

# **The Deregulation Penalty: Losses for Consumers and Gains for Sellers**

**A Report to the American Public Power Association  
By Edward Bodmer<sup>1</sup>**

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<sup>1</sup> Edward Bodmer is a financial and economic consultant. Elise Caplan and John Kelly of the American Public Power Association have been integral to this report through their comments. The report would not have been possible without their hard work and contributions.

## I Introduction and Summary of Results

This paper presents an analysis of the financial performance in 2008 of the companies with the greatest amount of unregulated generation selling power in the wholesale electricity market operated by the PJM Interconnection. This analysis provides a means to assess the costs to consumers from the restructuring of the electricity markets in the PJM region. Excess earnings by these companies indicate that the revenues from the sale of electricity greatly exceed the costs of producing electricity. Were these restructured markets truly competitive, as is claimed by their supporters, such high profits would bring additional entrants into the market and drive down the prices. Anomalous financial outcomes, such as those experienced by these companies year after year, would be unlikely to occur in efficient competitive markets. The profitability of these companies is therefore a direct indicator of higher costs for consumers.

This report updates two earlier reports prepared for the American Public Power Association to measure the profitability and financial performance of these companies.<sup>2</sup> As with the earlier studies, the main objective of the inquiry is to compare the earnings and shareholder benefits of deregulated companies with those of regulated, vertically integrated utilities to estimate the cost penalty to consumers under deregulation. Because there is not one all-encompassing measure, various approaches are applied, including both financial or accounting earnings and stock market performance. The measures used for this analysis are listed below and described in greater detail in the body of the report and in Appendix C.

A. Financial Accounting Measures of Profitability: The indicators listed below are financial or accounting measures, meaning they are available from the annual financial reports provided by the companies to the Securities and Exchange Commission (SEC), and are actual measures of dollar earnings.

- Return on Equity: Net income (after preferred dividends) divided by the average common equity balance. Net income is the profit of the company and the common equity is the amount under shareholder ownership.
- Return on Invested Capital: After-tax operating income divided by the total invested capital (debt plus adjusted equity less cash). Operating income does not account for interest expense, non-recurring items, and investments in other firms.
- Gross Margin: Total revenue from the sale of electricity, less the cost of fuel and purchased power.

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<sup>2</sup> These studies were: *The Electric Honeypot: The Profitability Of Deregulated Electric Generation Companies*, by Edward Bodmer, February 2007, <http://appanet.org/files/PDFs/Bodmerstudywappendices.pdf>; Affidavit of Edward Bodmer, Comments of the American Public Power Association, FERC Dockets RM07-19-000 19-000 and AD07-7-000, Wholesale Competition in Regions with Organized Electric Markets, September 14, 2007, <http://appanet.org/files/PDFs/bodmer.pdf>.

- Cash Flow from Operations: Revenue from all operations net of expenses, this measure is compiled from the cash flow statement of each company. Cash flow reflects actual taxes paid, removes the effects of mark-to-market accounting<sup>3</sup>, does not subtract depreciation, and deducts total actual operating expenses.
- Free Cash Flow before Capital Expenditure: Measures cash flow after expenses on capital investments. Free cash flow subtracts investment expenses from the cash flow from operations.

B. Stock Market Indicators: These measures are indicators of the market value of the company's stocks and determine the benefits that accrue to shareholders. Investors ultimately care about the cash that goes into their pockets, not return on investment figures computed from accounting information. Two analyses were performed to illustrate shareholder benefits.

- Holding Period Returns to Shareholders: This is the primary measure of investor earnings, and is equal to the total cumulative earnings from changes in the share price plus dividends over a given period of time ("holding period.")
- Market-to-Book Ratio: Equal to the stock price divided by the per share cash investment in the company. This provides another measure of the market value of a company compared to the actual cash investment.

C. Companies in the Study. Each of the above indicators is measured for two groups of companies that sell power in PJM on a deregulated basis (Core PJM Companies and Merchant Companies) and a comparison group of Regulated Companies. Each of these groups is defined as follows:

- Core PJM Companies: These are owners of formerly vertically integrated, state-regulated utilities and include Exelon ("EXC"), Allegheny ("AYE"), Public Service Enterprise Group ("PSEG"), Constellation Energy ("CEG") and PPL Energy ("PPL"). Generating assets owned by these entities were generally constructed pursuant to state regulatory approval, where funding of the plants was made possible by rate-of-return regulation.
- Merchant Companies: These companies were not initially formed as regulated utilities and do not have an obligation to provide electricity to retail customers. Instead, their primary business is selling power in deregulated wholesale markets. The merchant companies include Mirant ("MIR"), Reliant Energy ("RRI"), NRG Energy ("NRG") and Midwest Generation, a subsidiary of Edison Mission Group, which is a subsidiary of Edison International ("EIX").
- Regulated Companies: To benchmark the profitability and the stock prices of PJM companies, we have used a set of vertically integrated companies that still earn

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<sup>3</sup> Mark-to-market accounting measures the change in the market value of assets and assigns gains or losses to the company's earnings based on such increases or decreases.

revenues under rate-of-return regulation. Additional detail on the regulated sample is provided in Appendix A.

D. Sources of Financial Data: All of the companies analyzed in this report file financial reports with the SEC. Three of the PJM companies – Exelon, PSEG and PPL – present financial data in a manner that allows one to compute returns for the generating segment separately from other businesses. The other two PJM companies – AYE and Constellation – have less transparent reporting that does not allow differentiation of returns associated solely with generation of electric power. In particular, Constellation Energy mixes the reporting of its speculative trading activities with its brokering and its generation plants. With the exception of Midwest Energy, the parent (holding) companies for all of the companies also have publicly listed shares.<sup>4</sup>

E. Analytical Framework: A fundamental premise of this analysis is that the differential between the earnings of companies that own deregulated generation assets and those that remain regulated provides an estimate of the costs to consumers from deregulation. APPA and others have presented data showing that electricity rates in deregulated regions exceed those in regulated regions, and that the gap between the two continues to grow.<sup>5</sup> This analysis provides the other side of the story – that these price differentials cannot simply be a reflection of differences in costs if the profits of the deregulated companies significantly exceed those of regulated entities.

What is striking about this analysis is that the earnings for these owners of generation remained high in 2008, despite the severe economic downturn and record numbers of consumers unable to pay their bills. Although stock prices fell for all of the companies in this study, investors still earned more than if they had invested in the S&P 500 or in regulated utilities. Accounting measures of profitability – such as return on equity and cash flow – continued to increase last year.

F. Summary of Findings: This analysis demonstrates the largest owners of unregulated generation in PJM have extracted large amounts of wealth from consumers under a market structure ostensibly intended to create competition to benefit consumers. Following are the primary indicators of the large magnitude of the costs incurred by consumers.

- The difference in return on equity earned by the Core companies relative to the return earned by regulated companies was \$4.9 billion in both 2007 and 2008 and \$20 billion in total from 2001 through 2008.

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<sup>4</sup> All of the companies are either directly listed or are subsidiaries of holding companies with listed shares. In the case of Midwest Generation, the company that has generating assets in PJM is a very small part of Edison Mission Group, which is a subsidiary of Edison International, its holding company. Changes in Midwest Generation's profits and cash flow do not have much of an effect on the overall operations of Edison International and its stock price.

<sup>5</sup> *Retail Electric Rates in Deregulated and Regulated States: 2008 Update*, March 2009, <http://appanet.org/files/PDFs/RKWFfinal2008update.pdf>.

- In 2008 alone, the gross margin on electricity sales for the Core company generating segment and the Merchant Companies increased by \$4.4 billion.
- The Core and Merchant companies have realized increases of more than \$6 billion in free cash flow since 2005.
- Shareholder earnings in the PJM companies were between \$33 billion and \$47 billion greater than investments in the S&P 500 over six and ten-year holding periods, and between \$19 billion and \$26 billion above regulated companies.
- The difference in market-to-book ratios for unregulated relative to Regulated Companies implies that shareholders expect a future revenue stream of \$47 billion from ownership of stock these companies, above that earned from regulated companies.

The remainder of this paper explains the financial performance measures and the calculation of the outcomes in greater detail.

## **II Return on Equity**

### A. Determination of Return on Equity

Return on equity is a measure of profitability. It drives the revenue requirements used to determine rates for regulated companies. This measure also provides an indicator of earnings by shareholders relative to the investment they have made in the company (although it does not measure gains or losses from changes in the stock price). Return on equity is calculated by dividing the net income (after preferred dividends) by the average common equity balance. Net income is the profit of the company and the common equity is the amount under shareholder ownership.

Although the return on equity is a simple number to compute and interpret, the manner in which accounting data are compiled can distort comparisons between companies based on the return on equity. First, straight line depreciation over long-lived assets means returns increase as plants age, even though cash returns to investors do not change. Second, non-recurring write-offs and changes in accounting policy affect the measurement of net income (or profit) in the numerator. Further, accounting adjustments for goodwill, accumulated other comprehensive income and write-offs can distort the investment base that is the denominator in the accounting return calculations. (These are discussed in greater detail in Appendix C). Because return on equity is affected by accounting conventions, we have computed the following three different measures of return on equity:

- Unadjusted return on equity. This statistic is simple to calculate, and is a straightforward division of net income by the common equity balance (without adjustments to financial statement data.)

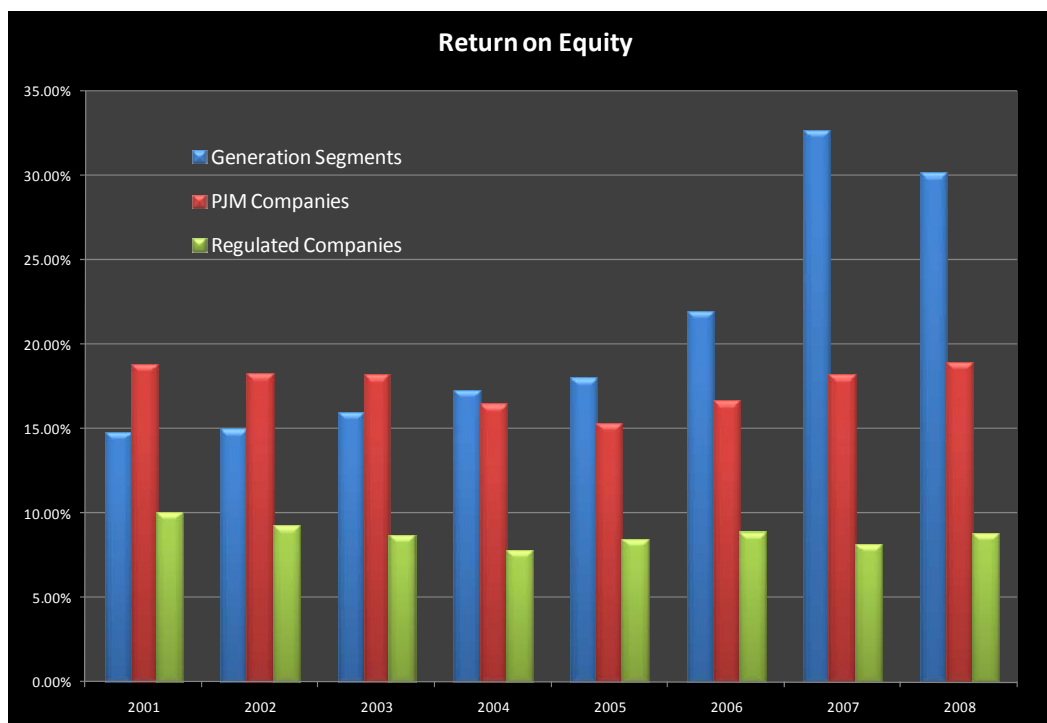
- Return on equity with adjustments. Adjustments are made to equity capital to exclude goodwill, accumulated other comprehensive income, and plant write-offs associated with changing accounting methods. This measure of return requires adjustment of both the numerator and the denominator of the return on equity calculation.

For the regulated companies, the complications related to goodwill, write-offs, bankruptcy, capital structure changes and other factors generally do not arise. These companies do not frequently engage in business activities that cause the complications such as accumulated other comprehensive income encountered in the analysis of the Core and Merchant companies.

- Return on shareholders' equity reported by the Value Line Investment Survey. This external source is used to confirm that our results are generally in line with numbers computed from other sources. Returns on equity computed for the regulated sample are extracted from the Value Line investor survey.

There are two potential frameworks for calculating the adjusted and unadjusted return on equity. The first is to use the *total company* net income and common equity, which are provided by all the companies in their quarterly and annual filings submitted to the SEC. The second is calculated using just the *unregulated generating segment* net income and common equity, which provide a more accurate measure of the costs from deregulation because generation is a component of total electricity costs. The Core and Merchant companies often earn returns from other businesses that do not affect electric utility bills, such as energy trading or international power plants. But only three companies segregate their financial data for the unregulated generating plants.

The return on equity analysis demonstrates that the profitability of unregulated generating segments, where the data are available, has been particularly high in the past two years. The following graph illustrates the weighted average unadjusted return earned by the Core and Merchant companies in the aggregate, by regulated companies and the deregulated generation segments for Exelon, PSEG and PPL. In 2007 and 2008, these generating segments realized annual returns of 30 percent, while returns for regulated companies remained below 10 percent.



The following three tables present the three measures of return on equity earned by the Core companies in the aggregate, the generating segments (where the data are available)<sup>6</sup>, and the Merchant companies.

**Table 1: Unadjusted Return on Equity**

	2001	2002	2003	2004	2005	2006	2007	2008
<b>Core PJM Companies</b>								
Exelon	18.49%	21.08%	9.76%	20.54%	10.25%	17.14%	29.39%	29.30%
PSEG	18.84%	10.10%	18.10%	12.88%	14.23%	15.40%	18.25%	13.05%
PPL	8.74%	17.64%	26.77%	18.62%	15.66%	18.13%	24.12%	17.49%
Allegheny	23.24%	-26.00%	-17.92%	-21.65%	4.93%	16.91%	17.86%	14.68%
Constellation Energy	2.13%	13.61%	11.41%	12.78%	12.58%	15.72%	16.51%	-30.85%
Adjusted Average (1)	17.33%	15.61%	16.51%	16.21%	13.18%	16.66%	21.23%	18.63%
Weighted Average (2)	16.23%	15.40%	14.67%	16.14%	12.24%	17.03%	24.45%	18.17%
<b>Generating Segments</b>								
Exelon Generation	19.34%	14.02%	-4.54%	22.45%	31.29%	29.75%	41.20%	41.67%
PSEG Power	27.38%	31.53%	41.64%	10.89%	5.95%	15.49%	28.01%	28.17%
PPL Energy Supply	4.96%	7.96%	20.82%	17.30%	13.22%	16.08%	24.75%	15.36%
Weighted Average (2)	14.80%	15.00%	15.95%	17.30%	17.99%	21.94%	32.66%	30.13%
<b>Merchant Companies</b>								
NRG	14.34%			7.25%	2.60%	14.48%	10.50%	18.84%
Mirant	14.64%	5.05%				72.44%	40.91%	27.89%
Mirant - PJM	5.72%	5.82%	-14.53%	3.65%	0.23%	29.02%	-2.69%	67.44%
Reliant	16.37%	-9.90%	-30.70%	-0.67%	-8.56%	-3.10%	8.16%	-19.58%
Midwest	-19.27%	-3.44%	-174.51%	-5.84%	12.34%	10.08%	10.64%	13.45%
<b>Regulated Utility Companies</b>	10.05%	9.20%	8.70%	7.80%	8.50%	8.90%	8.10%	8.80%

(1) The adjusted average does not include AYE in 2001-2004 and Constellation in 2008

(2) Weights are from the equity balance

<sup>6</sup> The return on equity could not be computed for the generating segments of Constellation and Allegheny because of the manner in which their financial statements are presented.

**Table 2: Adjusted Return on Equity**

<b>Core PJM Companies</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Exelon	14.88%	20.55%	18.42%	17.70%	19.43%	19.56%	22.85%	22.51%
Constellation Energy	11.97%	16.41%	11.71%	13.60%	13.24%	12.94%	14.33%	11.00%
PSEG	15.48%	16.43%	19.44%	15.74%	12.10%	13.12%	13.92%	20.61%
PPL	22.03%	19.69%	23.23%	18.69%	16.36%	18.08%	19.32%	16.03%
Allegheny	22.88%	-25.60%	-18.48%	2.60%	9.51%	19.74%	20.46%	16.70%
Adjusted Average (1)	18.82%	18.27%	18.20%	16.43%	15.28%	16.69%	18.18%	18.97%
Weighted Average (2)	15.25%	18.63%	18.10%	16.52%	16.00%	16.55%	18.42%	20.83%
<b>Generating Segments</b>								
Exelon Generation	18.90%	13.56%	9.45%	17.49%	27.02%	26.45%	37.16%	37.84%
PSEG Power	27.38%	31.53%	41.64%	10.89%	5.95%	15.49%	28.01%	28.17%
PPL Energy Supply	20.56%	19.65%	25.35%	23.66%	18.94%	21.86%	31.51%	18.63%
Weighted Average (2)	21.29%	19.68%	23.12%	17.28%	18.02%	22.10%	32.99%	29.46%
<b>Merchant Companies</b>								
NRG	13.90%			7.98%	2.84%	19.81%	15.80%	26.65%
Mirant	14.64%	6.34%	-87.98%	-65.15%	-413.79%	80.02%	43.58%	27.03%
Mirant - PJM	5.76%	5.92%	1.94%	3.44%	1.06%	28.80%	2.96%	65.30%
Reliant	29.18%	-7.81%	-29.30%	5.81%	-1.95%	-6.74%	6.51%	-16.63%
Midwest	-19.27%	-3.50%	37.14%	1.08%	8.53%	6.44%	7.24%	10.34%
<b>Regulated Utility Companies</b>	10.05%	9.20%	8.70%	7.80%	8.50%	8.90%	8.10%	8.80%

(1) The adjusted average does not include AYE in 2001-2004 and Constellation in 2008

(2) Weights are from the equity balance

#### Notes on Tables 1 and 2:

1. Average of the Core company returns is adjusted to exclude losses incurred by AYE from 2001 to 2004 and by Constellation in 2008.
2. Weighted averages shown for the Core companies and for the generating segments are weighted according to the equity balances of the companies.
3. No average was computed for the Merchant companies because of the distorting effects of the bankruptcy of NRG and Mirant on the computed returns. The negative return realized by Reliant Energy in 2008 resulted largely from losses from its energy marketing activities rather than its power plants.
4. A full list of the regulated companies and their individual returns is provided in Appendix A.

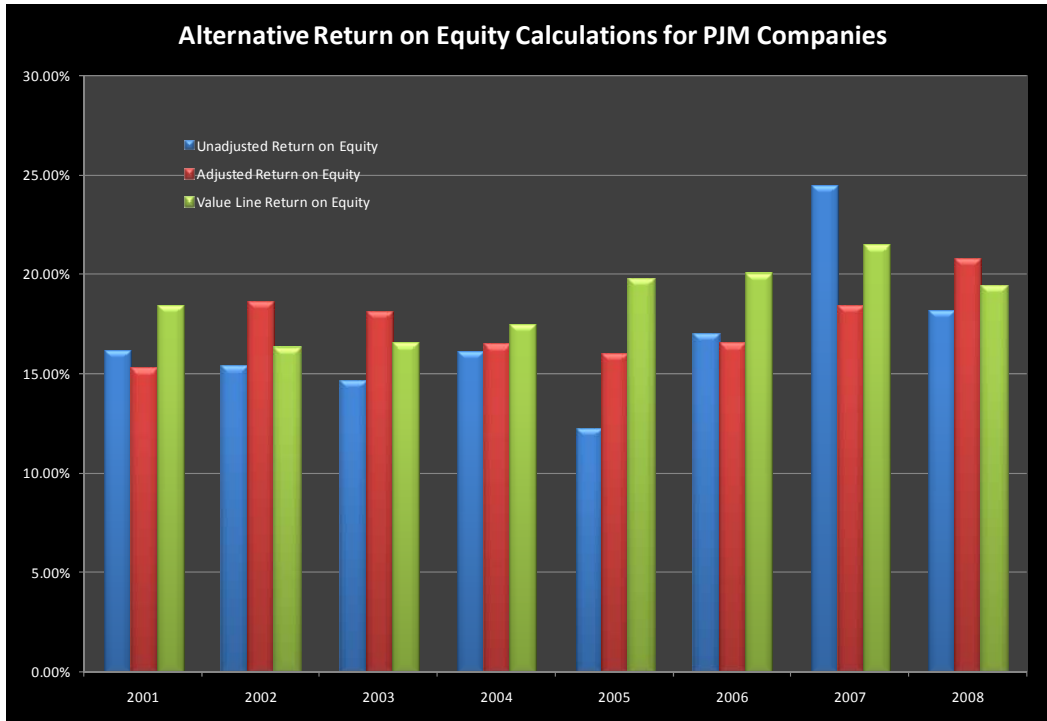
**Table 3: Return on Equity Reported by Value Line**

<b>Core PJM Companies</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Exelon	17.20%	20.10%	18.80%	19.50%	23.60%	23.70%	26.90%	24.60%
PSEG	18.60%	18.60%	18.60%	18.60%	18.60%	18.60%	18.60%	18.60%
PPL	20.80%	18.10%	20.20%	16.10%	16.50%	17.30%	18.20%	18.20%
Allegheny	17.24%	-26.30%	-22.11%	6.09%	9.09%	15.39%	16.30%	13.90%
Constellation Energy	9.20%	9.30%	11.10%	11.70%	12.30%	14.80%	14.70%	2.60%
Adjusted Average (1)	18.46%	16.53%	17.18%	16.48%	17.75%	17.96%	18.94%	18.83%
Weighted Average (2)	18.43%	16.33%	16.58%	17.51%	19.77%	20.01%	21.48%	19.45%
<b>Merchant Companies</b>								
NRG				6.00%	3.10%	9.40%	9.90%	14.00%
Reliant	9.40%	6.30%	3.70%				3.40%	1.50%
<b>Regulated Utility Companies</b>	10.05%	9.20%	8.70%	7.80%	8.50%	8.90%	8.10%	8.80%

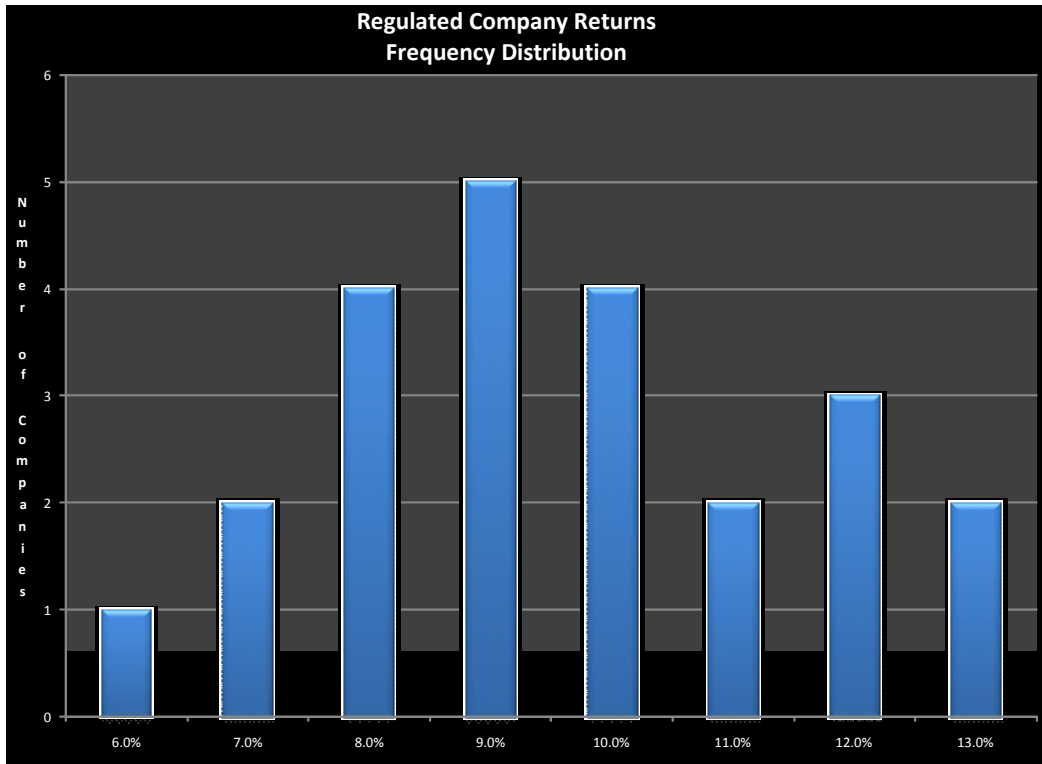
Note: Table 3 does not include generation segments or Mirant because Value Line only computes returns on an aggregate basis and does not prepare a report for Mirant.



The three different measures of return on equity for the PJM Core and Merchant companies are shown on the graph below. This graph demonstrates that each of the return on equity measures produces similar results.



The graph below shows the frequency distribution of 2008 returns for regulated companies and demonstrates that the returns of the Core and Merchant Companies and the generating segments in particular falls outside the entire range of the Regulated Companies.



## B. Use of Return on Equity to Calculate Costs to Consumers

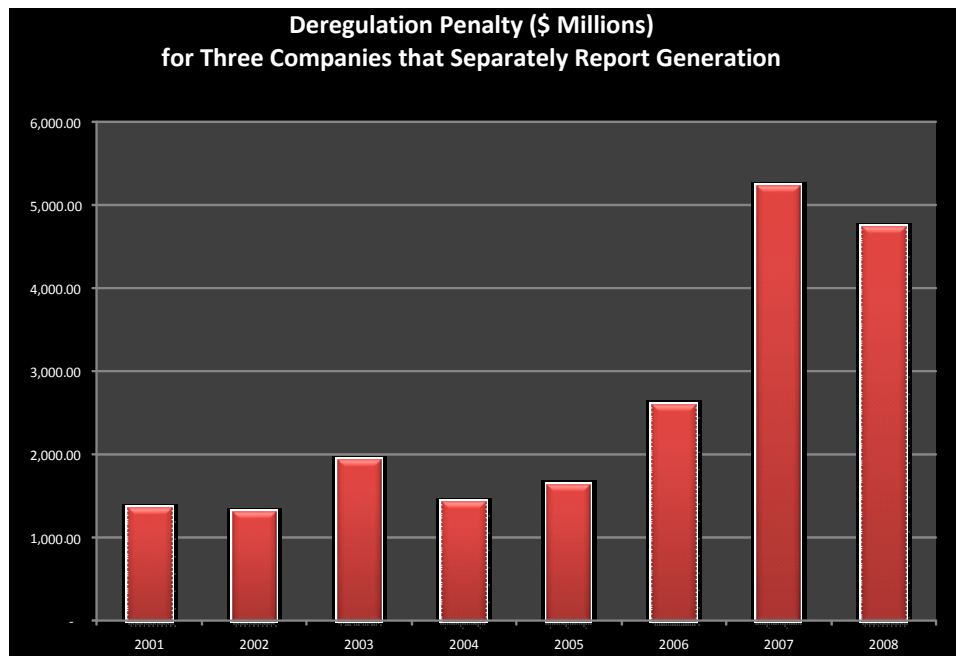
The return on equity data can be used to estimate the costs to consumers from the deregulation of electricity generation in PJM. To make this calculation, the first step is to compute the amount of “surplus return” or the excess that the generators are earning compared to what they would have earned under regulation, using the formula:

Surplus Return = (Generating Segment Adjusted ROE – Regulated ROE) x Deregulated Company Equity

The return on equity in this formula is calculated using after-tax net income. The next step is to determine the pre-tax amount by dividing the surplus return by one minus the tax rate.

Given the manner in which the companies report their finances, it is possible to make this computation for the three companies that report results for generating segments, or for the all companies in aggregate. The method presented here uses only the generating segments because, as explained earlier, this is the portion of the electricity bill directly affected by deregulation. The problem with making the calculation on an aggregate holding company basis is that the results are affected by distribution companies and other non-generation activities. This selected method, while more accurate, is an underestimate because it does not include all the generation sold into PJM. It does, however, provide a rough idea of the magnitude of the costs to consumers and the economy.

The tables below show that the average surplus costs to consumers for the three generating segments of Exelon, PSEG and PPL totaled \$10 billion in 2007 and 2008. When the annual costs are summed over the period beginning in 2001, we see that consumers paid a \$20 billion “deregulation penalty” just from these three generating segments.



**Table 4: Computation of Aggregate Consumer Costs from Generating Segment Analysis**

	2001	2002	2003	2004	2005	2006	2007	2008	Total	Avg 07-08
Returns for Excess Cost Analysis										
PJM Generation Segment Return	21.29%	19.68%	23.12%	17.28%	18.02%	22.10%	32.99%	29.46%	22.99%	31.22%
Regulated Return	10.05%	9.20%	8.70%	7.80%	8.50%	8.90%	8.10%	8.80%	8.76%	8.45%
Excess Return Earned by PJM Generation	11.24%	10.48%	14.42%	9.48%	9.52%	13.20%	24.89%	20.66%	14.24%	22.77%
Equity Balance of PJM Generation	7,236	7,426	8,003	9,079	10,301	11,823	12,598	13,754		
<b>Excess Earnings (Return x Balance)</b>	<b>813.58</b>	<b>778.61</b>	<b>1,153.94</b>	<b>861.05</b>	<b>980.55</b>	<b>1,560.14</b>	<b>3,134.96</b>	<b>2,842.06</b>	<b>12,124.90</b>	<b>2,988.51</b>
Tax Rate	40%	40%	40%	40%	40%	40%	40%	40%		
<b>Excess Revenues paid by Consumers</b>	<b>1,355.97</b>	<b>1,297.68</b>	<b>1,923.24</b>	<b>1,435.08</b>	<b>1,634.25</b>	<b>2,600.24</b>	<b>5,224.94</b>	<b>4,736.77</b>	<b>20,208.17</b>	<b>4,980.85</b>

### III Return on Invested Capital and Cash Flow Trends

To eliminate potential biases from accounting adjustments and debt leverage that are present in the return-on-equity calculation, two other measures of financial performance are presented for the Core and Merchant companies: return on invested capital and cash flow, each of which is defined below. (A longer discussion of these measures is provided in Appendix C.)

- **Return on Invested Capital.** This statistic measures the income that accrues to total debt and equity investors rather than only equity investors. Return on invested capital is calculated by dividing after-tax operating income by the total invested capital (debt

plus adjusted equity less cash). Operating income is computed without interest expense or interest income, non-recurring items, or investments in other firms, but after taxes.

- Cash Flow: Cash flow has the advantage over the net income used to determine the return on equity, as it can be more difficult to manipulate through accounting methods. A company could report a positive net income, yet have a negative cash flow, for example.

Three different measures of cash flow are analyzed in this study:

1. Gross Margin. Equal to the total revenue from the sale of electricity less the cost of fuel and purchased power. The gross margin represents the contribution towards profits from electricity sales and drives trends in return on invested capital, return on equity and the other cash flow measures.
2. Cash Flow from Operations. Equal to the revenue from all operations net of expenses, this measure is compiled from the cash flow statement of each company. Cash flow reflects actual taxes paid, removes the effects of mark-to-market accounting<sup>7</sup>, does not subtract depreciation, and deducts total actual operating expenses.
3. Free Cash Flow before Capital Expenditure. Measures cash flow after expenses on capital investments such that the cash flow reflects operations rather than financing. Free cash flow is calculated by subtracting investment expenses from the cash flow from operations.

It is difficult to make an accurate comparison using these measures with available data on the regulated companies. Therefore in presenting the cash flow and return on investment statistics, we present just trends over the past few years for the Core and Merchant companies.

#### Summary of Findings:

- 1) On average, Core and Merchant companies experienced higher returns on invested capital in 2008 than in earlier years as shown in Table 7 below.

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<sup>7</sup> Mark-to-market accounting measures the change in the market value of assets and assigns gains or losses to the company's earnings based on such increases or decreases.

**Table 7: Return on Invested Capital**

	2001	2002	2003	2004	2005	2006	2007	2008
<b>Core PJM Companies</b>								
Exelon	8.93%	10.18%	8.47%	9.52%	11.31%	11.73%	12.81%	13.40%
Constellation Energy	5.82%	6.32%	6.93%	6.63%	6.75%	8.51%	8.84%	5.30%
PSEG	4.85%	6.79%	6.01%	5.30%	5.68%	8.39%	12.05%	11.58%
PPL	9.87%	9.74%	9.65%	9.47%	9.19%	9.41%	9.43%	9.85%
Allegheny	8.93%	-4.64%	-1.85%	6.01%	6.22%	9.40%	9.42%	8.51%
Adjusted Average (1)	7.37%	8.25%	7.77%	7.73%	7.83%	9.49%	10.51%	10.83%
<b>Generating Segments</b>								
Exelon Generation	8.16%	4.00%	4.34%	4.61%	8.38%	9.90%	12.63%	15.04%
PSEG Power	4.85%	6.79%	6.01%	5.30%	5.68%	8.39%	12.05%	11.58%
PPL Energy Supply	9.58%	12.18%	10.86%	10.42%	8.47%	10.40%	10.52%	11.00%
Average	7.53%	7.66%	7.07%	6.78%	7.51%	9.56%	11.73%	12.54%
<b>Merchant Companies</b>								
NRG	5.29%	2.12%	2.98%	8.41%	5.74%	10.65%	7.61%	11.49%
Mirant	-1.94%	3.65%		5.43%	11.93%	4.99%	2.08%	1.17%
Mirant - PJM	3.43%	6.76%		7.80%	10.78%	8.22%	6.02%	5.33%
Reliant	8.95%	10.48%	1.91%	3.41%	-0.19%	-0.88%	0.77%	5.74%
Midwest	1.39%	2.69%	1.72%	1.33%	7.38%	6.23%	7.76%	8.36%
Average	4.76%	5.51%	1.65%	5.24%	5.93%	6.05%	5.54%	7.73%

2) Gross margins have increased since 2004 for both Core and Merchant companies, (see Table 8). Unlike the aggregate return on investment or return on equity statistics, AYE and Constellation in 2006 began to present revenue and fuel cost statistics for the merchant generation segment separately. The gross margin trend demonstrates that Constellation's generation's gross margin increased by half a billion dollars from 2006 to 2008. For the generation segment of PJM companies other than Constellation and AYE, there has been a consistent increase in gross margin for each year since 2003 due to both increased energy and capacity prices. Total gross margin for the Merchant companies (which includes the PJM portion of Mirant) increased significantly in 2006 and 2008 in part because of changes in the amount of capacity owned by NRG.

**Table 8: Gross Margin (Revenues Less Purchased Power and Fuel in \$ Millions)**

Core PJM Companies	2001	2002	2003	2004	2005	2006	2007	2008
Exelon			8,954	9,204	9,711	10,423	11,274	12,277
Constellation Energy	-	-	927	864	887	1,348	1,321	613
PSEG	4,844	4,417	4,671	4,813	4,967	5,209	6,330	6,027
PPL			3,934	4,113	4,363	4,680	4,872	4,773
Allegheny			1,277	1,813	1,843	1,896	1,983	1,909
<b>Total</b>			<b>19,763</b>	<b>20,807</b>	<b>21,771</b>	<b>23,556</b>	<b>25,780</b>	<b>25,599</b>
Increase				1,044	964	1,785	2,224	(181)
<b>Generating Segments</b>								
Exelon Generation			3,015	3,692	4,564	5,165	6,298	7,182
PSEG Power	1,620	1,784	1,858	1,614	1,773	2,102	2,821	3,214
PPL Energy Supply			2,727	2,897	2,961	3,217	3,629	3,465
AYE Deregulated Generation						825	931	969
Constellation Merchant						1,490	1,700	1,956
<b>Total without AYE and Constellation</b>			<b>2,533</b>	<b>2,734</b>	<b>3,099</b>	<b>3,495</b>	<b>4,249</b>	<b>4,620</b>
Increase				201	365	395	755	371
<b>Total with AYE and Constellation</b>						<b>12,799</b>	<b>15,379</b>	<b>16,786</b>
Increase							2,580	1,407
<b>Merchant Companies</b>								
NRG	982	841	486	859	641	2,358	2,611	3,287
Mirant	1,886	961	1,097	1,128	881	1,947	1,107	2,129
Mirant - PJM	490	469	400	501	455	1,318	1,002	2,129
Reliant	5,640	6,178	2,258	2,419	1,846	1,346	1,441	2,552
Midwest	703	752	651	651	1,046	1,017	1,179	1,296
<b>Total</b>	<b>7,815</b>	<b>8,240</b>	<b>3,796</b>	<b>4,430</b>	<b>3,988</b>	<b>6,039</b>	<b>6,233</b>	<b>9,264</b>
Increase/Decrease		425	(4,444)	634	(442)	2,051	195	3,030

3) Cash flow from operations increased more dramatically than have the gross margins. The generating segments of the Core companies' cash flow increased by about \$8 billion from 2005 to 2008. A primary reason for this growth was the increased cash flow realized by Exelon and PSEG.

**Table 9: Cash Flow from Operations (\$ Millions)**

Core PJM Companies	2001	2002	2003	2004	2005	2006	2007	2008
Exelon			3,908	4,895	2,644	5,363	5,006	7,050
Constellation Energy	573	1,020	1,080	1,087	627	525	928	(1,274)
PSEG	1,169	(1,287)	1,447	1,605	949	1,926	1,921	2,345
PPL	909	802	1,340	1,497	1,388	1,758	1,571	1,589
Allegheny	336	326	370	524	486	763	955	861
<b>Total</b>			<b>8,145</b>	<b>9,607</b>	<b>6,095</b>	<b>10,335</b>	<b>10,381</b>	<b>10,571</b>
<b>Generating Segments</b>								
Exelon Generation			1,453	1,947	972	4,835	4,496	6,551
PSEG Power			700	575	215	2,015	2,016	2,443
PPL Energy Supply	619	651	910	616	838	1,240	1,094	1,039
<b>Total</b>			<b>3,063</b>	<b>3,138</b>	<b>2,025</b>	<b>8,090</b>	<b>7,606</b>	<b>10,033</b>
<b>Merchant Companies</b>								
NRG			(351)	645	68	408	1,517	1,434
Mirant			143	106	170	348	652	760
Reliant			869	(18)	175	1,330	755	173
Midwest			108	190	145	874	732	545
<b>Total</b>			<b>769</b>	<b>924</b>	<b>559</b>	<b>2,960</b>	<b>3,656</b>	<b>2,912</b>

4) Free cash flow before Capital Expenditure also increased in a pattern similar to the Cash Flow from Operations. (see Table 10)

	2001	2002	2003	2004	2005	2006	2007	2008
<b>Core PJM Companies</b>								
Exelon			3,908	4,895	2,644	5,363	5,006	7,050
Constellation Energy	743.22	1,207.38	1,285	1,288	817	731	1,127	(1,005)
PSEG			1,942	2,084	1,439	2,399	2,357	2,701
PPL	1,140.60	1,138.60	1,625	1,805	1,693	2,026	1,855	1,864
Allegheny	506.05	513.36	657	764	748	926	1,068	1,001
<b>Total</b>			<b>9,416</b>	<b>10,835</b>	<b>7,341</b>	<b>11,445</b>	<b>11,413</b>	<b>11,612</b>
<b>Generating Segments</b>								
Exelon Generation			1,506	2,009	1,049	4,930	4,593	6,633
PSEG Power			700	575	215	2,015	2,016	2,443
PPL Energy Supply	647.20	777.00	1,029	730	947	1,376	1,249	1,221
<b>Total</b>			<b>3,236</b>	<b>3,314</b>	<b>2,211</b>	<b>8,321</b>	<b>7,858</b>	<b>10,297</b>
<b>Merchant Companies</b>								
NRG			(155)	848	220	874	1,951	1,806
Mirant			144	104	159	497	765	864
Reliant			1,093	212	401	1,566	944	304
Midwest			248	273	201	924	728	515
<b>Total</b>			<b>1,329</b>	<b>1,437</b>	<b>981</b>	<b>3,862</b>	<b>4,388</b>	<b>3,489</b>

## IV Stock Price Analyses

This section presents two measures of stock prices of the Core and Merchant companies compared to Regulated Companies and the overall market, as measured by the S&P 500. An analysis of stock prices does not depend on accounting information and is forward-looking.<sup>8</sup> However, the outcomes of stock price analyses change with volatile stock market movements and depend on the start and end dates selected for the analysis.

Two different measures are presented in this section:

- Holding Period Returns to Investors: The gains to shareholders from stock price increases and dividends received over a defined time frame or “holding period,” compared to earnings from the Regulated companies and the S&P 500.
- Market-to-Book Ratio: Equal to the stock price divided by the per-share cash investment in the company. This is presented for the Core, Merchant and Regulated Companies.

Appendix B also presents a detailed review of trends in stock prices for the S&P 500, Regulated, Core and Merchant Companies.

### A. Holding Period Returns to Shareholders

This next section presents a measure of profitability from the perspective of investors in the company. The holding period return to investors measures the gains realized by

<sup>8</sup> Theoretically the value placed on shares indicates investors’ expectations about the future financial earnings of the company.

investors from share price increases and dividend payments. This return is compared to the amount that would have been realized had investments been made instead in a portfolio of regulated utility stocks or the S&P 500.

This type of analysis does not depend on accounting data. However, the method: (1) depends on the start date of the analysis; (2) assumes that the markets efficiently measure future cash flow prospects for the companies; and (3) reflects the drop in stock prices resulting from the loss of investor confidence in late 2008.

The selection of the start date or the holding period strongly affects the results of the analysis. For this study, we examined six- and ten-year holding period returns.

As shown in the tables below, this analysis finds that shareholder earnings in the Core companies were between \$33 billion and \$47 billion greater than the S&P 500 and between \$19 billion and \$26 billion above regulated companies. (The total dollar numbers are affected by the dramatic stock price decline of Constellation in 2008.) It should be noted that the estimate of the surplus earnings for investors compared to regulated companies is within the same range as the differential in the return on equity presented in Section II. The return on equity calculations found a cost to consumers of \$20 billion over a seven-year period for the three Core companies reporting generation separately.

Constellation's investors were an exception and suffered losses resulting from the extreme drop in its share price in 2008. The company's financial downfall was largely the result of a strategy to expand speculative trading, to purchase companies that could produce near-term earnings and an absence of data transparency in its reporting to investors. Once it became apparent that Constellation was making speculative bets and did not have the cash on hand to maintain its trading, investors panicked.<sup>9</sup>

To explain the calculation of these excess returns, Exelon's investor returns since 2003, as shown in the top line of the first two tables, is used as an example. Exelon's 658 shares were worth \$14.12 billion in 2003 ("Stock Index from 2003"). The current share price is \$45.75 and the total market value of the company is \$30.1 billion. (\$45.75 times 658 shares). During the same holding period, the value of the S&P index declined to 93 percent of the 2003 value. Had that same \$14.12 billion been invested in an equal number of S&P indexed shares in 2003, their value today would be \$13.2 billion. The surplus of total Exelon investor earnings relative to the S&P is therefore the difference in the value of an investment in Exelon and the S&P over the holding period, or \$16.9 billion (\$30.1 billion minus \$13.2 billion.)

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<sup>9</sup> Constellation's downturn will be analyzed in greater detail in an upcoming report.



Wealth Realized Relative to S&P Index Since 2003										
	Number of Shares (Millions)	Stock Price (\$/Share)	Market Capital (\$ millions)	Holding Period	Stock Index from 2003	Start Market Capital (\$ Millions)	Accum. Dollar Return (\$ Millions)	S&P Index	Accum Dollar S&P Index (\$ Millions)	Surplus Value Realized (\$ Millions)
Exelon	658	45.75	30,103.50	6	212.00%	14,199.76	30,070.86	93.00%	13,205.8	16,897.72
Constellation	199	22.96	4,571.03	6	82.00%	5,574.43	4,445.26	93.00%	5,184.2	(613.19)
PSEG	506	27.98	14,157.88	6	201.00%	7,043.72	14,138.84	93.00%	6,550.7	7,607.22
PPL	376	29.08	10,925.94	6	200.00%	5,462.97	10,910.95	93.00%	5,080.6	5,845.38
Allegheny	169	25.55	4,327.15	6	280.00%	1,545.41	4,325.71	93.00%	1,437.2	2,889.92
Total										32,627.04

Wealth Realized Relative to Regulated Index Since 2003										
Dollars and Shares in Millions										
	Number of Shares (Millions)	Stock Price (\$/Share)	Market Capital (\$ millions)	Holding Period	Stock Index from 2003	Start Market Capital (\$ Millions)	Accum. Dollar Return (\$ Millions)	Regulated Index	Accum Dollar Regulated Index (\$ Millions)	Surplus Value Realized (\$ Millions)
Exelon	658	45.75	30,103.50	6	212.00%	14,199.76	30,070.86	132.00%	18,743.7	11,359.81
Constellation	199	22.96	4,571.03	6	82.00%	5,574.43	4,445.26	132.00%	7,358.2	(2,787.21)
PSEG	506	27.98	14,157.88	6	201.00%	7,043.72	14,138.84	132.00%	9,297.7	4,860.17
PPL	376	29.08	10,925.94	6	200.00%	5,462.97	10,910.95	132.00%	7,211.1	3,714.82
Allegheny	169	25.55	4,327.15	6	280.00%	1,545.41	4,325.71	132.00%	2,039.9	2,287.21
Total										19,434.79

The holding period analysis using 1998 as the starting year is shown in the two tables below.

Wealth Realized Relative to S&P Index Since 1998										
	Number of Shares (Millions)	Stock Price (\$/Share)	Market Capital (\$ millions)	Holding Period	Stock Index from 2003	Start Market Capital (\$ Millions)	Accum. Dollar Return (\$ Millions)	S&P Index	Accum Dollar S&P Index (\$ Millions)	Surplus Value Realized (\$ Millions)
Exelon	658	45.75	30,103.50	11	616.00%	4,886.93	30,103.50	81.00%	3,958.4	26,145.09
Constellation	199	22.96	4,571.03	11	92.00%	4,968.51	4,567.53	81.00%	4,024.5	546.54
PSEG	506	27.98	14,157.88	11	353.00%	4,010.73	14,157.88	81.00%	3,248.7	10,909.19
PPL	376	29.08	10,925.94	11	416.00%	2,626.43	10,925.94	81.00%	2,127.4	8,798.53
Allegheny	169	25.55	4,327.15	11	98.00%	4,415.46	4,324.79	81.00%	3,576.5	750.63
Total										47,149.97

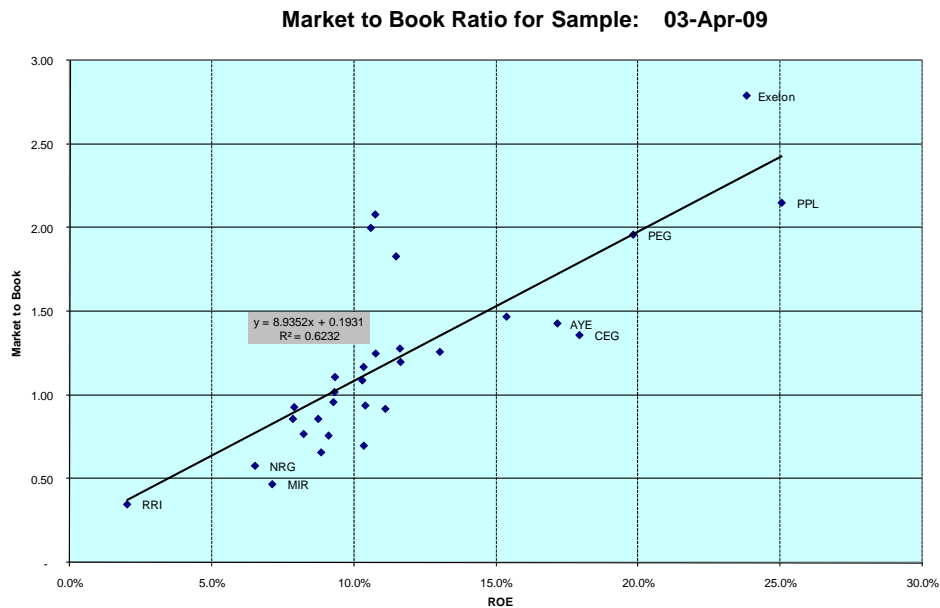
Wealth Realized Relative to Regulated Index Since 1998										
	Number of Shares (Millions)	Stock Price (\$/Share)	Market Capital (\$ millions)	Holding Period	Stock Index from 2003	Start Market Capital (\$ Millions)	Accum. Dollar Return (\$ Millions)	Regulated Indx	Accum Dollar Regulated Indx (\$ Millions)	Surplus Value Realized (\$ Millions)
Exelon	658	45.75	30,103.50	11	616.00%	4,886.93	30,103.50	181.00%	8,845.3	21,258.15
Constellation	199	22.96	4,571.03	11	92.00%	4,968.51	4,567.53	181.00%	8,993.0	(4,421.97)
PSEG	506	27.98	14,157.88	11	353.00%	4,010.73	14,157.88	181.00%	7,259.4	6,898.46
PPL	376	29.08	10,925.94	11	416.00%	2,626.43	10,925.94	181.00%	4,753.8	6,172.10
Allegheny	169	25.55	4,327.15	11	98.00%	4,415.46	4,324.79	181.00%	7,992.0	(3,664.83)
Total										26,241.91

## B. Market-to-Book Ratio

An alternative way to compute the shareholder benefits from PJM restructuring is to compare the market-to-book ratios for the Core and Merchant companies to ratios for the Regulated companies. The market-to-book ratio is calculated by the dividing the stock price by the book equity value per share. The book value per share measures the amount of investment made by equity investors through issuing stock or through allowing earnings to be retained in the company.

As such, the market-to-book ratio quantifies the market value of a company relative to the actual investment in the company. If the market-to-book ratio is 1.0, then the stock market is saying that the value of the company is equal to the investment put into the company. If the market-to-book ratio is above 1.0, the stock price implies that the expected future stream of earnings will exceed the investment made by shareholders.<sup>10</sup>

The graph below shows that even though the stock market prices have fallen for the Core Companies, they still have higher market-to-book ratios than typical regulated companies. This graph uses the forward expected return on equity and the market-to-book ratio from the Finance.Yahoo! Web site. The graph demonstrates that most Regulated Companies have a market-to-book ratio clustered around 1.0, which implies that regulated companies are approximately earning their cost of capital.<sup>11</sup> The graph shows that the Core Companies have market-to-book ratios ranging from 1.4 to 2.8 and they also have higher expected returns on equity than Regulated<sup>12</sup> or Merchant Companies.



<sup>10</sup> Past profits are not relevant to this calculation because they are either retained as earnings, which increase the book value per share and the market price, leaving the ratio the same, or the profits are dispersed in dividends that do not affect the market or book value. The market-to-book ratio is therefore affected only by future expectations.

<sup>11</sup> A basic premise of regulation is that if a company is expected to earn the cost of capital used to determine its rates on a continuing basis, the market value will equal the book value. In “The Cost of Capital” Seth Armitage states: “The ... aim of regulation implies that the market value of the company should be equal to the book value, at least immediately after a price-setting review ... If market value exceeds book value, it suggests that the actual rate of return exceeds the cost of capital, and vice versa.” (Armitage, S., 2005, p. 324.)

<sup>12</sup> The regulated companies are the cluster around the intersection of a market-to-book ratio of 1 and a return of 10 percent.

Because higher market-to-book ratios for PJM Companies, especially the Core companies, are driven by higher prospective returns for these companies, largely due to expected earnings from deregulated electricity markets, the difference between market-to-book ratios for these and Regulated Companies can be used to compute the prospective cost penalty to consumers, equal to the differential in earnings for investors from deregulation.

Prospective costs are computed using the following formula where M/B stands for the market-to-book ratio:

$$\text{Shareholder Deregulation Benefits} = (\text{Core M/B} - \text{Regulated M/B}) \times \text{Core Book Equity}$$

Once the shareholder benefits are computed, the consumer costs can be derived. As with the computation of aggregate costs from return on equity statistics, the aggregate consumer costs are calculated from adjusting the shareholder benefits for income tax. This is necessary because shareholder returns as reflected in the stock price are received after taxes are paid. The table below shows that for the five Core Companies, the total shareholder benefit is \$28 billion. After the income tax adjustment, the total costs expected to be incurred by consumers accumulate to \$47 billion.

	Adjusted Book Equity (\$ Millions)	Market to Book Ratio (April 2008)	Theoretical Market to Book Value	Market to Book Difference	Excess Value to Un-regulated (\$ Millions)
<b>Core PJM Companies</b>					
Exelon	11,429	2.79	1.15	1.64	18,743.49
Constellation Energy	3,851	1.36	1.15	0.21	808.73
PSEG	8,067	1.96	1.15	0.81	6,534.27
PPL	1,616	2.15	1.15	1.00	1,616.00
Allegheny	2,368	1.43	1.15	0.28	662.91
Total	27,331				28,365.40
Pre-Tax Cost to Consumers					47,275.67

## V Conclusion: Implications for Consumers

This analysis found that earnings by owners of unregulated generation from sales in the PJM Interconnection in 2008 contributed to a sustained high level of profits – despite the financial downturn and hardships faced by consumers. The combination of energy, ancillary service and capacity market revenue earned by these companies greatly exceeded the costs of producing the electricity that was sold into these markets. Capacity revenues clearly played a prominent role in the earnings profile. According to PJM, the weighted average capacity price rose from \$5.73 to \$111.93 per MW in 2008.<sup>13</sup>

This study’s findings show that consumers have simply not benefited from the restructuring of the wholesale markets – as was promised by the proponents of these markets. High prices in restructured regions are frequently explained by market supporters as the result of differentials in fuel costs. But were this to be the case, then

<sup>13</sup> PJM State of the Market Report 2008, p. 272.

one would not expect to see the high margins on electricity sales of 2008 because the higher prices would be cancelled out by higher fuel expenses.

A second implication of the study is that the financial data are not sufficient to fully evaluate the costs and benefits of these markets. Financial data on unregulated generation is buried in the earnings of large holding companies, where the accounting data are often not reported separately for the generation units.

The final lesson to be drawn from this study is that these profits are simply not what one would expect under a truly competitive market. In such a market, high profits would not be sustained because new entry would encourage competition in the form of lower prices. But the greatest profit rates continued to be earned not by the newer, independent power producers, but for those companies that owned generation largely paid for by ratepayers under cost-of-service regulation. The absence of such price competition, and the continued presence of a handful of incumbent companies as the largest beneficiaries, points to a market that is not competitive.