substantially higher electric costs per kilowatt hour than businesses that operate 7 days per week and 3 shifts per day, or around the clock. We recommend that industrial businesses, when examining the tables in this appendix, select the schedule that most accurately reflects their operation.

Six different electric profiles are used in the tables of cost data in this appendix, as shown in the table below.

Profiles	1	2	3	4	5	6
Kilowatt hours used	15,000	30,000	50,000	200,000	400,000	650,000
Demand load in kilowatts	75	75	75	1,000	1,000	1,000
Load factor	28%	56%	93%	28%	56%	90%
Approximate operating schedule	5 days/week 1 shift/day	6 days/week 2 shifts/day	7 days/week 3 shifts/day	5 days/week 1 shift/day	6 days/week 2 shifts/day	7 days/week 3 shifts/day

The costs in the following tables are ranked from highest to lowest based upon the rates for the fifth profile, with a 56% load factor.

Table 1: Ranking of Small Industrial Rates in States that Have Suspended or Delayed Restructuring

We gathered data on 2007 small industrial electric costs for 6 different electric profiles in 26 cities in 8 states that have either suspended or delayed electric choice.

			Status of Restructuring	Load Factor						Name of Utility (M) - Municipal (I) - Investor-Owned		
				Increase 2006 over 2005	Increase 2007 over 2006	28%	56%	93%	28%		56%	90%
			Not Active - N Transiting - T Activity Delay - D Active - A Suspended - S			75 kW 15,000 kWh	75 kW 30,000 kWh	75 kW 50,000 kWh	1,000 kW 200,000 kWh	1,000 kW 400,000 kWh	1,000 kW 650,000 kWh	
1	California	San Diego (I,W)	S	3.4%	2.0%	\$0.225	\$0.167	\$0.144	\$0.212	\$0.156	\$0.124	San Diego Gas & Electric Company (I)
2	California	San Bernardino (I)	S			\$0.130	\$0.129	\$0.127	\$0.126	\$0.125	\$0.127	Southern California Edison Company (I)
3	Nevada	Reno (I,A)	D	12.5%		\$0.137	\$0.114	\$0.104	\$0.143	\$0.111	\$0.099	Sierra Pacific Power Company (I)
4	California	Palto Alto (M)	S			\$0.130	\$0.114	\$0.107	\$0.129	\$0.105	\$0.095	City of Palo Alto Utilities (M)
5	California	Sacramento (M)	S	6.0%	7.0%	\$0.130	\$0.114	\$0.107	\$0.129	\$0.105	\$0.095	Sacramento Mun. Utility District (M)
6	California	San Francisco (I,W)	S	3.0%	25.0%	\$0.130	\$0.114	\$0.107	\$0.129	\$0.105	\$0.095	Pacific Gas & Electric Company (I)
7	Ohio	Toledo (I,W)	D	1.0%		\$0.152	\$0.130	\$0.094	\$0.151	\$0.102	\$0.076	Toledo Edison (I)
8	Nevada	Las Vegas (I,A)	D	2.2%	12.0%	\$0.121	\$0.115	\$0.112	\$0.113	\$0.100	\$0.095	Nevada Power Company (I)
9	Ohio	Cleveland (I,W)	D	1.0%		\$0.141	\$0.106	\$0.092	\$0.146	\$0.097	\$0.069	Cleveland Electric Illuminating Company (I)
10	New Mexico	Santa Cruz (I)	D		18.0%	\$0.132	\$0.097	\$0.080	\$0.143	\$0.097	\$0.074	El Paso Electric Company (I)
11	California	Los Angeles (M,A)	S	0.0%		\$0.130	\$0.090	\$0.075	\$0.122	\$0.086	\$0.071	Los Angles Dept. of Water & Power (M)
12	Ohio	Cincinnati (I,W)	D	24.2%	9.1%	\$0.126	\$0.085	\$0.066	\$0.125	\$0.084	\$0.066	Cincinnati Gas & Electric Company (I)
13	Ohio	Akron (I,W)	D	1.0%		\$0.150	\$0.091	\$0.066	\$0.133	\$0.082	\$0.060	Ohio Edison (I)
14	Oklahoma	Tulsa (I,W)	D	31.8%	8.0%	\$0.084	\$0.085	\$0.079	\$0.090	\$0.076	\$0.071	Public Service Company of Oklahoma (I)
15	Montana	Billings (I,A)	D	14.4%	15.0%	\$0.105	\$0.110	\$0.075	\$0.083	\$0.069	\$0.064	Montana Power (I)
16	Oklahoma	Oklahoma City (I,W)	D	28.7%	8.0%	\$0.089	\$0.074	\$0.068	\$0.079	\$0.067	\$0.063	Oklahoma Gas & Electric Services (I)
17	Ohio	Dayton (I,W)	D	11.0%	5.4%	\$0.105	\$0.067	\$0.052	\$0.099	\$0.064	\$0.051	Dayton Power & Light (I)
18	Ohio	Columbus (I,W)	D	9.0%	5.0%	\$0.097	\$0.071	\$0.056	\$0.096	\$0.064	\$0.052	Columbus Southern Power Rate Area (I)
19	New Mexico	Santa Fe (I,A)	D		10.9%	\$0.071	\$0.071	\$0.069	\$0.069	\$0.060	\$0.056	Southwestern Public Service Company (I)
20	New Mexico	Albuquerque (I,A)	D	-2.6%		\$0.094	\$0.070	\$0.059	\$0.088	\$0.060	\$0.050	Public Service Company of New Mexico (I)
21	Ohio	Canton (I,W)	D	19.0%	10.0%	\$0.074	\$0.062	\$0.048	\$0.072	\$0.057	\$0.046	Ohio Power Rate Area (I)
22	Arkansas	Little Rock (I,W)	D	13.2%		\$0.074	\$0.063	\$0.053	\$0.075	\$0.056	\$0.044	Entergy Arkansas, Inc. (I)
23	Virginia	Norfolk (I,W)	D	0.0%	15.0%	\$0.085	\$0.061	\$0.046	\$0.087	\$0.055	\$0.042	Dominion Virginia Power (I)
24	Virginia	Richmond (I,W)	D	0.0%	15.0%	\$0.085	\$0.061	\$0.046	\$0.087	\$0.055	\$0.042	Dominion Virginia Power (I)
25	Montana	Bismarck (I,A)	D			\$0.072	\$0.074	\$0.051	\$0.057	\$0.047	\$0.043	Montana-Dakota Utilities Company
26	Virginia	Roanoke (I,A)	D	7.8%	25.0%	\$0.061	\$0.047	\$0.038	\$0.056	\$0.043	\$0.034	Appalachian Power Rate Area (I)

Table 2: Ranking of POLR Small Industrial Rates in Open Market States and Ohio

Top small industrial electric rates²³ for 2007 for utilities found in states active in open markets and Ohio (which has delayed restructuring)

Rank	State	City	Load Factor						Name of Utility / (M) = Municipal, (I) = Investor-Owned		
			Increase 2006 over 2005	Increase 2007 over 2006	28%	56%	93%	28%		56%	90%
			75 kW 15,000 kWh	75 kW 30,000 kWh	75 kW 50,000 kWh	1,000 kW 200,000 kWh	1,000 kW 400,000 kWh	1,000 kW 650,000 kWh			
1	Massachusetts	Boston (I,W)	70.9%		\$0.204	\$0.169	\$0.155	\$0.260	\$0.226	\$0.213	Boston Edison Company (I)
2	Massachusetts	Cambridge (I,W)	85.5%		\$0.215	\$0.173	\$0.156	\$0.250	\$0.219	\$0.207	Cambridge Electric Company (I)
3	New York	New York City (I,W)	35.4%		\$0.228	\$0.204	\$0.195	\$0.227	\$0.204	\$0.195	Consolidated Edison Company of New York (I)
4	Massachusetts	Springfield (I,A)	94.6%		\$0.218	\$0.195	\$0.186	\$0.222	\$0.197	\$0.188	Western Massachusetts Electric Company (I)
5	California	San Diego (I,W)	3.4%	2.0%	\$0.225	\$0.167	\$0.144	\$0.212	\$0.156	\$0.124	San Diego Gas & Electric Company (I)
6	New York	Buffalo (I,W)	16.9%		\$0.142	\$0.120	\$0.111	\$0.188	\$0.155	\$0.140	Niagara Mohawk Power Corporation (I)
5	New York	Hempstead (I,W)	42.3%		\$0.170	\$0.157	\$0.152	\$0.163	\$0.154	\$0.150	Long Island Public Authority (I)
6	Maine	Portland (I,A)	24.6%		\$0.164	\$0.139	\$0.129	\$0.160	\$0.137	\$0.128	Central Maine Power Company (I)
7	Rhode Island	Pawtucket (I,A)	33.4%		\$0.149	\$0.136	\$0.131	\$0.141	\$0.133	\$0.129	Narragansett Electric Company (I)
8	California	San Bernardino (I)			\$0.130	\$0.129	\$0.127	\$0.126	\$0.125	\$0.127	Southern California Edison Company (I)
9	New Hampshire	Manchester (I,A)	12.9%		\$0.147	\$0.128	\$0.120	\$0.141	\$0.119	\$0.110	Public Service Company of New Hampshire (I)
10	Arizona	Phoenix (I,W)	2.5%	4.4%	\$0.125	\$0.125	\$0.125	\$0.120	\$0.115	\$0.110	Arizona Public Service Company (I)
11	Nevada	Reno (I,A)	12.5%		\$0.137	\$0.114	\$0.104	\$0.143	\$0.111	\$0.099	Sierra Pacific Power Company (I)
12	Connecticut	Waterbury (I,A)	28.9%	16.0%	\$0.159	\$0.130	\$0.114	\$0.132	\$0.111	\$0.103	Northeast Utility-Connecticut Light & Power Company (I)
13	Texas	El Paso (I,W)	10.4%		\$0.146	\$0.108	\$0.088	\$0.158	\$0.107	\$0.082	El Paso Electric Company (I)
14	Connecticut	Bridgeport (I,W)	3.3%	50.0%	\$0.147	\$0.113	\$0.099	\$0.135	\$0.107	\$0.096	United Illuminating Company (I)
15	Connecticut	New Haven (I,W)	3.3%	50.0%	\$0.147	\$0.113	\$0.099	\$0.135	\$0.107	\$0.096	United Illuminating Company (I)
16	New Jersey	Newark (I,W)	8.2%		\$0.102	\$0.089	\$0.083	\$0.118	\$0.107	\$0.102	Public Service Electric & Gas Company (I)
17	New Jersey	Paterson (I,W)	8.2%		\$0.102	\$0.089	\$0.083	\$0.118	\$0.107	\$0.102	Public Service Electric & Gas Company (I)
18	California	Palo Alto (M)			\$0.130	\$0.114	\$0.107	\$0.129	\$0.105	\$0.095	City of Palo Alto Utilities (M)
19	California	Sacramento (M)	6.0%	7.0%	\$0.130	\$0.114	\$0.107	\$0.129	\$0.105	\$0.095	Sacramento Mun. Utility District (M)
20	California	San Francisco (I,W)	3.0%	25.0%	\$0.130	\$0.114	\$0.107	\$0.129	\$0.105	\$0.095	Pacific Gas & Electric Company (I)
21	Ohio	Toledo (I,W)	1.0%		\$0.152	\$0.130	\$0.094	\$0.151	\$0.102	\$0.076	Toledo Edison (I)
22	Nevada	Las Vegas (I,A)	2.2%	12.0%	\$0.121	\$0.115	\$0.112	\$0.113	\$0.100	\$0.095	Nevada Power Company (I)

M – Municipally-owned utility
 I – Investor-owned utility
 W – Winter rates shown
 A – Annual rates

²³ These rates include the generation costs charged by the Provider of Last Resort (POLR), which is the local distributing company (LDC) or utility. The generation costs available from alternative suppliers may be less. POLR provides a market-based Standard Offer Service for customers whose price freeze service has ended and no supplier has been selected.

Table 2: Ranking of POLR Small Industrial Rates in Open Market States and Ohio (continued)

State	City	Increase 2006 over 2005	Increase 2007 over 2006	Load Factor						Name of Utility / (M) = Municipal, (I) = Investor-Owned
				28%	56%	93%	28%	56%	90%	
				75 kW 15,000 kWh	75 kW 30,000 kWh	75 kW 50,000 kWh	1,000 kW 200,000 kWh	1,000 kW 400,000 kWh	1,000 kW 650,000 kWh	
23	Pennsylvania Reading (I)		24.6%					\$0.099		Metropolitan Edison Company (I)
24	Pennsylvania Unlisted (I)		18.0%					\$0.099		West Penn Power (I)
25	Pennsylvania Philadelphia (I,W)	6.2%		\$0.169	\$0.106	\$0.076	\$0.151	\$0.097	\$0.071	PECO Energy (I)
26	Ohio Cleveland (I,W)	1.0%		\$0.141	\$0.106	\$0.092	\$0.146	\$0.097	\$0.069	Cleveland Electric Illuminating Company (I)
27	New Mexico Santa Cruz (I)		18.0%	\$0.132	\$0.097	\$0.080	\$0.143	\$0.097	\$0.074	El Paso Electric Company (I)
28	District of Columbia Washington, DC (I,W)	40.4%		\$0.115	\$0.103	\$0.099	\$0.103	\$0.092	\$0.086	Potomac Electric Power Company (I)
29	Pennsylvania Erie (I,W)	3.2%	32.4%	\$0.113	\$0.113	\$0.113	\$0.091	\$0.091	\$0.091	Pennsylvania Electric Company F(I)
30	Pennsylvania Johnstown (I)		32.4%	\$0.113	\$0.113	\$0.113	\$0.091	\$0.091	\$0.091	Penelec (I)
31	Pennsylvania New Castle (I)	3.2%	32.4%	\$0.113	\$0.113	\$0.113	\$0.091	\$0.091	\$0.091	Penn & Pennsylvania Power Company (Penelec) (I)
32	Texas Austin (M,W)	10.2%		\$0.118	\$0.086	\$0.073	\$0.118	\$0.086	\$0.074	Austin Energy (M)
33	California Los Angeles (M,A)	0.0%		\$0.130	\$0.090	\$0.075	\$0.122	\$0.086	\$0.071	Los Angeles Dept. of Water & Power (M)
34	Ohio Cincinnati (I,W)	24.2%	9.1%	\$0.126	\$0.085	\$0.066	\$0.125	\$0.084	\$0.066	Cincinnati Gas & Electric Company (I)
35	Ohio Akron (I,W)	1.0%		\$0.150	\$0.091	\$0.066	\$0.133	\$0.082	\$0.060	Ohio Edison (I)
36	Maryland Baltimore (I,W)	-4.4%	15.0%	\$0.085	\$0.084	\$0.084	\$0.081	\$0.081	\$0.081	Baltimore Gas & Electric Company (I)
37	Arizona Tucson (I,W)	4.5%	4.4%	\$0.101	\$0.098	\$0.098	\$0.096	\$0.079	\$0.073	Tucson Electric Power Company (I)
38	Pennsylvania Pittsburgh (I,A)	0.0%	9.0%	\$0.113	\$0.078	\$0.065	\$0.086	\$0.077	\$0.074	Duquesne Light Company (I)
39	Oklahoma Tulsa (I,W)	31.8%	8.0%	\$0.084	\$0.085	\$0.079	\$0.090	\$0.076	\$0.071	Public Service Company of Oklahoma (I)
40	Michigan Detroit (I,W)	3.2%		\$0.098	\$0.083	\$0.064	\$0.097	\$0.074	\$0.059	Detroit Edison Company (DTE Energy) (I)
41	Illinois Springfield (M,W)	11.7%	40.0%	\$0.099	\$0.074	\$0.064	\$0.092	\$0.071	\$0.063	City of Springfield, IL City Water Light & Power Dept. (M)
42	Montana Billings (I,A)	14.4%	15.0%	\$0.105	\$0.110	\$0.075	\$0.083	\$0.069	\$0.064	Montana Power (I)
43	Illinois Chicago (I,W)	-0.1%	40.0%	\$0.101	\$0.073	\$0.057	\$0.107	\$0.069	\$0.056	Commonwealth Edison Company (I)
44	Illinois Rockford (I,W)	-0.1%	40.0%	\$0.101	\$0.073	\$0.057	\$0.107	\$0.069	\$0.056	Commonwealth Edison Company (I)

Next 22 small industrial electric rates for 2007 for utilities found in states active in open markets and Ohio (which has delayed restructuring)

M – Municipally-owned utility
I – Investor-owned utility
W – Winter rates shown
A – Annual rates

Table 2: Ranking of POLR Small Industrial Rates in Open Market States and Ohio (continued)

Third level ranking of 18 small industrial electric rates for 2007 (46-64) for utilities found in states active in open markets and Ohio (which has delayed restructuring)

State	City	Increase 2006 over 2005	Increase 2007 over 2006	Load Factor						Name of Utility / (M) = Municipal, (I) = Investor-Owned	
				28%	56%	93%	28%	56%	90%		
				75 kW 15,000 kWh	75 kW 30,000 kWh	75 kW 50,000 kWh	1,000 kW 200,000 kWh	1,000 kW 400,000 kWh	1,000 kW 650,000 kWh		
46	Oregon	Portland (I,A)	9.8%	9.0%	\$0.083	\$0.071	\$0.066	\$0.077	\$0.065	\$0.061	Portland General Electric Company (I)
47	Ohio	Dayton (I,W)	11.0%	5.4%	\$0.105	\$0.067	\$0.052	\$0.099	\$0.064	\$0.051	Dayton Power & Light (I)
48	Ohio	Columbus (I,W)	9.0%	5.0%	\$0.097	\$0.071	\$0.056	\$0.096	\$0.064	\$0.052	Columbus Southern Power Rate Area (I)
49	Delaware	Dover (M)			\$0.091	\$0.066	\$0.055	\$0.088	\$0.062	\$0.053	City of Dover (McKee Run G.S.)
50	Delaware	Wilmington (I,W)	2.1%		\$0.091	\$0.066	\$0.055	\$0.088	\$0.062	\$0.053	Delmarva Power & Light (i)
51	New Mexico	Santa Fe (I,A)		10.9%	\$0.071	\$0.071	\$0.069	\$0.069	\$0.060	\$0.056	Southwestern Public Service Company (I)
52	Michigan	Lansing (M,W)	9.7%		\$0.077	\$0.064	\$0.054	\$0.077	\$0.060	\$0.051	Lansing Board of Water & Light (M)
53	New Mexico	Albuquerque (I,A)	-2.6%		\$0.094	\$0.070	\$0.059	\$0.088	\$0.060	\$0.050	Public Service Company of New Mexico (I)
54	Michigan	Grand Rapids (I,W)	-2.6%		\$0.086	\$0.061	\$0.050	\$0.080	\$0.058	\$0.048	Consumers Energy (I)
55	Ohio	Canton (I,W)	19.0%	10.0%	\$0.074	\$0.062	\$0.048	\$0.072	\$0.057	\$0.046	Ohio Power Rate Area (I)
56	Arkansas	Little Rock (I,W)	13.2%		\$0.074	\$0.063	\$0.053	\$0.075	\$0.056	\$0.044	Entergy Arkansas, Inc. (I)
57	Virginia	Norfolk (I,W)	0.0%	15.0%	\$0.085	\$0.061	\$0.046	\$0.087	\$0.055	\$0.042	Dominion Virginia Power (I)
58	Virginia	Richmond (I,W)	0.0%	15.0%	\$0.085	\$0.061	\$0.046	\$0.087	\$0.055	\$0.042	Dominion Virginia Power (I)
59	Oregon	Eugene (M,W)	-4.0%		\$0.071	\$0.058	\$0.053	\$0.066	\$0.052	\$0.046	Eugene Water & Electric Board (M)
60	Oregon	Albany (I)			\$0.074	\$0.054	\$0.044	\$0.071	\$0.051	\$0.040	Pacific Power Corp. (I)
61	Arizona	Mesa (M,W)	-12.3%	4.4%	\$0.074	\$0.063	\$0.053	\$0.055	\$0.049	\$0.047	Salt River Project (M)
62	Montana	Bismarck (I,A)			\$0.072	\$0.074	\$0.051	\$0.057	\$0.047	\$0.043	Montana-Dakota Utilities Company
63	Virginia	Roanoke (I,A)	7.8%	25.0%	\$0.061	\$0.047	\$0.038	\$0.056	\$0.043	\$0.034	Appalachian Power Rate Area (I)
64	Texas	Dallas (I,W)	39.1%		\$0.151	\$0.125	\$0.111				TXU Energy (I)

M – Municipally-owned utility
 I – Investor-owned utility
 W – Winter rates shown
 A – Annual rates


Table 3: Industrial Electric Rates in Ohio and Bordering States

Industrial electric rates for utilities found in Ohio and the five bordering states (based on varying load factors). The 2007 rates are ranked from highest to lowest based on the rates for the profile with a load factor of 42%.

		Status of			Load Factor						Name of Utility (M) - Municipal (I) - Investor-Owned			
		Restructuring			28%	56%	93%	28%	56%	90%				
		Not Active - N Transiting - T Activity Delay - D Active - A Suspended - S	Increase 2006 over 2005	Increase 2007 over 2006	75 kW 15,000 kWh	75 kW 30,000 kWh	75 kW 50,000 kWh	1,000 kW 200,000 kWh	1,000 kW 400,000 kWh	1,000 kW 650,000 kWh				
OH	Ohio	Toledo (I,W)	D	1.0%				\$0.152	\$0.130	\$0.094	\$0.151	\$0.102	\$0.076	Toledo Edison (I)
PA	Pennsylvania	Philadelphia (I,W)	A	6.2%				\$0.169	\$0.106	\$0.076	\$0.151	\$0.097	\$0.071	PECO Energy (I)
OH	Ohio	Cleveland (I,W)	D	1.0%				\$0.141	\$0.106	\$0.092	\$0.146	\$0.097	\$0.069	Cleveland Electric Illuminating Company (I)
PA	Pennsylvania	Erie (I,W)	A	3.2%	32.4%			\$0.113	\$0.113	\$0.113	\$0.091	\$0.091	\$0.091	Pennsylvania Electric Company F(I)
PA	Pennsylvania	Johntown (I)	A		32.4%			\$0.113	\$0.113	\$0.113	\$0.091	\$0.091	\$0.091	Penelec (I)
PA	Pennsylvania	New Castle (I)	A	3.2%	32.4%			\$0.113	\$0.113	\$0.113	\$0.091	\$0.091	\$0.091	Penn & Pennsylvania Power Company (Penelec) (I)
OH	Ohio	Cleveland (M,A)	N	3.0%				\$0.102	\$0.095	\$0.092	\$0.107	\$0.089	\$0.080	Cleveland Public Power (M)
OH	Ohio	Cincinnati (I,W)	D	24.2%	9.1%			\$0.126	\$0.085	\$0.066	\$0.125	\$0.084	\$0.066	Cincinnati Gas & Electric Company (I)
IN	Indiana	Gary (I,A)	N	5.1%				\$0.113	\$0.090	\$0.081	\$0.110	\$0.083	\$0.073	Northern Indiana Public Service Company (I)
OH	Ohio	Akron (I,W)	D	1.0%				\$0.150	\$0.091	\$0.066	\$0.133	\$0.082	\$0.060	Ohio Edison (I)
PA	Pennsylvania	Pittsburgh (I,A)	A	0.0%	9.0%			\$0.113	\$0.078	\$0.065	\$0.086	\$0.077	\$0.074	Duquesne Light Company (I)
KY	Kentucky	Paducah (M)	N					\$0.110	\$0.077	\$0.064	\$0.109	\$0.076	\$0.064	Paducah Power System (M)
MI	Michigan	Detroit (I,W)	A	3.2%				\$0.098	\$0.083	\$0.064	\$0.097	\$0.074	\$0.059	Detroit Edison Company (DTE Energy) (I)
OH	Ohio	Dayton (I,W)	D	11.0%	5.4%			\$0.105	\$0.067	\$0.052	\$0.099	\$0.064	\$0.051	Dayton Power & Light (I)
OH	Ohio	Columbus (I,W)	D	9.0%	5.0%			\$0.097	\$0.071	\$0.056	\$0.096	\$0.064	\$0.052	Columbus Southern Power Rate Area (I)
IN	Indiana	Evansville (I,W)	N	10.0%				\$0.086	\$0.069	\$0.060	\$0.084	\$0.063	\$0.054	Southern Indiana Gas & Electric Company (I)
MI	Michigan	Lansing (M,W)	A	9.7%				\$0.077	\$0.064	\$0.054	\$0.077	\$0.060	\$0.051	Lansing Board of Water & Light (M)
MI	Michigan	Grand Rapids (I,W)	A	-2.6%				\$0.086	\$0.061	\$0.050	\$0.080	\$0.058	\$0.048	Consumers Energy (I)
OH	Ohio	Canton (I,W)	D	19.0%	10.0%			\$0.074	\$0.062	\$0.048	\$0.072	\$0.057	\$0.046	Ohio Power Rate Area (I)
IN	Indiana	Indianapolis (I,A)	N	7.9%				\$0.093	\$0.063	\$0.051	\$0.085	\$0.056	\$0.045	Indianapolis Power & Light Company (I)
KY	Kentucky	Louisville (I,W)	N	-1.9%				\$0.075	\$0.048	\$0.037	\$0.068	\$0.045	\$0.035	Louisville Gas & Electric Company (I)
KY	Kentucky	Lexington (I,A)	N	4.8%				\$0.064	\$0.046	\$0.038	\$0.061	\$0.044	\$0.032	Kentucky Utilities Company (I)
WV	West Virginia	Wheeling (I,A)	N	-1.9%				\$0.057	\$0.052	\$0.050	\$0.055	\$0.043	\$0.034	Wheeling Power Rate Area (I)

Table 4: Penn Power's 2007 POLR Electric Rates

Shown below are the 2007 POLR rates for Penn Power, a FirstEnergy Company.


2007 POLR RATE SUMMARY
"Fixed Rate" RFP-Based Option (Default)

		"Small Commercial"			"Large Commercial"		
Rate Schedule		GS	GM	GP	GT	GT (1)	GT (2)
Service Voltage		Secondary	Secondary	Primary	23 KV	69 KV	138 KV
Availability/Minimum		< 50 KW	50 KVA Min	50 KVA Min	200 KVA Min	200 KVA Min	200 KVA Min
Delivery Service	Customer Charge	\$14.44					
	Distribution Charge	\$4.361 per KW > 3	\$2.774 per KVA	\$1.670 per KVA	\$0.364 per KVA	\$0.353 per KVA	\$0.346 per KVA
POLR Service	Capacity Charge	\$0.000 per KW > 3	\$0.000 per KVA	\$0.000 per KVA	\$0.000 per KVA	\$0.000 per KVA	\$0.000 per KVA
	Energy Charge (per kWh)	\$0.0867	\$0.0867	\$0.0873	\$0.0873	\$0.0847	\$0.0829

Based upon an auction in the summer of 2006, the 2007 POLR generation rates range from 8.87¢ per kWh for small businesses to a low of 8.29¢ per kWh (for large industrial customers accepting voltage at 138 kilovolts). If an auction of POLR pricing were held this summer (2007), some speculate that generation rates would climb over 10¢ per kWh.

Switching Activity Tables

These switching activity tables are from the Electric Energy Market Competition Task Force's *Report to Congress on Competition in the Wholesale and Retail Markets for Electric Energy - Draft*, June 5, 2006

Illinois

Switching Activity: The degree to which customers have switched to delivery service from bundled service varies greatly between distribution franchise territories and classes of customers. Table 2 provides the switching statistics for the largest utilities franchise areas separated by customer type as of November 2005. As Table 3 indicates, the vast majority of switching activity is centered on the Commonwealth Edison distribution territory (which also has the largest load in the state). Lower levels of switching have taken place in the AmerenCILCO and AmerenIP areas and very little outside of these three.

Firm and Usage In million kWh	Residential	Small C&I	Large C&I	Total
AmerenCILCO 461	0.0% (0.0%)	0.0% (0.1%)	2.2% (33.3%)	0.0% (15.4%)
AmerenCIPS 952	0.0% (0.0%)	0.2% (0.8%)	7.1% (4.1%)	0.0% (2.2%)
AmerenIP 1,496	0.0% (0.0%)	0.8% (8.9%)	29.8% (41.7%)	0.1% (23.2%)
AmerenUE 265	0.0% (0.0%)	0.0% (0.0%)	2.5% (0.2%)	0.0% (0.1%)
ComEd 91,508	0.0% (0.0%)	6.0% (36.6%)	73.9% (58.3%)	0.6% (32.8%)
MidAmerican	0.0%	0.0%	0.0%	0.0%

Massachusetts

Switching Activity: Table 12 shows the proportion of customers and load taking service from alternative suppliers in each utility distribution territory. In the Commonwealth territory, switching by residential customers is much higher than any other area of the state.

Firm and load in MWh	Residential	Small C&I	Medium C&I	Large C&I
Boston Edison 1,498,476	0.3% (0.6%)	2.0% (3.5%)	7.9% (13.6%)	34.0% (50.0%)
Cambridge 154,540	0.2% (0.3%)	6.7% (13.5%)	8.4% (12.4%)	33.6% (52.6%)
Commonwealth 403,108	54.2% (51.8%)	55.0% (57.5%)	44.3% (46.2%)	65.6% (70.5%)
Fitchburg 47,256	0.0% (0.0%)	3.8% (2.9%)	4.8% 15.5%	72.7% (86.6%)
Mass. Electric 1,995,096	2.1% (2.4%)	7.4% (12.2%)	31.1% (29.3%)	58.1% (66.2%)
Nantucket 12,547	0.2% (1.3%)	4.4% (6.6%)	23.6% (29.3%)	50.0% (53.2%)
Western Mass.	0.5% (0.7%)	6.6% (11.9%)	32.4% (36.8%)	60.2% (76.3%)

Source: Mass. Department of Telecommunications and Energy

Note: C = Commercial, I = Industrial

Pennsylvania

Switching Activity: At this point in time, retail switching activities are largely limited to the Duquesne Light distribution territory and to a lesser degree the PECO territory, as shown in Table 27.

Firm and Load in MWh	Residential	Small C&I	Large C&I	Total
Allegheny Power	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)
Duquesne Light	19.7% (18.5%)	20.3% (52.3%)	43.4% (83.6%)	19.8% (48.0%)
MetEd/Penelec	0.0% (0.0%)	0.0% (0.0%)	(0.1%) (5.6%)	0.0% (1.6%)
PECO	0.9% (1.0%)	23.8% (13.2%)	2.0% (1.2%)	3.2% (4.9%)
PennPower	0.0% (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
PPL	0.0 (0.0%)	0.2 (0.7%)	0.3 (0.3%)	0.1 (0.3%)
UGI	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

Source: Pennsylvania Office of the Consumer Advocate

Texas

Switching Activity: Retail customers have been migrating to alternative suppliers in all of the distribution territories with the highest switching rates in the AEP Central and North areas, as shown in Table 32.

Firm and Load in MWh	Residential	Small C&I	Total
TXU	26.3% (26.2%)	30.7% (64.7%)	26.4% (50.4%)
Centerpoint	26.8% (27.3%)	34.5% (60.7%)	27.5% (47.8%)
AEP Texas Central	27.0% (31.3%)	45.8% (81.4%)	29.4% (63.8%)
AEP Texas North	33.2% (39.3%)	34.0% (78.7%)	31.9% (64.9%)
Texas NM Power	25.8% (29.9%)	35.0% (66.8%)	26.4% (56.0%)

Source: Texas Public Utility Commission

Note: C = Commercial, I = Industrial