



# Do ISO Bidding Processes Result in Just and Reasonable Rates?

Robert McCullough, Managing Partner  
McCullough Research

October 14, 2009

[robert@mresearch.com](mailto:robert@mresearch.com)

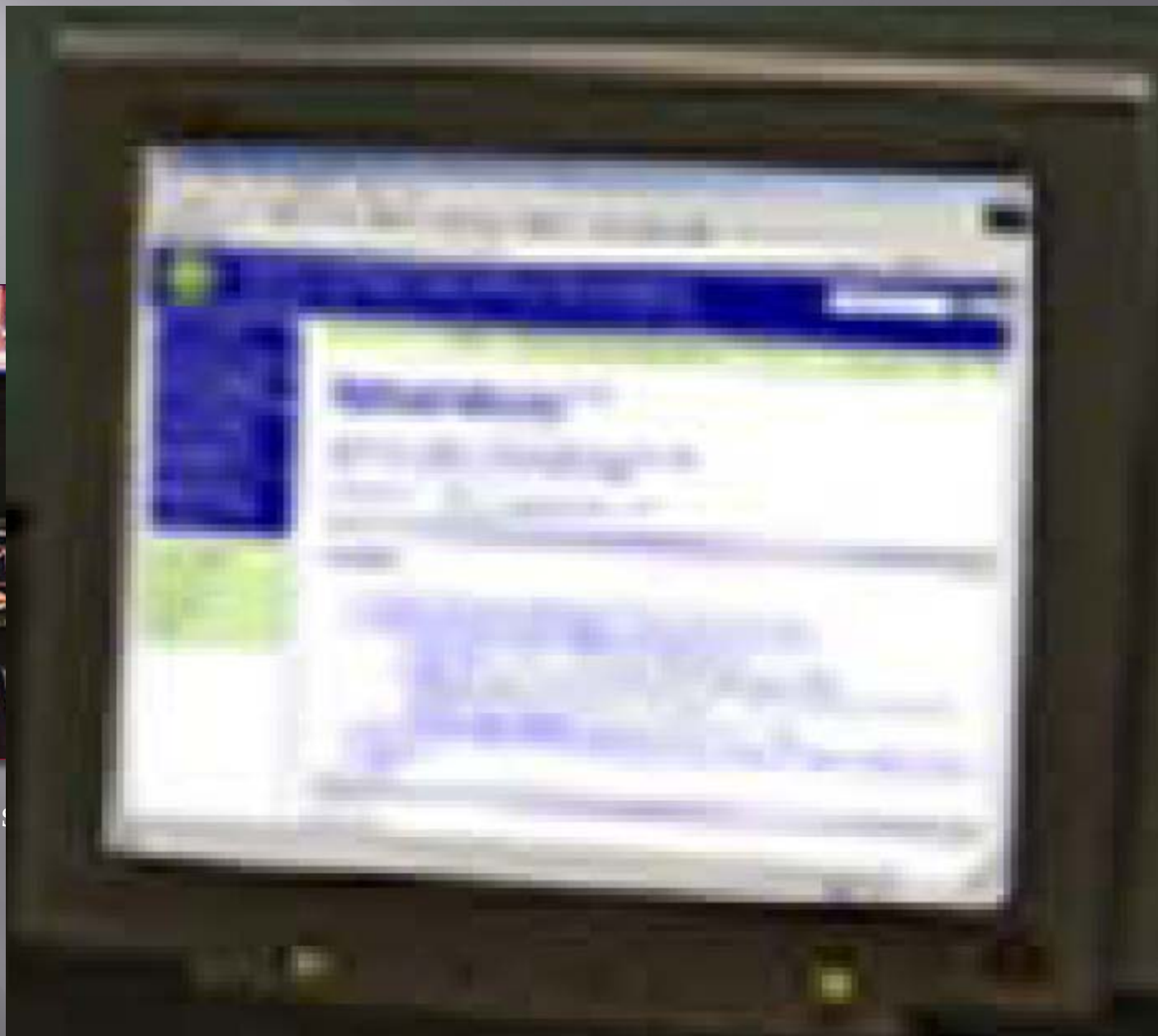
# Mr. Raccoon and his friends

First, he checked with Ground Hog, the community weather expert. Ground Hog always denied the stories about his foretelling weather by noting whether or not he saw his shadow when he came out of his burrow on February second of each year. He insisted that his methods were much more scientific. He observed things like whether the geese were flying north early in the spring or late, how thick a coat of fur the rabbits had in the fall, when ice thawed or when it froze, but especially he watched to see, as winter approached, whether people were building large wood piles or small ones. Ground Hog said that all signs pointed to a long hard winter.

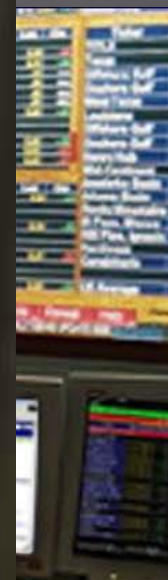
# Friedrich Nietzsche

If you look long enough into the void, the void looks back.

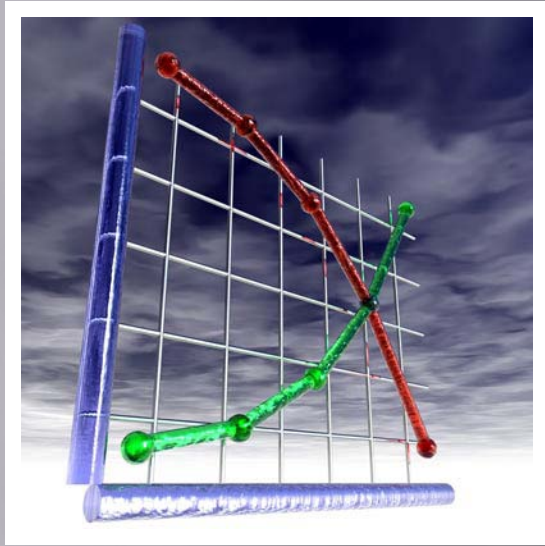




FERC's

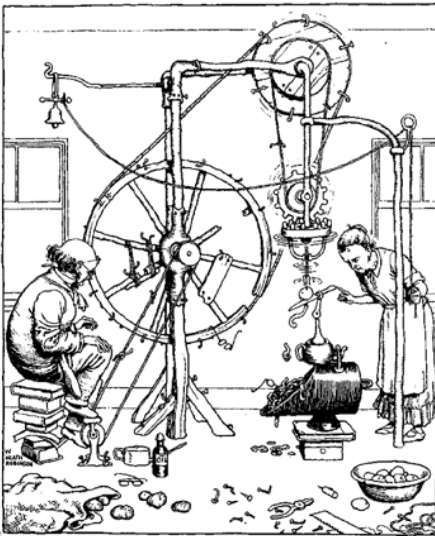






# Price Theory As An Evangelical Force

- The U.S. left the Cold War with an inflated sense of the power of competition
- Successful competitive bulk power markets in the Pacific Northwest (and with a nod towards Phil Chabot) and the Southwest created an appetite for change
- The resulting legislation, AB-1890, was an amazingly bad cartoon of wholesale competition
- While the failure of AB-1890 was a Titanic-level disaster, the image of computers setting prices based on arcane formulas beyond the ken of humans has a terrible attraction for middle-aged people brought up on "Lost In Space"

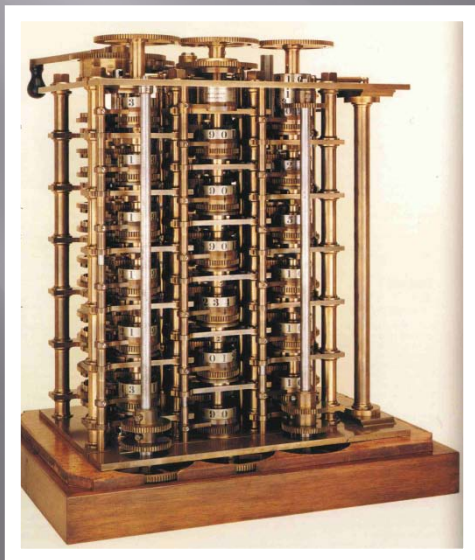


The Professor's invention for peeling potatoes.



## Danger, Will Robinson!

- California spent half a billion dollars on its first faltering computer programs, and hundreds of millions more on upgrades, repairs, and patches
- The outcome was so impossibly complex that few outsiders understood the concepts, let alone the implementation
- One group of consultants even travelled the West Coast, conducting a “Crime School” for hacks of the software
- The complexity and computational requirements of the solution have greatly exceeded most the grasp of most participants
- Even Enron viewed the California computations as a “black box”
- MISO and ERCOT frequently have computational errors – overruled quietly in the backroom by the operators



# What's the Problem?

- Pure trading is a zero sum game with little profit for honest traders
- After a few years, it was clear that only illegal methods would assure significant trading profits in California
- Tim Belden (dressed as a devil on the left) characterized the result as “prone to gaming”
- Although Enron had a pivotal role in the disaster, various schemes were adopted widely in both California and the remainder of the WECC
- These schemes now show up across the U.S. and Canada
- No prohibitions have been placed on Enron (and other) traders who violated federal law. They can now be found throughout the U.S.





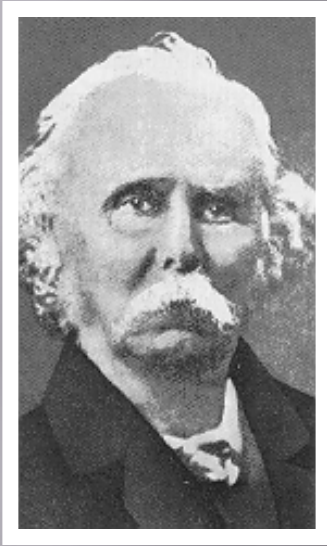
# Against All Probability the California Model Has Been Copied Across the U.S.



- Each of the states that has adopted the model has had similar problems
- As far as we have been able to determine, not one of the implementations has managed to create a market remotely similar to competitive markets
- Odd bidding patterns are the rule, rather than the exception
- Although frequent press releases note how competitive the markets are, prices have continued to diverge from those outside of the California model states



## Whose Theories Are At Fault?

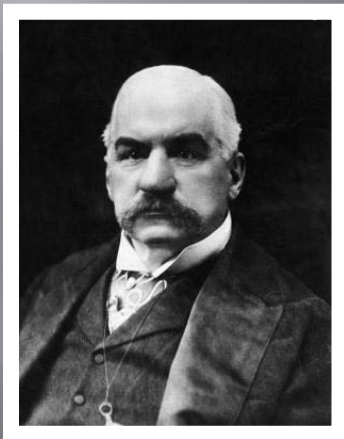


- The basic supply and demand model was developed by Alfred Marshall early in the 19<sup>th</sup> century
- Bill Hogan has successfully popularized the British administered-market concept in the U.S.
- The problems with the concept have proved a windfall for Hogan who now has a successful practice explaining away the system's failures
- He is a frequent purveyor of questionable apologies – still arguing that the California fiasco was the fault of an imaginary drought in the Pacific Northwest
- The theories are just fine; the fault lies with the facts



# Samuelson's Conditions for Perfect Competition

1. Many Buyers
2. Many Sellers
3. Open Entry
4. Open Exit
5. Freedom of Information



# Reasons Why Artificial Markets Generally Work Poorly



- High levels of concentration
- Profound information asymmetries
- Mechanisms designed to dampen competition among suppliers
- Complex rules and entry requirements to frustrate new entrants
- Very limited market surveillance
- Frequent rule changes
- Malfunctioning computer programs



# Marginal Cost Theory



In theory, bidders in an administered market will lose money if their bids do not reflect marginal cost. The logic is straightforward:

- A higher bid will mean lower rates of dispatch, but since the market is competitive, the bid will not change prices
- A lower bid would lead to dispatch at a loss since the resulting price might be less than marginal cost





# The Flaw

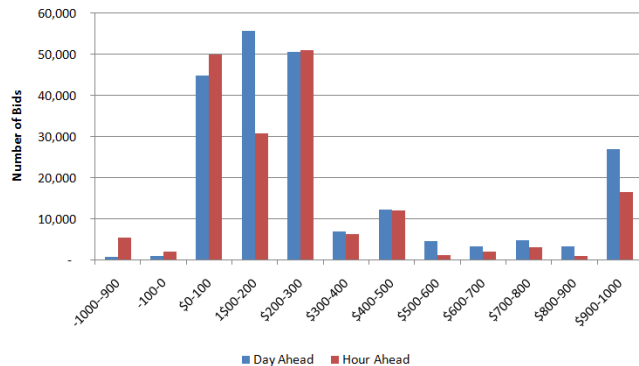


- All this depends on whether bids – individually or collusively – affect prices
- While FERC (and the ISOs) view this as the default set of facts, the reality is very different
- Each of the ISOs receives implausible bids every day – sometimes thousands of them
- The correct default fact is that bids – individually and collusively – are changing prices continuously
- The proof of the matter is straightforward: the thousands of bids prove that bidders in each ISO ( 55 in New York alone) are acting on the basis of the correct facts



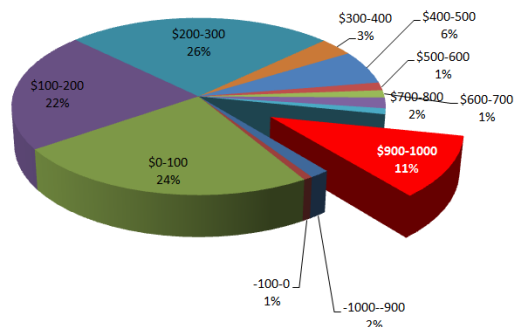
# Facts at NYISO

**Anomalous Bids in New York**  
NYISO March 2009 Data



- 11% of all bids submitted to the New York ISO in March included bid prices above \$900/MWh
- The second most-common high price in the March bids was \$999/MWh
- Many bids are at arbitrary levels that do not reflect generation levels or fuel prices
- Approximately 9% of New York generation was bid at implausible prices in summer 2008

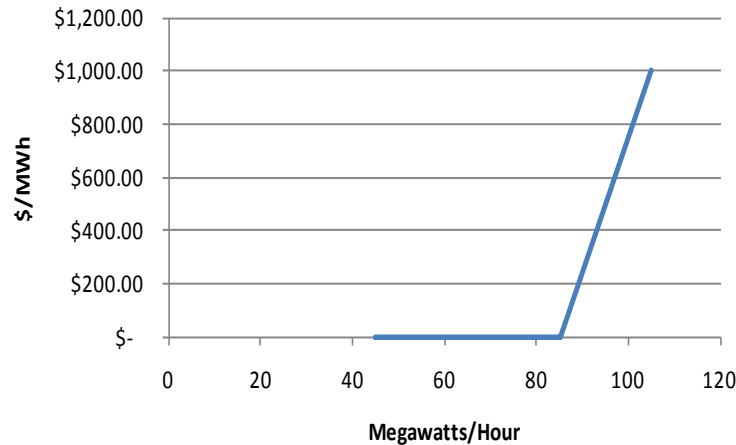
**Anomalous Bids in New York**  
NYISO March Data



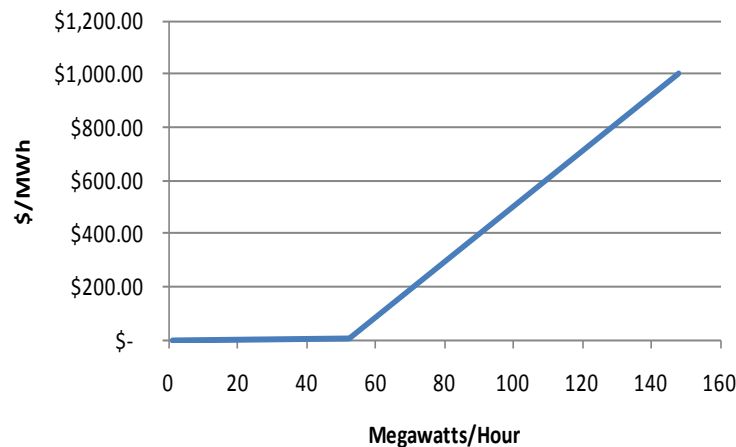
# What is “Marginal Cost”?

- Only the most prejudiced observer believes that \$999/MWh represents anyone’s marginal cost
- For most high-priced plants marginal cost is equal to natural gas x heat rate x variable O&M and a small emissions charge
- Real-world heat rates range from the high 6,000s to 15,000 with few – very few – out of that range
- Hence, \$900/MWh actually means \$60/mmBtu gas

**Generator #93636180**



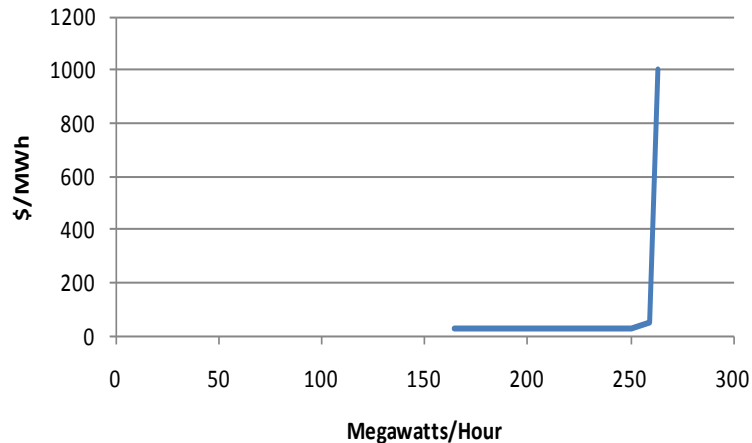
**Generator #29636180**



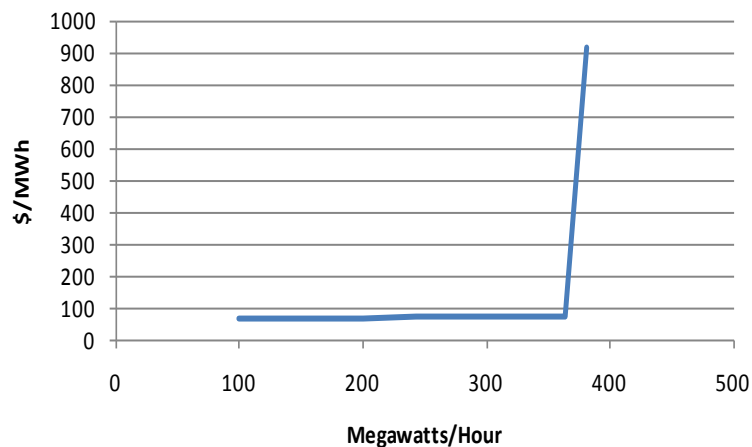
# Can Miscreants Redefine Economics?

- Very possibly
- The Texas PUC settled one case – very advantageously for TXU – fearing that the PUC would rule that fixed costs are part of marginal costs
- David Patton's September 2009 affidavit in the New York City case is clearly worried about the same issue
- NYISO has presented a variety of poor arguments to defend the concept that many of its units coincidentally have a marginal cost of \$999/MWh

**Generator #25855750**



**Generator #13036180**





In the absence of bids that match marginal cost, there is little relevance to the ISO bidding process if the objective is fairness (Just) or efficiency (Reasonable)

- FERC has shown little interest in the efficiency issues
- Explaining efficiency has proved far more difficult than explaining traditional cost-based methods
- Absent discovery, figuring out the reason and method behind these bids is a challenge



# The only silver lining is the increasing differential between administered-market states and free-market states

## New York and US Residential Electricity Price Difference

(Data compiled from the Energy Information Administration, US Department of Energy)

