



The Brattle Group

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Financial Challenges of Rising Utility Costs and Capital Investment Needs

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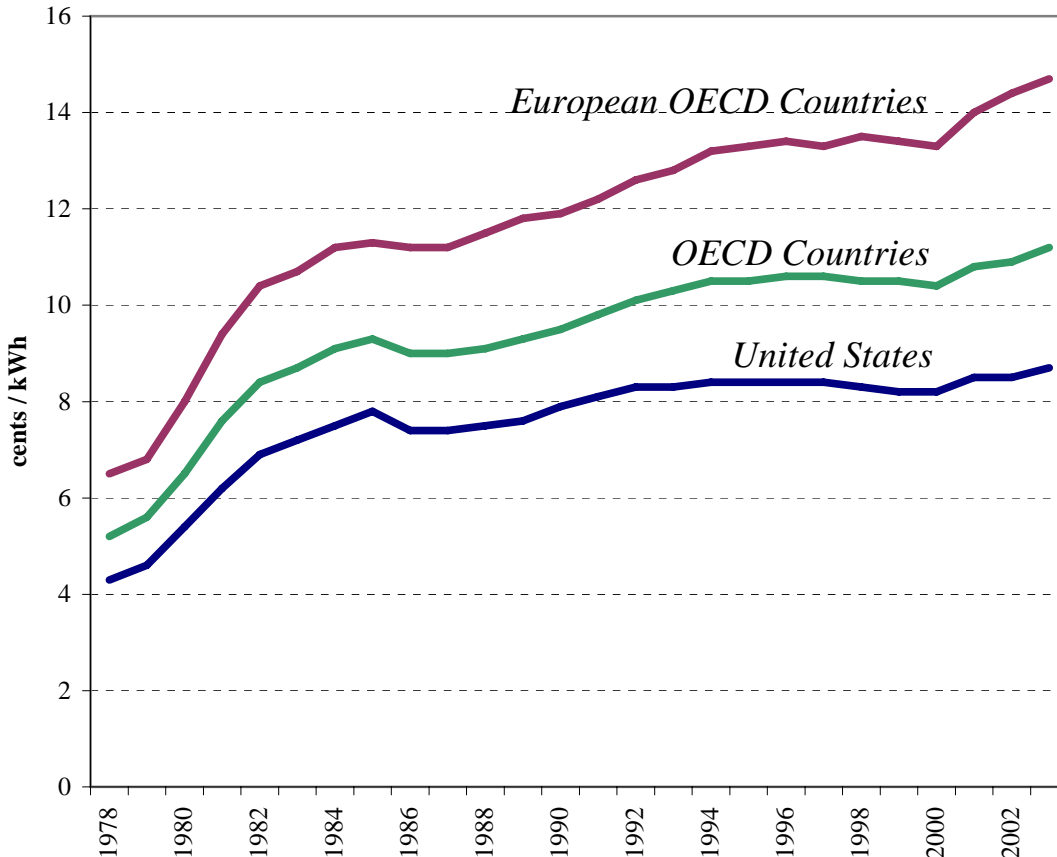
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- U.S. Electricity Rates: Context and Trends
- Looking Forward:
 - ▶ Investment Needs and Likely Additional Rate Impacts
 - ▶ Can the Industry Weather the Financial Challenges it Faces?
- Conclusions

U.S. Electricity Rates: Context and Trends

Electricity Rates: US vs. Other Developed Countries

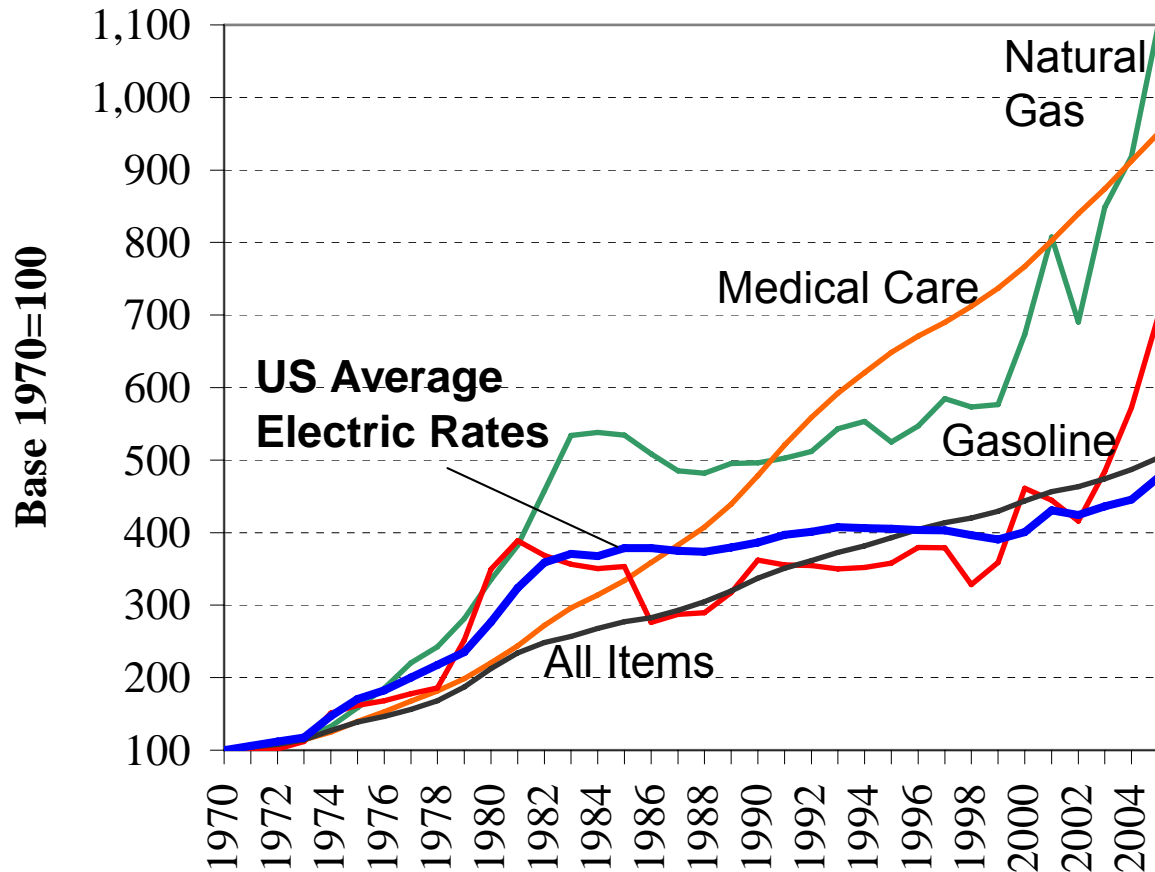
U.S. and OECD Residential Rates



- U.S. Rates well below Europe and OECD average
- Trends over time very similar, reflecting common fundamentals in global energy markets
- Utility rates doubled in early 1980s, but increases have been very modest since.

Sources and Notes: International Energy Agency. Rates converted to nominal US cents / kWh using purchasing power parity.

Reality Check: Rate Trends Compared to Other Consumer Products

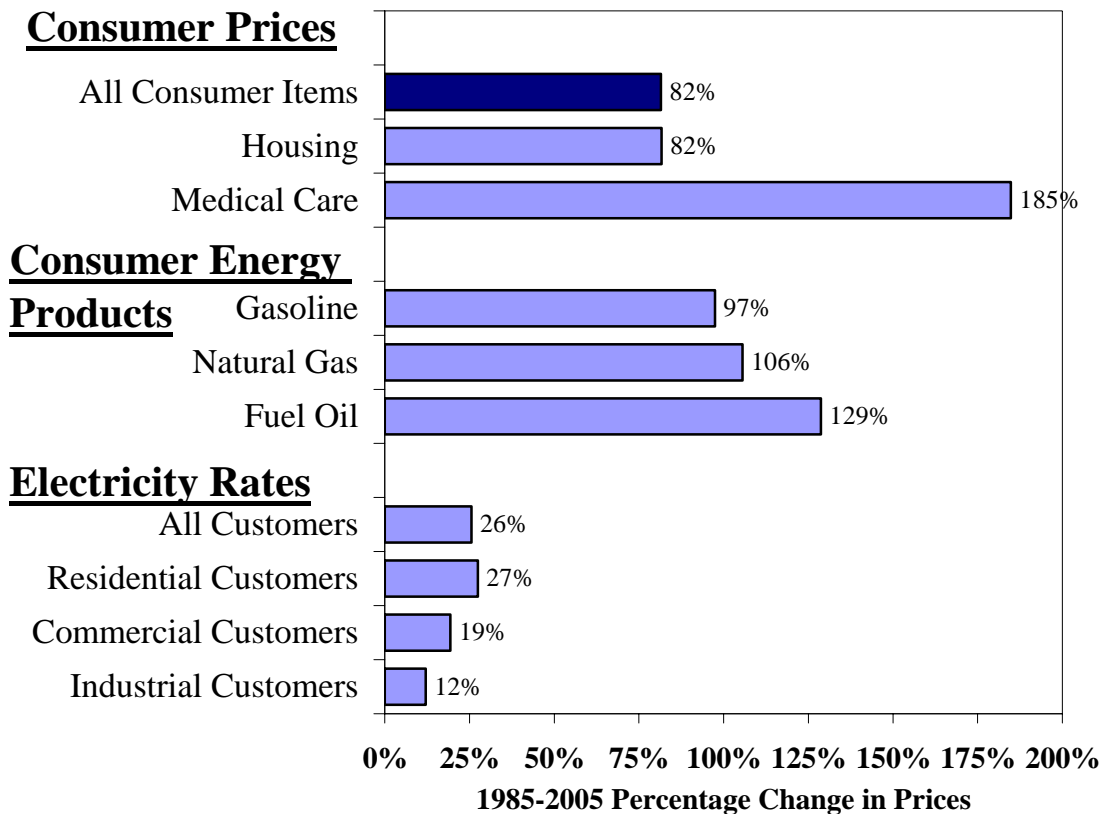


- After run-up of prices during energy crisis, electricity rate increases have been significantly below inflation rates until late 1990s
- Even recent rate increases have been modest compared to sharp increases in prices for other consumer energy products

Sources: EIA Annual Energy Review 2004, EIA Monthly Energy Review March 2006, and U.S. Bureau of Labor Statistics.

Reality Check: Rate Trends Compared to Other Consumer Products

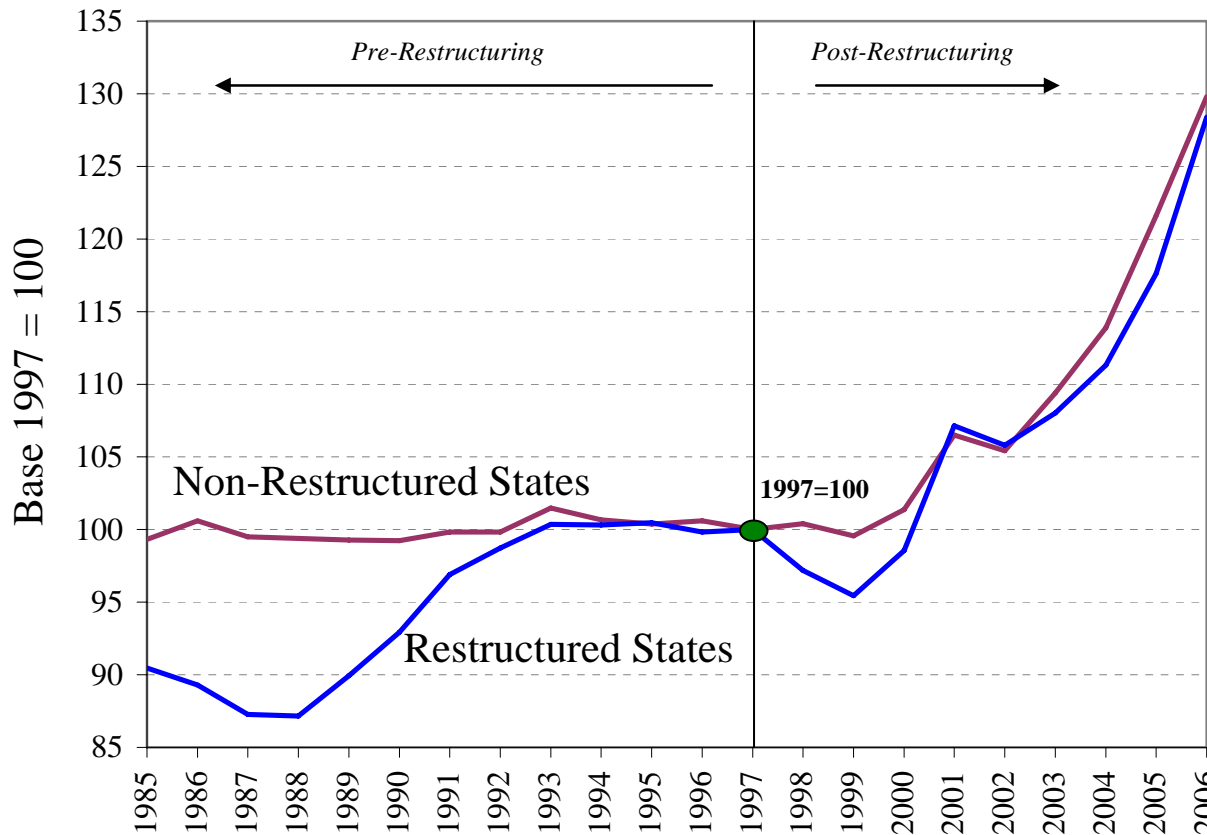
Electricity Rates Compared to Other Consumer Products: 1985-2005



- Despite recent increases, electricity rates have decreased relative to other energy and consumer products over last 20 years
- Average residential bill is 2.5% of average household expenses, down from 2.7% in 1980s despite 30% increase in usage

Sources: BLS CPI indices, national urban average prices, EIA Form 861, EIA Form 826.

Reality Check: Rate Increases in Restructured and Non-Restructured States



- Very similar rate trends since restructuring discussions started in the mid 1990s
- Less-noticed increases in non-restructured states due to “routine” rate adjustments?
- Average rates are 35% higher in restructured states, but that was the case long before restructuring

Sources and Notes:

EIA Data: SEDS, Form 861, Monthly Energy Review, and Form 826.

2006 reflects January 2006 - July 2006 monthly data.

Main Drivers of Rate Increases in Last 10 Years

- Fuel and purchased power costs increases account for more than 120% of utility cost increases since mid 1990s
- Fuel and purchased power cost increases partly offset by reduced financing costs
- Small increase in non-fuel O&M and other costs points to significant efficiency gains

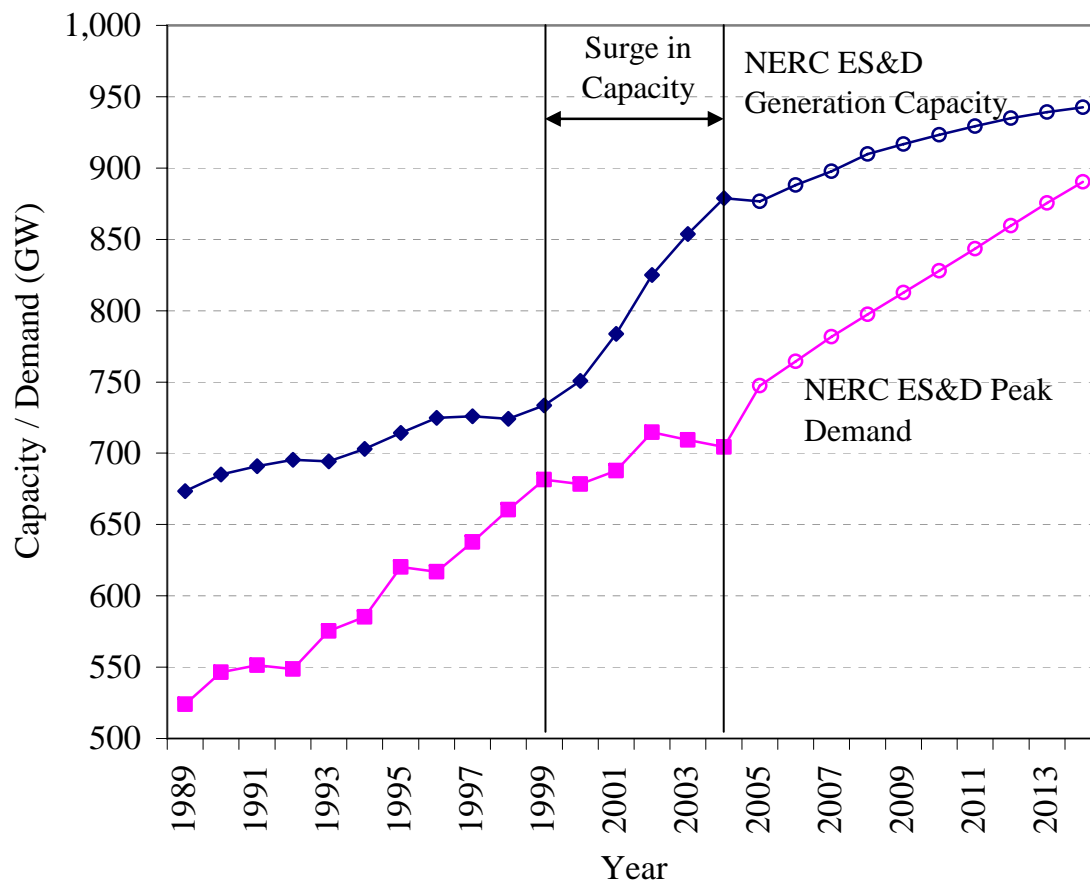
**Looking Forward:
Investment Needs and
Likely Additional Rate Impacts**

Main Drivers of Additional Rate Increases

- Higher fuel and transportation prices not yet fully reflected in utility rates
- Significant infrastructure investment needs:
 - ▶ Transmission
 - ▶ Distribution
 - ▶ Generation additions and renewable resource standards
- Investment and operating costs to comply with known and still uncertain regulatory and environmental mandates
- Likely increases in financing costs (debt and equity)
- Faster non-fuel O&M cost increases as utilities exhaust efficiency gains (e.g., need to add staff again)?

Generation: Sufficient Capacity but Increasing Costs

Generation and Demand Balance

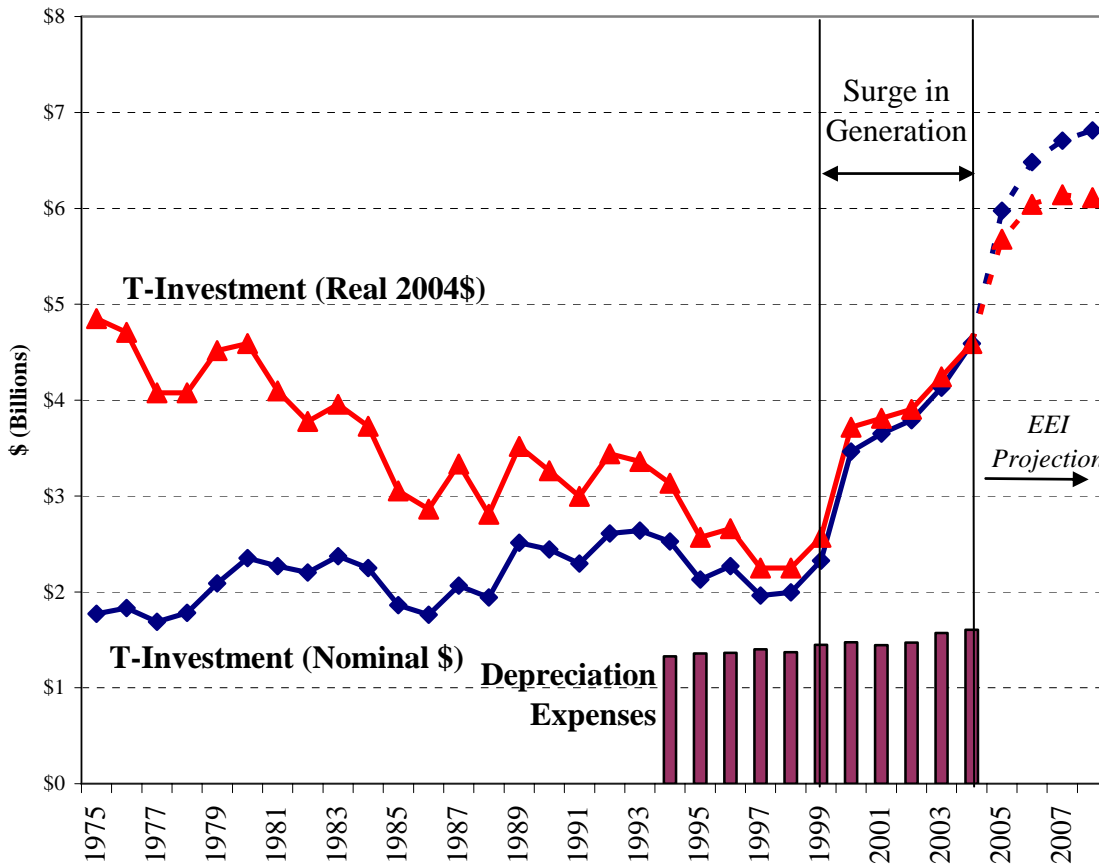


Source and Note: NERC ES&D. Circles reflect forecast values.

- Sufficient reserve margins in many regions and on average due to recent surge in merchant capacity
- Value of new capacity is not yet fully reflected in market prices
- Increasing cost of service as (1) utilities buy or contract with existing merchant plants; and (2) utilities are starting to add new baseload plants

Transmission: Significant Increase in Investments

**Transmission Investments
by Investor-Owned Electric Utilities**

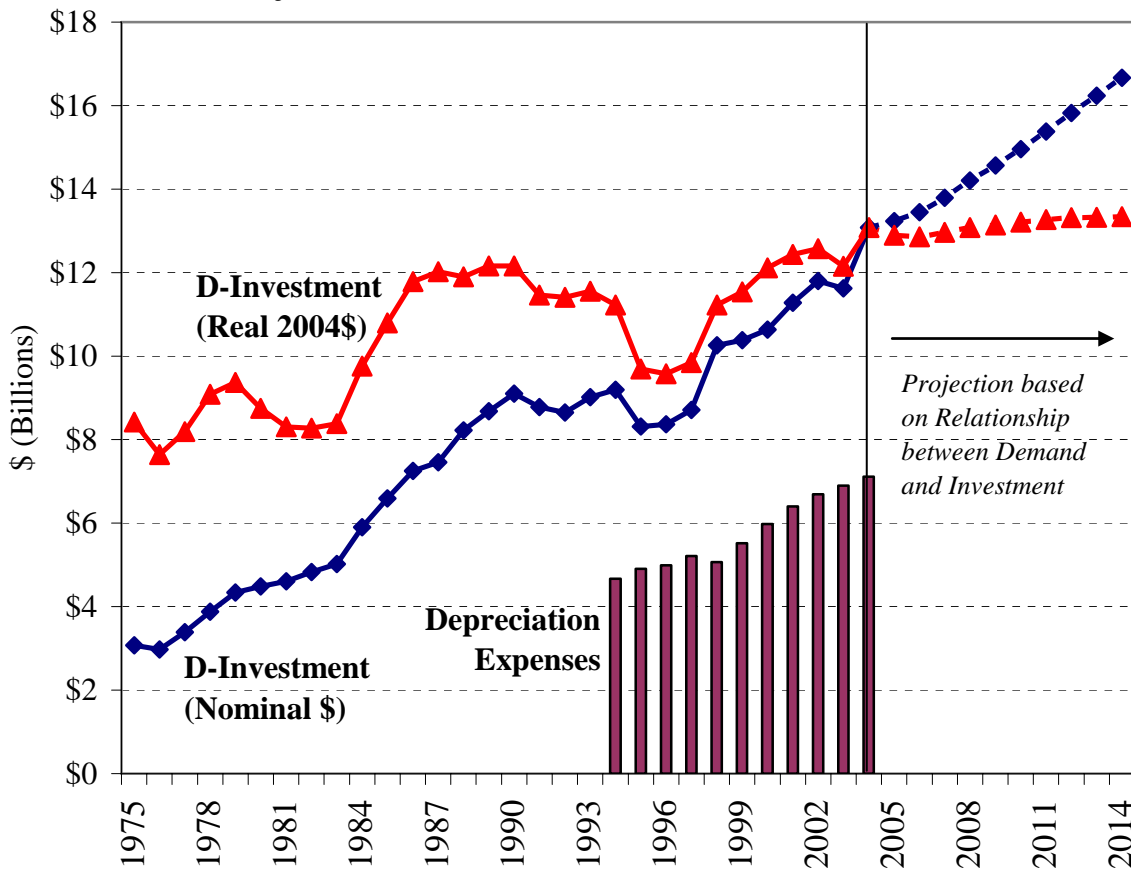


- Transmission investment flat (declining in real terms) for 20 years
- Significant increase in investment since 2000, coinciding with surge in generating capacity
- \$30 billion in 2004-08 transmission investment by investor-owned utilities

Source: EEI, FERC Forms 1.

Distribution: Continuing High Investment Needs

**Distribution Investments
by Investor-Owned Electric Utilities**



- Continued increase in distribution investments due to load growth
- Exceeding \$13 billion per year
- Likely to exceed generation and environmental capital spending in next decade
- Almost triple the size of transmission spending

Source: EEI, FERC Forms 1.

Potential Further Rate Impacts Over Next Decade

Main Cost Drivers

Preliminary Estimate of Potential Rate Impact

- | | |
|---|------------|
| • EIA projection of fossil fuel prices | +5% (low?) |
| • EIA forecast of higher financing costs (165 bpts) | +5% |
| • \$150b in IOU distribution investments | +3.5% |
| • \$40b in IOU environmental investments | +3.5% |
| • \$70b in IOU transmission investments | +3.3% |
| • \$60b in new generation plus \$40b “catch-up” | +1.3% |
| • Cost of RTO formation (Day 2) | +0.6-1.2% |
| • New mandates (e.g., RPS, CO ₂) | large? |

But note:

- Enormous variances likely across utilities
- 10-year inflation forecast 26%
- EIA forecasts only 19% rate increase over next decade; but some forecasts much higher (e.g., Lehman Bros 66% through 2010)

**Looking Forward:
Can the Industry Weather
the Financial Challenges Ahead?**

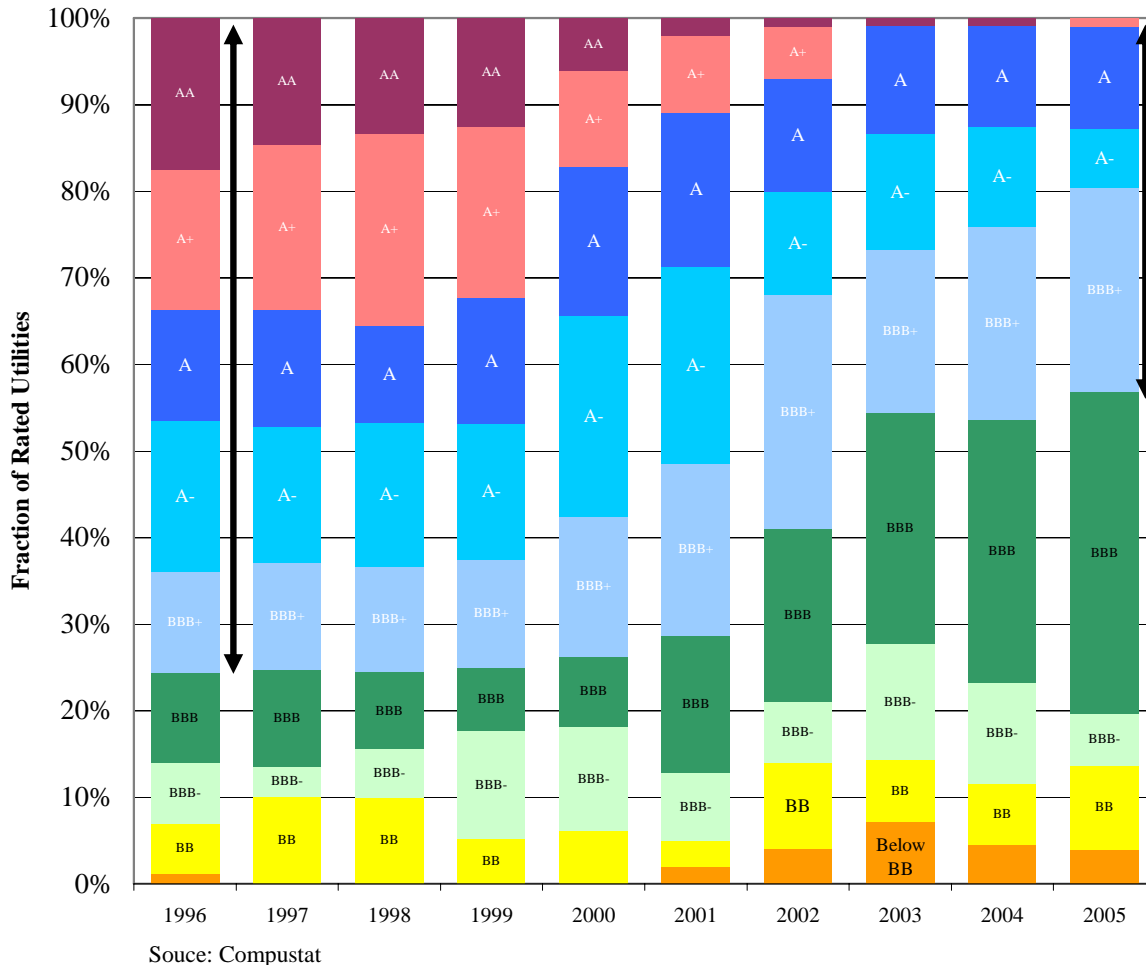
Financial Challenges Ahead

- Investment needs coincide with other cost increases
 - ▶ Sharp increases in fuel, purchased power, and other costs
 - ▶ New regulatory mandates (e.g., environmental and renewables)
- Negative cash flows
 - ▶ Resulting from large investment needs combined with significant other cost increases and regulatory lags
 - ▶ Increases reliance in external financing
 - ▶ Increases exposure to rising financing costs (debt and equity)
- Investment recovery risks
 - ▶ Political “shock” of recent rate increases after a decade of flat or declining rates, particularly in restructured states
 - ▶ Rate increases create demand growth uncertainty
 - ▶ Risk of overbuilding, cost overruns and delays

Creditworthiness of Utilities has Been Declining, ...

Electric and Combination Utilities

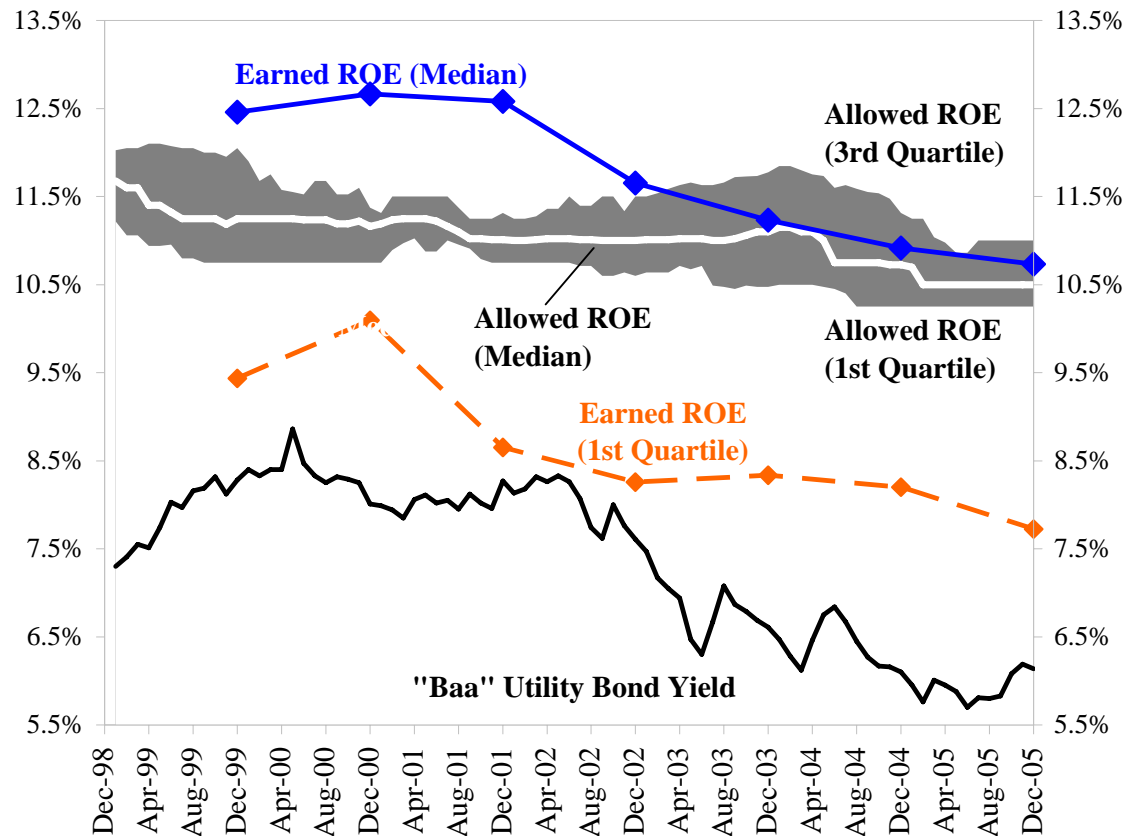
Range of Credit Ratings



- In last 5 years, the typical credit rating of utilities dropped from A to BBB
- Only 45% of all utilities maintain ratings of BBB+ or above, down from 75% in late 90s
- Since 2002, BBB- and below investment-grade ratings improved to 20% of all utilities, but will that hold?

... Earned Returns on Equity have Started to Retreat, and ...

**Allowed and Earned Returns on Equity
for US Electric Companies**



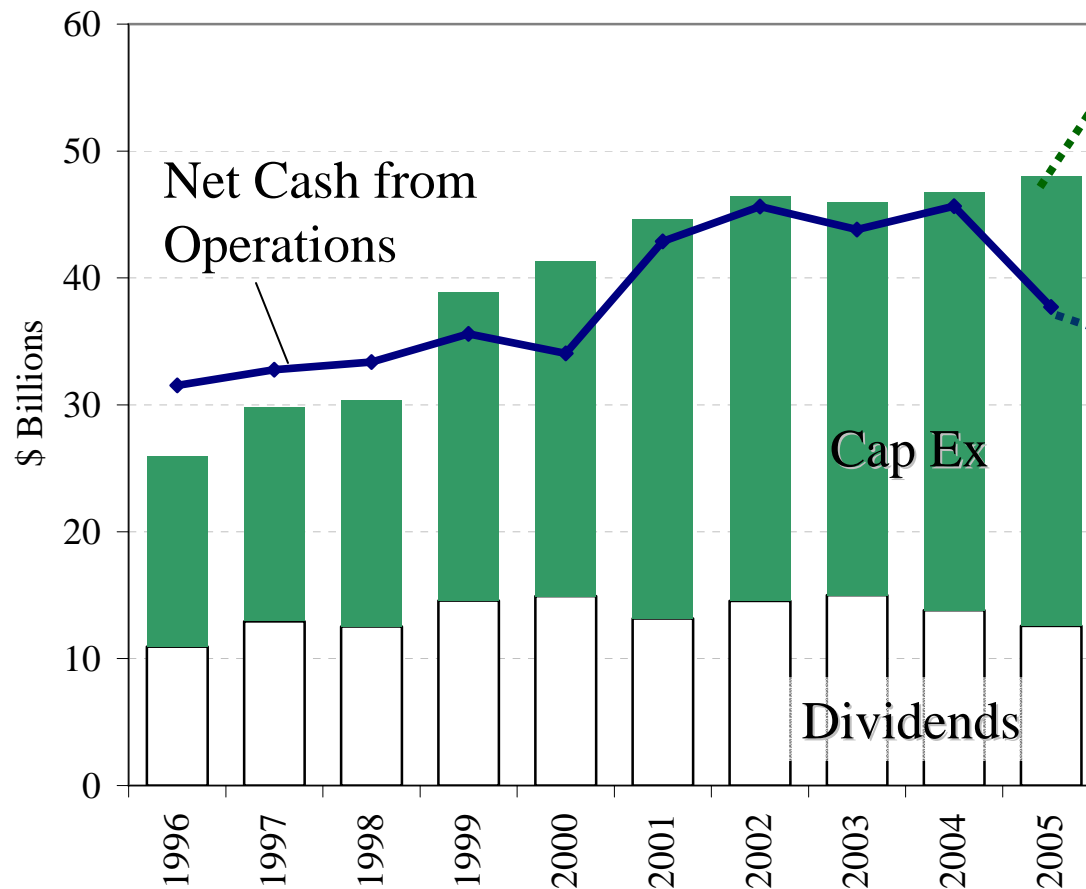
Sources and Notes:

Regulatory Research Associates, Compustat, Mergent Bond Record. Allowed ROE calculated as 2-year two-year rolling average of Commission-approved returns. Sample reflects only electric and combination operating utilities.

- Average ROEs have been at or above allowed ROEs, but are trending downward
- Allowed ROEs have been trending downward as well
- A large portion of the industry earns low ROEs
- Increasing operating and financing costs create significant challenge to maintain adequate earnings levels

... Declines in Operating Cash Flows Point to Worsening Financial Condition of the Industry

Cash Flows of Electric and Combination Utilities



Sources: Compustat; sample of 121 electric and combination utilities

- Negative free cash flows are a leading indicator for further declines in utility returns and significant financial challenges
- 2006 cap ex expected to increase 30% over 2005 levels
- Analysts forecast “increasingly negative credit factors;” some predicting earnings to average 250 basis points below required returns

Can the Industry Weather the Financial Challenges Ahead?

- Good news:
 - ▶ Industry recovered fairly well since 2000-02 credit crisis
- Bad news:
 - ▶ Downward trend in earnings, cash flows, and credit quality
 - ▶ Very weak bottom quartile of industry
- High long-term cost of financially weak utilities
 - ▶ higher investment-related costs
 - ▶ unable to make beneficial discretionary investments
 - ▶ distracted by looming financial risks
- Requires constructive regulatory climate, reasonable rate relief, and predictable investment recovery policies

Conclusions

Conclusions: Known Cost Drivers and Challenges

- Recent rate increases have been driven primarily by fuel prices
- Similar recent increases in restructured and non-restructured states
- Challenges in years ahead:
 - ▶ Full realization of higher fuel and transportation costs
 - ▶ Environmental compliance and renewable resource costs
 - ▶ Infrastructure investment needs (D, T and G)
 - ▶ Higher financing and non-fuel O&M costs
 - ▶ Other environmental uncertainties (e.g., CO₂)
- Deceiving average: significant variances will create more difficult challenges for some utilities

Conclusions: Open Questions

Important questions remain:

- Are fuel prices stabilizing?
- What will be the cost of already-known and still uncertain environmental mandates (e.g., CO₂)?
- Ultimate cost of renewable resource standards?
- Impact of conservation and demand response?
- Will individual utilities be strong enough financially to cope with the challenges today and in years ahead?
- Will the regulatory climate maintain financial health of industry to allow for cost-effective capital expansion?

Conclusions: Protecting Consumers

Sharp increases utility costs raise difficult questions about how to protect consumers. Some thoughts:

- Maintain financially healthy utilities that can cope with volatile costs and substantial investment needs
- Get prices right!
 - ▶ Transition out of long-term rate freezes before they end
 - ▶ Have retail rates be reasonably reflective of incremental costs; selling below will only aggravate problems
 - ▶ Utilize time-of-use and dynamic pricing
- Recognize that most customers can afford to pay for full cost of electricity, but help those who cannot
- Offer options and education: efficiency, pricing, billing, renewables, low income

Further Reading

Pfeifenberger, “Financial Pressures Ahead: Can Utilities Simultaneously Manage Rising Costs and Pressing Capital Investment Needs?,” Public Utilities Fortnightly, October 2006

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Pfeifenberger and Newell, “Innovative Regulatory Models to Address Environmental Compliance Costs in the Utility Industry,” Newsletter of the American Bar Association, Section on Environment, Energy, and Resources, October 2005, pp. 3-6

Pfeifenberger, Wharton, and Schuhmacher, “Keeping Up with Retail Access? Developments in U.S. Restructuring and Resource Procurement for Regulated Retail Service,” The Electricity Journal, December 2004, pp. 50-64

Pfeifenberger, “Can Utilities Play on the Street? Issues in ROE and Capital Structure,” opening comments for panel discussion on “Traditional and Alternative Methods for Determining Return on Investment,” Financial Research Institute Conference, Columbia, Missouri, September 16, 2004

Weisman and Pfeifenberger, “Efficiency as a Discovery Process: Why Enhanced Incentives Outperform Regulatory Mandates,” The Electricity Journal, January-February 2003

Sappington, Pfeifenberger, Hanser and Basheda, “The State of Performance-Based Regulation in the U.S. Electric Utility Industry,” The Electricity Journal, October 2001, pp. 71-79

Bio and Contact Information

Johannes Pfeifenberger is a Principal of The Brattle Group, where he co-manages the firm's utility practice. He specializes in industry restructuring, network access, ratemaking and incentive regulation, analysis and mitigation of market power, financial valuation, and litigation support. As an expert economist with over 15 years of experience in the areas of regulated industries and finance, Mr. Pfeifenberger has worked with utilities, RTOs, utility customers, and government agencies, including with the California Attorney General in the state's investigation of the power crisis, gaming strategies, and market manipulation by Enron and other suppliers. He has published widely; assisted clients in the formulation of business and regulatory strategy; submitted testimony to the U.S. Congress, courts, arbitration panels, and regulators; presented to antitrust and government agencies; and provided analytical support in mediation and stakeholder processes.

Mr. Pfeifenberger holds an M.A. in economics and finance from Brandeis University and an M.S. in power engineering and energy economics from the University of Technology, Vienna, Austria.

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