



Enron North America

Cracking the California Code

***Improving California Market Efficiency
through Simpler Models and
More Information***

October 12, 2000



Current State

- ◆ Secret, black-box models used to price transmission and dispatch in real time.

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- ◆ Limited data release. ISO and PX provide little detailed data on unit status, actual flows, and bid curves.

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- ◆ Analytical Monopoly - only the market analysis entities within ISO and PX have enough information to ascertain what is going on.



How Did We Get Here?

- ◆ Market was originally designed by economists and system operators.
- ◆ Significant market design oversights:
 - Did not anticipate importance of transaction intermediaries (legacy of vertically integrated utility mindset).
 - Did not anticipate power of external control areas to influence operating rules.
- ◆ Many market participants, both generation owners and distribution companies, have worked hard to ensure that little data gets released by the PX and ISO.
- ◆ CAISO has not made data release a top priority.



Why Does It Matter?

- ◆ Econ 101: Information dissemination is a defining characteristic of a market.
- ◆ Increase efficiency of short-term and real-time markets.
- ◆ Information withheld from new generation developers. Increases risk of investment.
- ◆ Everyone needs to understand what is going on. Bust the information monopoly.



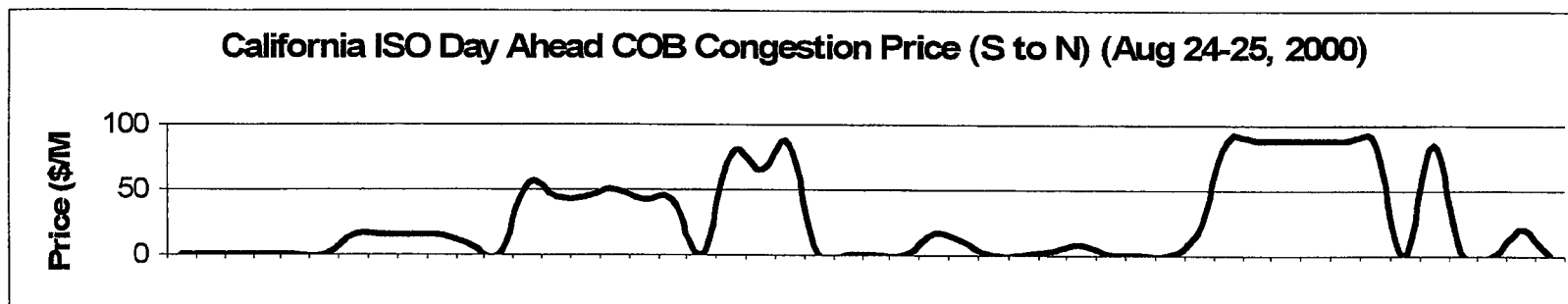
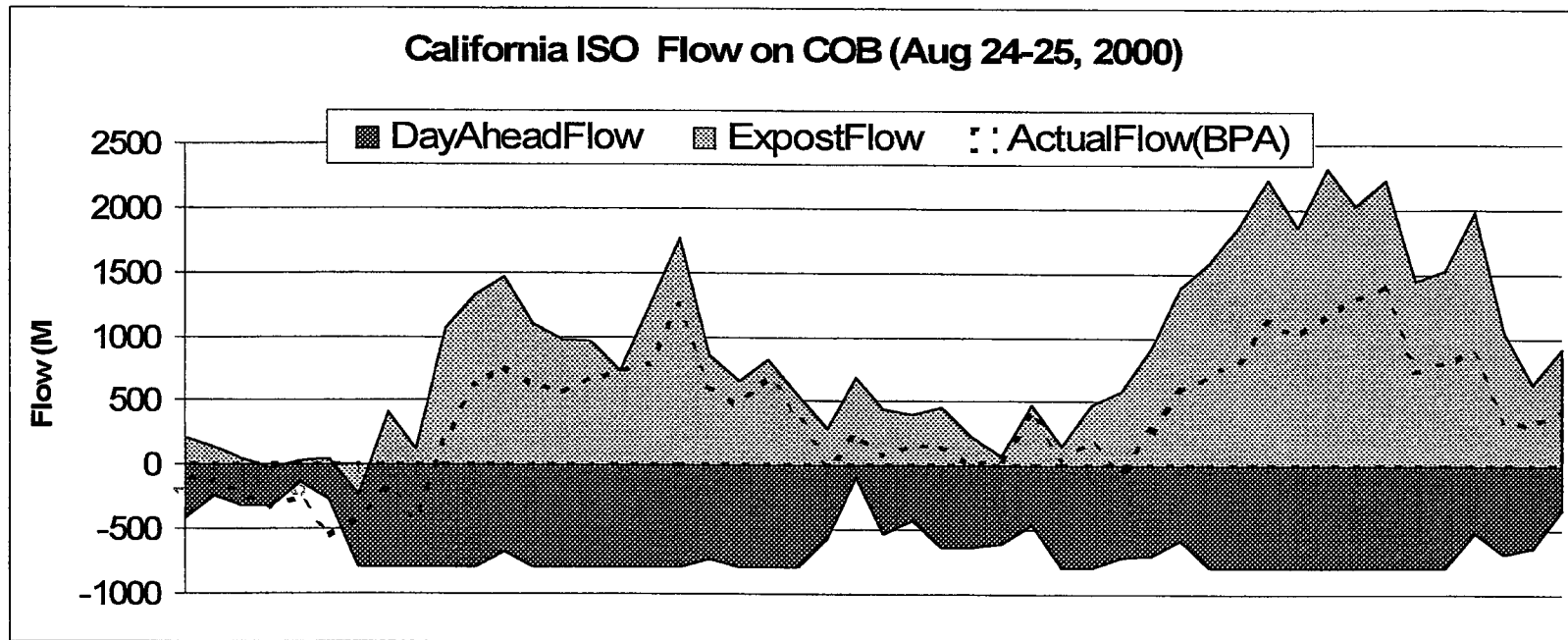
The Need for Simpler Models

Example: Congestion Management

- ◆ Complex, proprietary software used to calculate congestion charges.
- ◆ Implicit transmission auction through complicated inc/dec process.
- ◆ Congestion prices don't always reflect actual system conditions.



COB Whiplash: CA ISO Day Ahead and Real Time Flow





Congestion Management Proposal

- ◆ Explicit bidding for physical transmission rights.
- ◆ Physical right required for scheduling.
- ◆ Large scale release of rights in forward market.
- ◆ Mandatory capacity release to avoid hoarding.

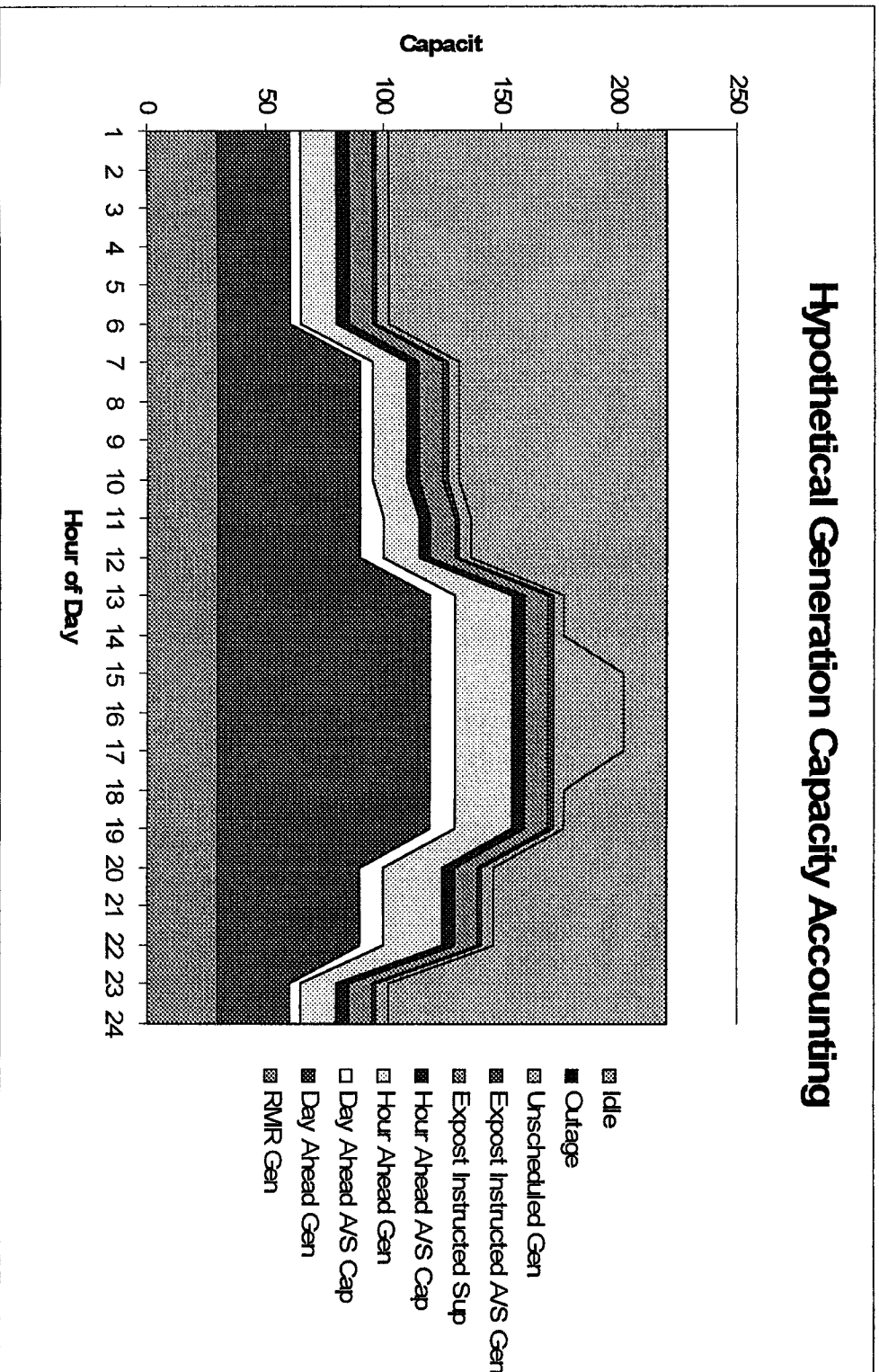


Status of Data Release: ISO and PX Release Hodge-Podge of Data

- ◆ ISO/PX provides incomplete information on system status (e.g., neglects to provide basic information such as actual flow on interties and actual load by zone).
- ◆ ISO/PX does not supply participant specific information (with the exception of Ex Post market).
- ◆ ISO/PX supplies little data on submitted bid or offer curves.

Data Release Nirvana: Every MW in System Tracked Publicly

Hypothetical Generation Capacity Accounting





CA ISO Information Dissemination Map

	Awarded Price Quantity					Price-Quantity Bid Offer Curves				
GENERATION	Unit	Plant	Load Zone	Cong Zone	System	Unit	Plant	Load Zone	Cong Zone	System
RMR Generation										
Day Ahead Generation										
Ancillary Service Capacity										
Hour Ahead Generation										
Ancillary Service Hour Ahead Capacity										
Expost Instructed Supplemental Generation										
Unscheduled Generation										
Expost Instructed Ancillary Service Generation										
Outage/Deration										
Idle										
LOAD	Load Zone & SC	Load Zone	Cong Zone	System		Load Zone & SC	Load Zone	Cong Zone	System	
Day Ahead Load										
Day Ahead Anc. Serv. Capacity Requirement										
Hour Ahead Load										
Anc. Serv. Hour Ahead Capacity Requirement										
Expost Load										
Actual Load										
TRANSMISSION	Zone Interface				System	Zone Interface				System
Day Ahead Flow										
Hour Ahead Flow										
Expost Flow										
Actual Flow										
Total Day Ahead Capacity										
Total Hour Ahead Capacity										
Total Expost Capacity										
Available Day Ahead Capacity										
Available Hour Ahead Capacity										
Available Expost Capacity										

Possible	
Released	
Not Possible	



Summary

- ◆ Information is good and more is better (high benefit, low cost).
- ◆ Declassify market models: Changing market models is difficult, but providing information about model operation, assumptions, inputs, and outputs is easy.
- ◆ Bust the Information Monopoly: Regulators must press for full, public information dissemination from ISO.
- ◆ Northwest and Southwest RTO should heed shortcomings in California market design.