

# **THE ELECTRIC HONEYPOT: THE PROFITABILITY OF DEREGULATED ELECTRIC GENERATION COMPANIES**

**By Edward Bodmer**

## **EXECUTIVE SUMMARY**

### **Purpose and Conclusions of the Study**

This report presents the results of an investigative financial analysis of utility companies operating in deregulated markets. The study reviews the profitability of corporations that are the largest sellers of unregulated wholesale generation into the PJM market<sup>1</sup> (“PJM Companies”). Primary objectives of the inquiry are to gather and summarize financial data for these PJM companies and compare their financial performance with that of regulated, vertically owned utility companies (“Regulated Companies”). Through measuring profits and shareholder value of PJM Companies relative to Regulated Companies, the extent to which investors have benefited from deregulation is examined.

The analysis of each PJM company includes an examination of its recent financial history, as reflected in financial reports, stock prices and dividends. Revenues earned by companies and their shareholders ultimately come from either cost savings or increases in bills paid by consumers. While it is possible that the shareholder benefits reflect productivity improvements in the generating plants, the price increases that have occurred with the expiration of rate caps demonstrate that a good degree of these benefits are coming from higher consumer bills.

This comparative financial analysis of PJM Companies and Regulated Companies includes an informed assessment of the following issues:

- What are the aggregate earnings or losses that PJM Company shareholders have received since the inception of electricity deregulation?
- How have particular aspects of retail and wholesale restructuring affected key indicators of financial performance for generating companies?
- Did the recovery of stranded investment<sup>2</sup> enhance the profitability of the PJM companies?

---

<sup>1</sup> These power plants are no longer owned or have never been owned by utility companies regulated by state public service or public utility commissions. They would still fall under other regulations, such as those pertaining to environmental, labor or safety standards.

<sup>2</sup> Stranded investment refers to the portion of generation costs that utilities projected could not be recovered under market rates. These stranded investments were estimated as part of most retail restructuring proceedings, and recovered from ratepayers.

- What particular characteristics (*e.g., fuel mix*) of PJM Companies are the primary drivers of financial performance?
- What is the combined profit from utilities divesting plants and from merchant returns?

This study found that companies that have fared best under deregulation share certain common features. Among those features are:

- Ownership of base load generating assets that were formerly regulated and subject to cost-of-service regulation.
- Concentration of generating assets in PJM rather than elsewhere in the nation or the world.
- High proportion of income from generation rather than distribution or trading.

This investigation reveals that shareholder value for those PJM companies which have unregulated generating capacity concentrated in the region and which have continued to also own a regulated transmission and distribution subsidiary, has been higher than companies that remained entirely regulated. The current and prospective profitability has been realized not because the nature of capacity changed after deregulation – generating assets that have been most profitable are those that were built in a regulated environment. Rather, the investor returns have come about because retail choice legislation provided for stable and assured cash flows over a transition period, followed by a subsequent period of increased profits after the rate caps and fixed price contracts expire. Since these transition periods included stranded investment recovery, the net investment associated with older base load plants has been diminished, and the profits for deregulated generation are far higher than they would be if the plants were still under cost-based regulation.

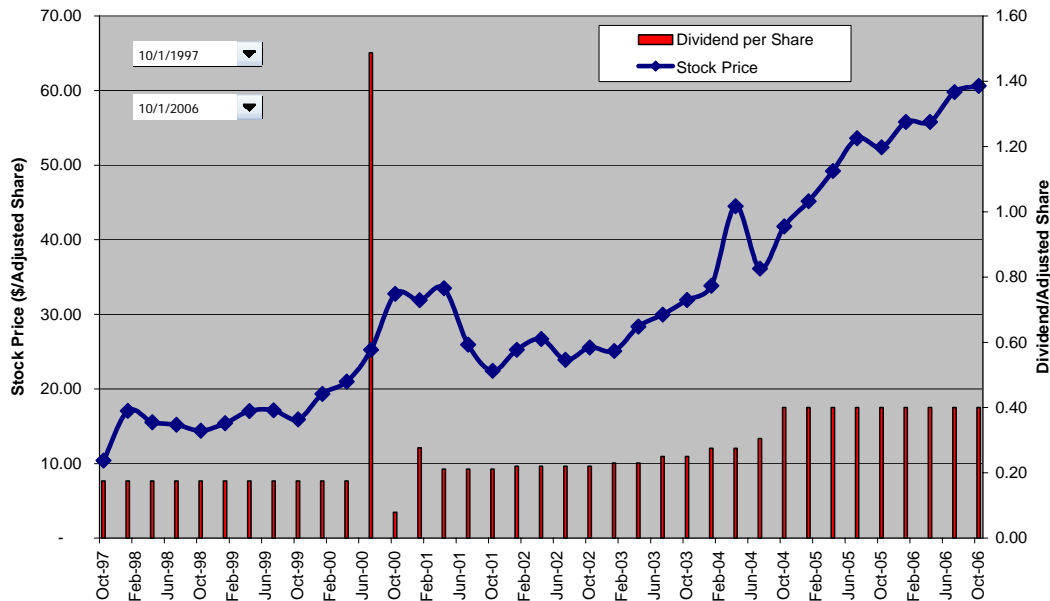
Analysis of PJM companies shows that high returns after rate caps expire are worth billions to investors. During transition periods in which companies operate with rate freezes or rate caps, the formerly vertically integrated companies realized returns on investment that exceeded both the return on equity portion of their estimated cost of capital and the shareholder returns earned by Regulated Companies (both of which are discussed later). This demonstrates that the PJM companies are not incurring losses for generating capacity whose cost many utilities had claimed to be unrecoverable through market prices when restructuring began (i.e. stranded investment).

Prospectively, the subset of PJM Companies who own capacity which was formerly regulated will produce about \$4.2 billion per year more in profits than would be earned by typical regulated companies. The accumulated returns that investors have realized from expectations of increased earnings and historic returns as manifested in stock price increases and dividend payments is between \$32 and \$40 billion depending on the period used in computing returns. The accumulated market values of PJM companies that had constructed plants with

ratepayer support have a premium above their book value that far exceeds the estimated premium for regulated companies. This surplus market to book ratio is between \$32 and \$50 billion.

The increase in investor wealth is illustrated by the case of Exelon Corporation – the largest seller of power into PJM. While alternative profit metrics produce varying estimates of shareholder benefits, the minimum investor benefit for Exelon that incorporates both transition period benefits and prospective returns is \$16 billion. This result is counter to a fundamental notion of restructuring – investors should not have been made better off simply by virtue of a changed regulatory framework. The graph below shows the benefits accruing to an investor in Unicom – the former holding company of ComEd, the utility company serving Chicago. The graph accounts for stock splits, share exchanges, normal dividends and special dividends. Once adjustments are made to put shares on an equal footing, the graph shows that a Unicom investor who made an investment at the inception of deregulation would have realized the equivalent of an annual rate of return on his or her investment of 28% in each subsequent year.

**Unicom/Exelon Stock Price and Dividends  
Adjusted for Exchange Ratio in Merger and Stock Splits  
Annual IRR of 28.0%**



The holding period return analysis for Exelon demonstrates the net dollar benefits received by investors relative to the Regulated Company sample. Exelon’s 10-year annual return, which incorporates nearly its entire transition period (when rates were still subject to rate caps), are very high compared to returns on a regulated portfolio. A share holder that initially invested in PECO<sup>3</sup> stock would have earned 21.7%, and a shareholder that invested in ComEd stock would have earned a 28% annual return. These returns imply that if a PECO investor made

<sup>3</sup> Formerly the Philadelphia Electric Company, PECO merged with Unicom, ComEd’s holding company, to create the Exelon Corporation.

an investment of \$100 in 1996, the investment would have accumulated to a value of \$713 in 2006. If a Unicom investor made the same investment at the start of restructuring, it would have grown to \$1,180 in 2006. By comparison, an investor in the regulated portfolio would have ended up with \$266 after 10 years if he or she invested \$100 in 1996. The main reasons that the Exelon investment performed so well is not that Exelon made efficient investment choices (the company lost money on its investment in a merchant company named Sithe, which it sold in 2004 after it incurred a write-off of \$945 million) nor the efficiency of its plant operations (it retired 2,200 MW of nuclear capacity and its nuclear plants have similar capacity factors and operating costs to other nuclear plants). Rather, the profits have come about directly because of price deregulation as the company generated strong cash flow through its stranded investment recovery charges and is expected to earn very high profits when rate caps expire in the Illinois.

### **Companies Studied and Criteria for Selection**

The PJM Companies whose financial performance is evaluated in this study are listed below. These companies were identified by APPA, as those with the largest 2005 electricity sales from unregulated generation capacity into PJM<sup>4</sup>.

1. Constellation Energy
2. Exelon Energy
3. PSEG - Public Service Enterprise Group
4. PPL Corporation
5. Allegheny Energy
6. FPL Group
7. Dominion Resources
8. NRG Energy
9. Reliant Energy
10. Mirant Corporation
11. AES Corporation
12. PEPCO Holdings
13. Edison International
14. Goldman Sachs

The ranking of PJM Companies in terms of their ownership of unregulated capacity is shown below. Further details of each company's capacity – fuel type, plant names, age and location -- are presented in the individual company profiles.

---

<sup>4</sup> Source: Energy Velocity database. Data are for the year 2005.

2005 Summer Capacity, in MWs.						
Source: Energy Velocity data base.						
	Total Capacity (MW)	Capacity in PJM		Total PJM Cap in Group (MW)	PJM Unregulated Cap as Pct of Total in Group	Unregulated PJM as % of Company Capacity
		Unregulated Capacity (MW)	Regulated Capacity (MW)			
Exelon Corp	25,009	20,574	548	21,122	22.3%	82.3%
Public Service Enterprise Group Inc	16,253	13,096		13,096	14.2%	80.6%
PPL Corp	11,037	9,018		9,018	9.8%	81.7%
Reliant Energy Inc	14,559	8,318		8,318	9.0%	57.1%
Edison International (Midwest Energy)	13,901	7,795		7,795	8.5%	56.1%
Allegheny Energy Inc	10,094	6,742	2,812	9,554	7.3%	66.8%
Constellation Energy Group	11,813	6,446	958	7,404	7.0%	54.6%
Mirant Corp	14,083	5,257		5,257	5.7%	37.3%
Pepco Holdings Inc	5,043	4,309	721	5,029	4.7%	85.4%
Dominion Resources Inc	25,050	3,792	15,451	19,243	4.1%	15.1%
FPL Group	33,124	1,982		1,982	2.2%	6.0%
AES Corp	13,158	1,802		1,802	2.0%	13.7%
NRG Energy Inc	21,410	1,683		1,683	1.8%	7.9%
Goldman Sachs Group Inc	5,427	1,281		1,281	1.4%	23.6%
<b>Total in Group</b>	<b>219,960</b>	<b>92,094</b>	<b>20,489</b>	<b>112,583</b>	<b>100.0%</b>	

### *Data Availability*

The availability of financial information for companies selling power and energy into PJM varied from company to company, and, in some cases influenced the choice of companies for detailed analysis. All of the companies selected for this review file financial reports with the Securities and Exchange Commission (“SEC”). Parent (holding) companies for all of the companies also have publicly listed shares. While many years of daily stock price data are available for most of the companies, there are a few exceptions. Stock prices for Mirant exist only since January 2006. For NRG, the stock prices are available from 2003, and for Reliant Energy, there are stock prices since 2001.

Companies in the above list own a wide variety of assets in addition to generating plants that sell power into the PJM wholesale market. Some of the companies have regulated transmission and distribution operations, and others have extensive operations outside of the US. The location of the PJM assets in the corporate structure also differs among the firms. A few of the companies – Reliant, Mirant and Edison International -- publish separate financial statements for subsidiary companies that sell power into PJM. Others hold generating assets in distinct subsidiaries, but combine PJM capacity with capacity serving other areas.

Detailed financial analyses were not conducted for Edison International or Goldman Sachs because of the unavailability of critical data. Edison International owns Southern California Edison and many other assets not related to PJM, but files standalone SEC reports for a subsidiary – Midwest Generation -- that sells generation into PJM. Therefore, instead of computing financial ratios for Edison International, an analysis was made for the Midwest Generation subsidiary. Goldman Sachs sells power into PJM through its J Aron subsidiary. Neither Goldman Sachs nor J Aron publishes data in SEC filings that allow computation of return on investment and other profitability measures for J Aron’s electricity supply operations.<sup>5</sup>

<sup>5</sup> Goldman Sachs owns 21 generation facilities eight of which are fueled by natural gas and eight of which burn coal. Goldman Sachs first acquired plants in 2003 and currently has electricity revenues of \$496 million.

## ***Classification of PJM Companies***

PJM Companies have a variety of fuel types, their assets were acquired in different ways, and they have differing corporate structures and business strategies. Because of these consequential differences, the PJM Companies have been separated into three different groupings for purposes of reporting the results. The three categories for the companies that were evaluated in detail (i.e. excluding Edison International and Goldman Sachs) are:

1. ***Core PJM Companies*** – These companies were formerly vertically integrated, state-regulated utilities, operating in what is now the PJM region. Core PJM companies include Exelon, Constellation, PSEG, PPL and Allegheny. Generating assets owned by companies in this group were generally constructed pursuant to state regulatory approval, where funding of the plants was made possible by rate of return regulation. Much of the generating asset capacity owned by the Core PJM Companies comprises base load coal and nuclear facilities, and the bulk of that generating capacity is located in the PJM region.
2. ***Merchant PJM Companies*** – These companies were not initially formed as regulated utilities, and generally do not have an obligation to provide electricity to retail customers. Instead, the primary business of merchant PJM companies is selling power in deregulated wholesale markets. This group includes Mirant, NRG, Reliant and Edison International’s Midwest Generation. Merchant PJM companies purchased coal, oil and gas fueled generating plants from other companies or constructed new, often gas-fired, plants after wholesale markets were deregulated. Unlike Core PJM Companies, the companies in this category do not own transmission and distribution assets in the PJM region.
3. ***Minor PJM Companies*** – These are companies for which unregulated wholesale power sales into PJM are a relatively minor part of their overall operations. Minor PJM companies include AES, Dominion, FPL and PEPCO. (PEPCO is classified as a minor PJM company because its generation operations are small relative to its distribution assets and because it sold most of its generation capacity to Mirant.) Companies in this group have major foreign generation, large regulated activities outside PJM, most generating plants outside PJM, or significant non-electricity assets such as natural gas pipelines.

## ***Regulated Sample***

To benchmark the profitability of PJM companies, a set of companies that still earn revenues under rate of return regulation was also analyzed. The regulated sample was assembled through examining financial data for numerous electric and natural gas companies that are located in states that have not restructured their electricity markets. Companies that receive a large percentage of their income from unregulated subsidiaries and companies that have had

unusual losses are excluded from the sample. After screening many companies, a sample of twenty utility companies was identified.

## **Overview of Past and Future Changes to Electricity Markets Affecting Financial Performance of Companies**

This section provides context for the financial analyses of individual PJM Companies by presenting an overview of some of the changes to PJM markets over the period analyzed. Financial performance of the PJM Companies is affected by electricity market restructuring in both the retail and wholesale sectors. Retail market restructuring at the state level affects the way end-use (business and residential) consumers acquire and pay for electricity. Components of most retail restructuring programs that drive shareholder value include rate freezes, rate caps, stranded investment charges, power auctions and the timing of the implementation of market-based prices for consumers. In addition, profitability is influenced by the removal of regulatory constraints on asset transactions and commodity or service pricing. Many of the deregulated generating assets have greatly appreciated in value as prices have increased in PJM (see for example, the Constellation Energy Group profile).

Investor returns are also affected by the manner in which companies sell power into wholesale markets. Restructuring of wholesale markets in PJM has encompassed changes that affect the price of electricity sold by plants, payments for making generating capacity available, contracts between generation companies and distribution companies (bilateral contracts), locational pricing for electricity and other markets, and special payments for generation deemed necessary for transmission reliability. The following discussion of past and future changes to electricity markets is divided into separate examinations of retail restructuring and wholesale restructuring.

### ***Retail Restructuring***

With the exception of West Virginia, states in the PJM region passed legislation that deregulated retail electricity generation service and allowed consumers to purchase power from alternate service providers. While restructuring details varied from state to state, the process generally included rate freezes and permission for utility companies to charge transition fees for inefficient plants – stranded investment (calculated as the difference between the remaining invested cost of the plants and the lower expected revenues from the deregulated market). Provisions of these legislative enactments defined the conditions under which companies could sell their generation assets and established transition periods during which consumer rates are capped and stranded investment charges are paid.

Upon passage of legislation that deregulated prices, many utilities changed their corporate structure. Generation capacity was either sold to an unrelated company or transferred to a generation subsidiary (often newly created). The remaining regulated entities, transmission and distribution (“T&D”) only utility subsidiaries retained the obligation to serve the customers in their service territory who did not purchase power from another entity. Because very few customers actually switched suppliers, these T&D-only utilities needed to purchase power through wholesale market contracts. Supply obligations under rate caps were generally fulfilled

through fixed price bilateral contracts with generators, which are sometimes generation-owning affiliates. Such continuing obligations to provide bundled service are often referred to as a “provider of last resort” (POLR) responsibility.

In preparing the financial analysis we have gathered information on retail restructuring presented by the companies in their investor analyst documents. It is apparent in these presentations that upcoming developments (i.e. removal of rate caps) in retail restructuring are expected to affect returns to shareholders. An example of such information is the slide below from a presentation by Allegheny to investors, which projects increased income to Allegheny Energy when rate caps are removed in Maryland and Ohio. Similar expectations are documented in the individual company profiles.



**Growth Driver:  
Transition to Market-Based Rates**

	<u>2006</u>	<u>2009</u>
<b>State</b>	<b>Maryland, Ohio</b>	<b>Maryland</b>
<b>MWH transitioning to market</b>	<b>4.8 million</b>	<b>3.5 million</b>
<b>Increase in pre-tax income</b>	<b>\$90 million</b>	<b>\$60 million</b>
	<b>Total: \$150 million</b>	

9

Increases in rates that occur upon the expiration of rate caps mean that on an aggregate basis, some business entity is receiving more money from consumers. When the generation-owning companies are no longer under bilateral contracts with regulated T&D-only utilities subject to rate caps, these companies can sell their generation either through new contracts, reflecting current and expected future prices or through the spot market. To the extent that PJM Companies own lower operating cost, base load nuclear and coal generating plants, these companies benefit by arranging contracts that are more closely aligned with the higher wholesale spot market prices

This issue is particularly pertinent for companies studied in this investigation because most states with rates caps that expire in the next eight years are in PJM as shown on the map below.<sup>6</sup>

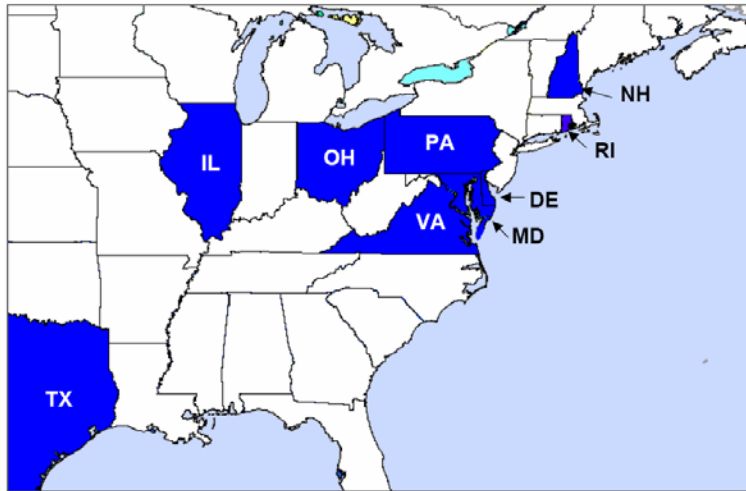
<sup>6</sup> Dominion Presentation to Investors, Boston, MA, May 2006.



## States With Electric Rate Caps Expiring By 2015

---

as of 5/22/2006



Because the rate caps have not yet ended in many states, prospective returns are a better source of information on the potential impacts of the expiration of these caps than historic profitability. Holding period returns – stockholder profits from buying, holding and then selling shares over a defined period -- also measure the anticipated effect of prospective retail rate increases, since stock prices incorporate expectations of future earnings.

When retail choice legislation was being developed, many utilities expressed the concern that they would not be able to fully pay off the remaining book value and operating costs of their generating plants from the revenue earned by selling power at market-based rates. These utilities were therefore allowed to collect such unrecoverable, or “stranded”, costs from the electric rates charged to customers. Stranded investment recovery was intended to be part of a compact – ratepayers would pay off the portion of the plants that would not be recovered in a market, and would receive the “benefit” of rate freezes and the ability to shop for power. But what this study shows is that these formerly regulated companies were able to pay off their stranded costs, and are now reaping the benefits from plants that were much more profitable in the market than anticipated. Meanwhile, few consumers are shopping, and most are facing price increases.

### ***Wholesale Restructuring***

The financial status of companies that sell power in PJM is affected by the market rules for setting PJM energy and capacity prices. Energy prices are paid on an hourly basis for electricity that is delivered and capacity prices are paid to generators for assuring that capacity will be available whether the capacity operates or not. PJM rules establish how wholesale electricity prices are computed, how capacity prices are determined, and how “reliability must run” plants will be compensated (discussed later in this section). The switch from cost-based pricing to locational, bid-based pricing was approved by the Federal Energy Regulatory Commission in November 1997. Capacity markets are currently being restructured based upon a

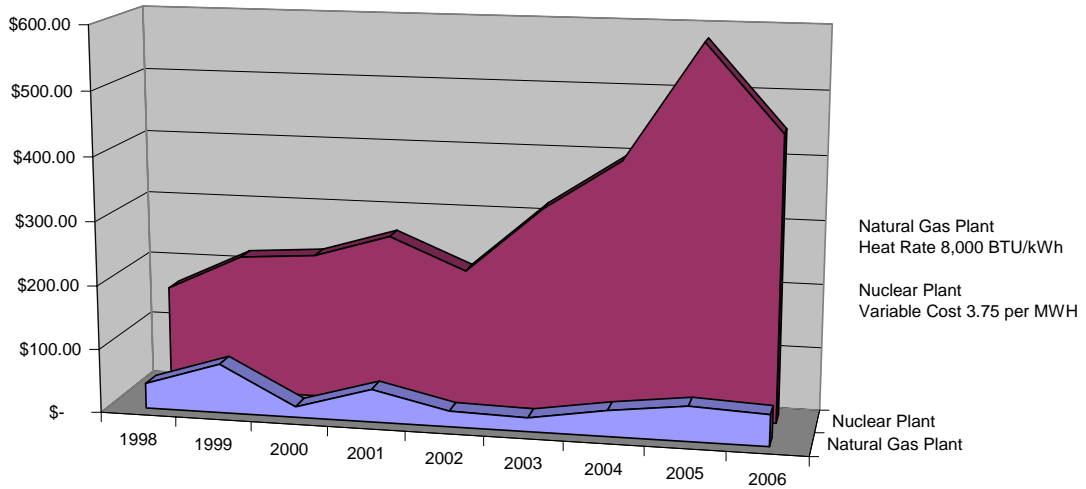
proposal called the Reliability Pricing Model. Naturally, profitability is also affected by the pricing of bilateral contracts between the generation companies and T&D companies for power not sold into the PJM wholesale market.

Energy prices in PJM have increased in the past few years, largely because oil and gas fired plants frequently set the price that is paid to all generators. With single clearing prices used to set prices for all megawatt-hours, these price increments accrue to the net income of all companies, even those that do not produce energy with natural gas or oil plants. Spot market electricity prices are therefore the largest single driver of profit for base load generation plants that do not have bilateral contracts.

In the absence of bilateral contracts with regulated entities under a price cap regime, PJM Companies would earn revenues driven by spot energy prices. Even if new bilateral contracts were arranged, they would be heavily influenced by spot market pricing opportunities. Under such circumstances, the effect of energy price changes on companies will vary according to the types of capacity they own. To illustrate the financial effects on companies with different capacity profiles, the profit per kW of capacity is simulated for a nuclear plant and for a natural gas plants with a heat rate of 8,000 BTU/kWh. This simulation assumes that the two hypothetical plants do not have bilateral contracts and that the plants are dispatched in each hour where it is profitable to operate. The dispatch decision for the illustrative case is made by computing the variable costs of operating the plants (including fuel) and dispatching the plants each hour in which the market price exceeds the variable cost. The excess of energy prices above variable costs for one MW of capacity is accumulated over each year. This analysis demonstrates that the nuclear plant has earned increasing profits from selling energy while the natural gas plants have earned minimal returns. The illustrative cases explain why the Core PJM Companies with base load capacity are projected to have strong financial results once rate caps and associated bilateral contracts expire. Coal plants have a similar pattern as nuclear plants since the variable costs of coal are low relative to the market price.



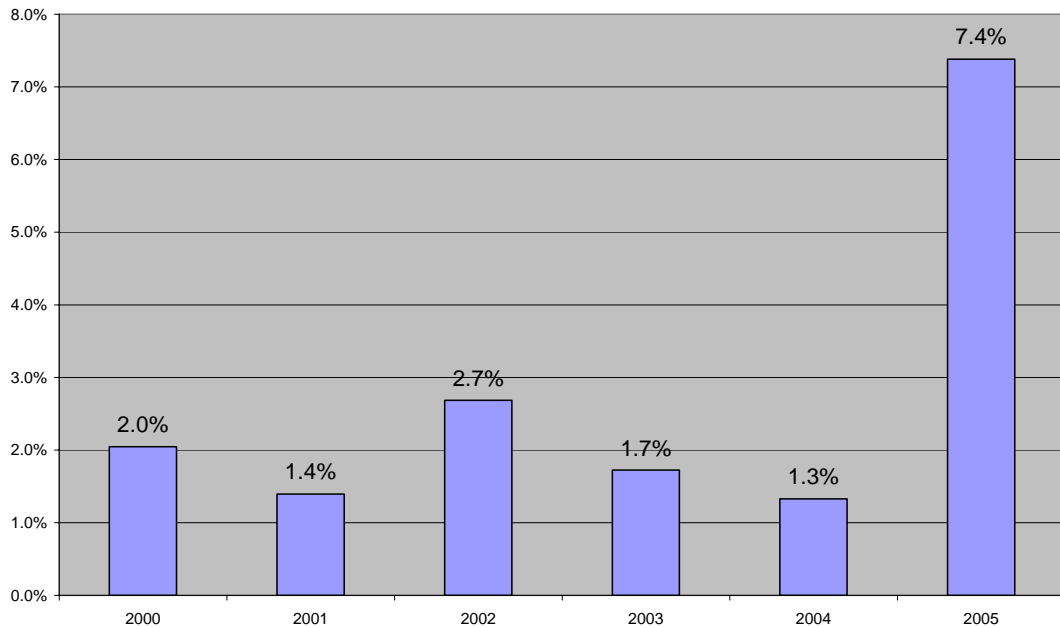
### Operating Margin per kW/Year



	1998	1999	2000	2001	2002	2003	2004	2005	2006
Natural Gas Plant	\$39.28	\$76.95	\$16.66	\$51.19	\$24.44	\$21.81	\$40.40	\$54.61	\$48.98
Nuclear Plant	\$163.08	\$218.76	\$226.81	\$262.82	\$213.84	\$317.20	\$395.59	\$578.77	\$445.18

The experience of Midwest Generation (owned by Edison International) is a good illustration of what can happen when fixed-price, transition-period contracts end and generators are free to charge market-based rates. Midwest Generation operates a number of coal plants in Illinois, and prior to 2004, the company sold energy from the plants under fixed-price contracts with Exelon. The company experienced low returns in the 2000-2004 time period, in part because of the high price it originally paid for the capacity in 1999 along with fixed price contracts that were established at the time. However, as shown on the graph below, Midwest Energy’s return on investment jumped dramatically once the contracts expired.

### Midwest Generation Return on Invested Capital



PJM companies receive revenues from payments for capacity as well as the energy revenues discussed above. In the past, low capacity prices have negatively affected the profitability of some plants in PJM, most notably gas-fired peaking plants that receive a relatively high proportion of their income from capacity payments. After the California power crisis of 2000-2001, capacity pricing has been the subject of many policy debates in the power industry. Generating companies have argued for changes in the structure of markets that would increase capacity prices and (in theory) assure construction of new capacity. In PJM, future capacity prices will be established using its Reliability Pricing Model (“RPM”).

In their investor analyst presentations, many PJM Companies tout the financial benefits of expected increases in capacity prices. For example, PSEG estimates that capacity prices will increase from current levels of less than \$10 per kW per year to as much as \$35 per kW per year by 2008.<sup>7</sup> The primary features of RPM are the establishment of locational capacity markets using an administratively-determined downward-sloping demand curve; a four-year-forward commitment of capacity; allowing certain planned resources, transmission upgrades and demand resources to compete with existing generation resources to satisfy capacity requirements; and market power mitigation rules (which are applied mainly to existing generation resources).

The prospective increases in capacity prices have been the subject of other studies. For example, a report on RPM by Synapse Energy Economics examined the prospective earnings of

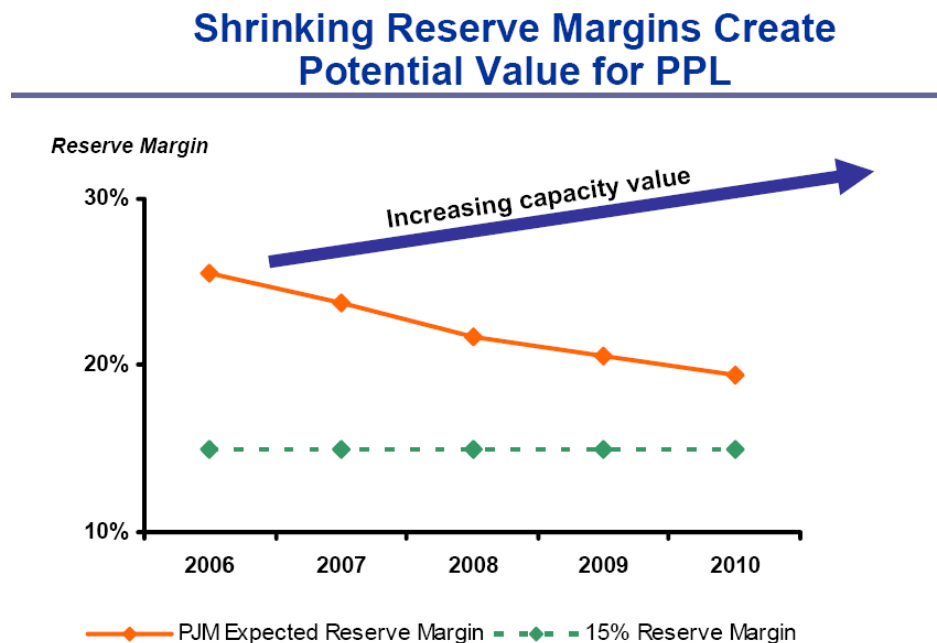
---

<sup>7</sup> According to PSEG investor presentations: “capacity prices in PJM have decreased to less than \$10 per kW-year in 2003 from historical levels of more than \$25 per kW-year in 2001...This overcapacity has decreased capacity revenues and has decreased margins from some of Power’s units.” With the RPM, capacity prices are expected to increase to “\$20/kW/year to mid \$30’s/kW/year.”

Exelon Corporation’s nuclear fleet and four non-nuclear generating facilities in Pennsylvania.<sup>8</sup> The Synapse study concludes with the projection of:

“a total capacity payment for these 17,000 MW of baseload generation of over \$830 million annually. This may be compared with about \$240 million based on the average market capacity price over the last six years. Thus RPM, as filed by PJM, would mean an additional \$590 million in capacity payments to these existing, largely amortized, base load generating plants in Illinois and Pennsylvania, at consumer expense.”

The generators’ perspective is illustrated by PPL’s investor analyst presentation below.



In this study, the effect of increased capacity prices is incorporated in the prospective return on equity analysis and the holding period return comparisons. The expectation of increased capacity prices is candidly presented by many of the PJM generators.

<sup>8</sup> “RPM 2006: Windfall Profits for Existing Base Load Units in PJM, An Update of Two Case Studies,” Synapse Energy Economics, February 2, 2006. Available at <http://www.synapse-energy.com>.