



# *Coping With Capacity Prices*

*Robert McCullough  
McCullough Research*

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# Coping With Capacity Prices

- { The Good Old Days
- { Recent Developments
- { The Near Future
- { Market Options
- { Primary Industry Responses
- { A Restructuring Agenda

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A DAY

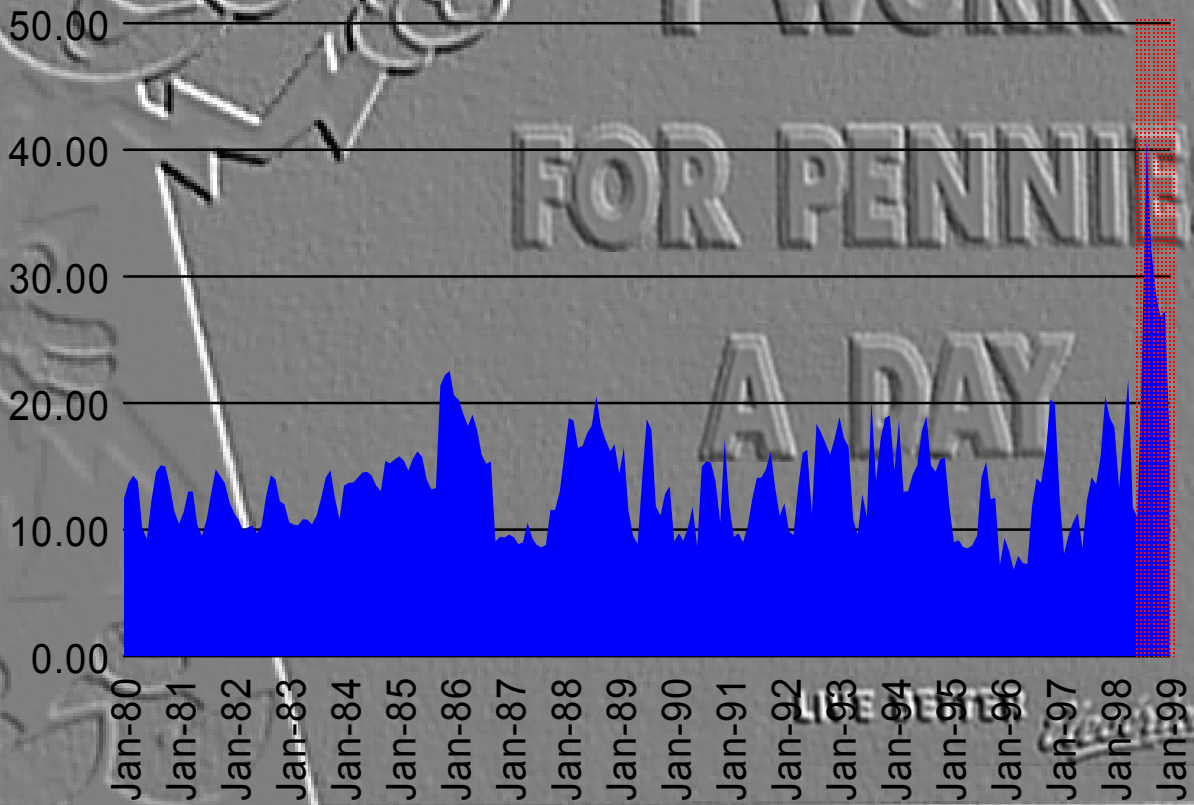
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## The good old days

- { Traditional utility practice was to break electric commodity sales into energy and capacity
- { The Pacific Northwest has had an active market in both energy and capacity for many years
- { Regulatory authority generally stopped at retail -- bulk power markets were largely uncontrolled and usually very efficient

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# Mid-Columbia Spot



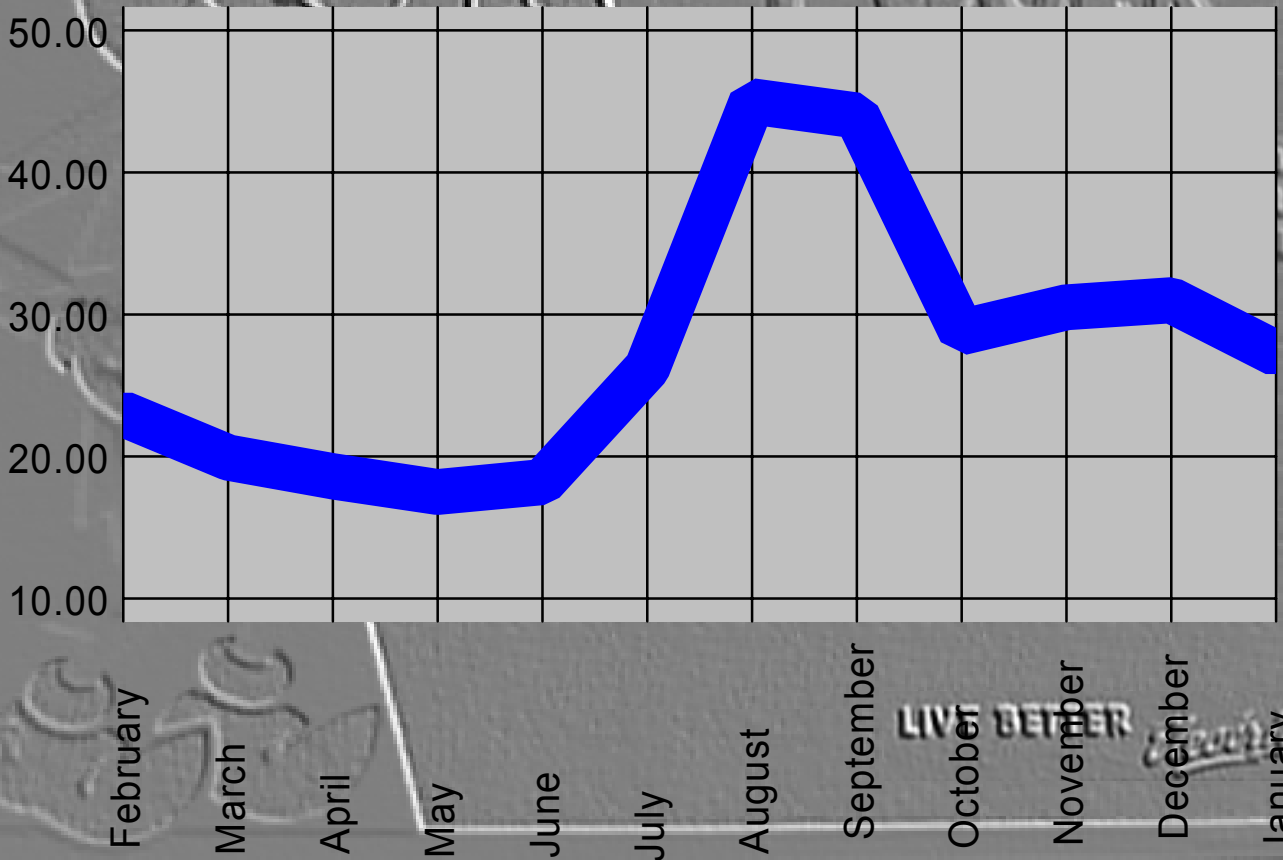
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# Updating For The PX

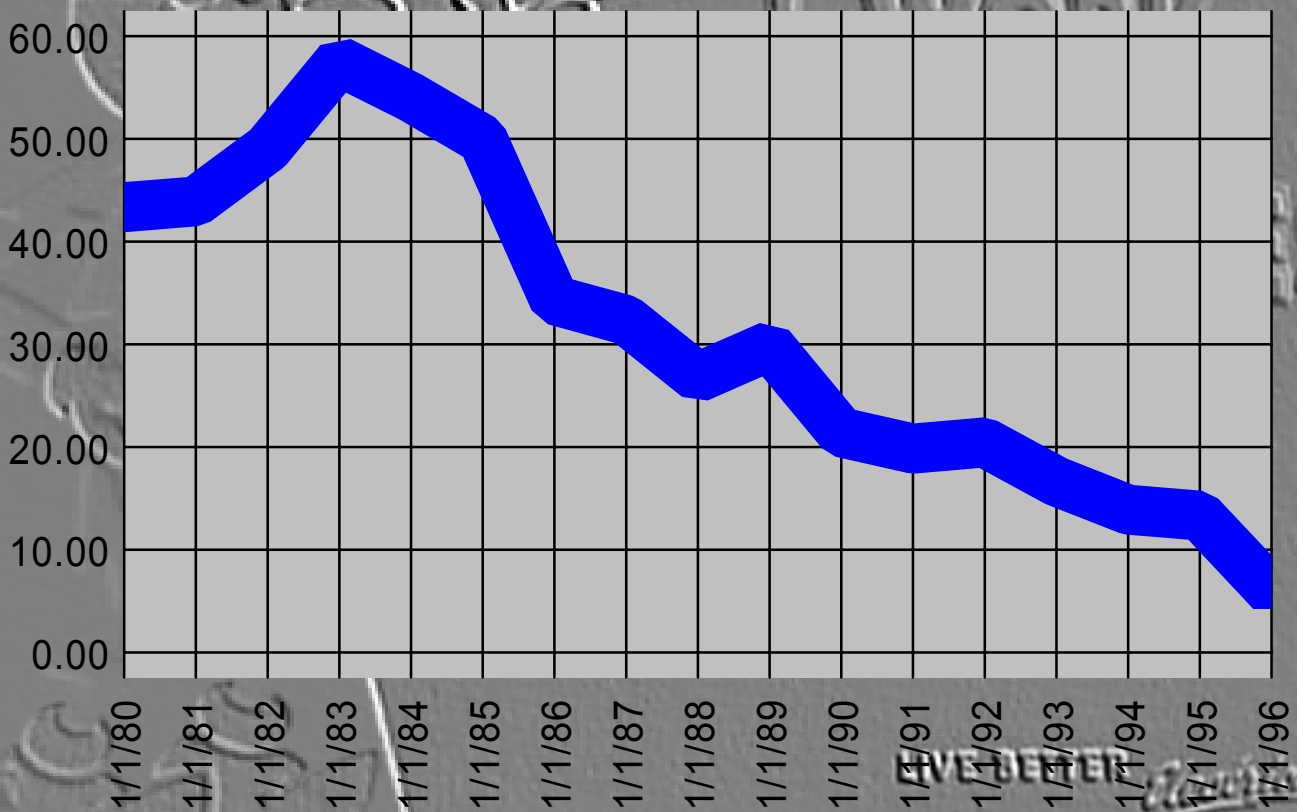
- Our current results indicate that the California PX has added 9.26 mills to on-peak prices and 4.82 mills to off-peak prices
- Close examination indicates that the impacts are very dependent on problems within the PX itself
- As a working hypothesis, we expect that PX excursions will only occur during high load months in California
- This should mean that November through January will not be affected by PX problems

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# COB Futures



# West Coast Capacity Prices



# Recent developments

- { Some theoreticians -- mainly our bumlbers from Harvard -- would like to outlaw capacity markets
- { California has gone a long way towards this goal -- increasing volatility and decreasing market coherence
- { The midwest's experience last summer has strongly underscored the need for capacity markets
- { Capacity risk is showing up as a major component of energy future curves throughout the Midwest





# FERC's Comments

Another factor was that several wholesale marketers defaulted on contracts to sell electricity, increasing uncertainty in the market about whether sellers could deliver their contracted quantities of electricity as loads increased. Market participants scrambled to secure power so that they would be able to meet their contractual commitments if called upon to do so, or to meet their obligation to serve electric customers. In those market conditions, as demand for power escalated, wholesale prices increased dramatically.

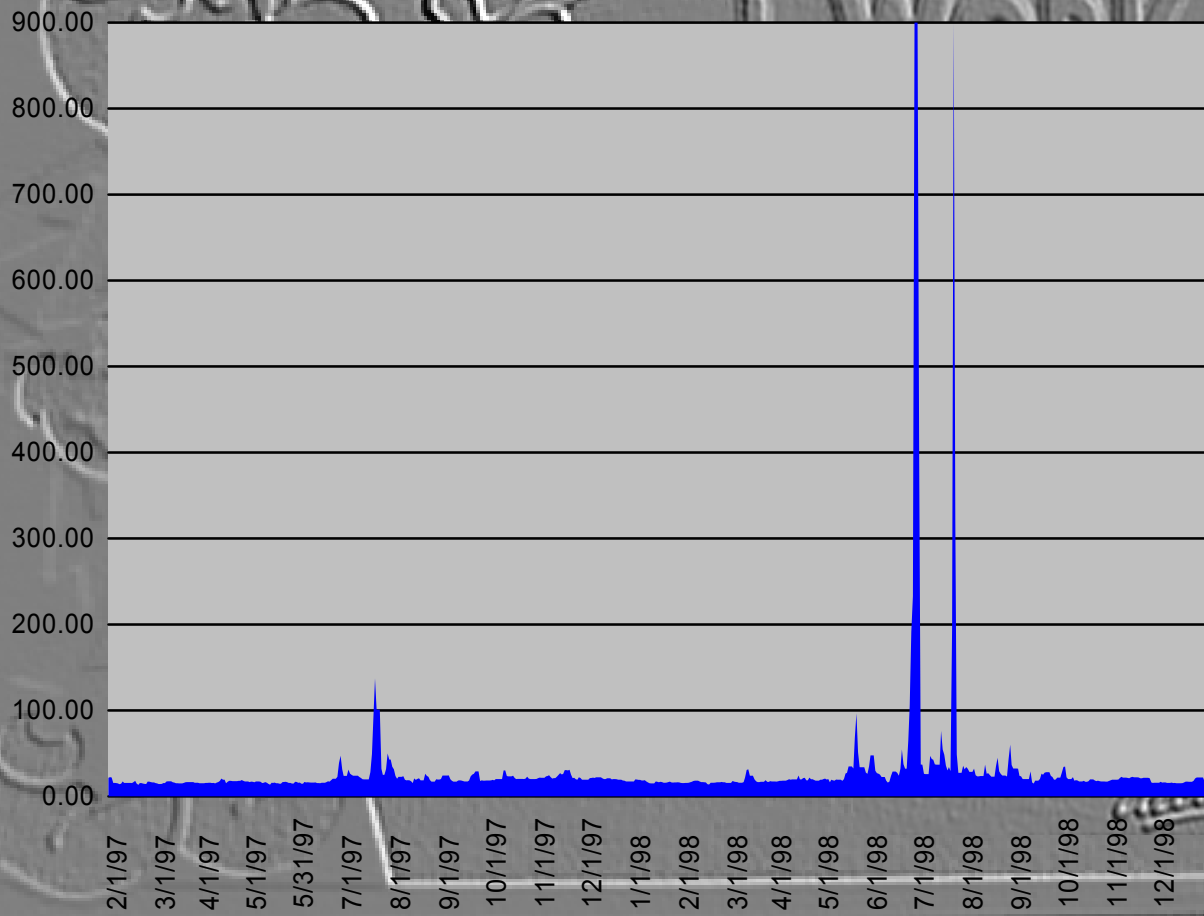
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# Entergy Daily Prices



# The Near Future

- { Futures markets are assuming a continuation of current events
- { Futures markets are currently very, very thin and the players are very, very inexperienced -- so the evidence is largely anecdotal
- { Informed opinion is that Commonwealth Edison's nuclear problems are far from over
- { Neighboring utilities have started refurbished their capacity resources

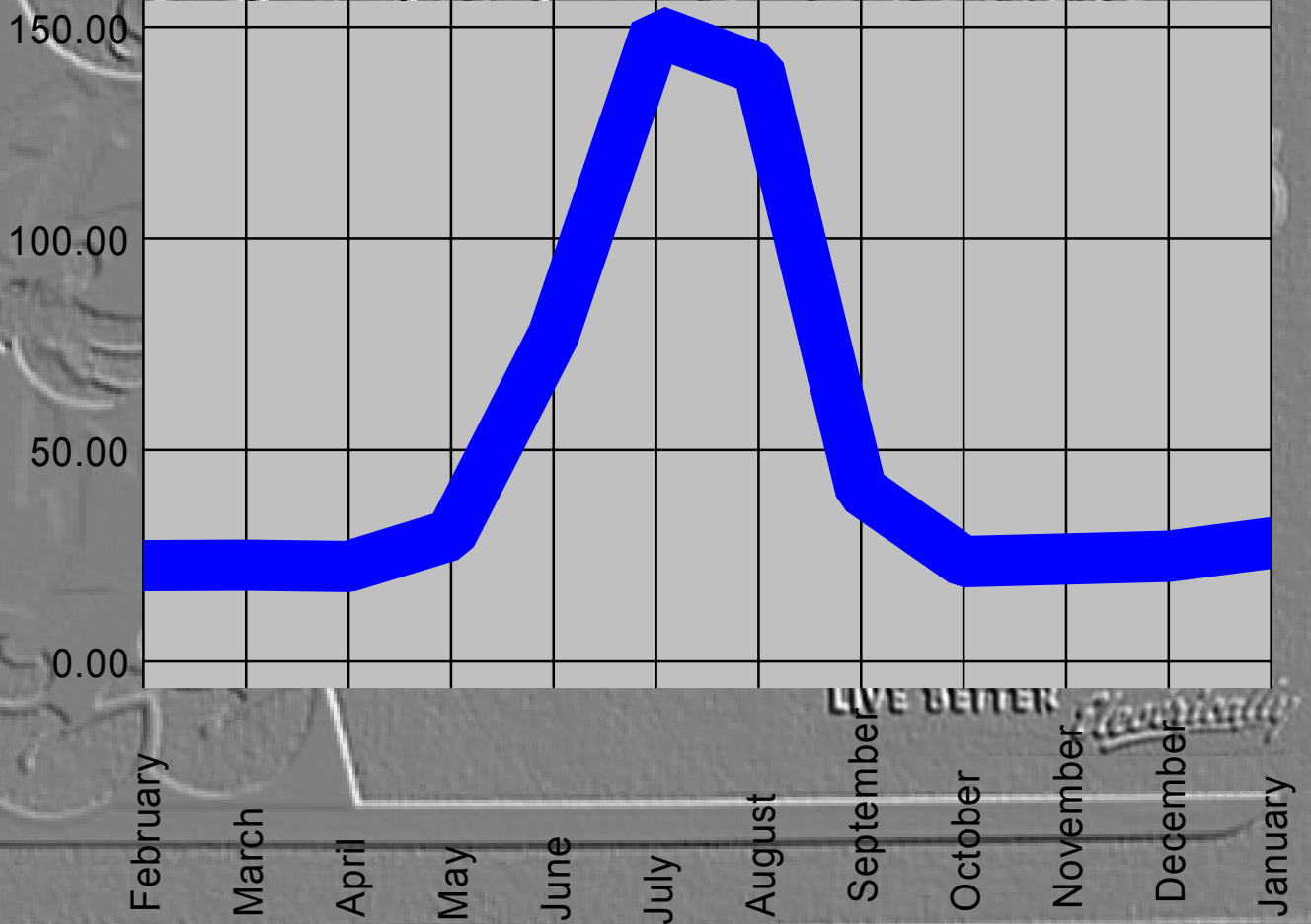
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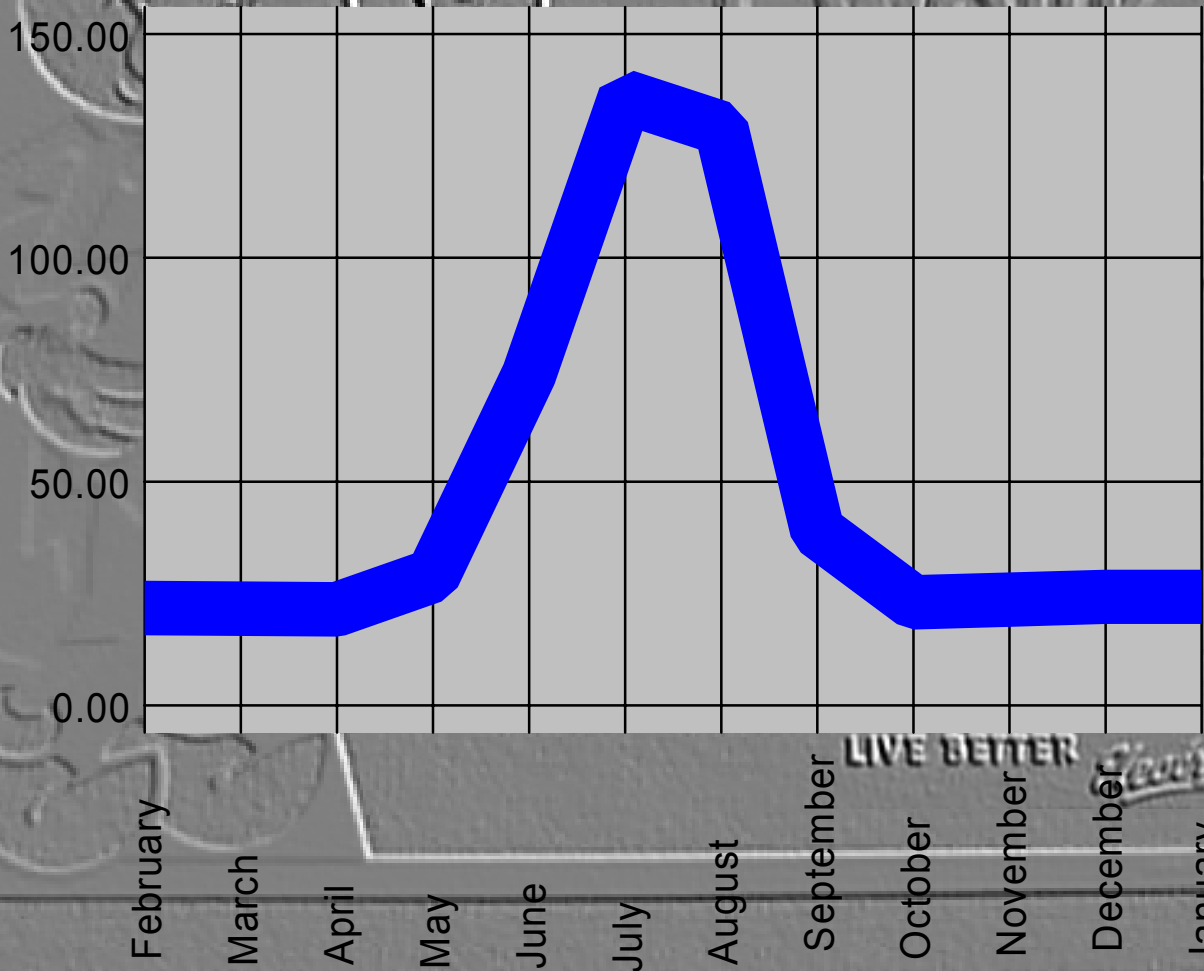
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# Cinergy Futures



# Entergy Futures





# Market Options

- { Capacity Valuation:
  - { Harvard's vision
  - { Free markets

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# Harvard's Vision

- 
- { Harvard has become convinced that the complex reciprocal relationships of real markets are inefficient
- { As in California and England, they would advocate outlawing capacity contracts or making them as complex and difficult to administer as possible
- { A little knowledge is a dangerous thing
- 

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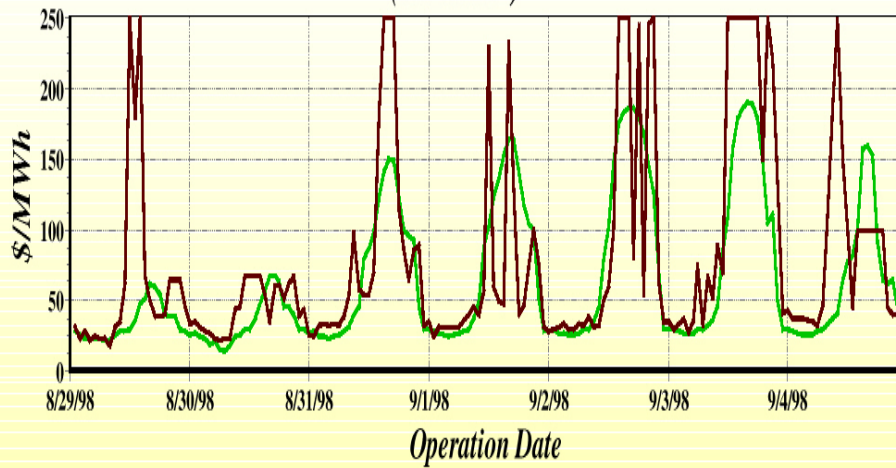
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# ISO Capacity Valuation

*PX Day Ahead vs. ISO Hourly Ex-Post Imbalance Energy Prices*  
(see note 1)



— PX Day Ahead Price (unconstrained) — ISO Real Time Price (NP15)



# Free Markets

- { Traditional capacity contracts provided a right to take energy at a certain price -- backed with an ironclad physical guarantee
- { Much the same financial effect can be reached by a call on a marketer -- assuming the marketer has the actual resources to call upon
- { The logical outcome will be a return to traditional capacity contracts backed by real resources

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# "Pumping Iron"

- { Capacity is an artifact of actual resources -- iron
- { These resources may also be dispatchable -- "pumpable"
- { Capacity in much of the country is still poorly understood and underutilized
- { Logansport, Indiana is wondering whether to sell or keep their existing resources
- { Only a very disorganized market could allow the owners of a very valuable resource to wonder whether it was worth operating

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# Basic Industry Responses

- { Basic industry has often explored the capacity issue as part of "interruptible" contracts
- { As we know, interruptibility has always been a tariff issue
- { Until last summer, most industrials even knew that this section of their contract had any real meaning

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# Once Valued, Always Valuable

- { Capacity is now very valuable in much of the Midwest and east
- { Interruptibility is actually an option -- although not in the way most utilities think
- { A careful review of process redundancies is now a very relevant option\*

\* Process Redundancy: Maintaining full production while reducing electric loads

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# Case Studies

- { Aluminum
- { Steel
- { Paper

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# Aluminum

- { Several mills have been practicing voltage shifts between day and night
- { Evidence is that the option is quite workable
- { This can produce saleable capacity equal to 10% of total loads

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# Steel

- { Mini-mills often operate with a disconnect between the rolling mill and the furnace
- { Reheating furnaces are gas fired -- this is one of the few processes where gas and electricity are in direct competition

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# Paper

- { Pulp can be stored for 12 to 24 hours
- { Off-peak pulping is very feasible if storage facilities exist

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# A Restructuring Agenda

- { Free capacity markets pose a substantial profit opportunity for primary industry
- { Free capacity markets allow a market choice between firm and spot energy supplies
- { Managed markets -- like those in California -- make such choices difficult at best and impossible at worst

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