

ELECTRICITY AND UNDERLYING FUEL PRICES

A Survey of Non-Restructured States

April 2006

INTRODUCTION AND SUMMARY

In this report we analyze recent history of electricity and underlying fuel prices in several states to better understand the potential effects of disparate regulatory and fuel mix settings on electricity prices across the country. Our key finding is that the trend of increasing prices for electricity is not unique to states that have allowed for retail competition. Our analysis indicates instead that strong relationships exist between changes in consumer electricity prices and changes in fossil fuel prices, even in states that have not undergone significant change in regulation and industry structure at the retail level. Given these strong relationships, it is reasonable to conclude that in recent years, increases in fossil fuel prices used to produce power are being passed along to consumers in the form of higher electricity prices in both restructured and non-restructured states.

Over the past ten years, the electric industry has faced an extraordinary period of rapid and simultaneous change in fundamental industry features that had been stable for decades. These changes are complicated and vary around the country. But there are common threads across many regions of the United States, including

- (1) changes in rules that govern access to transmission and the status of independent generating companies and the structure of and activity in wholesale, regional electricity markets;
- (2) changes in the structure of the industry and in the form of obligations for service to end use customers, as well as opportunities for retail electric competition (in many states);
- (3) “boom and bust” cycles of generation investment in several regions;
- (4) significant variations – mostly increases in prices and volatility – in the costs of fuels (especially fossil fuels) that contribute to the formation of end-user electricity rates and prices; and
- (5) major power outages and “rolling blackouts.”

The parallel and interconnected nature of these events has made it very difficult to isolate the benefits or costs of individual structural changes in the industry at the wholesale and retail levels over this period. Similarly, it has confounded efforts to pinpoint the source of increasing prices in several regions. Numerous studies estimating short-run or long-run benefits and costs of competition at the wholesale and retail levels have been carried out by a number of organizations and firms to answer some of these questions, with varying difficulties and varying conclusions. Typically the analyses focus on a region that has undergone structural change, and model the benefits and costs of restructuring and increased competition, subject to correcting for

underlying fuel price increases (and other factors) that are assumed to be present with or without the introduction of competition.

Here we review the other side of the coin – namely, we present data on trends in electricity prices over the past ten years, focusing on states that have not undergone major industry restructuring in the form of introducing competition at the retail level. We already know that in some states that *did* move to retail competition, the prices charged to default service customers were often subject to transitional rate caps and have increased recently as those transitional rates have ended and as the effect of increased fuel prices on wholesale electricity prices has been felt in consumers' electricity rates. Here we review price histories in certain *non-restructured* states to consider whether this trend in increased consumers' retail electricity rates has affected them, just as the trend shows up in certain restructured states. Specifically, we have analyzed the relationships among changes in fossil fuel prices and changes in consumers' electricity prices. We see strong parallels among these states across the country.

Importantly, this analysis is not intended to exhaustively review either rate trends in every state or all of the factors that go into the setting of rates in various jurisdictions around the U.S. We recognize that the average retail rate data presented in this analysis are affected not only by the short-term fluctuations in costs (primarily fuel) to provide electricity, but also by capital cost, ratemaking contexts, growth in electricity demand, and other factors that change less frequently or that occur over longer timeframes. Instead, we focus on the historical patterns of price changes in recent years, to observe whether those in non-restructured states parallel the observed price movements in underlying fossil fuels.

DESCRIPTION OF DATA AND RESULTS

In this report, we use the phrase “non-restructured” states to characterize states that have not adopted retail choice in the electric industry. Our analysis samples electricity price data for seven non-restructured states that we chose, for they represent a set that is diverse from the perspectives of fuel mix, regulatory setting, geography, and climate: Arizona, Georgia, Louisiana, Mississippi, Nevada, Oklahoma, and Wisconsin.

Average monthly prices are calculated from revenue and consumption data reported to the U.S. Energy Information Administration (EIA) by all sellers and distributors of electricity at retail in each state. We also compare electricity price data in the states in our analysis to trends in the prices of the major fossil fuels used to generate electricity in those states – natural gas and coal.¹ For comparison purposes, we include statistics on the change in retail electricity prices on average for the U.S., and for two states that *have* restructured (NY and MA).

Our most significant finding is that the trend of increasing prices for electricity is not unique to restructured states. To the contrary, over the same time period (2000 – 2005), the non-restructured states we reviewed all have seen substantial increases in average annual retail

¹ In the states in our sample, those two fuels are used to produce at least two-thirds of the power, from 65% to 92% of total generation in 2004.

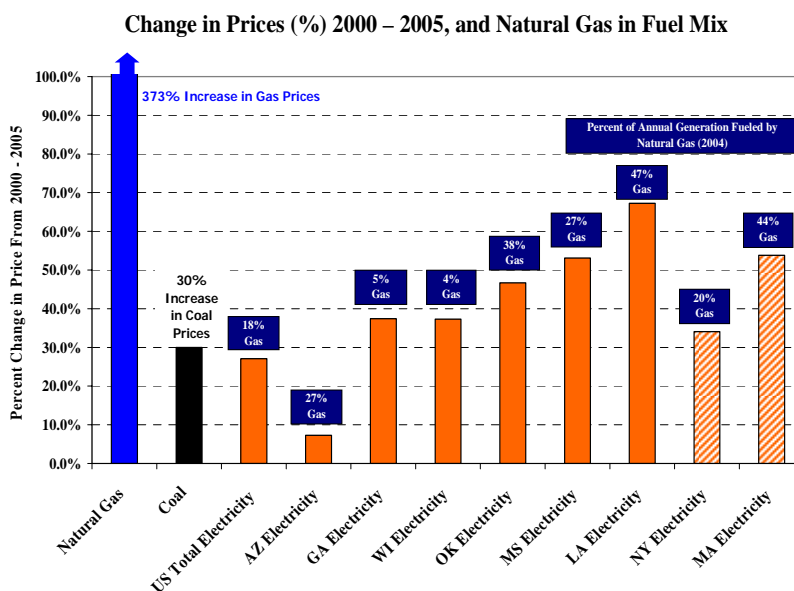
electricity prices on the order of – and in some cases higher than – the increase in average retail prices in Massachusetts and New York (the two states we examined which have restructured their retail electric industries).

See Figure 1. For reference, Figure 1 also contains the percentage increase in prices for natural gas and coal over the same time period, as well as an indication of the percent of each state’s annual generation (for 2004) fueled by natural gas. Generally, retail electricity prices in those states or regions heavily dependent on natural gas have seen the highest increase in recent years, in parallel with the dramatic price increases seen in natural gas markets.

The tracking of underlying fuel prices to the increase in

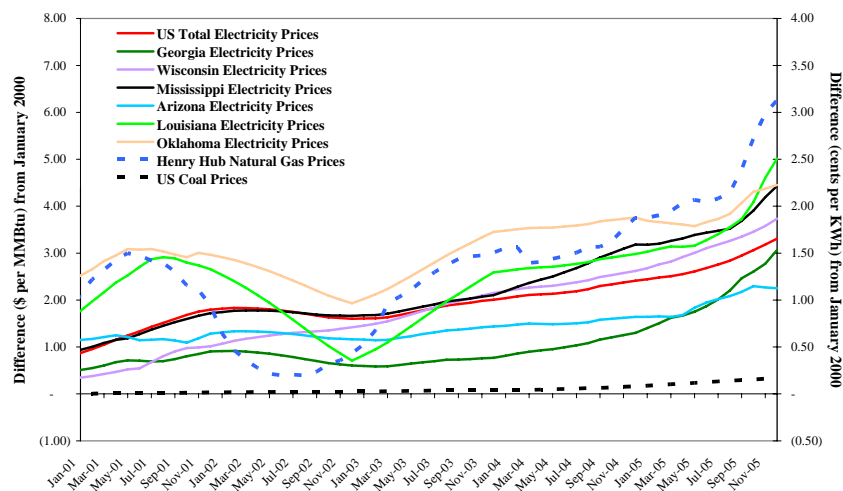
electricity prices over time can be seen in the trajectory of fuel and electricity prices experienced over the six-year period January, 2000 through December 2005. Figure 2 contains the bidweek price of natural gas at Henry Hub, average US prices for coal delivered to electric generating facilities, and the prices of electricity in the US overall and in the six non-restructured states we studied. All prices are monthly, and presented in this chart as 12-month rolling averages.² While we cannot say that all changes in average

Figure 1



Sources: Electricity, coal price, and fuel mix data from EIA, natural gas prices from Natural Gas Intelligence.
 Notes: [1] Natural gas prices used are the bidweek price at Henry Hub.
 [2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry.
 [3] Electric generation fuel mix represents in-state generation, while electricity prices are for delivered electricity, some of which may be generated out of state.

Figure 2
 Changes in Prices for Natural Gas, Coal, and Retail Electricity From January 2000 to December 2005 (12-Month Rolling Average)



Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.
 Notes: [1] Lines represent 12-month moving averages.
 [2] Natural gas prices reflect the bidweek price at Henry Hub.
 [3] Coal prices reflect the US average coal price paid by the electric power industry, and are yearly averages until 2003, after which they are reported monthly.

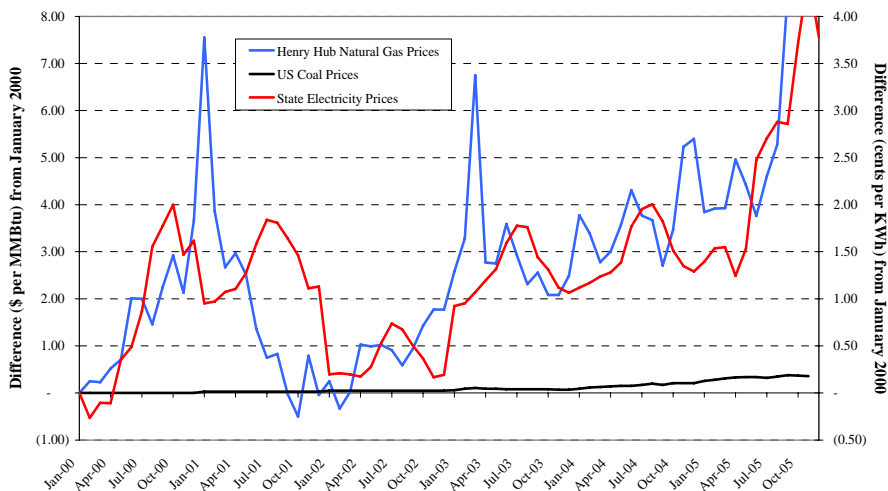
² In Figure 2, the data are presented as 12-month rolling averages in order to better observe trends and to improve the readability of the chart. As a result, the first data point – January 2001, represents the 12-month average of the preceding 12 months beginning January 2000. In subsequent figures that are specific to each state, we use the same data set, but present the actual monthly prices (as opposed to rolling averages) over the six-year period, beginning January 2000.

retail electricity prices can be traced solely to changes in the prices of underlying fuels, there is a strong observable relationship among fuel prices (particularly for natural gas) and the trends in monthly electricity prices in non-restructured states.

The data also show the strong seasonality of energy prices. Comparing the EIA average price data with the trajectory of underlying fuel prices in the same periods for each state reveals both the seasonality of average electric sector prices and the tracking (often lagged) of electricity prices to the price of fuel, primarily natural gas. These lags are sensible in light of cost-recovery and rate-setting practices in the non-restructured states.

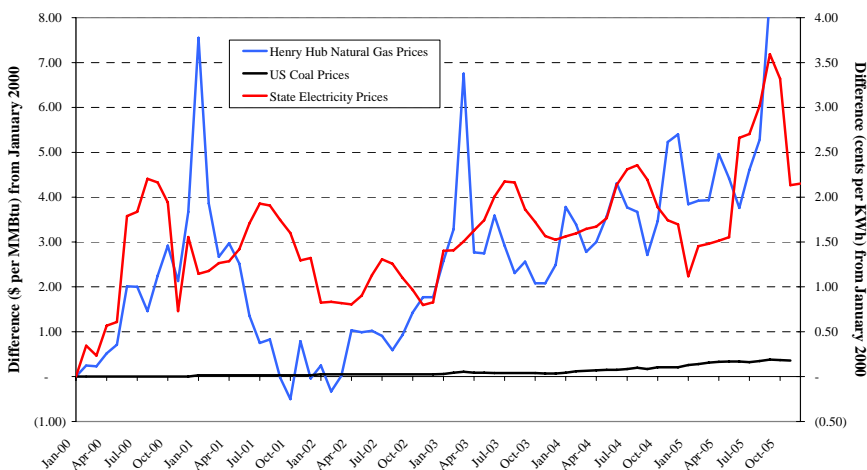
Figures 3 and 4 show the results for Louisiana and Oklahoma, respectively.³ Charts for the U.S. (on average) and for additional states – Arizona, Georgia, Mississippi, Nevada and Wisconsin – are attached to the end of the report.⁴

Figure 3
Comparison of Louisiana Monthly Average Electricity Price and Fuel Prices
January 2000 to December 2005



Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.
Notes: [1] Natural gas prices reflect the bidweek price at Henry Hub.
[2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry, and are yearly averages until 2003, after which they are reported monthly.

Figure 4
Comparison of Oklahoma Monthly Average Electricity Price and Fuel Prices
January 2000 to December 2005



Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.
Notes: [1] Natural gas prices reflect the bidweek price at Henry Hub.
[2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry, and are yearly averages until 2003, after which they are reported monthly.

³ Electricity price data represents receipts and delivered kWh reported by company and month. Care should be taken in interpreting average monthly data for Louisiana at the end of 2005. The significant impact on Louisiana’s electricity infrastructure and demand due to Hurricanes Katrina and Rita in August 2005 would be expected to affect both revenues and delivered kWh in subsequent months. However, given the lag between billings and receipts, and the fact that the damage would be expected to decrease both the numerator and denominator in the average price calculation, it is not possible to sort out the precise impact on estimated average prices.

⁴ The charts in Figures 3 and 4, and for the other states attached at the end of this report, portray annual average revenues per kWh for all customers within a state, and thus may not fully capture in 2005 recent increases to companies’ retail rates as a result of regulatory order. For example, average 2005 rates for Arizona (see Figure 10) do not yet fully reflect the decision of the Arizona Corporation Commission (ACC) to allow an increase in rates for

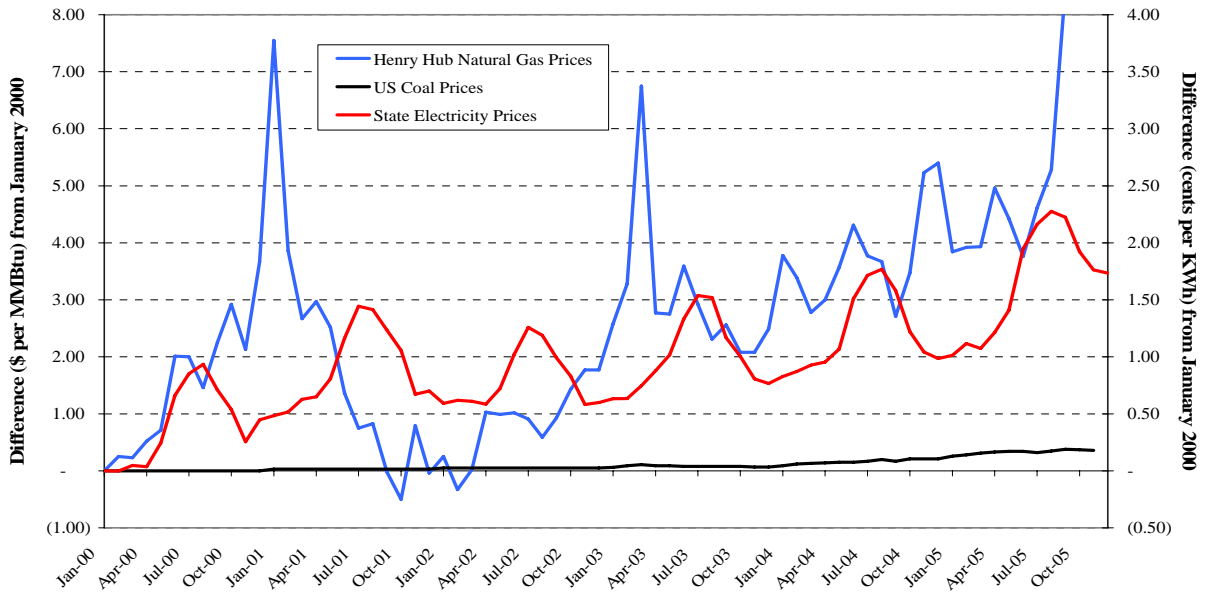
Louisiana and Oklahoma are good examples of the importance of fuel prices to the price of electricity generation for a number of reasons. They both depend significantly on natural gas as a fuel for the electric sector (47% for Louisiana, 38% for Oklahoma). Both of these states have experienced changes in electricity prices of a magnitude comparable to that in restructured states (NY and MA). And both have seen electricity price changes closely track the path of changes in natural gas prices over the same period. Figures 3 and 4 also display the regulatory lag that exists between increases in the price of fuel for electricity generation, and the realization of those fuel price increases in the rates paid by end-use consumers.

CONCLUSION

The past decade has been a difficult one for the electric industry, involving major regulatory changes, industry and market failures, and increasing prices. Many have suggested that structural change in the industry is behind the increase in costs to the consumer. Our most significant finding is that the trend of increasing prices for electricity is not unique to restructured states. Our analysis indicates that strong relationships exist between changes in consumer electricity prices and changes in fossil fuel prices, even in states that have not undergone significant change in regulation and industry structure at the retail level. Given these strong relationships, it is reasonable to conclude that in recent years, increases in fossil fuel prices used to produce power are being passed along to consumers in the form of higher electricity prices in both restructured and non-restructured states.

Arizona Public Service (ACC Docket E-01345A-03-0437), and thus electricity price averages for that year will appear low relative to current conditions.

Figure 5
Comparison of U.S. Monthly Average Electricity Price and Fuel Prices
January 2000 to December 2005

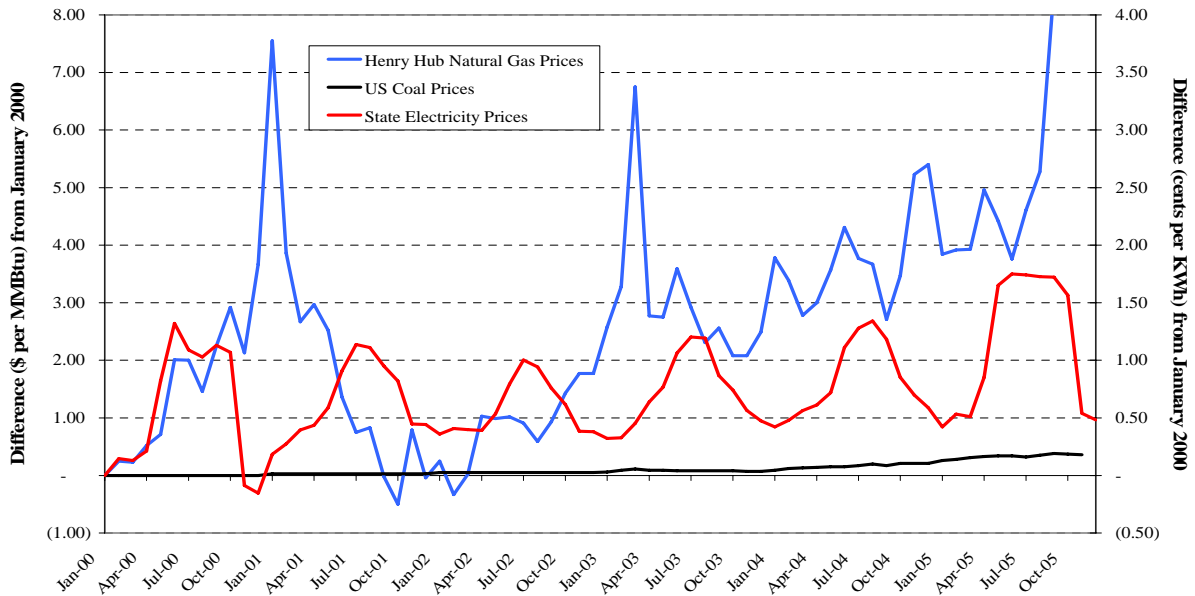


Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.

Notes: [1] Natural gas prices reflect the bidweek price at Henry Hub.

[2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry, and are yearly averages until 2003, after which they are reported monthly.

Figure 6
Comparison of Arizona Monthly Average Electricity Price and Fuel Prices
January 2000 to December 2005

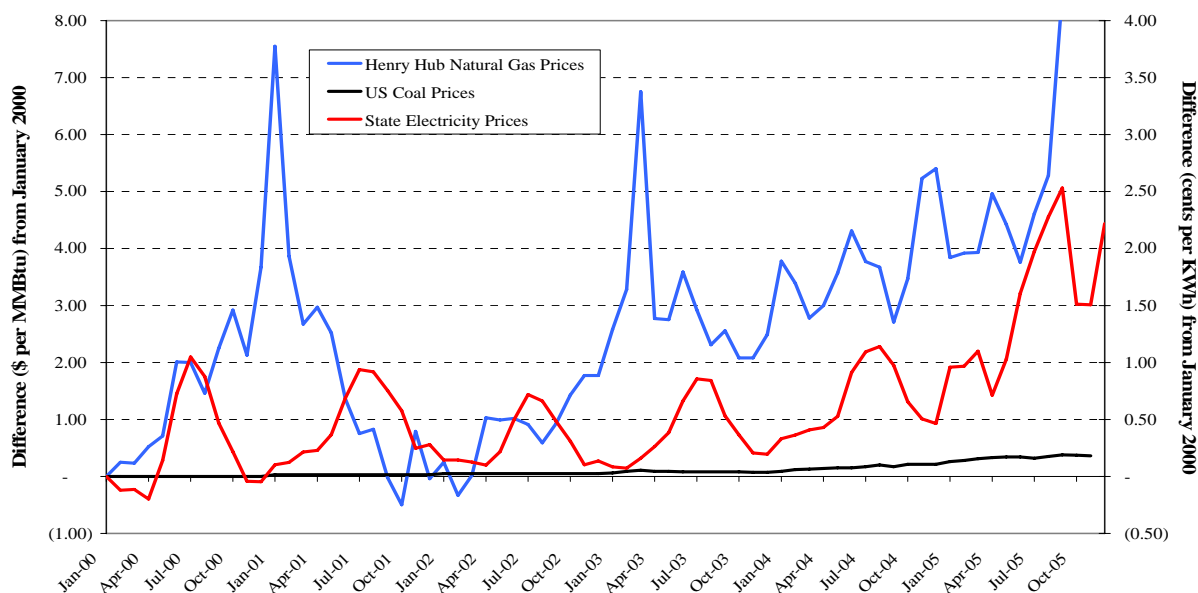


Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.

Notes: [1] Natural gas prices reflect the bidweek price at Henry Hub.

[2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry, and are yearly averages until 2003, after which they are reported monthly.

Figure 7
Comparison of Georgia Monthly Average Electricity Price and Fuel Prices
January 2000 to December 2005

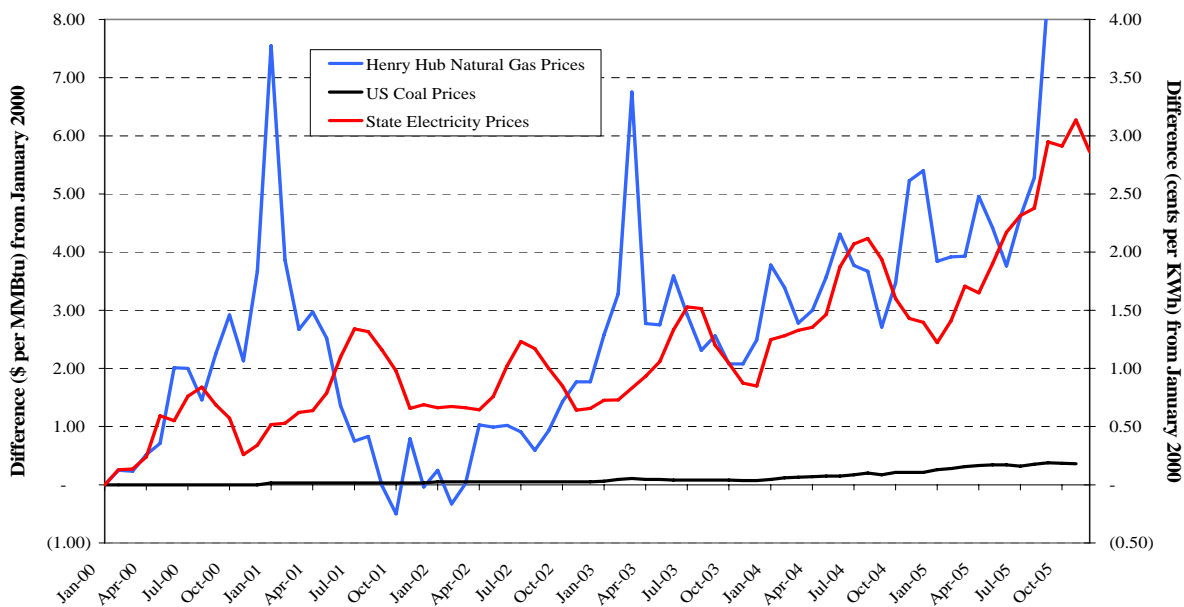


Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.

Notes: [1] Natural gas prices reflect the bidweek price at Henry Hub.

[2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry, and are yearly averages until 2003, after which they are reported monthly.

Figure 8
Comparison of Mississippi Monthly Average Electricity Price and Fuel Prices
January 2000 to December 2005

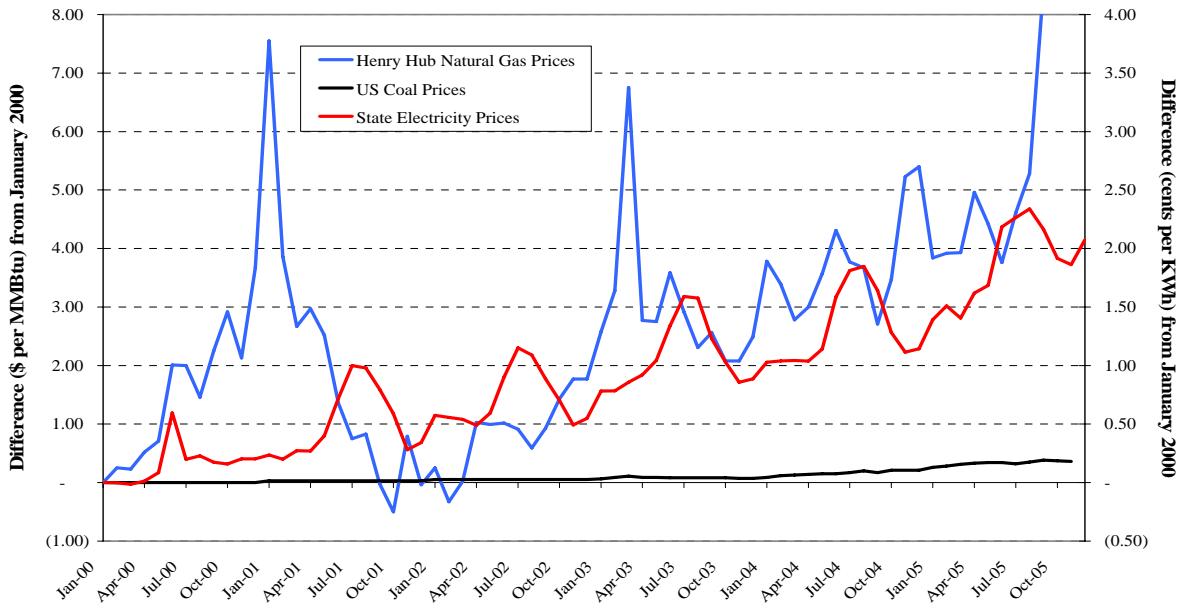


Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.

Notes: [1] Natural gas prices reflect the bidweek price at Henry Hub.

[2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry, and are yearly averages until 2003, after which they are reported monthly.

Figure 9
Comparison of Wisconsin Monthly Average Electricity Price and Fuel Prices
January 2000 to December 2005

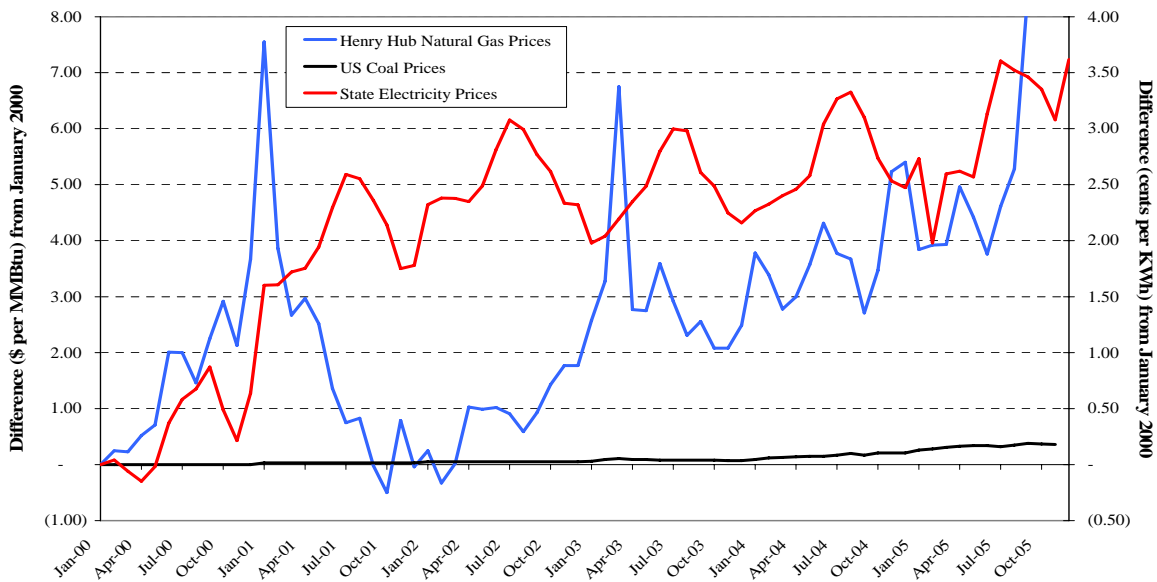


Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.

Notes: [1] Natural gas prices reflect the bidweek price at Henry Hub.

[2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry, and are yearly averages until 2003, after which they are reported monthly.

Figure 10
Comparison of Nevada Monthly Average Electricity Price and Fuel Prices
January 2000 to December 2005



Sources: Electricity and coal data from EIA, natural gas prices from Natural Gas Intelligence.

Notes: [1] Natural gas prices reflect the bidweek price at Henry Hub.

[2] Coal prices reflect the US average coal price paid for by all sectors of the electric power industry, and are yearly averages until 2003, after which they are reported monthly.