The Utility Fuel Economics – National Power Model Forecasting System

INFORMS Annual Meeting - Fall 2000
San Antonio, TX

November 7, 2000

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Outline

- How Our Models Work
- Factors Affecting Electric Plant Dispatch
- Factors Affecting New Plant Construction
- Modeling as a Business

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Figure I-1

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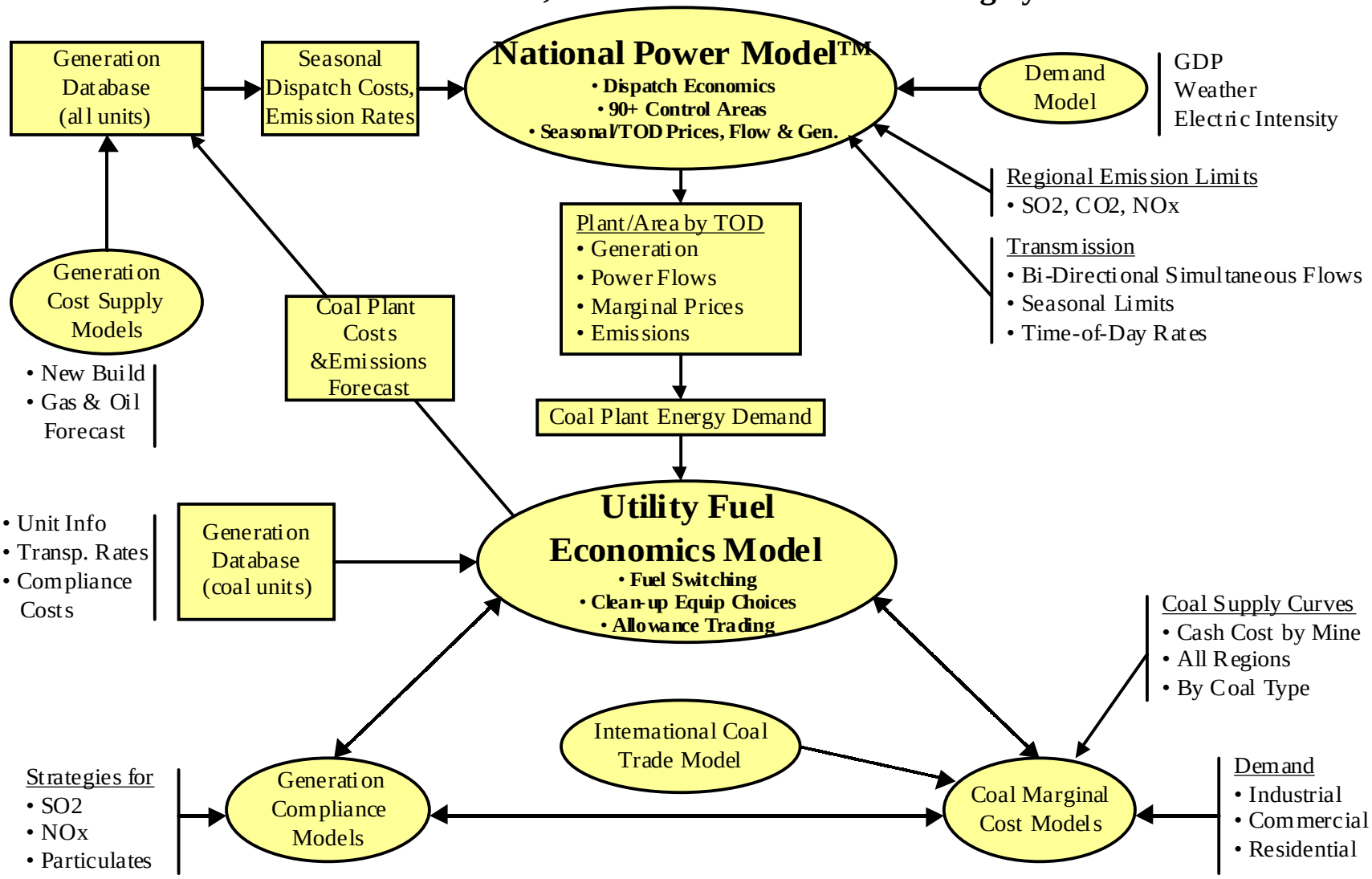
Electric Generation, Coal and Emissions Forecasting System



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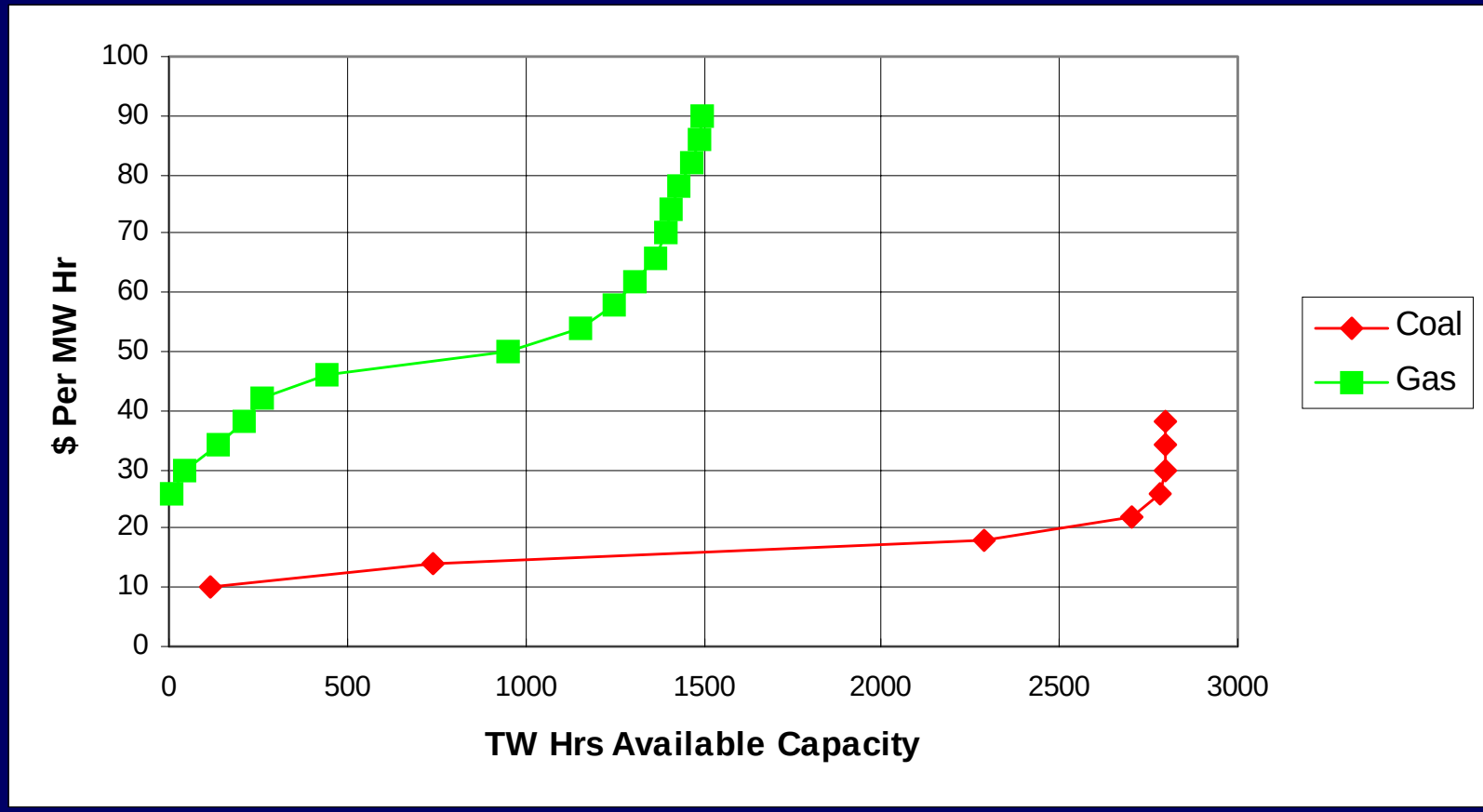
Factors Affecting Dispatch

- Pure Economics
- Nuclear/Hydro Availability
- Severity of NOx & SO2 Restrictions
- Transmission Bottlenecks

Dispatch Costs - Gas and Coal Units



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Nuclear/Hydro Availability

- In the Next 15 Years, Many Nuclear Plants Either Retire or Re-license
  - Through 2010, we have 5,617 MW retiring
  - In 2011-2015, we have an additional 18,318 MW retiring
- Hydro plants are under attack
  - Licenses are typically 30-40 years
  - In 2005-2007, over 11,000 MW renewal

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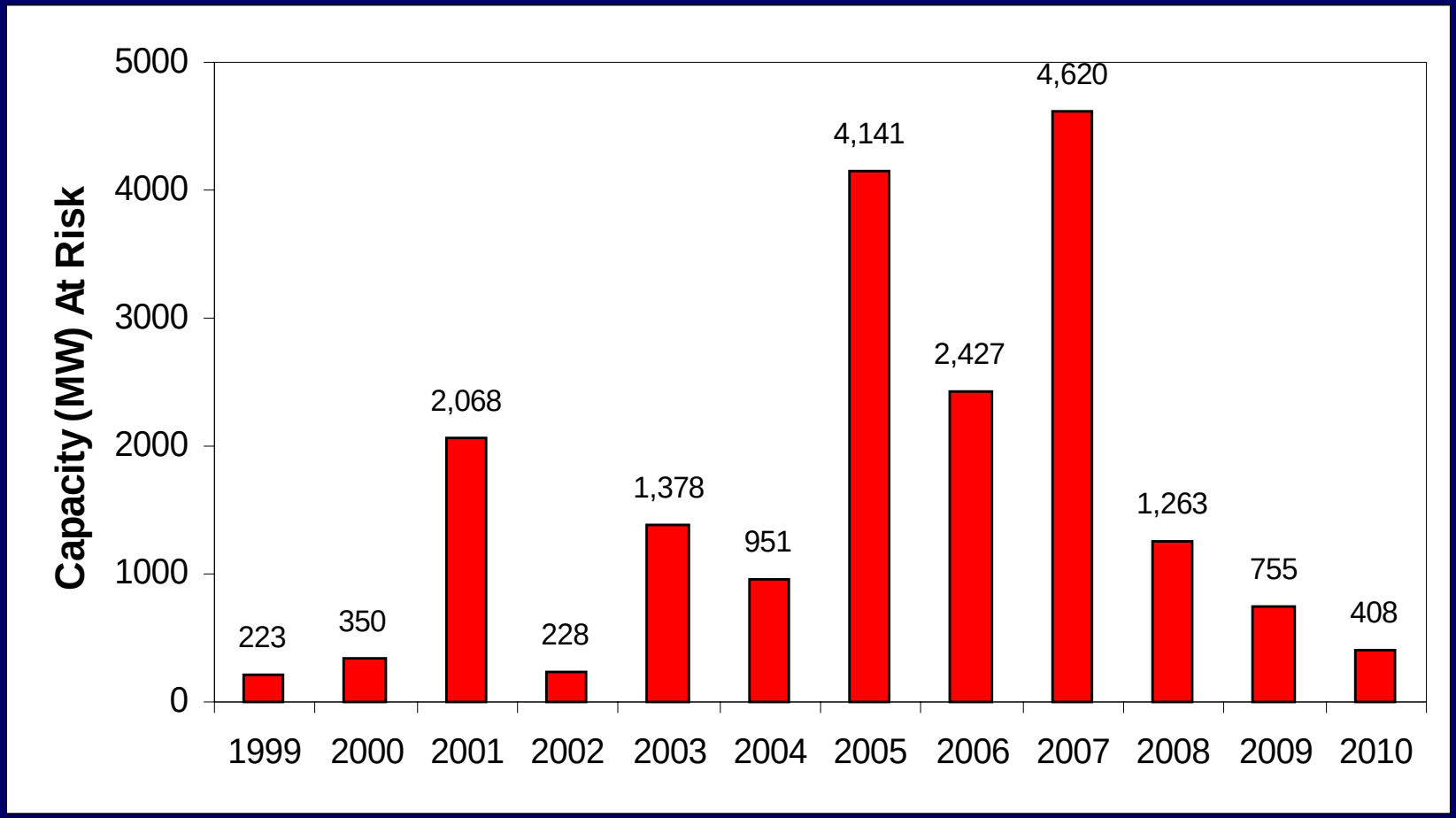
Hydropower Re-Licensing



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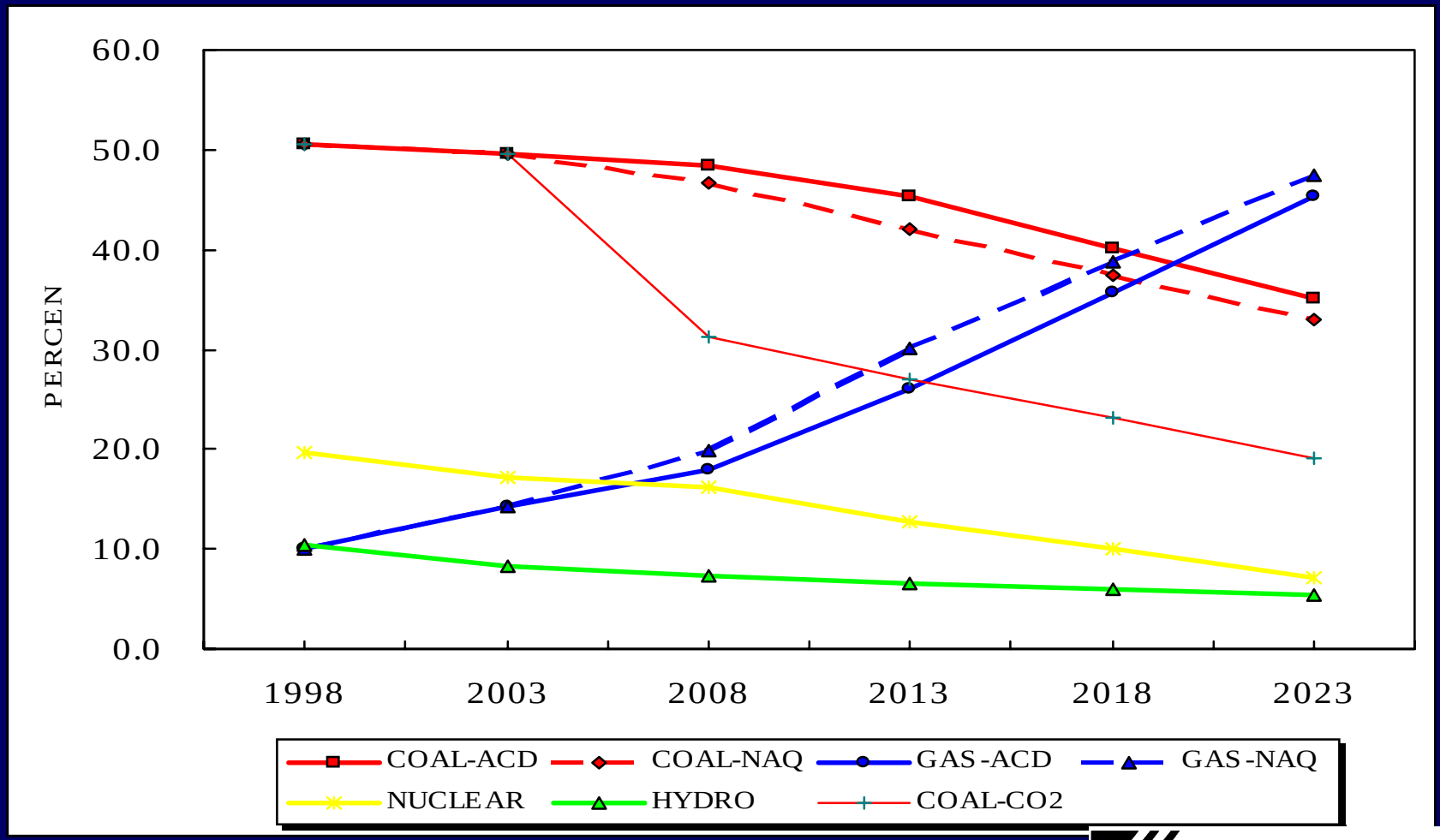
U.S. + Canada Elec. Fuel Shares (With Diff. Environmental Rules)



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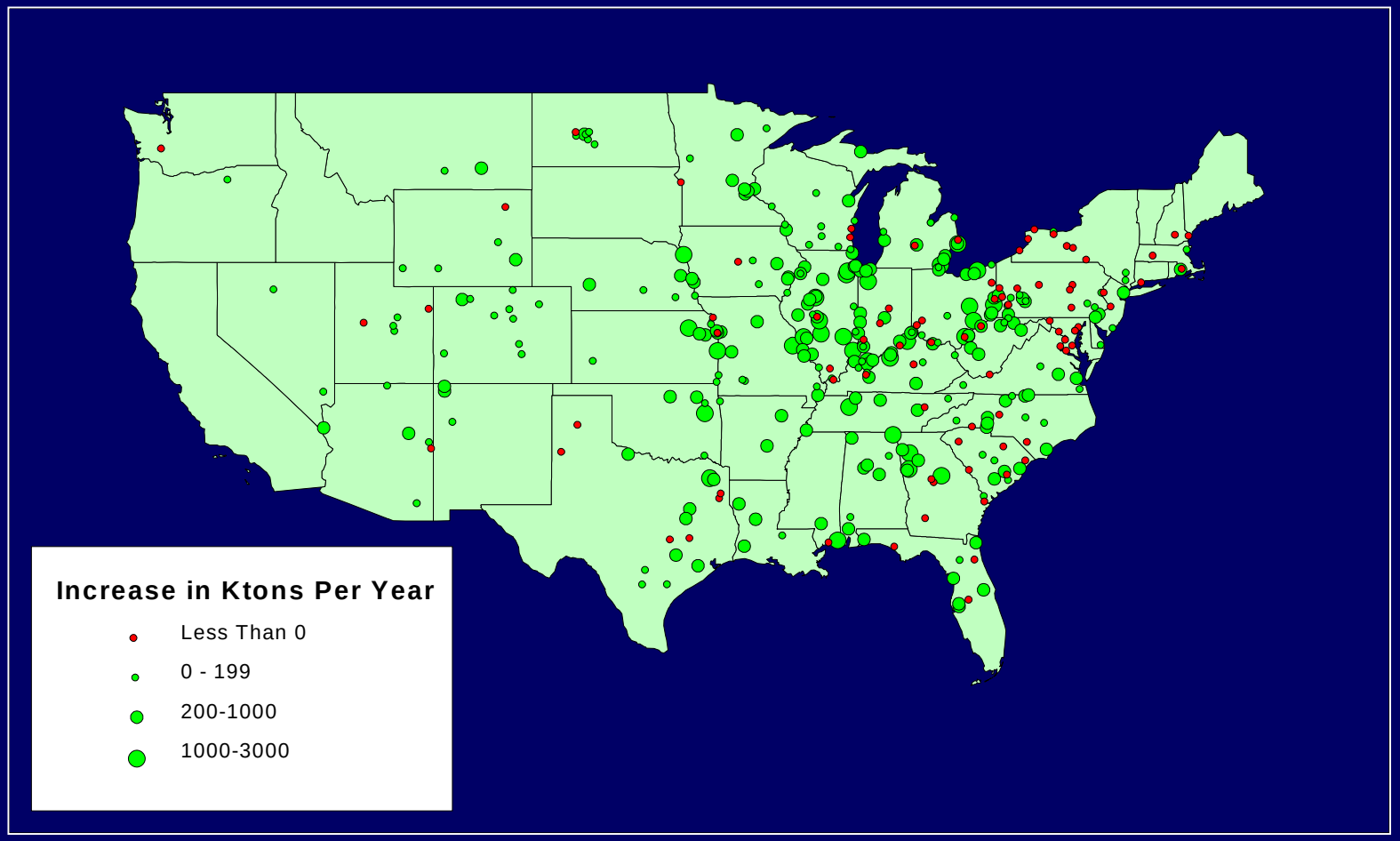
Projected Tonnage Increases at Coal-Fired Power Plants 2000 - 2005



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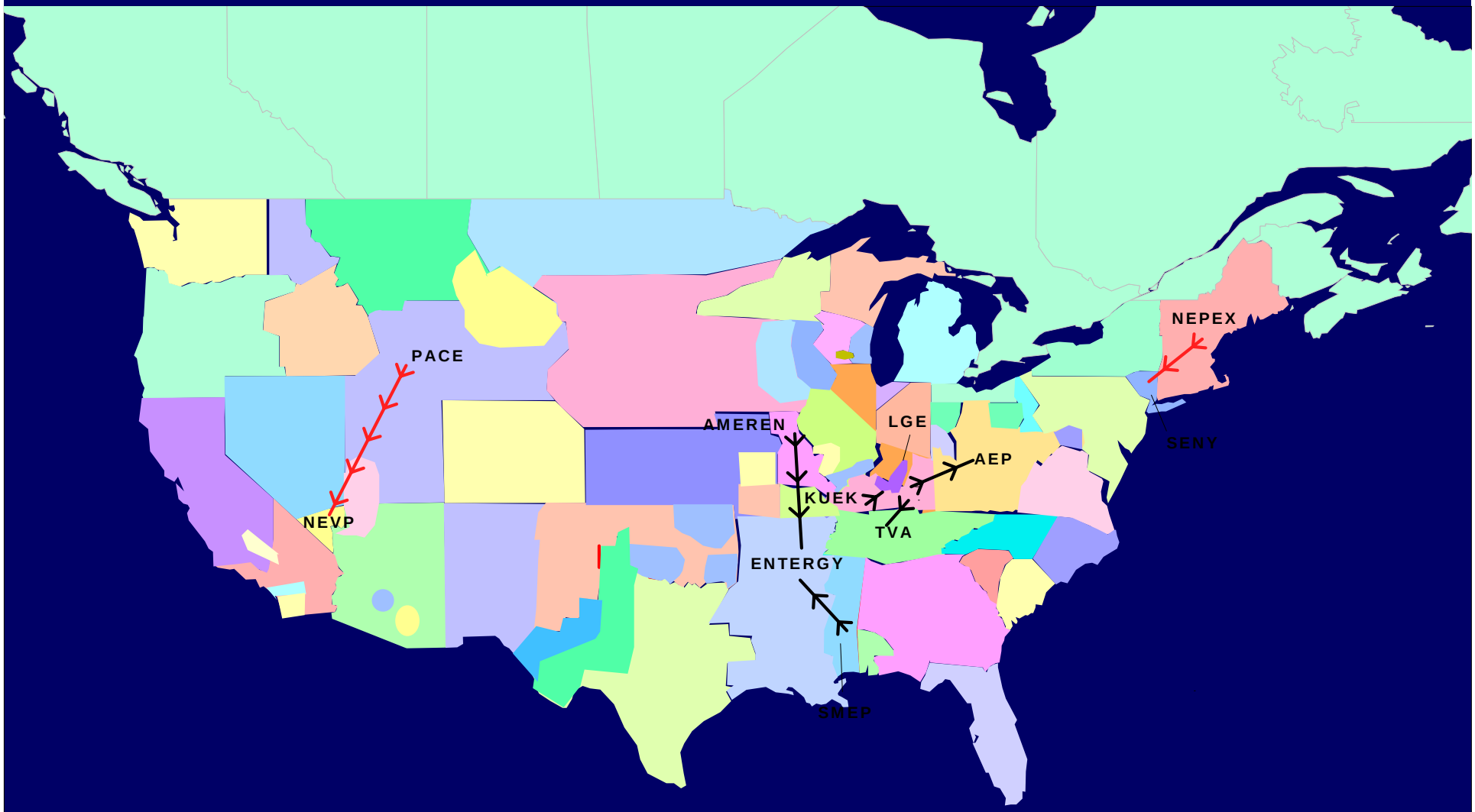
Transmission Bottlenecks 2005



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Factors Affecting New Utility Plant Construction

- Pure Economics
  - Natural Gas vs Pulverized Coal Plant
  - Natural Gas vs Gasified Coal Plant
- Politics
  - Bias
  - Uncertainty

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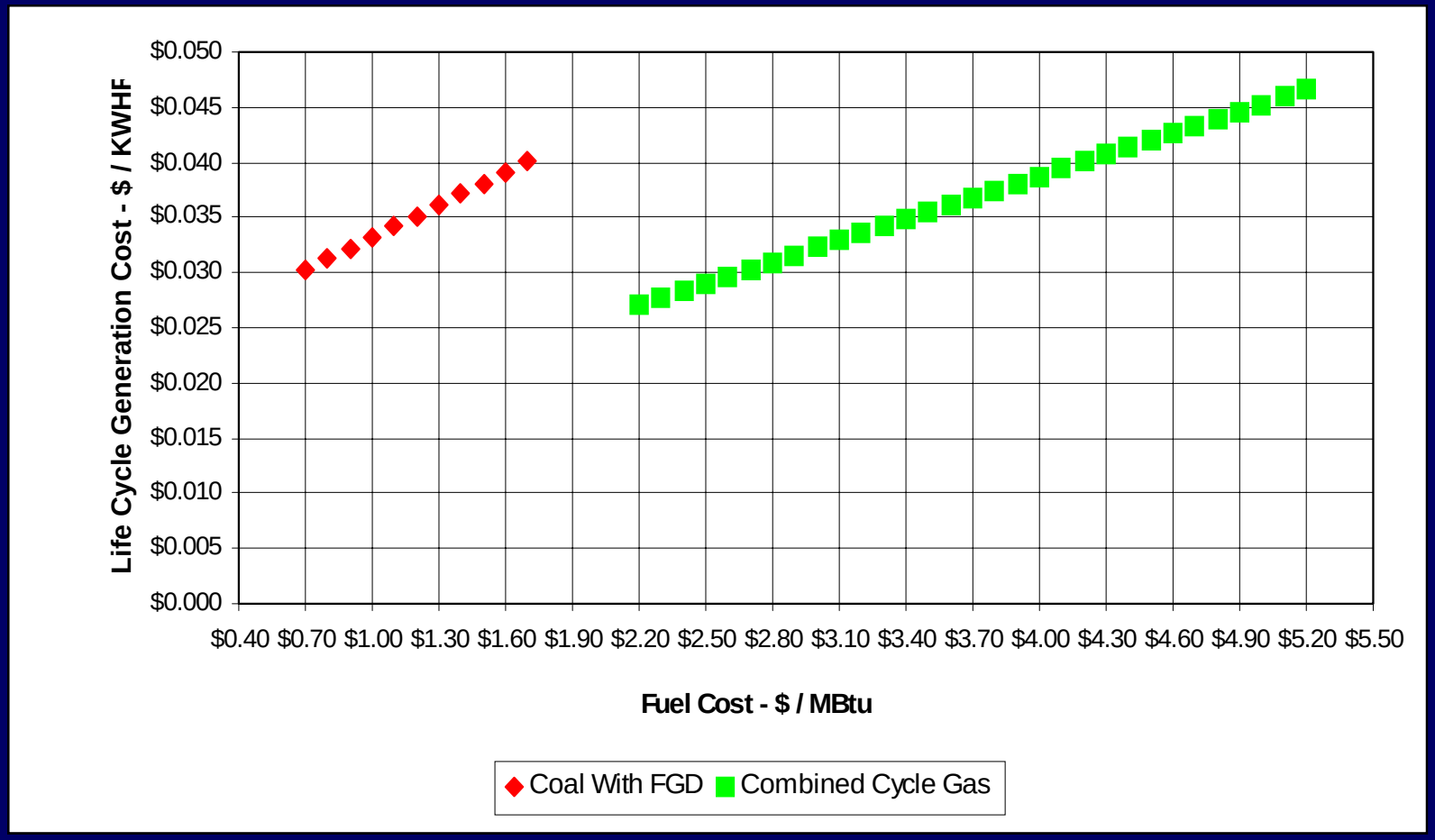
New Coal Units Lose to Gas at Low Gas Prices, But Win Easily at Today's Market Levels



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“ . . . As we all know, we have to stop using coal to generate electricity.”

- EPA official, at a recent conference in Washington, D.C.

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Market Power Issues
--The "What If" Capability--

- Environmental Rules Change
- Reluctance to Invest in Cleanup Capital
- Some Unexpected Nuclear Plants Don't Re-license

- An Individual Utility (or two) Withhold Some of their Power
- A Coal Supplier (or two) Withhold Tonnage
- A Railroad (or two) Lower/Raise Prices

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Modeling as a Business

- Defining Your Product
  - Are you providing a tool, “canned” analysis, custom analysis, forecasts (pt. vs range), multi-client studies
- Communicating Your Results
  - Getting it onto the client’s level
  - Explaining variance from the “real-world” (What’s important; Perception; Usefulness)

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