



Harvard Electricity Policy Group Session 2 Discussion

Andrew Ott

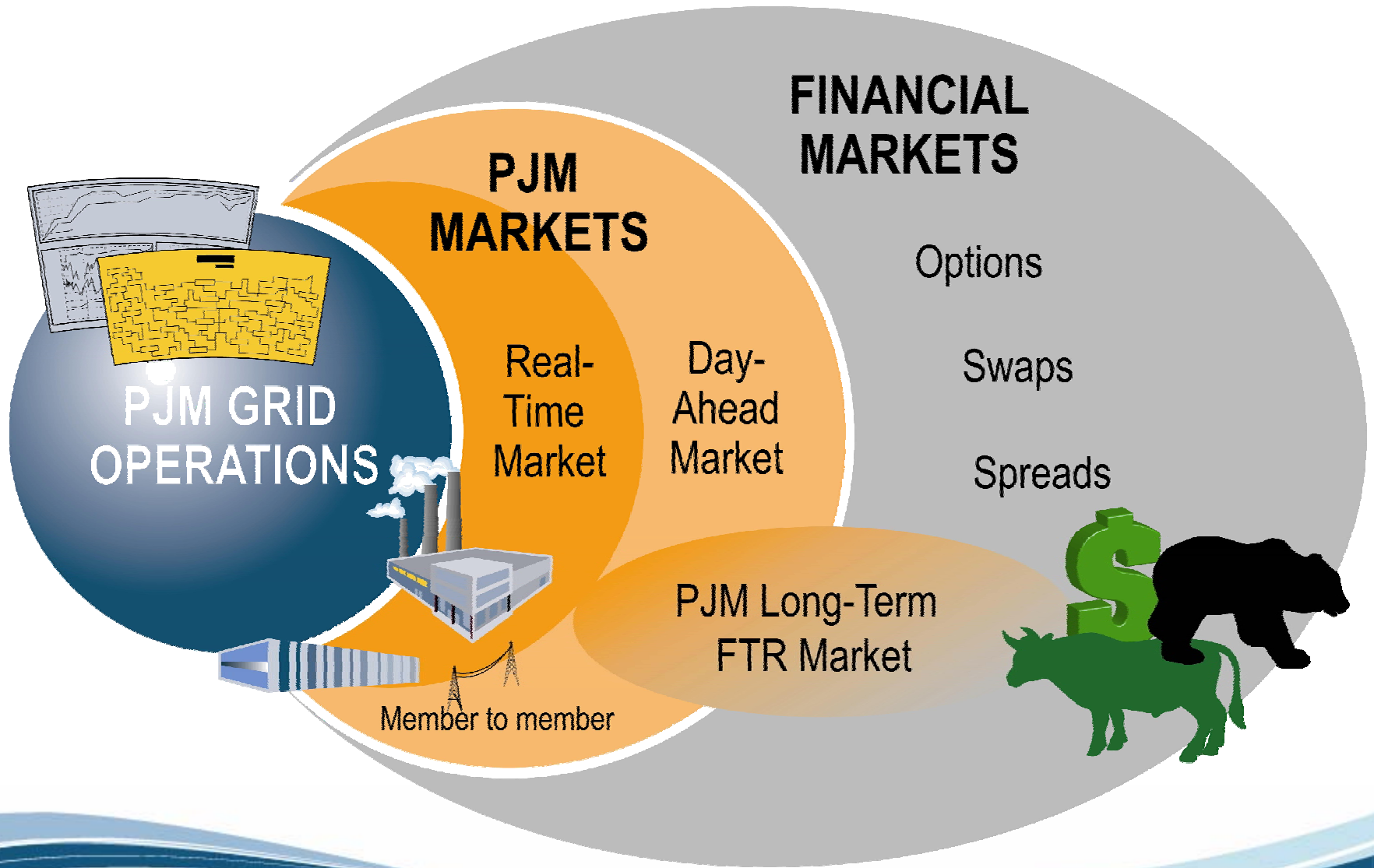
Vice President, PJM Markets

November 30, 2006

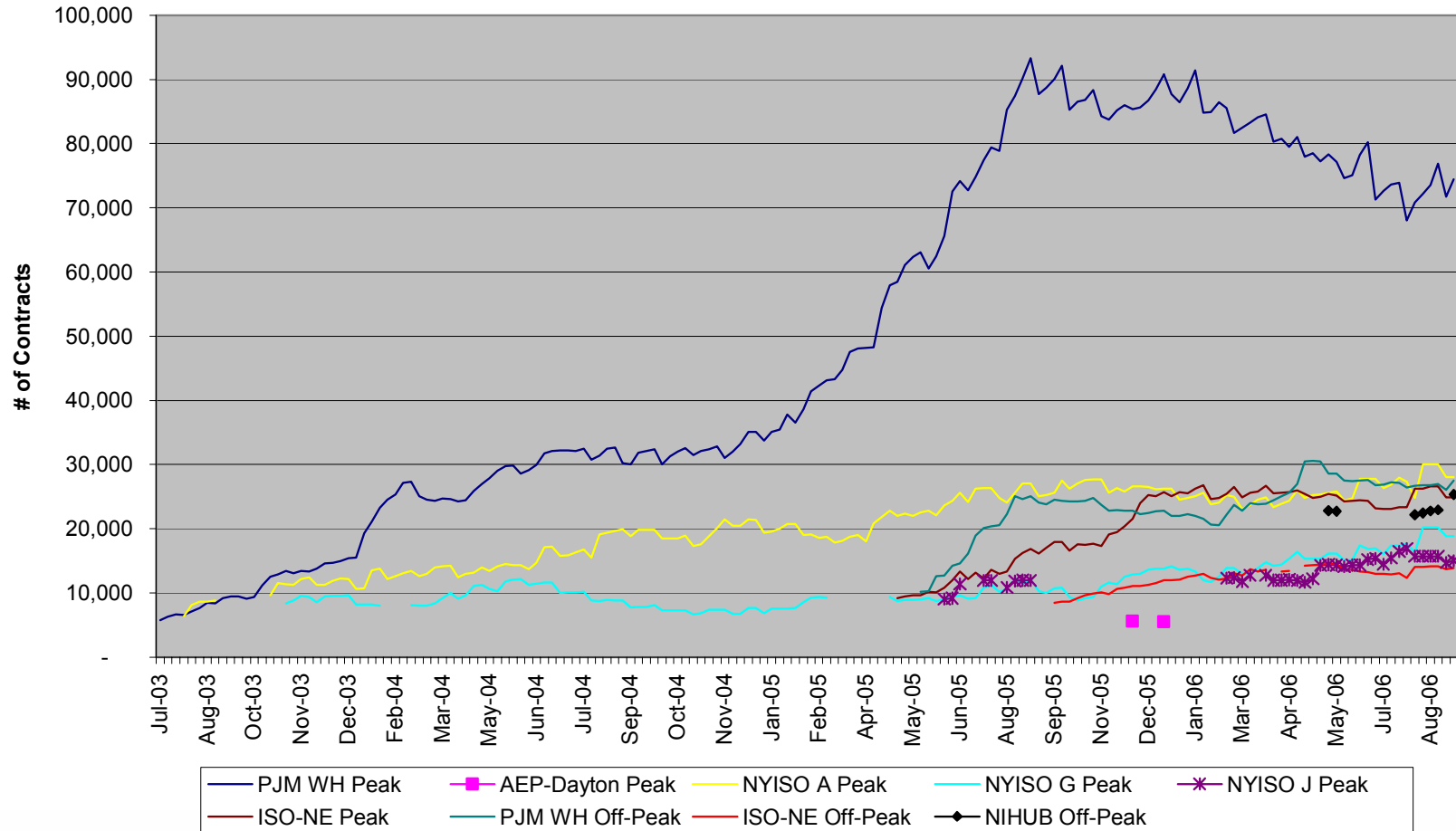
- Least-cost security-constrained dispatch optimizes energy and reserves and calculates unit specific dispatch instructions for the next five-minute period. (ex-ante dispatch)
- LMP values calculated every five minutes based on actual generation response to ex-ante dispatch instructions and on binding transmission constraints (ex-post pricing)
- LMP pricing, integrated with security-constrained dispatch, pricing based on actual system operating conditions

- Day-ahead Market – based on full transmission model and security-constrained unit commitment and dispatch
- FTR Auction - based on full transmission model
- Same model for Real-time market, day-ahead market, and FTR Auction
- High degree of consistency between markets which are all consistent with operational reality
- Consistency eliminates artificial arbitrage opportunities results in market confidence
- A lack of consistency would create substantial perverse incentives as observed in the past

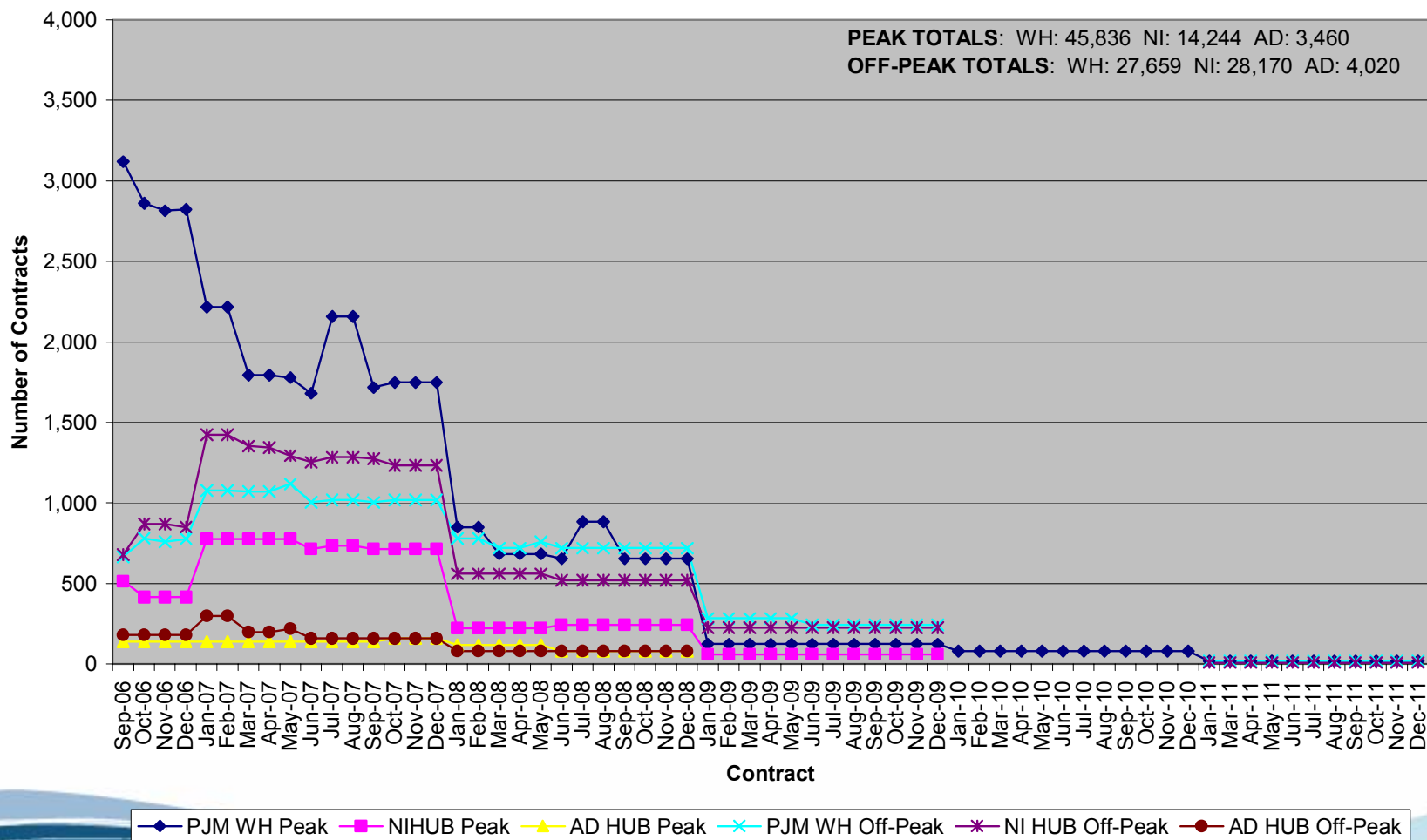
- Market prices reflect actual operating conditions
- Market incentives — market participants are partners with RTO to maintain reliability through price signals
- Financial product development
- Information transparency
- Price rationalization




NYMEX Open Interest
(Futures *plus* Delta-adjusted Options)
Last update: September 12, 2006

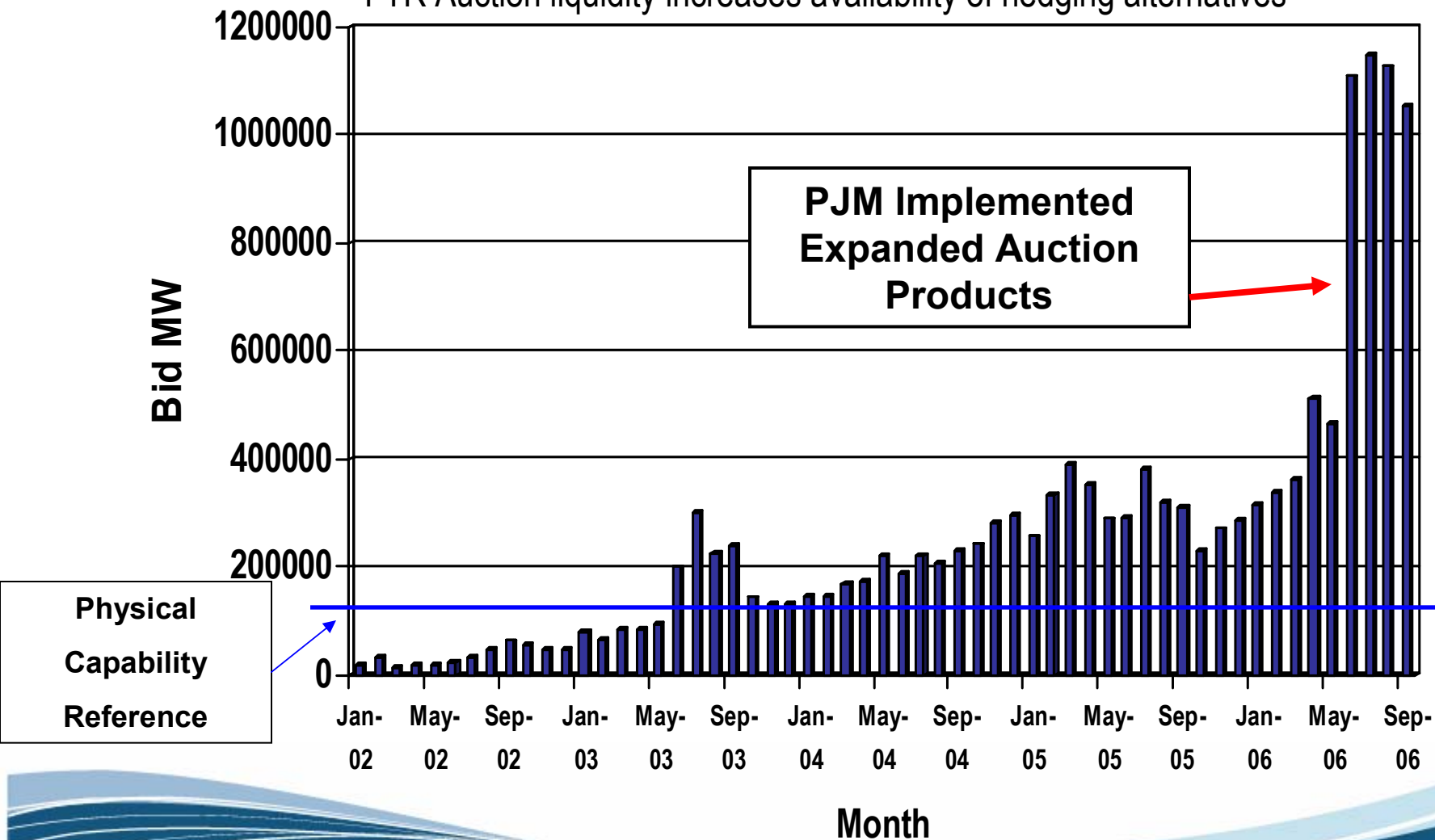


NYMEX OPEN INTEREST ON PJM CONTRACTS as of September 18, 2006



- Observed lack of forward trading volume
- General complaint concerning lack of reasonable forward hedging product availability
- Smaller market participants cannot use standard 50 MW block contracts, or standard exchange product
- Participants must purchase forward energy and transmission position separately
- Credit issues  create barriers to entry
- Wholesale / Retail Interface

FTR Auction liquidity increases availability of hedging alternatives



- Accelerated Settlements ?
- Clearinghouse ?
- More flexible forward products ?
- Combined forward energy and transmission auction ?
- Improved market interfaces ?

The real question is

Who should fill in the GAPS ?