

# *Fuel Price and Volatility Risks for Big Stone II and Alternatives*

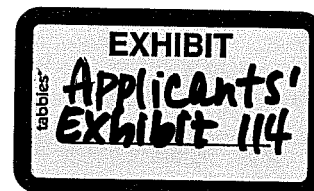
**Daniel E. Klein**

**Twenty-First Strategies, LLC  
McLean, VA**

presented to the  
**South Dakota Public  
Utilities Commission**

Case No. EL05-022  
June 2006

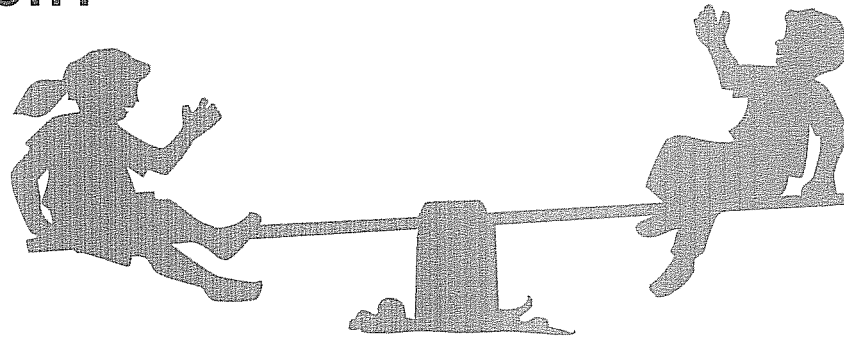
**Summary:  
Applicants' Exhibit 31**



# *My Testimony is about Trade-offs*

What are the potential costs of future greenhouse gas regulation?

What are the cost and other risks of not using coal at Big Stone II?

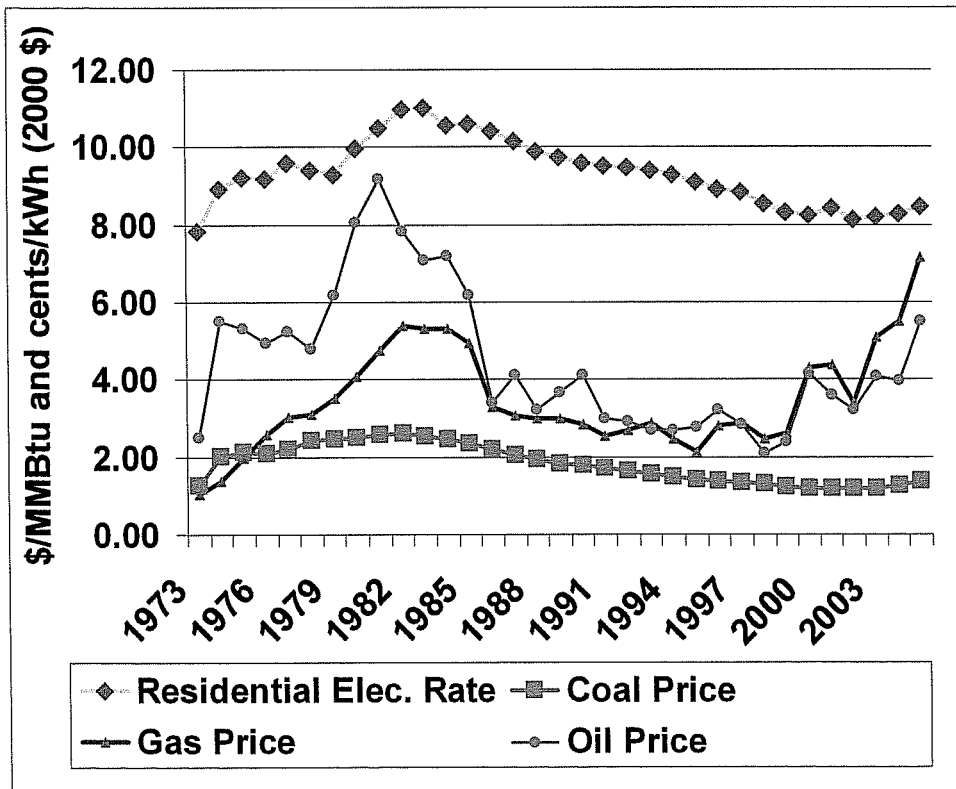


Capacity alternatives to Big Stone II generally entail natural gas, either as a primary or backup fuel supply.

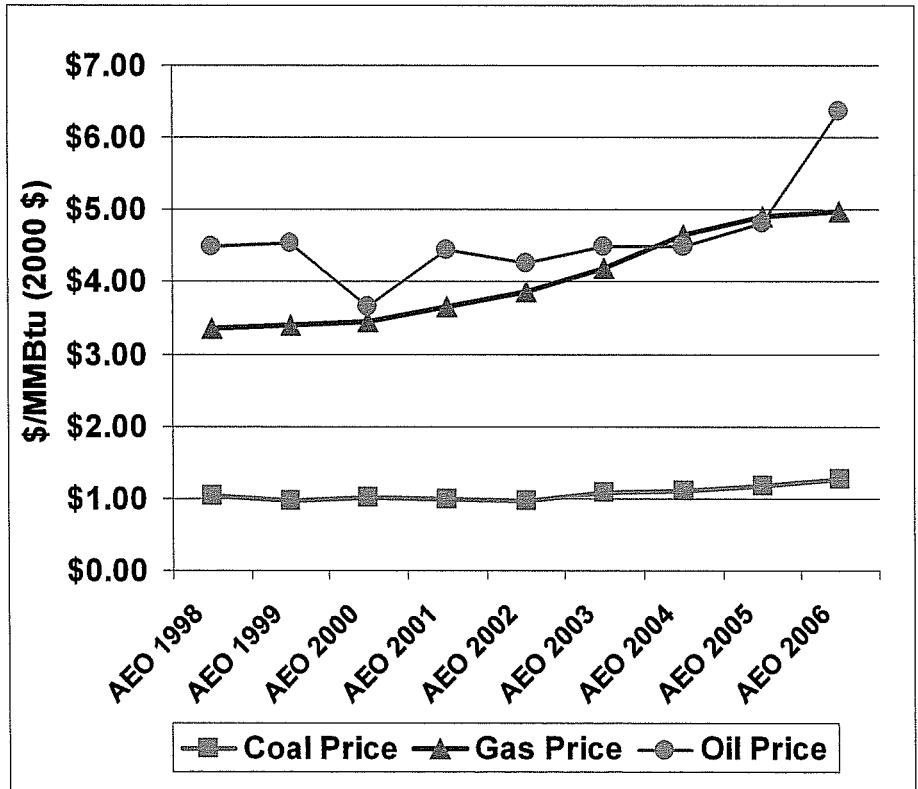
- Risks of higher prices
- Greater price volatility
- Health, safety, and longevity impacts of higher prices

# Natural gas prices are high, and heading higher

Average U.S. Residential Electric Rates and Utility Fuel Costs, 1973-2004

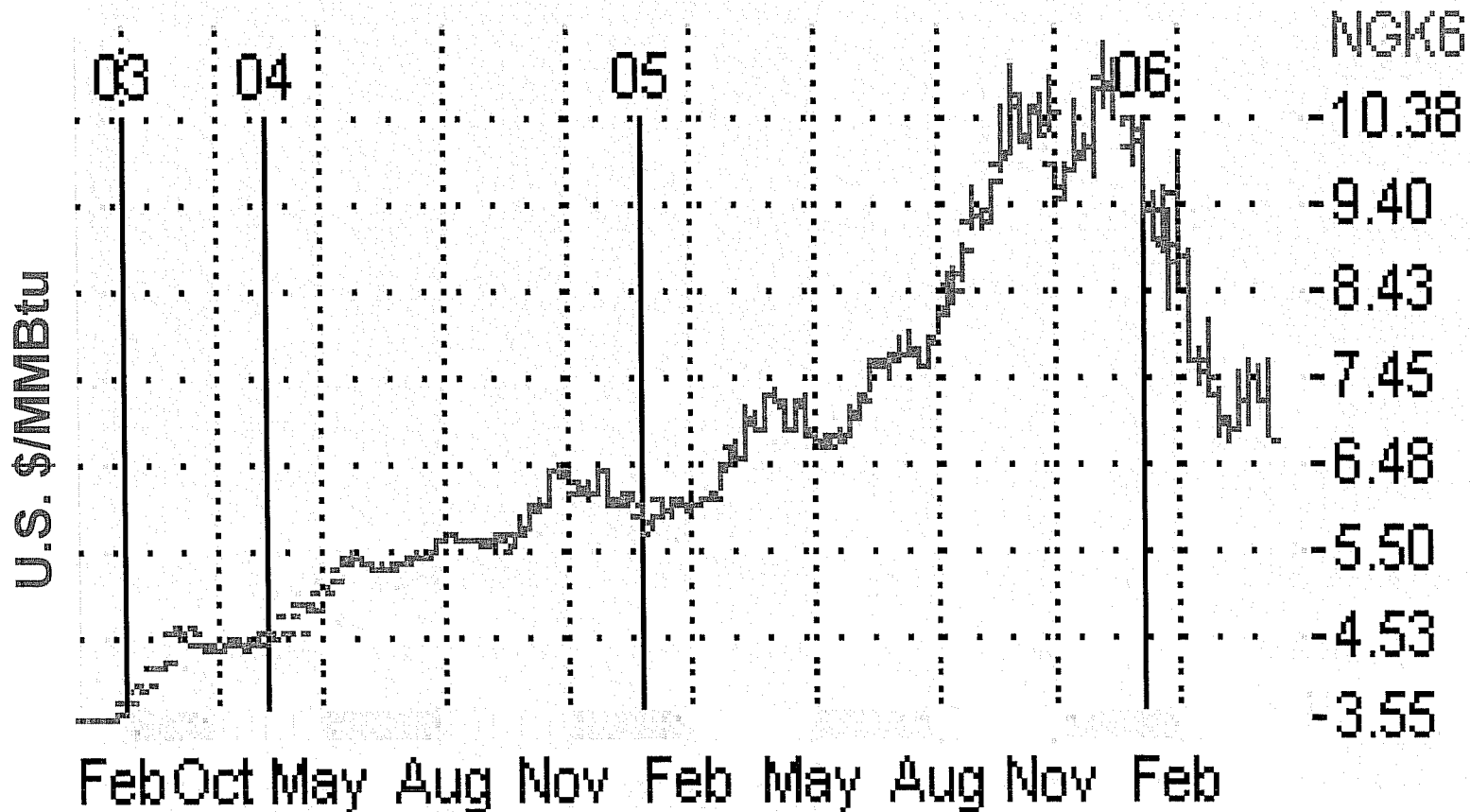


2020 Forecasts of Electric Power Sector Fossil Fuel Prices, Compiled from AEO 1998-2006



# *Much greater volatility in natural gas prices compared to coal*

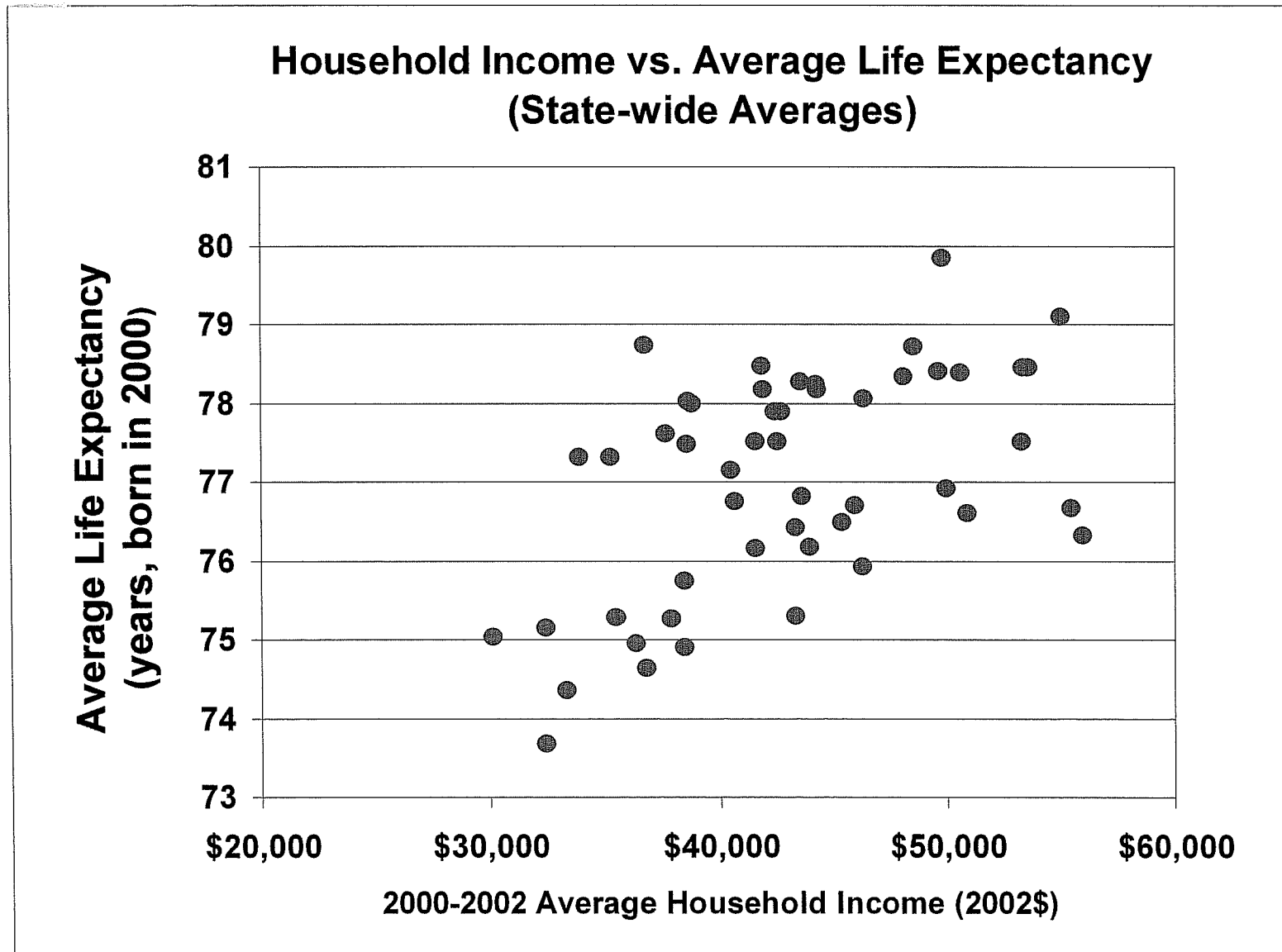
Natural Gas Futures: Contract Detail for May 6, 2006



## *High natural gas prices and price volatility pose risks for electricity generators*

- For 600 MW of gas combined cycle:
  - 1¢ change in gas prices → \$300,000/year
  - \$1.00/MMBtu or more → tens of \$millions/year
  
- Higher fuel prices are linked to health impacts
  - higher costs for generating power
  - higher rates for customers
  - less household income for other purposes
  - curtailment in health and safety spending
  - greater chance of premature death

# *“Wealthier is healthier”*



# *Additional considerations: South Dakota*

- SD counties to be served by Big Stone II have lower than average household income
- SD households have higher than average consumption of gas and oil
  - Households doubly vulnerable to gas price volatility
  - Coal use at Big Stone II would moderate price spikes in family energy budgets
- These factors suggest that SD impacts on health, safety, & longevity would be greater than national averages