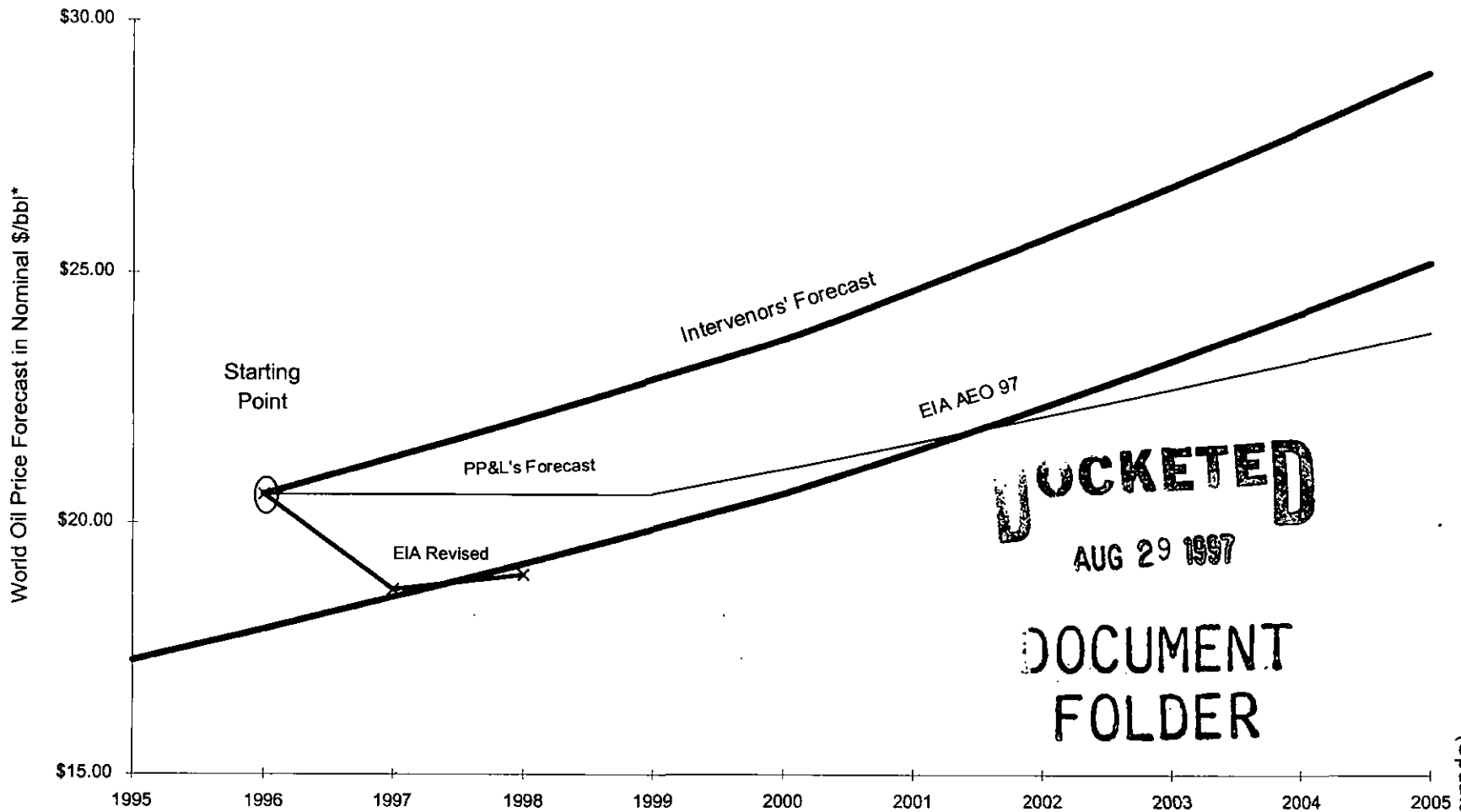


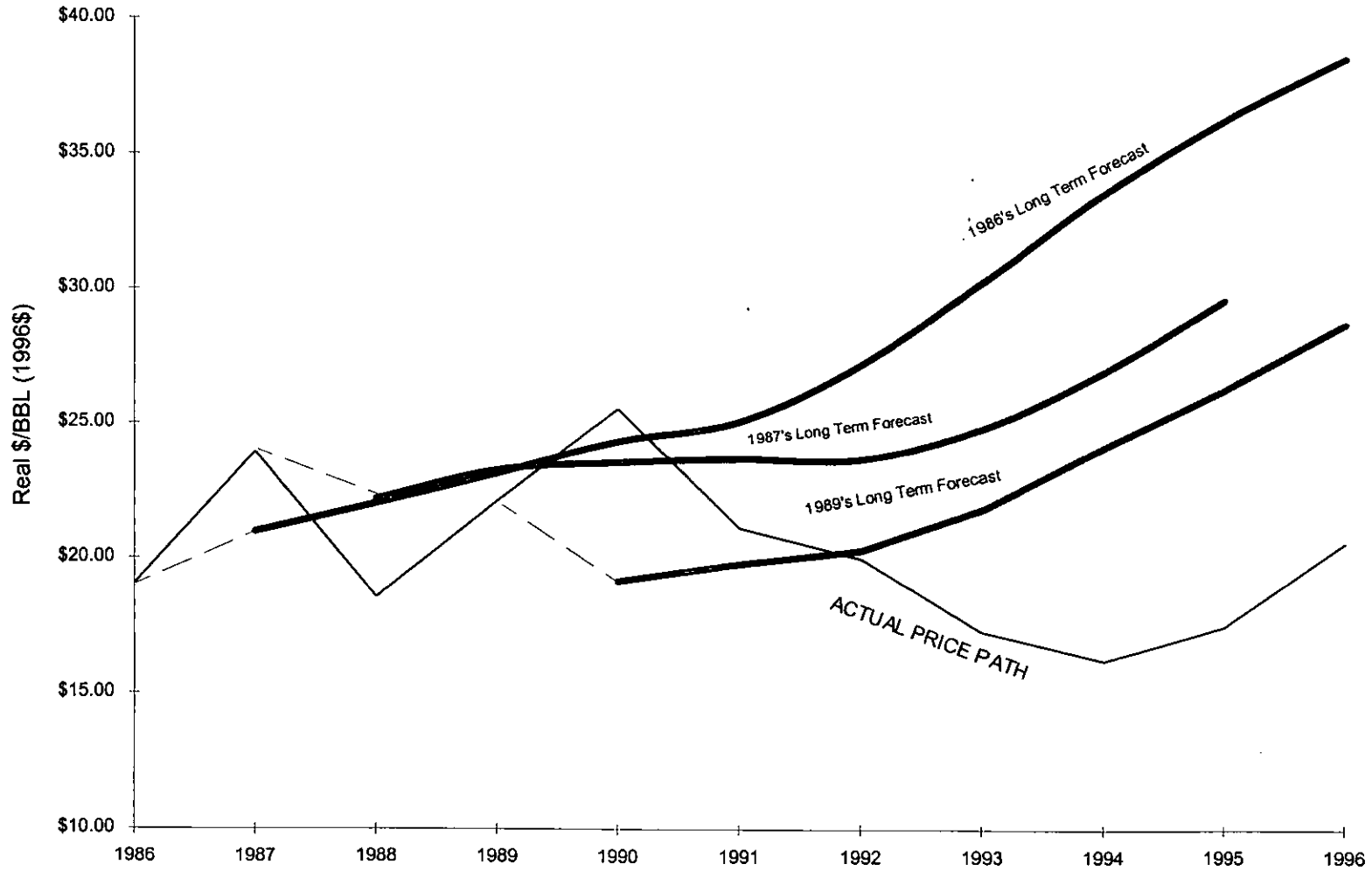
THE "STARTING POINT" PROBLEM: INTERVENORS USE OLD FUEL ESCALATION RATES TO INCREASE THEIR ESTIMATED FUEL COSTS



Sources: EIA, *Annual Energy Outlook*, 1997; EIA, *Monthly Energy Review*, April, 1997; EIA Short Term Energy Outlook, Third Quarter 1997 (Updated August, 1997). Direct Testimony of Robert Knecht, Table 3.

**Note: Annual Energy Outlook is based on data available through June, 1996.

LONG-TERM FORECAST ACCURACY: VARIOUS EIA FORECASTS FOR OIL PRICES



Source: EIA, *Issues in Midterm Analysis Forecasting*, 1997.

PP&L RECOGNIZES REAL FUEL PRICES ARE HIGHLY CORRELATED. INTERVENORS' FORECASTS IGNORE HISTORY AND PRODUCE LOW OR NEGATIVE CORRELATIONS.

I. Real Fuel Price Correlations (1981-1995)

| | OIL | GAS | COAL | URANIUM |
|---------|-----|-----|------|---------|
| OIL | N/A | .87 | .92 | .89 |
| GAS | .87 | N/A | .91 | .88 |
| COAL | .92 | .91 | N/A | .99 |
| URANIUM | .89 | .88 | .99 | N/A |

II. PPL Forecast (1996-2015)

| | OIL | GAS | COAL | URANIUM |
|---------|------|------|------|---------|
| OIL | N/A | 1.00 | .62 | .81 |
| GAS | 1.00 | N/A | .62 | .81 |
| COAL | .62 | .62 | N/A | .89 |
| URANIUM | .81 | .81 | .89 | N/A |

III. DRI (OCA) Forecast (1996-2015)

| | OIL | GAS | COAL | URANIUM |
|---------|-------|-------|-------|---------|
| OIL | N/A | .99 | -.958 | -.82 |
| GAS | .99 | N/A | -.953 | -.70 |
| COAL | -.958 | -.953 | N/A | .84 |
| URANIUM | -.82 | -.87 | .84 | N/A |

IV. EIA (PPLICA) Forecast (1996-2015)

| | OIL | GAS | COAL | URANIUM |
|---------|-----|-----|------|---------|
| OIL | N/A | .97 | .36 | .18 |
| GAS | .97 | N/A | .46 | .38 |
| COAL | .36 | .46 | N/A | .82 |
| URANIUM | .18 | .38 | .82 | N/A |

Sources:

EIA, *Annual Energy Review 1996* Table 3.1; DRI/McGraw Hill ;
PPLICA Statement No. 2, Exhibit RJF-2.

A TEN YEAR LOOK AT NATURAL GAS RESERVES, CONSUMPTION AND PRICES

| 1987 Total Proved Natural Gas Reserves Tcf | Total US Natural Gas Consumption 1987- 1996 Tcf | 1996 Total Proved Natural Gas Reserves Tcf |
|--|--|--|
| 196 | -196 | 216 |
| 1987 Average Wellhead Price (1996\$) | | 1996 Average Wellhead Price (1996\$) |
| \$2.66 | | \$2.24 |

Sources: Reserves - Table 4.2 "Crude Oil and Natural Gas Field Counts, Cumulative Production, Proved Reserves and Ultimate Recovery, End of Year 1977-1995" Consumption - Table 6.1 "Natural Gas Overview, 1949-1996" (EIA Annual Energy Review 1996); Potential Gas Committee Report cited in the Energy Daily, April 4, 1997. Prices - Table 6.8: "Natural Gas Wellhead and Import Prices, 1949-1995" (DOE/EIA)

AVAILABILITY OF COMBINED CYCLE UNITS (U.S. UTILITY-OWNED UNITS)

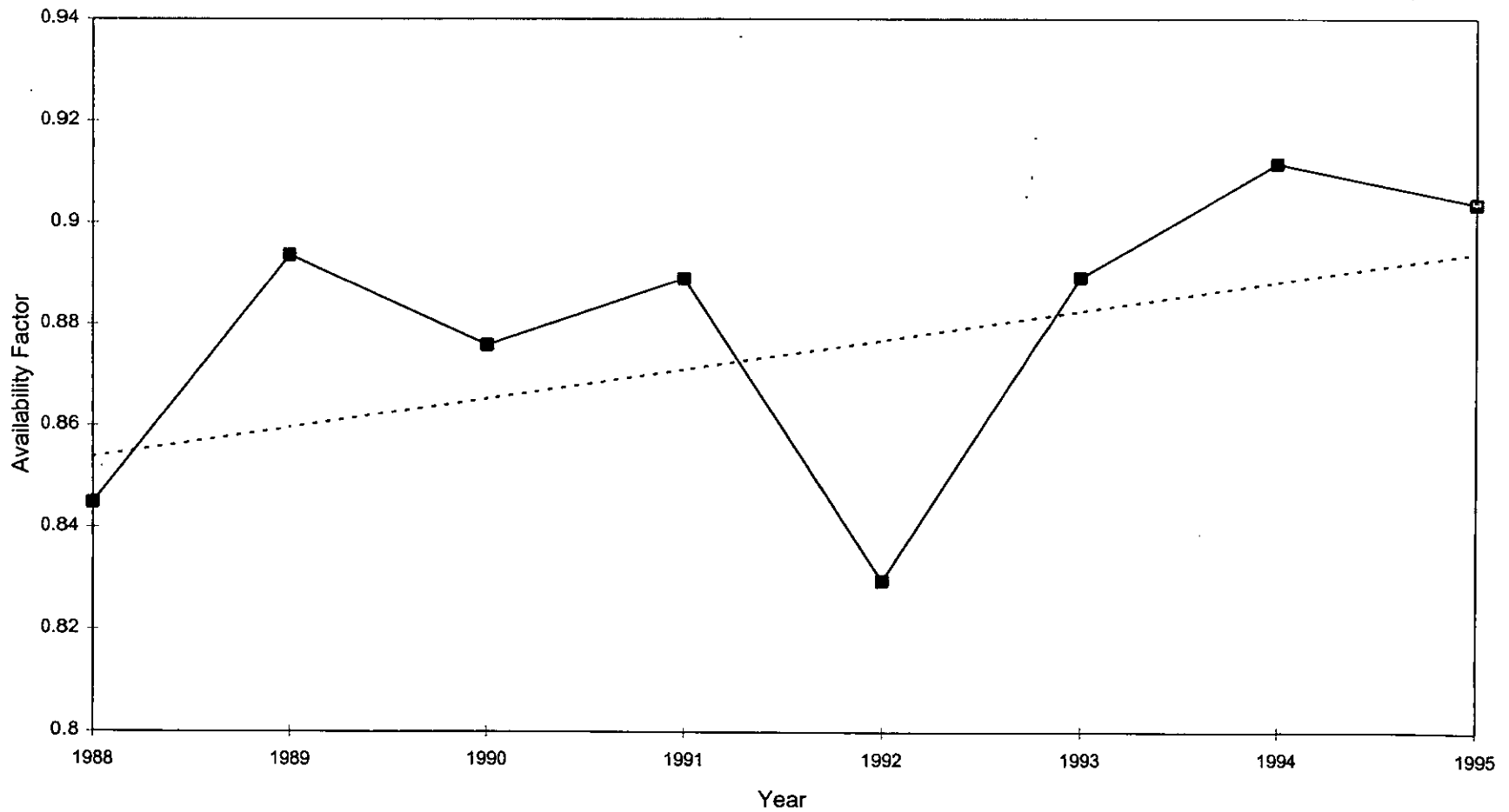
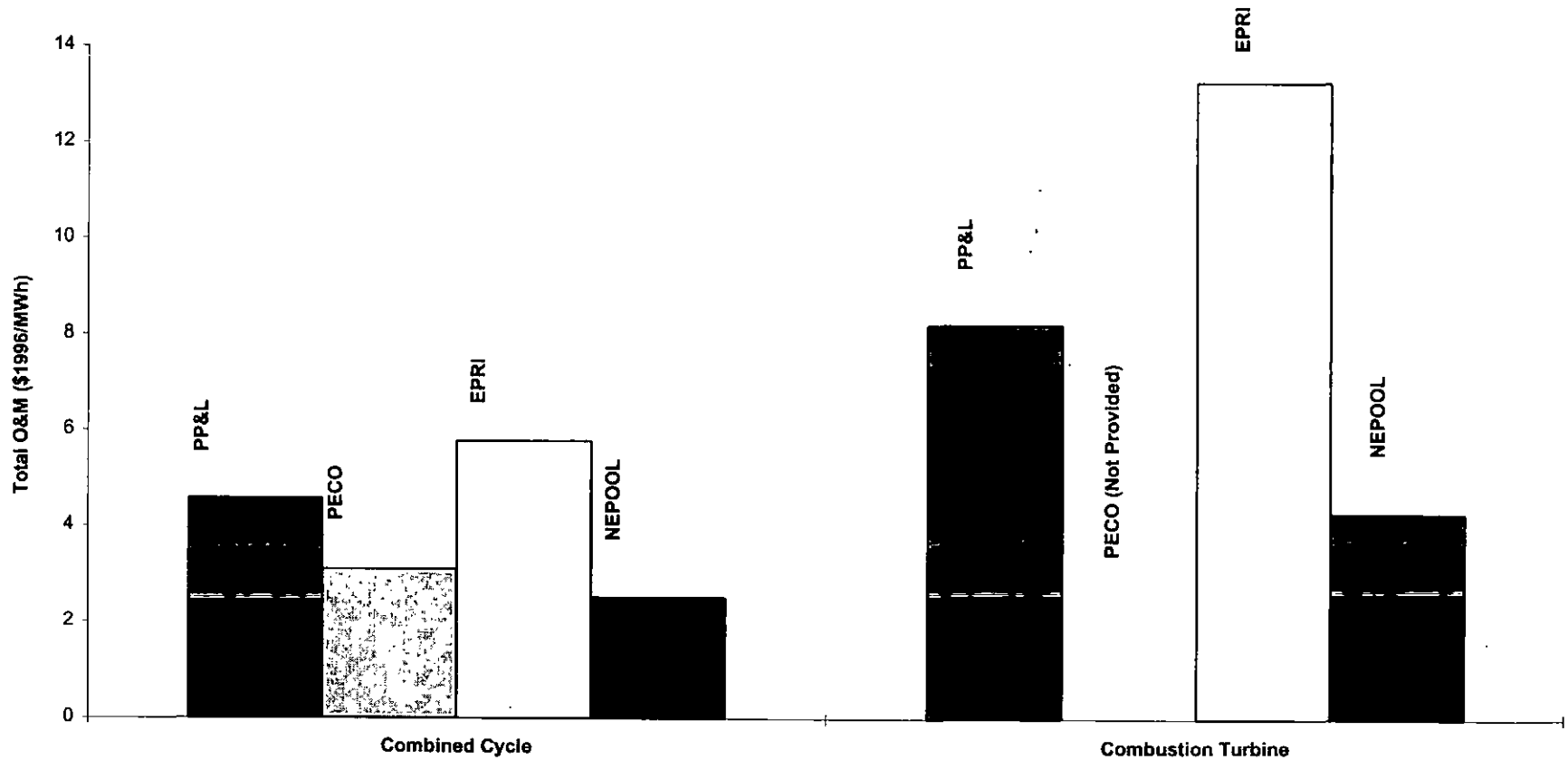


Exhibit ST-J-26
(Corrected 8/25/97)

Source: North American Electric Reliability Council (NERC), Generating Availability Data System (1996).

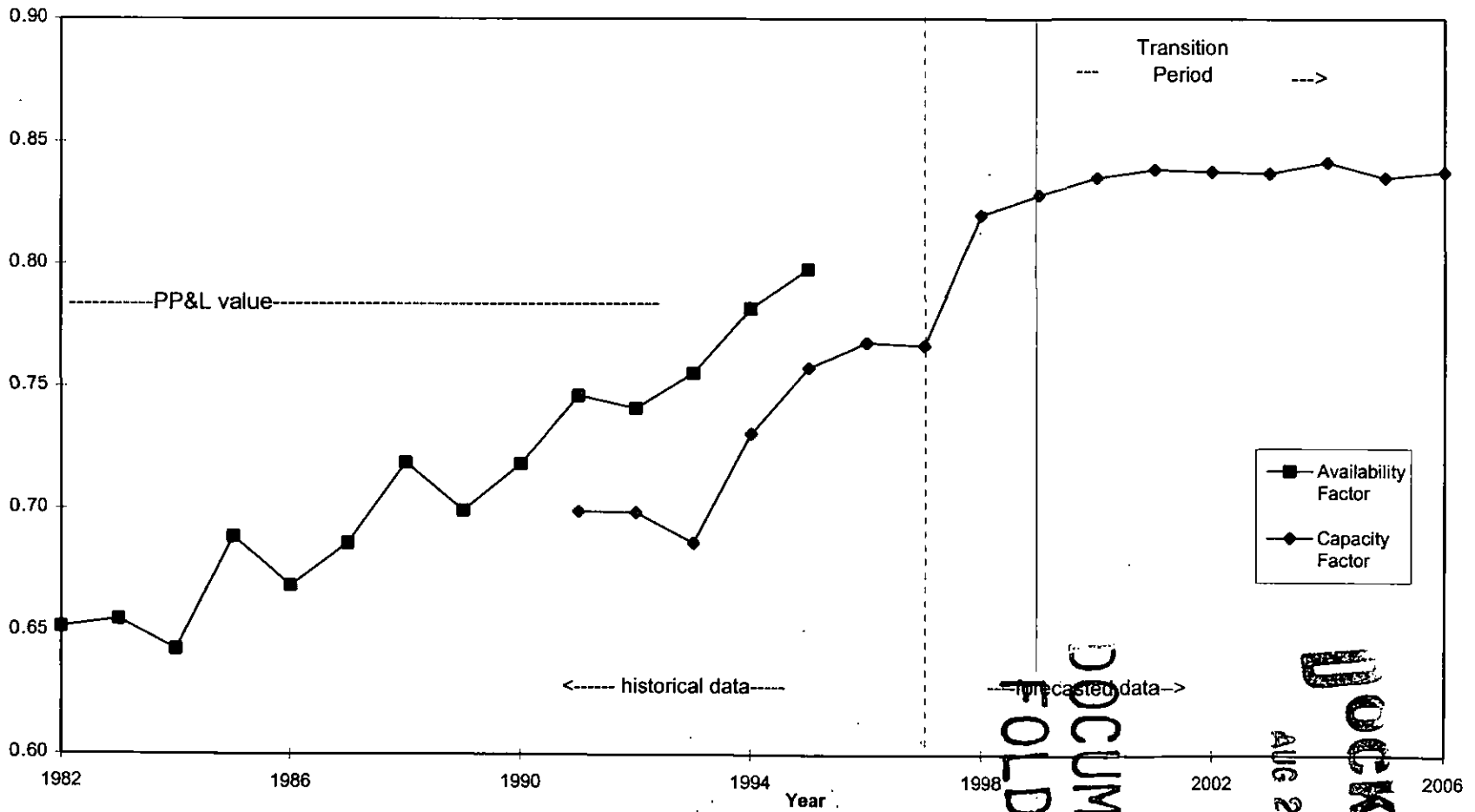
PP&L'S O&M COST ESTIMATES ARE WITHIN THE RANGE OF ESTIMATES CITED BY OCA'S MR. SMITH



Note: Total O&M calculated assuming 0.70 CF for CC and 0.10 CF for CT
All figures converted to 1996 Dollars

Sources: PECO - Docket No. R-00973953; EPRI Technical Assessment Guide (1993);
NEPOOL - Generation Task Force Long-Range Study Assumptions (1994)

NUCLEAR CAPACITY AND AVAILABILITY FACTORS



Sources: Historical data from North American Electric Reliability Council (NERC), Generating Availability Data System (1996). Capacity forecasts from NERC Electricity Supply and Demand (1997).

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Exhibit STJ-30
(Corrected 8/25/97)

PRESENT VALUE OF CAPACITY ADDITIONS USING VENDOR DATA

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| Vendor Identification | Capacity (MW) | Heat Rate (HHV) (BTU/kWhr) | Capital Cost (\$/kW) | NPV #1 (\$mm) | NPV #2 (\$mm) | Range of Return on Equity (%) |
|-----------------------|---------------|----------------------------|----------------------|---------------|---------------|-------------------------------|
| KA13E2-1 | 244.2 | 7026 | 515 | 8.0 | 10.8 | 13.6-13.9 |
| KA24-1 | 248.3 | 6593 | 569 | 5.6 | 8.5 | 13.2-13.5 |
| GUD 1S84.3A | 250 | 6643 | 580 | 2.8 | 5.7 | 12.8-13.2 |
| S-107FA | 253.5 | 6838 | 535 | 7.8 | 10.8 | 13.5-13.8 |
| 1x1 501F | 256.4 | 6743 | 522 | 12.0 | 14.9 | 14-14.4 |
| S-207EA | 262.2 | 7493 | 470 | 9.0 | 12.0 | 13.7-14.1 |
| GUD 1S.94.3A | 354 | 6621 | 575 | 5.8 | 9.9 | 13-13.3 |
| S-109FA | 345.7 | 6849 | 552 | 6.1 | 10.2 | 13-13.4 |
| KA26-1 | 366 | 6471 | 564 | 12.5 | 16.8 | 13.5-13.9 |
| KA11N2-3 | 512 | 7382 | 489 | 14.4 | 20.2 | 13.5-13.9 |

Source: 1996 Gas Turbine World Handbook (Capital costs inflated 15% to account for soft costs and other additional costs.)

Notes:

- 1) Results obtained using Knecht's spreadsheet modified to rectify escalation errors, capacity prices and O & M costs.
- 2) NPV #2 is Knecht version RDK2 schedule 5 and NPV#1 is Knecht version RDK2 schedule 6. Schedule 6 maintenance capital and gas transmission charges are not assessed.
- 3) Dr. Jones' assumptions (410MW, 7000Btu/Kwh, and \$595/KW) produce slightly negative present values using Mr. Knecht's assumptions.

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PROJECT ECONOMICS FOR CURRENTLY AVAILABLE COMBINED CYCLE UNITS: COLUMN "NPV #2"

Price Sufficiency for New Combined Cycle Capacity

| | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------|-----------------------|--------|-----------------|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Inflation | 2.50% | Fixed O&M (\$/KW/yr) | \$9.00 | Working Capital | 0.00% of Revenues | | | | | | | | | | | | | | | |
| Capacity (MW) | 512 | Variable O&M (\$/MWh) | \$2.16 | Income Tax rate | 41.50% | | | | | | | | | | | | | | | |
| Capital Cost (\$/KW) | \$489.00 | Debt Cost | 8.00% | Decommissioning | 0.00% of Real Investment Cost | | | | | | | | | | | | | | | |
| Fuel Cost (98\$/MMBTU Delivered) | \$2.30 | Debt Share | 38.60% | | | | | | | | | | | | | | | | | |
| Heat Rate (BTU/KW-h) | 7,382 | | | | | | | | | | | | | | | | | | | |
| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2020 | 2025 | 2030 | 2031 |
| Capacity Factor | | | 29.40% | 51.77% | 49.22% | 51.80% | 50.46% | 57.65% | 57.75% | 61.27% | 61.72% | 65.62% | 66.82% | 70.83% | 68.58% | 69.74% | 67.71% | 67.71% | 67.71% | 67.71% |
| Capacity Price (\$/KW/yr) | 29.0 | 38.0 | 50.0 | 49.0 | 48.0 | 44.0 | 45.0 | 50.0 | 51.0 | 53.0 | 54.0 | 55.0 | 58.0 | 57.0 | 59.0 | 60.0 | 67.3 | 76.2 | 86.2 | 88.3 |
| Energy Price (\$/MWh) | | | 28.2 | 27.2 | 28.8 | 29.2 | 30.3 | 31.2 | 32.7 | 32.9 | 34.1 | 34.6 | 35.6 | 36.4 | 38.9 | 37.8 | 43.0 | 48.7 | 55.0 | 56.4 |
| Generation (GWh) | 0 | 0 | 1,319 | 2,322 | 2,208 | 2,323 | 2,263 | 2,596 | 2,590 | 2,748 | 2,768 | 2,943 | 2,897 | 3,177 | 3,076 | 3,128 | 3,037 | 3,037 | 3,037 | 3,037 |
| Capacity Revenues (\$mm) | 14.85 | 19.46 | 25.60 | 25.09 | 24.58 | 22.53 | 23.04 | 25.60 | 26.11 | 27.14 | 27.85 | 28.16 | 28.67 | 29.18 | 30.21 | 30.72 | 34.47 | 39.00 | 44.13 | 45.23 |
| Energy Revenues (\$mm) | 0.00 | 0.00 | 37.16 | 63.16 | 63.56 | 67.86 | 68.51 | 80.78 | 84.62 | 90.49 | 94.29 | 101.77 | 108.57 | 115.76 | 113.58 | 118.36 | 130.60 | 147.76 | 167.18 | 171.36 |
| Revenues | 0.00 | 0.00 | 62.76 | 88.24 | 88.13 | 90.39 | 91.55 | 106.38 | 110.73 | 117.63 | 121.93 | 129.93 | 135.24 | 144.95 | 143.77 | 149.08 | 165.07 | 186.77 | 211.31 | 216.59 |
| Fuel Costs (\$/MWh) | 16.98 | 17.40 | 17.84 | 18.28 | 18.74 | 19.21 | 19.69 | 20.18 | 20.69 | 21.20 | 21.73 | 22.28 | 22.83 | 23.41 | 23.99 | 24.59 | 27.82 | 31.48 | 35.61 | 36.50 |
| Variable O&M Costs (\$/MWh) | 2.29 | 2.33 | 2.36 | 2.40 | 2.43 | 2.47 | 2.51 | 2.57 | 2.63 | 2.70 | 2.77 | 2.84 | 2.91 | 2.98 | 3.05 | 3.13 | 3.54 | 4.01 | 4.53 | 4.85 |
| Fixed O&M Costs (\$/KW/yr) | 9.69 | 9.93 | 10.18 | 10.44 | 10.70 | 10.97 | 11.24 | 11.52 | 11.81 | 12.10 | 12.41 | 12.72 | 13.03 | 13.36 | 13.69 | 14.04 | 15.88 | 17.97 | 20.33 | 20.84 |
| Fuel Costs (\$mm) | 0.00 | 0.00 | 23.52 | 42.45 | 41.37 | 44.63 | 44.56 | 52.18 | 53.58 | 58.27 | 60.16 | 65.57 | 68.43 | 74.35 | 73.79 | 76.92 | 84.49 | 95.59 | 108.15 | 110.86 |
| Variable O&M Costs (\$mm) | 0.00 | 0.00 | 3.11 | 5.57 | 5.37 | 5.74 | 5.67 | 6.64 | 6.82 | 7.42 | 7.66 | 8.35 | 8.71 | 9.46 | 9.39 | 9.79 | 10.76 | 12.17 | 13.77 | 14.11 |
| Fixed O&M Costs (\$mm) | 0.00 | 0.00 | 5.21 | 5.34 | 5.48 | 5.61 | 5.75 | 5.90 | 6.05 | 6.20 | 6.35 | 6.51 | 6.67 | 6.84 | 7.01 | 7.19 | 8.13 | 9.20 | 10.41 | 10.87 |
| Decommissioning | | | | | | | | | | | | | | | | | | | | 0.00 |
| Total Operating Costs (\$mm) | 0.00 | 0.00 | 31.85 | 53.36 | 52.22 | 55.98 | 55.99 | 64.73 | 66.45 | 71.88 | 74.18 | 80.42 | 83.82 | 90.66 | 90.20 | 93.89 | 103.38 | 116.96 | 132.33 | 135.64 |
| Depreciation (\$mm) | | | 21.25 | 19.65 | 18.18 | 16.81 | 15.55 | 14.39 | 13.31 | 12.31 | 12.15 | 12.15 | 12.15 | 12.15 | 12.15 | 12.15 | 12.15 | 0.00 | 0.00 | 0.00 |
| Interest (\$mm) | | | 8.75 | 8.48 | 8.18 | 7.89 | 7.61 | 7.32 | 7.04 | 6.76 | 6.47 | 6.19 | 5.90 | 5.62 | 5.33 | 5.05 | 3.63 | 2.20 | 0.78 | 0.50 |
| Income Taxes (\$mm) | | | 0.38 | 2.81 | 3.97 | 4.03 | 5.14 | 8.27 | 9.93 | 11.07 | 12.09 | 12.94 | 13.85 | 15.16 | 14.98 | 15.77 | 19.06 | 28.05 | 32.45 | 33.39 |
| Year Index for Depreciation | | | 20 | 19.5 | 18.5 | 17.5 | 16.5 | 15.5 | 14.5 | 13.5 | 12.5 | 11.5 | 10.5 | 9.5 | 8.5 | 7.5 | 2.5 | | | |
| Net Income | | | 0.54 | 3.96 | 5.59 | 5.68 | 7.25 | 11.66 | 14.00 | 15.61 | 17.05 | 18.24 | 19.53 | 21.37 | 21.12 | 22.23 | 28.87 | 39.55 | 45.74 | 47.07 |
| Capital Expenditures (\$mm) | | (\$283.27) | | | | | | | | | | | | | | | | | | |
| EOY Book Value | | 283.27 | 262.02 | 242.37 | 224.19 | 207.38 | 191.83 | 177.44 | 164.13 | 151.82 | 139.68 | 127.53 | 115.38 | 103.24 | 91.09 | 78.95 | 18.22 | 0.00 | 0.00 | 0.00 |
| EOY Debt | | 109.34 | 105.79 | 102.23 | 98.67 | 95.12 | 91.56 | 88.01 | 84.45 | 80.90 | 77.34 | 73.78 | 70.23 | 66.67 | 63.12 | 59.56 | 41.78 | 24.00 | 6.22 | 2.67 |
| Working Capital | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cash Flow | | | | | | | | | | | | | | | | | | | | |
| Net Income | | | 0.54 | 3.96 | 5.59 | 5.68 | 7.25 | 11.66 | 14.00 | 15.61 | 17.05 | 18.24 | 19.53 | 21.37 | 21.12 | 22.23 | 28.87 | 39.55 | 45.74 | 47.07 |
| Depreciation | | | 21.25 | 19.65 | 18.18 | 16.81 | 15.55 | 14.39 | 13.31 | 12.31 | 12.15 | 12.15 | 12.15 | 12.15 | 12.15 | 12.15 | 12.15 | 0.00 | 0.00 | 0.00 |
| Capital Expenditures | | (\$283.26) | | | | | | | | | | | | | | | | | | |
| Debt Cash Flow | | 106.67 | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) | (3.56) |
| Working Capital | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Net Cash Flow | | (\$169.68) | 18.23 | 20.05 | 20.21 | 18.93 | 19.25 | 22.50 | 23.75 | 24.36 | 25.64 | 26.83 | 28.12 | 29.96 | 29.70 | 30.82 | 35.46 | 35.99 | 42.19 | 43.51 |
| Internal rate of return | 13.86% | | | | | | | | | | | | | | | | | | | |
| NPV @ 12.5% at first | \$20.21 | | | | | | | | | | | | | | | | | | | |
| Capacity Price (\$/KW/yr) | 29.0 | 38.0 | 50.0 | 49.0 | 48.0 | 44.0 | 45.0 | 50.0 | 51.0 | 53.0 | 54.0 | 55.0 | 58.0 | 57.0 | 59.0 | 60.0 | 67.3 | 76.2 | 86.2 | 88.3 |
| Base Energy | 60% | | 20.34 | 20.95 | 21.48 | 22.23 | 22.87 | 24.71 | 25.19 | 26.55 | 27.63 | 28.7 | 29.67 | 31.04 | 30.94 | 32.11 | | | | |
| Int. Energy | 30% | | 25.68 | 27.02 | 28.3 | 29.13 | 29.99 | 31.36 | 32.35 | 33.22 | 34.14 | 34.98 | 35.85 | 36.76 | 37.68 | 38.59 | | | | |
| Peak Energy | 10% | | 31.39 | 31.95 | 33.87 | 33.69 | 34.54 | 34.97 | 36.34 | 36.51 | 37.32 | 37.83 | 38.65 | 39.73 | 40.25 | 41.14 | | | | |

ffr

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**Correction to Rebuttal Testimony of Dr. Scott T. Jones
Docket No. R-00973954**

TESTIMONY

| Page | Line | Reads: | Should Read: |
|------|-------------------|--------------------|---------------------------------------|
| 28 | 12 | 0.92 | 0.91 |
| 28 | 13 | 0.9 | 0.92 |
| 30 | 8 | data | discussion |
| 31 | 11 | more 12,000 times | more than 12,000 times |
| 49 | 11 | 0.88 and 0.85, | 0.89 and 0.88, |
| 72 | Fn. 32, line 2 | prices; the | prices." The author notes that the |
| 72 | Fn. 32, line 6 | earlier." It | earlier. It |
| 87 | Fn. 57 | Statement No. 3-R. | Statement No. 10-R. |

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EXHIBITS

| Exhibit # | Reads: | Should Read: |
|------------------|---|---|
| STJ-14a | line labels: "1989's Long Term Forecast" and "1987's Long Term Forecast" | [switched] |
| STJ-14a | data adjustment: three long term forecasts | [As shown, adjusted for inflation to 1996 \$.] |
| STJ-16a | Section I, "Real Fuel Price Correlations (1981-1995)": "Oil" and "Gas" is .84 "Oil" and "Coal" is .9 "Oil" and "Uranium" is .88 "Gas" and "Coal" is .92 "Gas" and "Uranium" is .85 "Coal" and "Uranium" is .91 | Corrected to read: "Oil" and "Gas" is .87 "Oil" and "Coal" is .92 "Oil" and "Uranium" is .89 "Gas" and "Coal" is .91 "Gas" and "Uranium" is .88 "Coal" and "Uranium" is .99 |
| STJ-16a | Section III, "DRI (OCA) Forecast (1996-2015): "Coal" and "Oil" is -.998 "Gas" and "Coal" is -.996 | Corrected to read: "Coal" and "Oil" is -.958 "Gas" and "Coal" is -.953 |
| STJ-17 | column header correction: "Total US Natural Gas Consumption 1986-1995" | "Total US Natural Gas Consumption 1987-1996" |
| STJ-26 | chart format error: title missing | [As shown, title added.] |
| STJ-27 | chart format error: title missing | [As shown, title added.] |
| STJ-30 | chart format error: title missing | [As shown, title added.] |
| STJ-30 | data entry error: 1982 availability factor is 0.6717 | corrected to: 0.6517 |

PP&L'S CAPACITY PRICES ARE ADEQUATE USING SMITH'S ASSUMPTIONS

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| Key Assumptions | Smith ¹ | Smith Corrected ² |
|------------------------------|--------------------|------------------------------|
| Capital Cost | | |
| Turnkey Cost | \$425.00 | \$425.00 |
| Switchgear Cost | \$25.00 | \$25.00 |
| Gas Pipeline Cost | \$4.00 | \$4.00 |
| Electrical Transmission Cost | \$4.00 | \$4.00 |
| Land Cost | \$0.10 | \$0.10 |
| Infrastructure | \$9.00 | \$9.00 |
| Plant Development/Siting | \$10.00 | \$10.00 |
| Interest During Construction | \$19.00 | \$0.00 |
| All-in Costs | \$496.10 | \$477.10 |
| All-in Costs @ Summer Rating | \$550.00 | \$520.00 |
| Return on Equity | | |
| STJ Capacity Price | 12.44% | 13.15% |

Notes:

- (1) See Exhibit DCS-14.
- (2) Interest during construction is properly accounted for in the NPV calculation. "All-in Costs @ Summer Rating" includes only turnkey costs.

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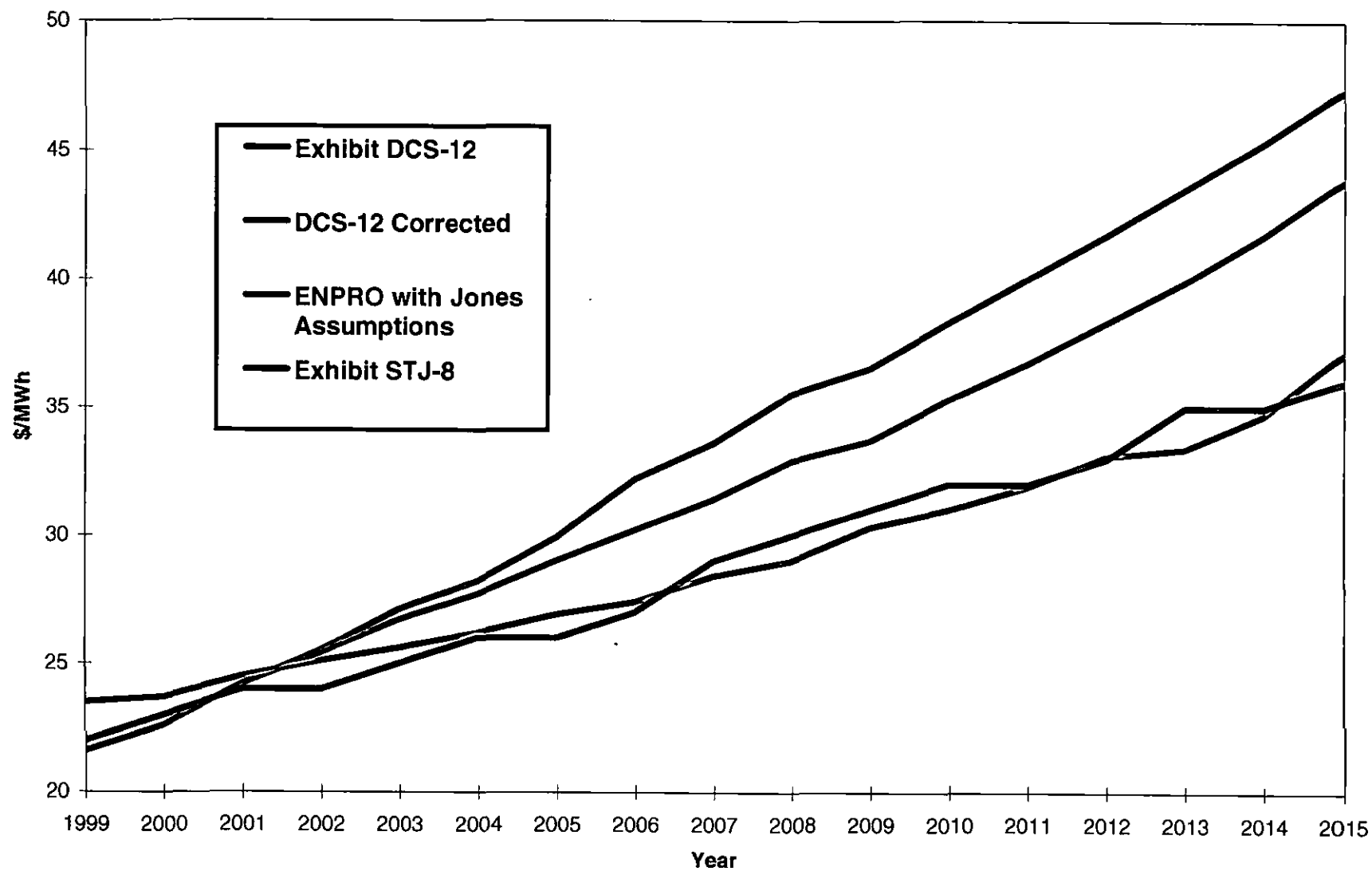
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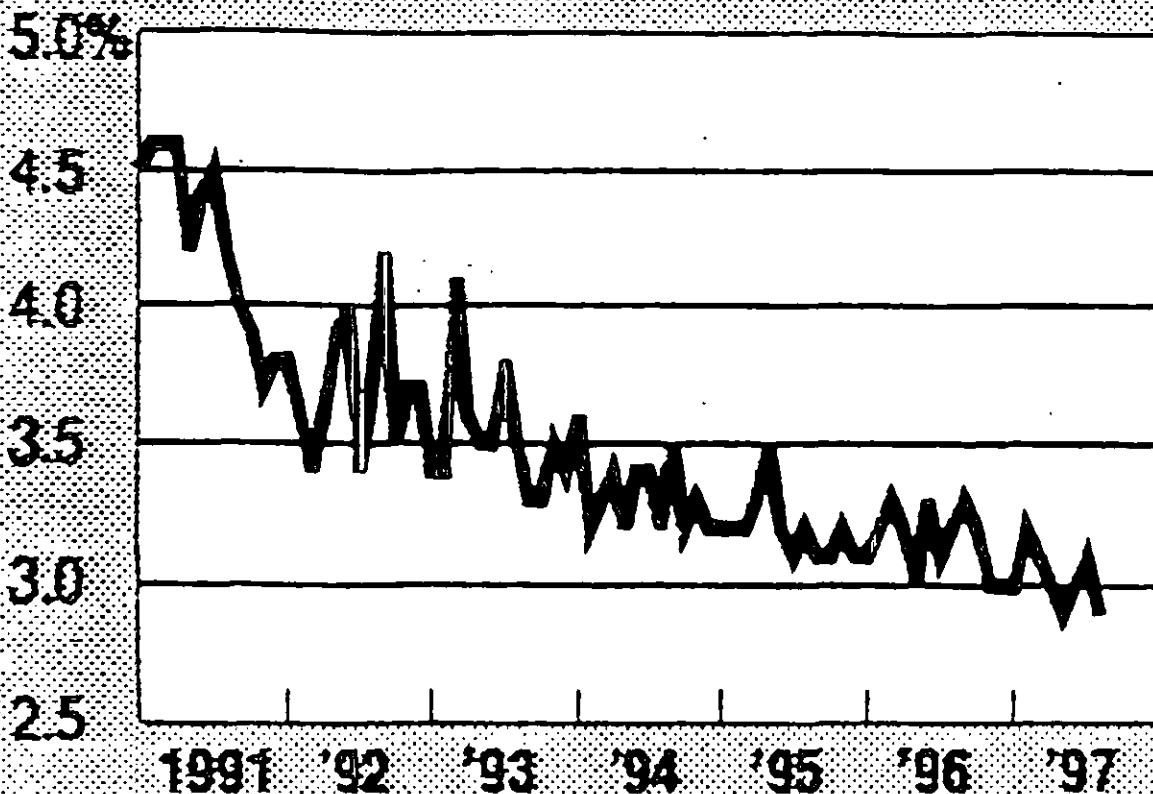
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Comparison of Smith and Jones Energy Prices



Fading Inflation Fears

Public expectations of the long-term annual inflation rate, monthly data



Source: University of Michigan

"When I was on the Fed, we said our goal was to cap inflation [CPI] at 3% and then bring it down. Now, that view is being taken as much too pessimistic."

Alan Blinder, Vice Chairman, 1994-96, WSJ, 8/18/97

DRI'S HISTORICAL OVERESTIMATION OF INFLATION

