Will Competition Hurt Electricity Consumers in the Pacific Northwest?

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Electricity Industry Restructuring

- Customers purchase from outside local utility
- Prices based on marginal cost of production
- Customers face real-time pricing
- Independent plants require profitability
- Regulators may dictate transition charge or credit

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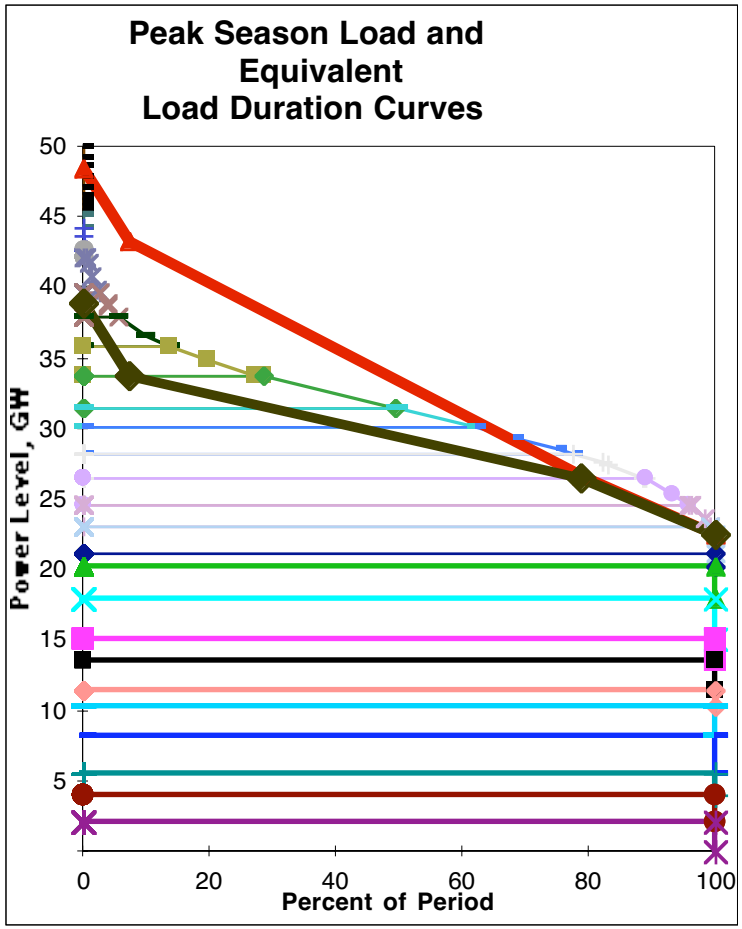
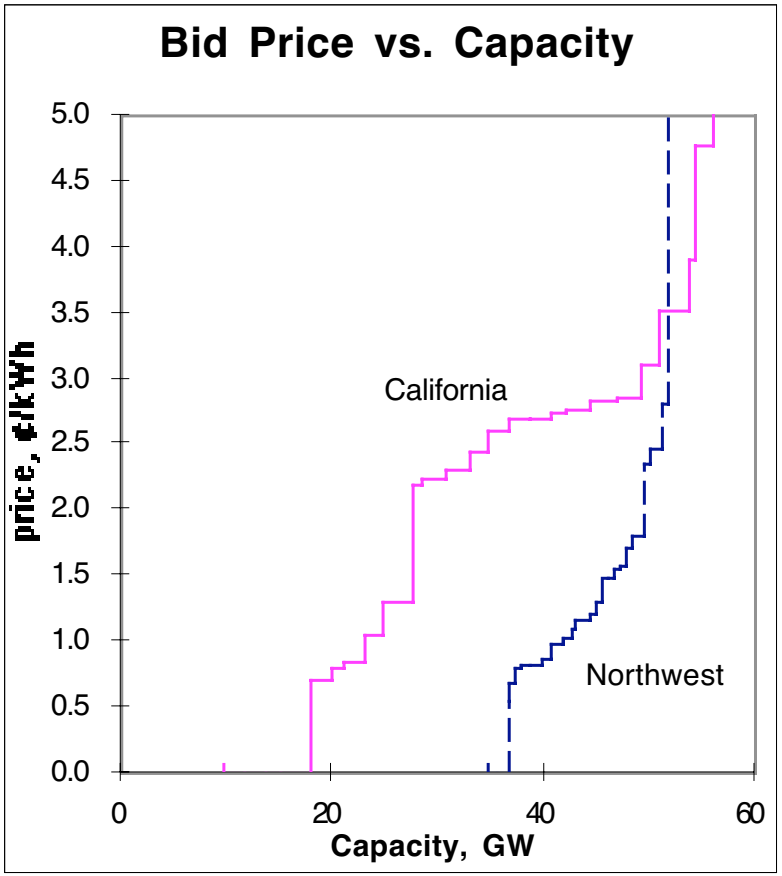
ORCED simulates regional markets

- Models two regions of 26 plants each for two seasons
- Hydro capacity reduces Load Duration Curve
- Plants dispatched based on bids (variable costs)
- Trading between regions to equilibrium or transmission constraint



California and Northwest Markets

- Simulate supply and demand for 2000
- Data for regions from EIA and RDI
- Demands converted to LDC's for summer and rest of year
- Separate planned and forced outage rates
- Difference in time of peaks between regions



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Year 2000 Base case conditions

	Northwest	California
Consumption and production		
Peak demand (MW)	40,000	48,400
Season for Peak	Winter	Summer
Consumption (GWh)	242,800	250,100
Generation costs and prices (¢/kWh)		
Variable cost	0.75	1.92
Total production cost	1.98	4.03
Market price	3.02	3.11
Regulated price	1.91	3.96

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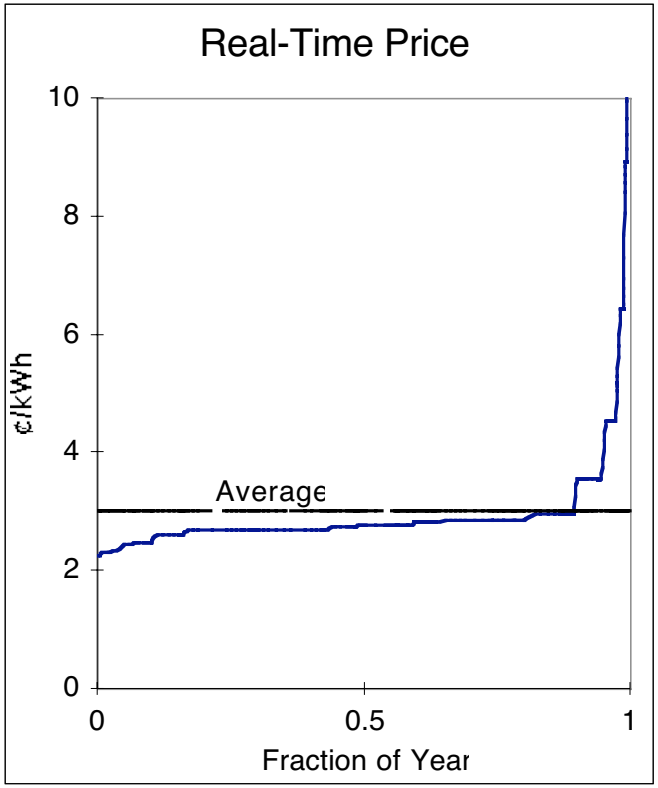
Market prices and costs

- Prices vary over year
- Based on marginal cost of most expensive plant running
- California plants most often on margin
- Weighted average price in both regions is 3.0¢/kWh



Post-Competition Changes

- Overall generation price caps in each region
  - 15% reduction from regulated rates in California
  - Cap of current regulated rates in Northwest
- Customers respond to real-time prices
  - Reduce peak demand
  - California overall demand increases
- Uneconomical plants retired
  - Reserve margin set to same as base case

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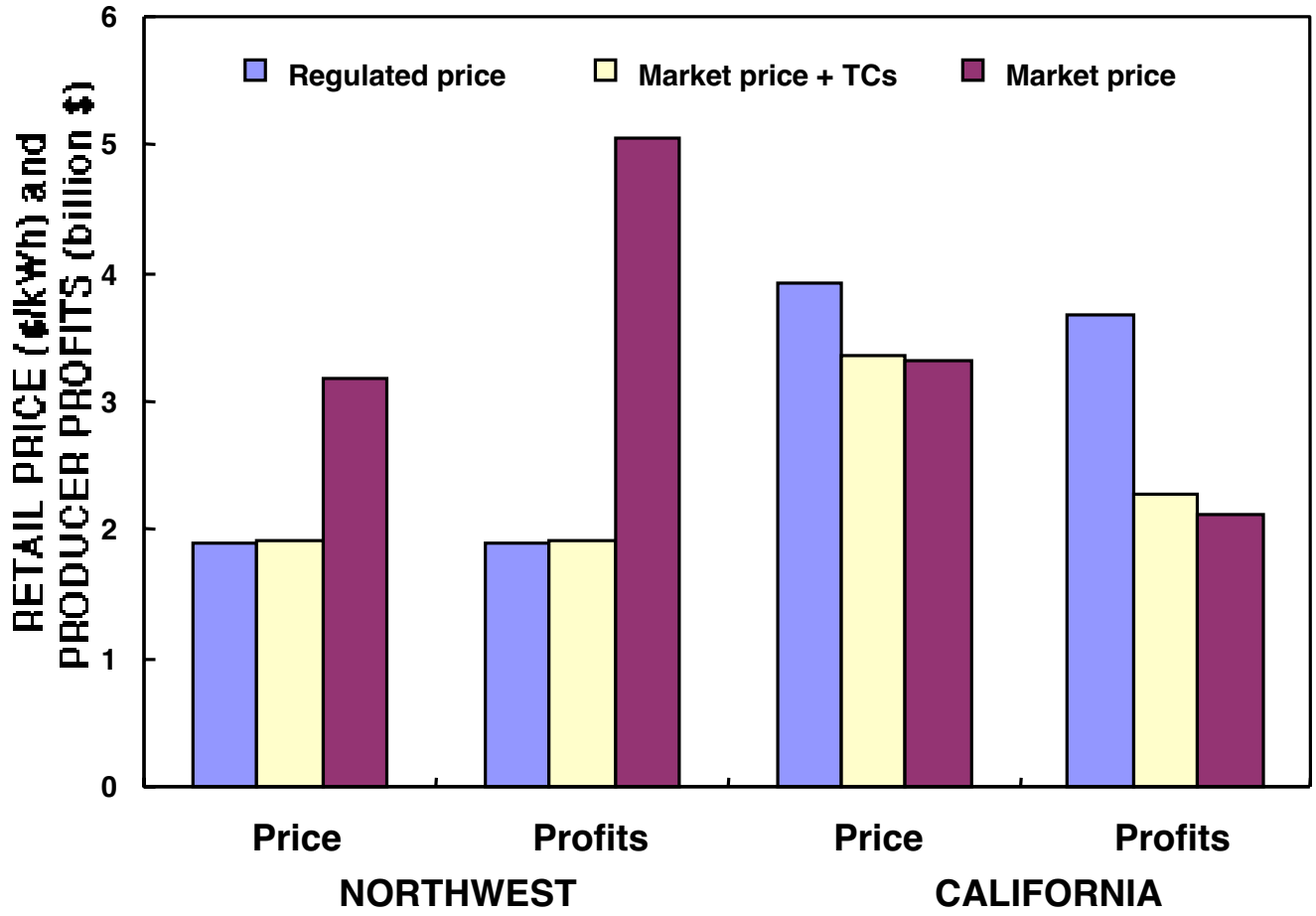
Prices and profits



Two Sensitivities

- Increase gas prices 20%
  - California gas from $2.57/MBTU to $3.08/MBTU
  - Northwest gas from $2.07/MBTU to $2.48/MBTU
- Reduce Pacific Northwest hydro by 20%
  - From 34.6 GW to 27.7 GW
- Trading between regions changes significantly

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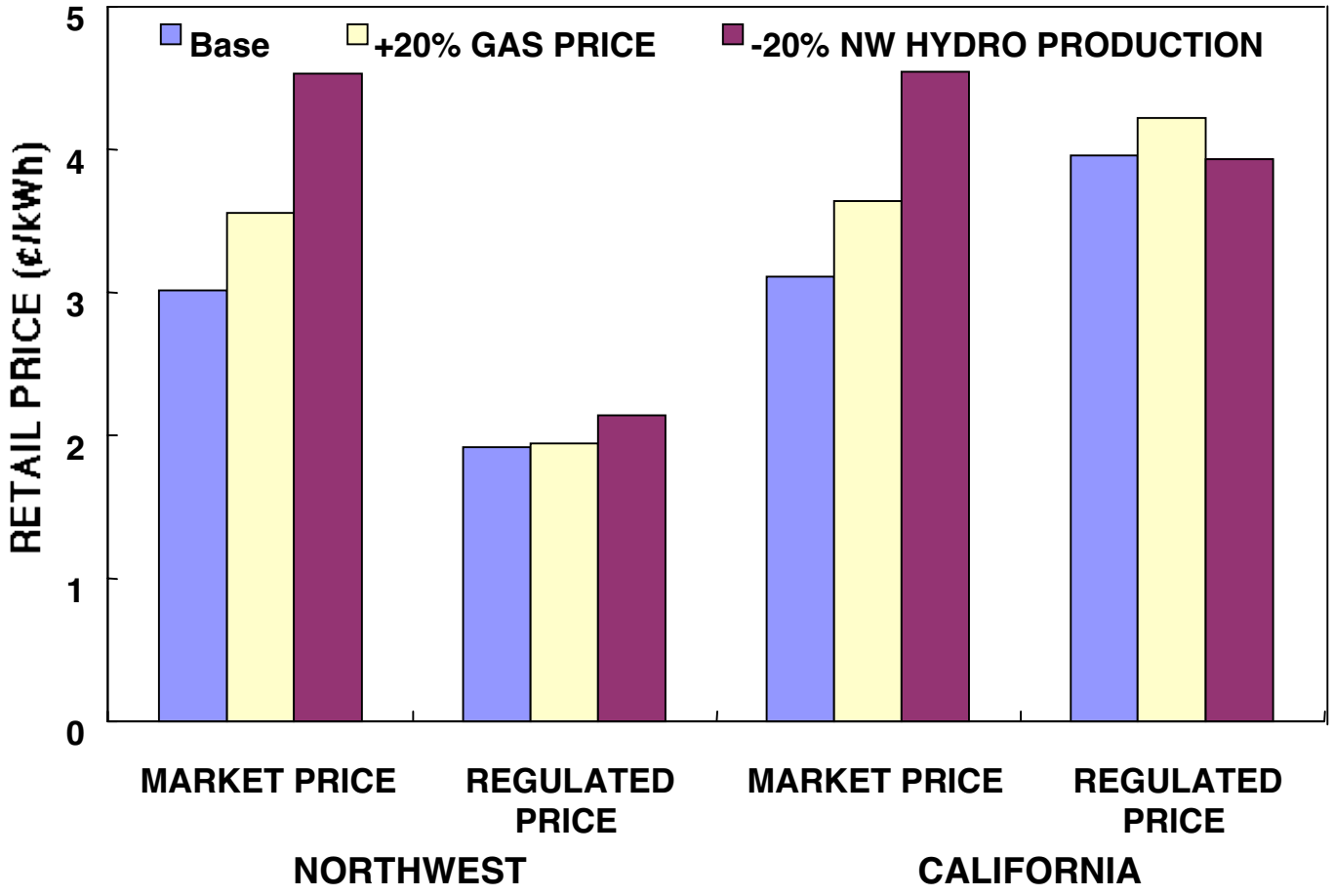
Price changes from sensitivities



Conclusions

- Increased competition can benefit high cost regions without harming low-cost regions
- State regulators must design transition to protect consumers
  - Negative transition charge
  - Profit sharing with ratepayers

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