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October 1, 2008

MEMORANDUM

TO: Power Committee

FROM: Michael Schilmoeller, Power Planning Analyst

SUBJECT: Representing Resources in the Regional Portfolio Model

Special modeling techniques for representing power resources give the Regional Portfolio Model its speed. This presentation will provide us with a sampling of those techniques. This presentation will not call for any Power Committee decision.

Conservation is represented by a supply curve of conservation programs. Prior to the Fifth Power Plan, utilities and the Council used wholesale electricity market prices as the cost effectiveness threshold for conservation. The Regional Portfolio Model helped make the business case for using a threshold that is higher than wholesale electricity market prices. We will discuss the basis for this premium.

The Regional Portfolio Model models dispatchable gas- and coal-fired resources, such as gas turbines. It does this quickly by using the relationship between fuel price and electricity prices during a given time period. A simple explanation of the technique illustrates why such generation costs and energy estimates are valid.



Representing Resources in the Regional Portfolio Model

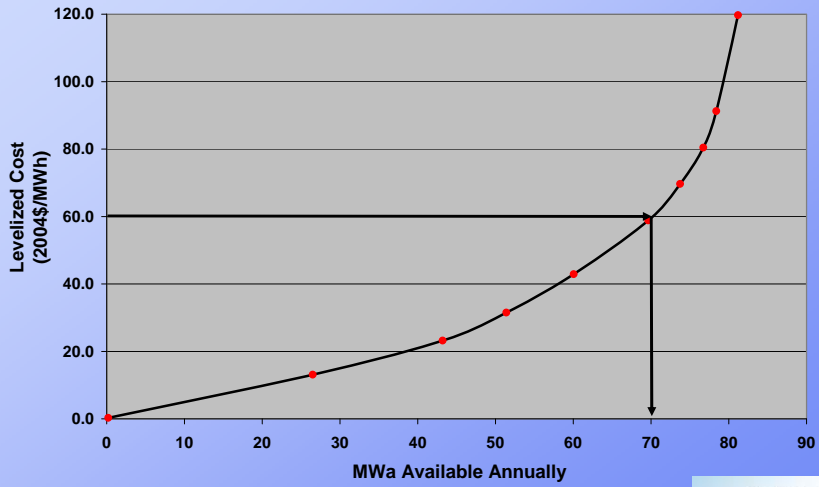
Michael Schilmoeller
Council Power Committee
Wednesday, October 15, 2008
Missoula, Montana

Overview

- Supply curves for conservation and price-responsive hydro
- Thermal resource dispatch



Supply Curves

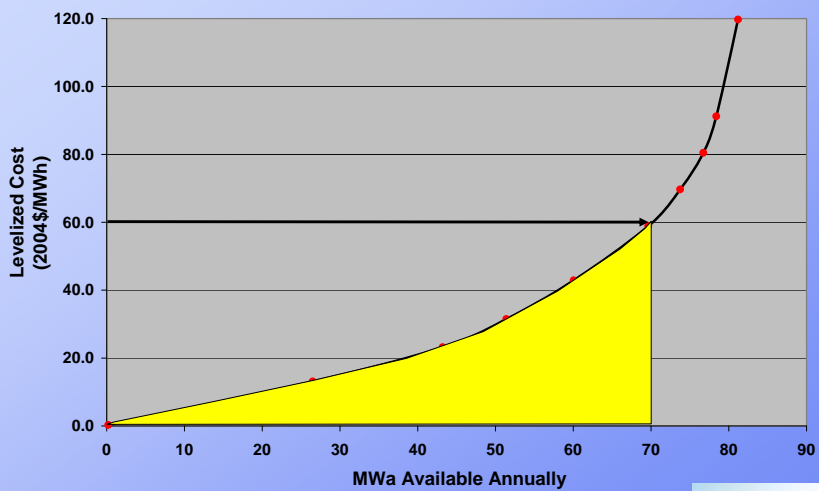


Supply curves

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Program Costs

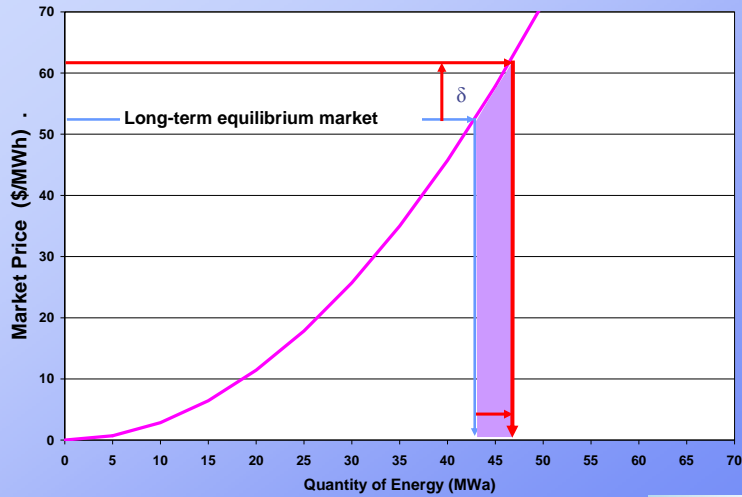


Supply curves

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Conservation Supply Curve

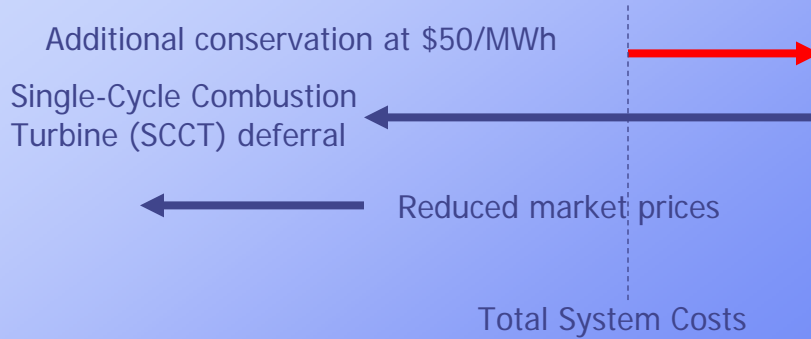


Supply curves

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Components of Cost Reduction



Supply curves

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Why Does Conservation Defer SCCTs?

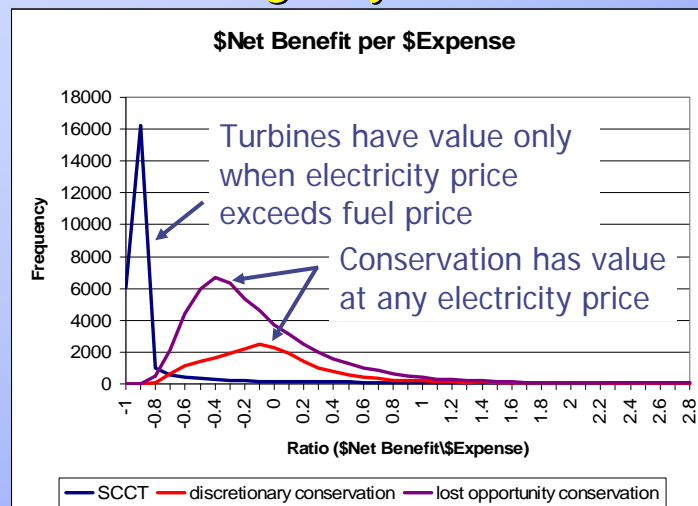
- Counter-intuitive?
 - Low-capital cost resources are the traditional solution for risk management
 - SCCTs have low capital cost
 - Conservation has *high* capital cost
- These resources are providing cost mitigation primarily in futures where there is an unforeseen need for more generation.
- *Expected* value of these resources is *negative*. We are paying an “insurance premium.” We pay less for the incremental conservation than for SCCTs.



Supply curves

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The Value of Conservation as a Contingency Resource



Supply curves

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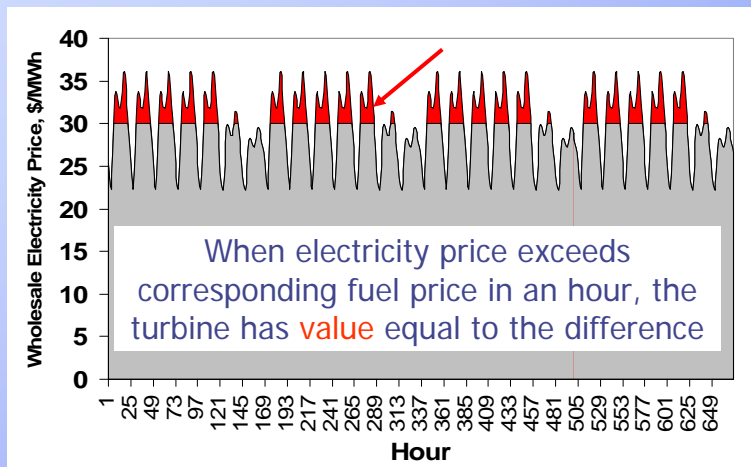
Overview

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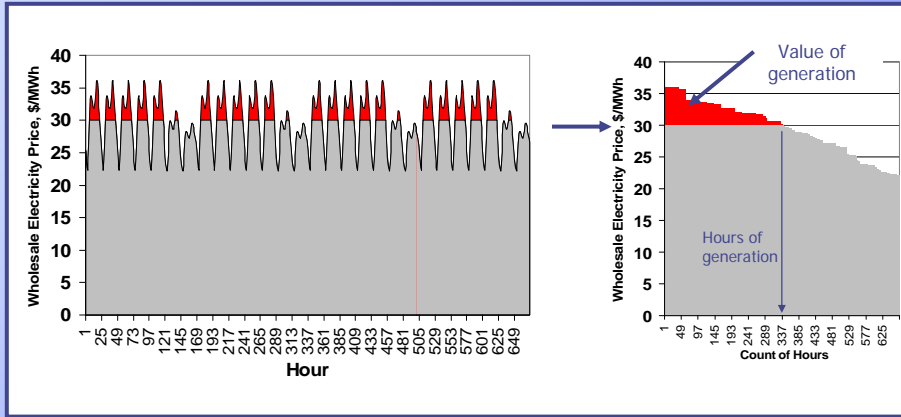
Hourly Electricity Price Over a Month



Thermal resource dispatch

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Energy Value and Generation



Thermal resource dispatch

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End

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