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February 26, 2009

## MEMORANDUM

**TO:** Power Committee

**FROM:** Michael Schilmoeller, Power Systems Analyst

**SUBJECT:** Current Regional Portfolio Model Results

Regional Portfolio Model studies are underway. Staff will discuss any significant assumptions that may not have been covered in other presentations to date. We will also introduce some of the preliminary conclusions of our work and explain how we can study results across futures to better understand the principal sources of risk and risk mitigation. This presentation does not call for any Power Committee decision. Staff, however, will seek the guidance of Committee Members regarding the direction of study efforts.

These studies are continuously under refinement. New information forthcoming from studies produces new questions which in turn inspire new studies. Between now and the release of the draft plan, Council staff will endeavor to pass along to Council members new results as they become available.

# Current Regional Portfolio Model Results

Michael Schilmoeller  
Power Committee  
Tuesday, March 10, 2009



## Overview

- New Assumptions
- Preliminary Results
- Interpreting Results



## Resources Available for Selection by the Model

- CCCT (415 MW Nominal)
  - available 2011-2012
- SCCT (94 MW Nominal)
  - available 2012
- IGCC (518 MW Nominal)
  - with carbon capture and sequestration
  - available 2023
- Five classes of demand response
  - total approaching 2000MW by the end of the study
  - 1300 MW of this limited to 100 hours per year of operation
- Wind generation (100 MW Blocks)
  - available 2011-2012
  - 100 MW by the end of the study in excess of anticipated RPS requirements and consequently available for REC credit
  - 5500 MW without REC credit
  - Includes transmission, any production tax credit (PTC), and integration, and firming costs
- Conservation
  - discretionary and lost opportunity
  - amount determined by wholesale electricity price and the cost-effectiveness premium

## RPS Modeling

- Basecase – all obligated utilities in the region meet their RPS targets
- RPS resource in the region depends on the load requirement under each future
  - Net of conservation in the future
  - Accounting for RPS credits
  - Costs for RPS resources currently tied to wind and do not reflect construction cost uncertainty
  - No attempt to model cost caps

## Carbon Measurement

- Economic end effects for carbon control included
- Average and 90<sup>th</sup> decile carbon production for two periods estimated
  - Aug 2022 - Aug 2025
  - Aug 2026 - Aug 2029
- NPV cost of carbon penalty alone estimated
  - Permits some evaluation of “transfer cost issues”
- Firm contract imports and market purchases count toward the region’s carbon footprint; firm and market sales reduce the carbon footprint.
  - Energy assumed produced by natural gas-fired CCCT with 9000 average heat rate (about ½ US ton of CO<sub>2</sub> per MWh)

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## Preliminary Results

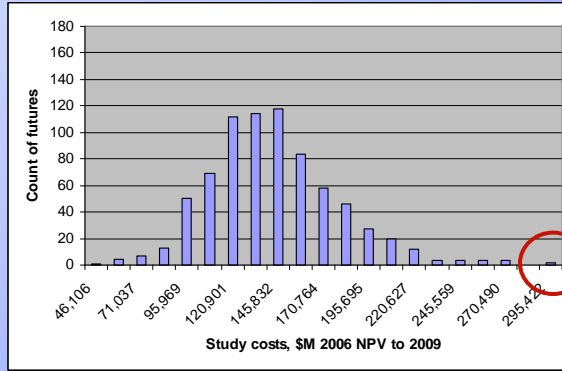
- ... will be forthcoming at the presentation

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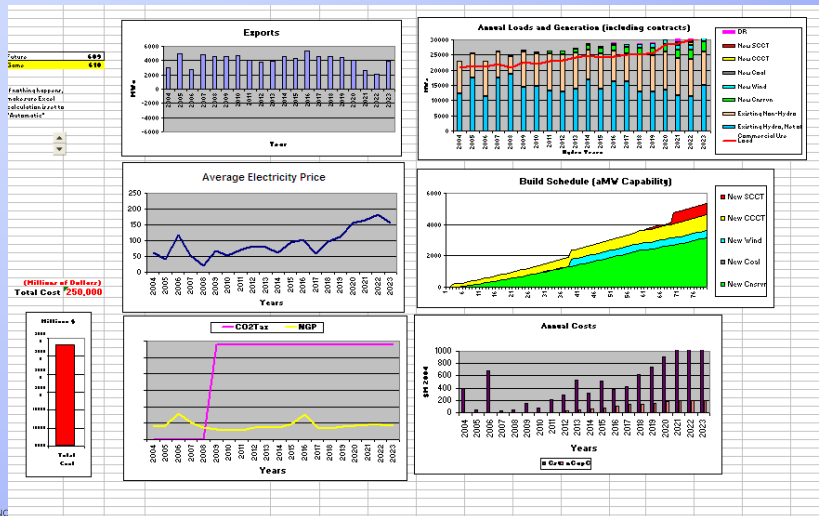
# Zooming In

For any plan, we can see what gives rise to extraordinary costs, rate excursions, reliability issues, and so forth

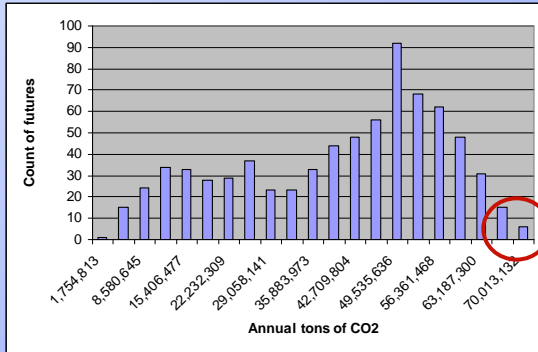


one future ...

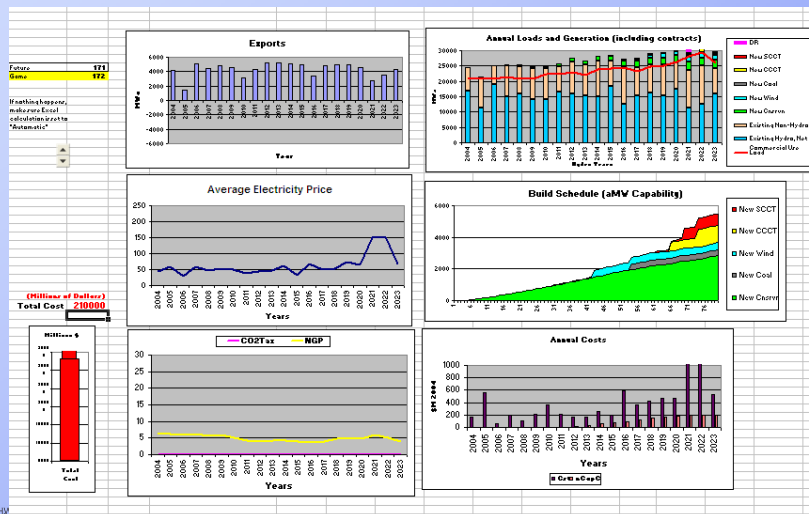
# Zooming In



# Zooming In on Carbon Emissions



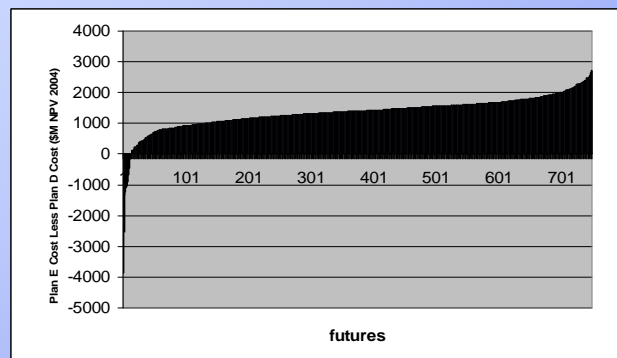
# Zooming In on Carbon Emissions



## Providing Insights

- We can also examine
  - which uncertainties are the most significant to the outcome
  - how a given plan moderates risk
  - how two plans compare with respect to reducing particular risks ....

## Providing Insights



Cost Differences Between Plans D and E, by Future



End