



California Energy Commission

Current Trends: Natural Gas Pricing

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Staff Workshop

2011 Integrated Energy Policy Report

California Energy Commission

Hearing Room A

April 19, 2011

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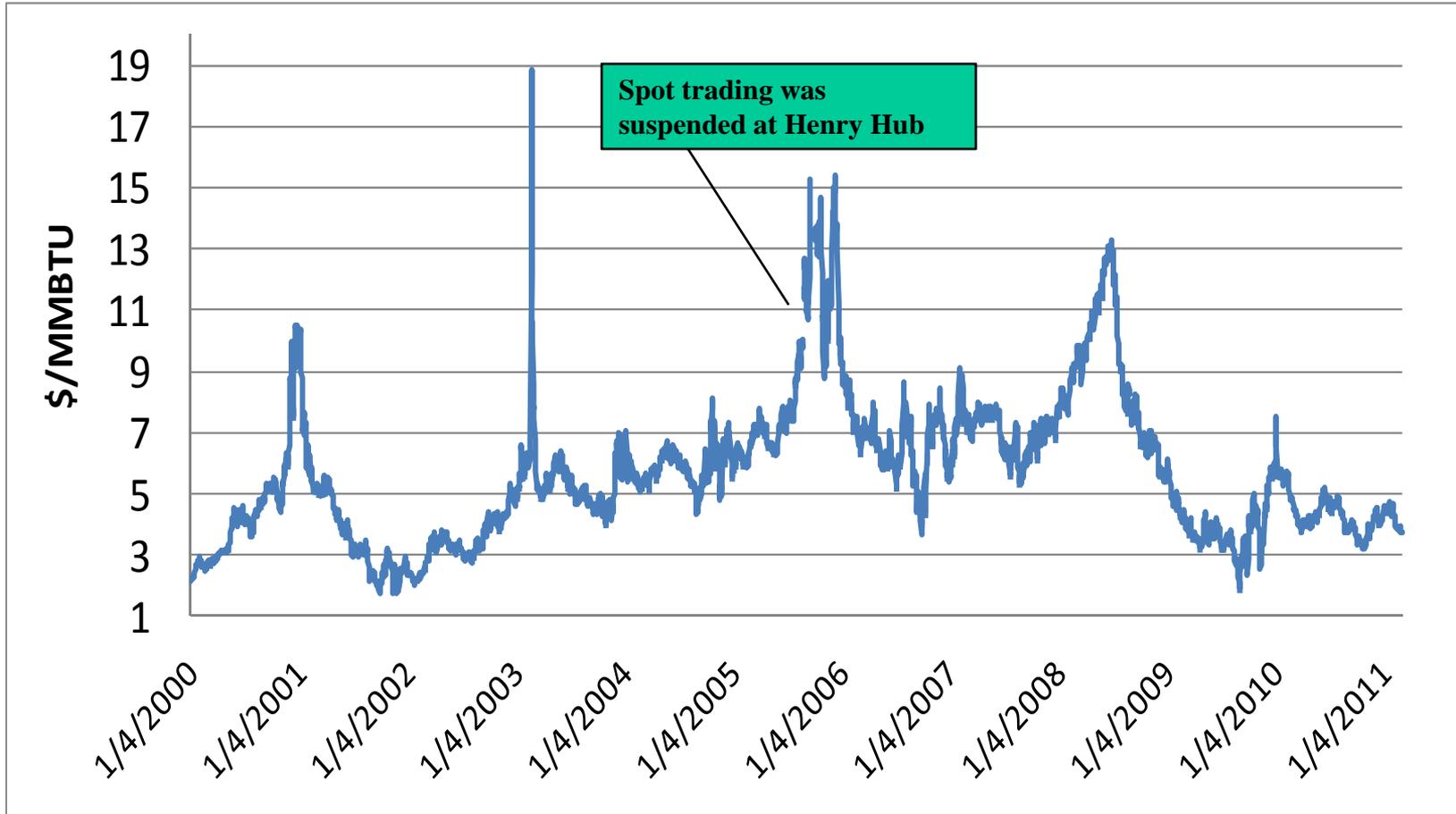
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Henry Hub Daily Spot Prices



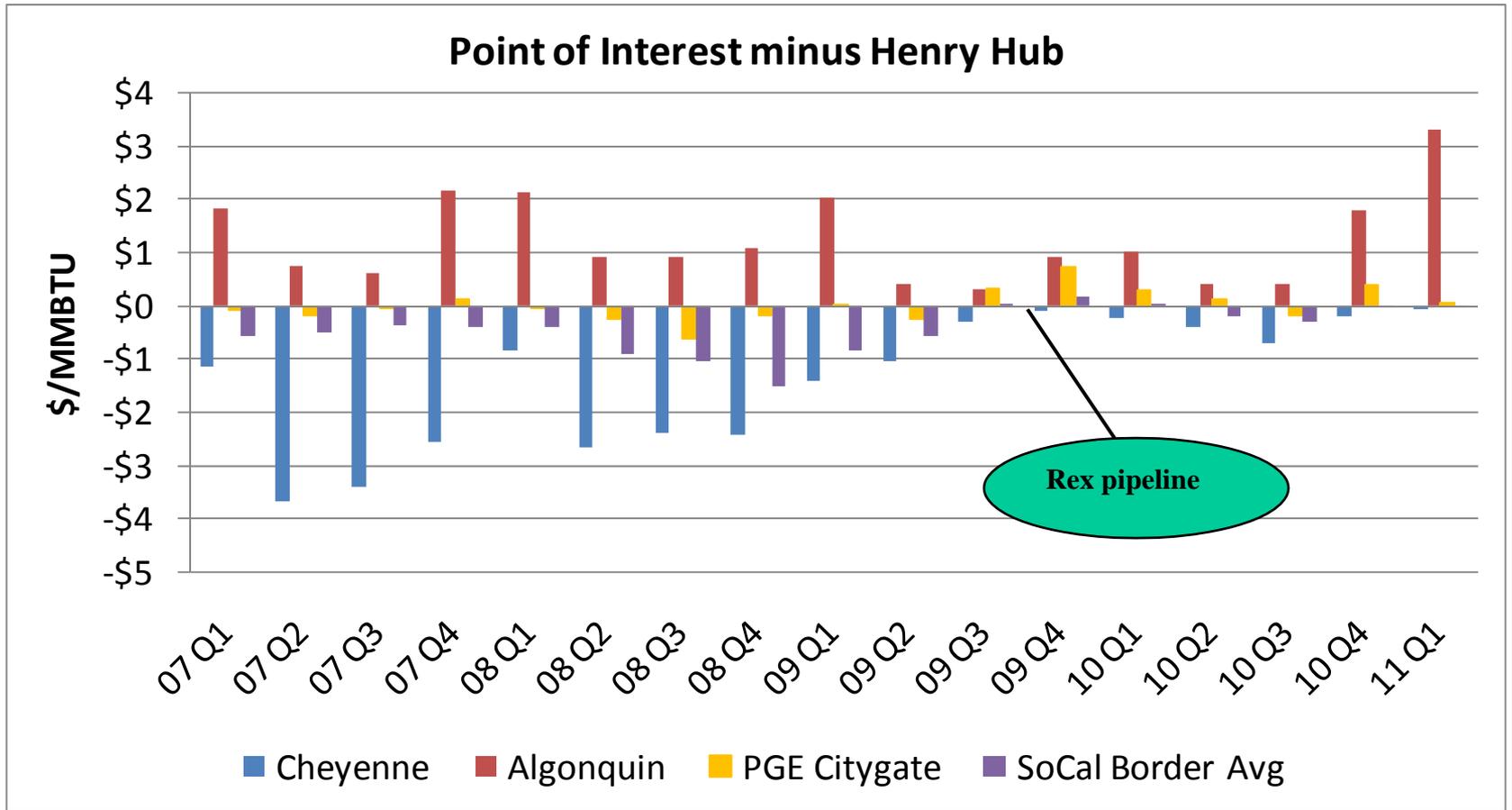


Basis Differentials

- Difference between daily natural gas spot prices at regional hubs versus Henry Hub.
- A large sustained basis demonstrates an opportunity to profitably construct a pipeline.
- Basis differentials occur mainly because of congestion and bottlenecks between markets.
- More shale production relative to available pipeline capacity will likely cause some basis differentials to shift. (shale gas was discussed in the previous presentation.)



Basis Differentials Changes





How California Utilities Procure Gas

- Staff paper and Committee workshop on this in 2009 IEPR – little change since.
- Most gas from short-term monthly contracts.
- Some procured via daily spot purchases, multi-month contracts, or withdrawn from storage.
- CPUC has Gas Cost Incentive Mechanisms (GCIM) allowing utilities to hedge against price volatility and recover costs in rates.



Speculation

- Is speculation a good or a bad thing?
 - Price discovery and liquidity
 - Market bubbles, herd behavior
 - Bubbles also caused buy supply/demand factors
- Opinions are mixed.
- Investments in commodities increased sharply from 2005 to 2008 as prices rose.
- Unclear whether real driver of 2008 run-up in oil and natural gas prices was speculation or supply/demand factors.



Financial Regulation

- Purpose of regulation is to:
 - Protect market participants against price manipulation and other fraudulent actions.
 - Protect price discovery in the market.
- Dodd-Frank Act (July 2010)
 - Commodity Futures Trading Commission is currently proposing regulations.
 - Adopt position limits for exempt commodities.
 - Data collection and publication.



Financial Regulation Cont.

- Effects of Regulation On Commodity Markets
 - Protect Market participants from price manipulation (volatility).
 - Increase market transparency and surveillance.
 - Market liquidity may be reduced.
 - Increased cost to investors and ratepayers.

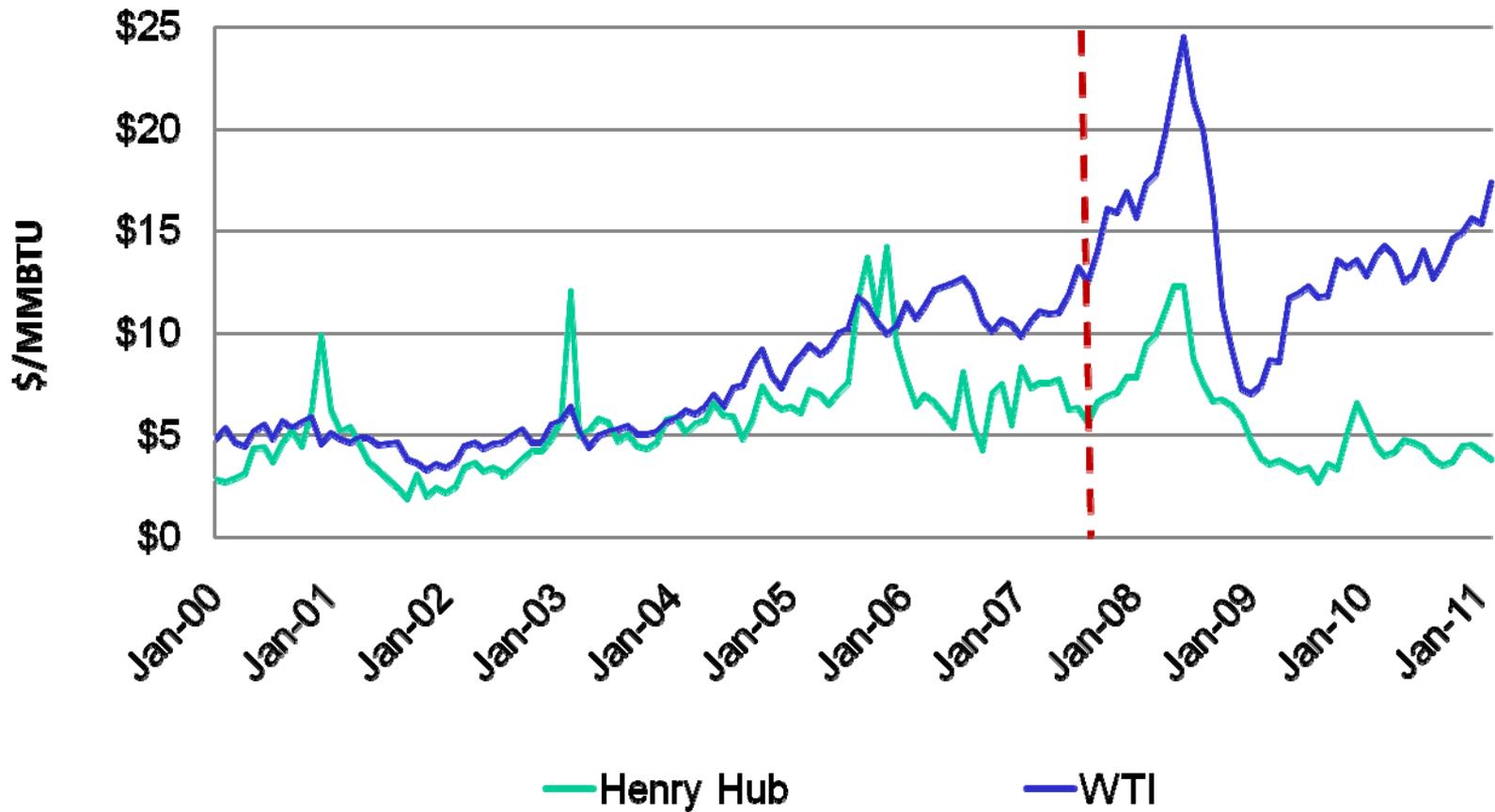


Oil/Gas Price Relationship

- Basic reasons:
 - same geology, technology and E&P cost structure
 - substitutes in most world markets.
 - Often produced together, Natural gas used for Enhanced Oil Recovery (EOR)
- U.S. oil/gas link appears to have gone away since the end of 2008.
- CEC staff addressed this in 2007 and 2009.

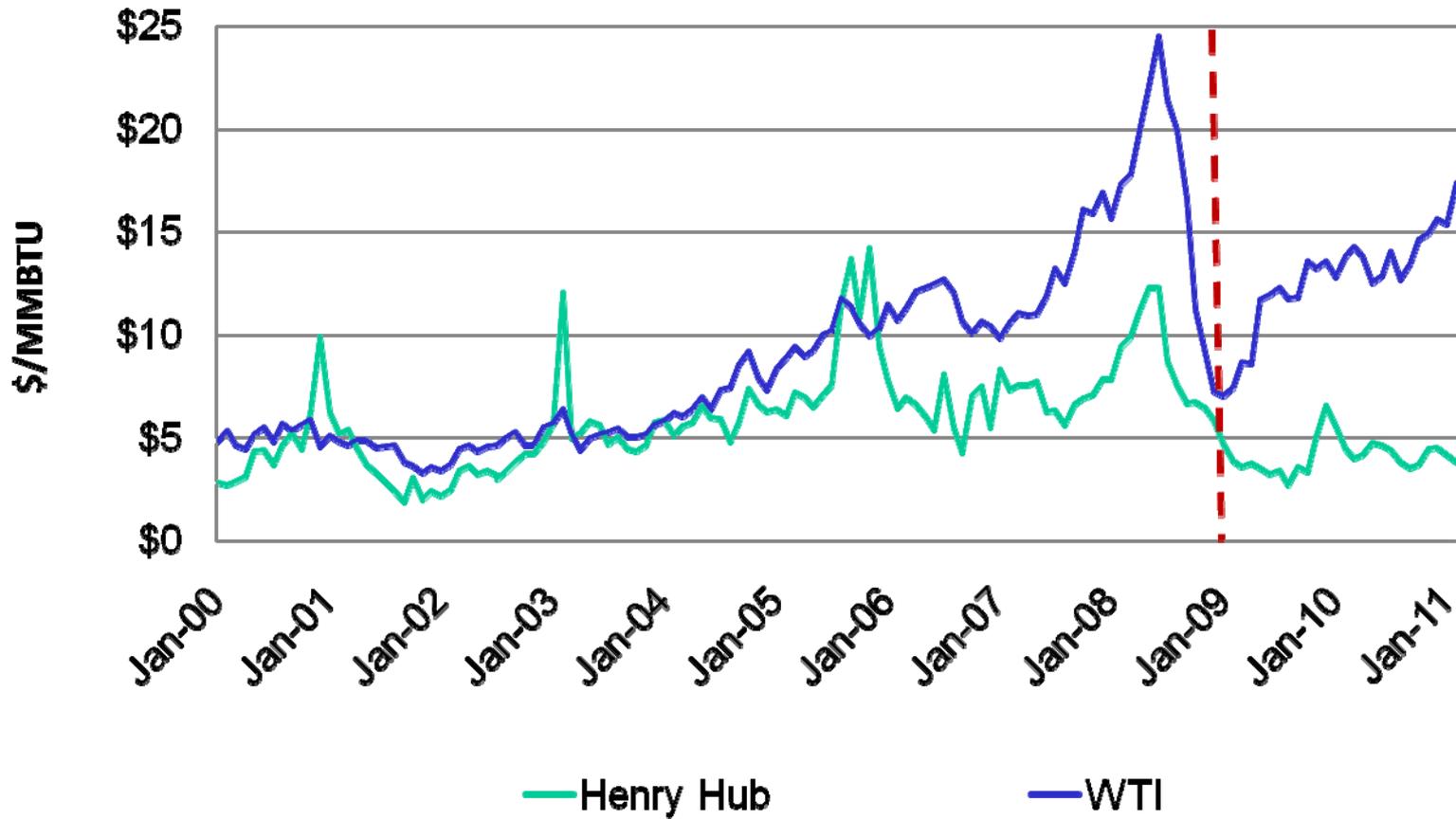


Natural Gas And Crude Oil Relationship





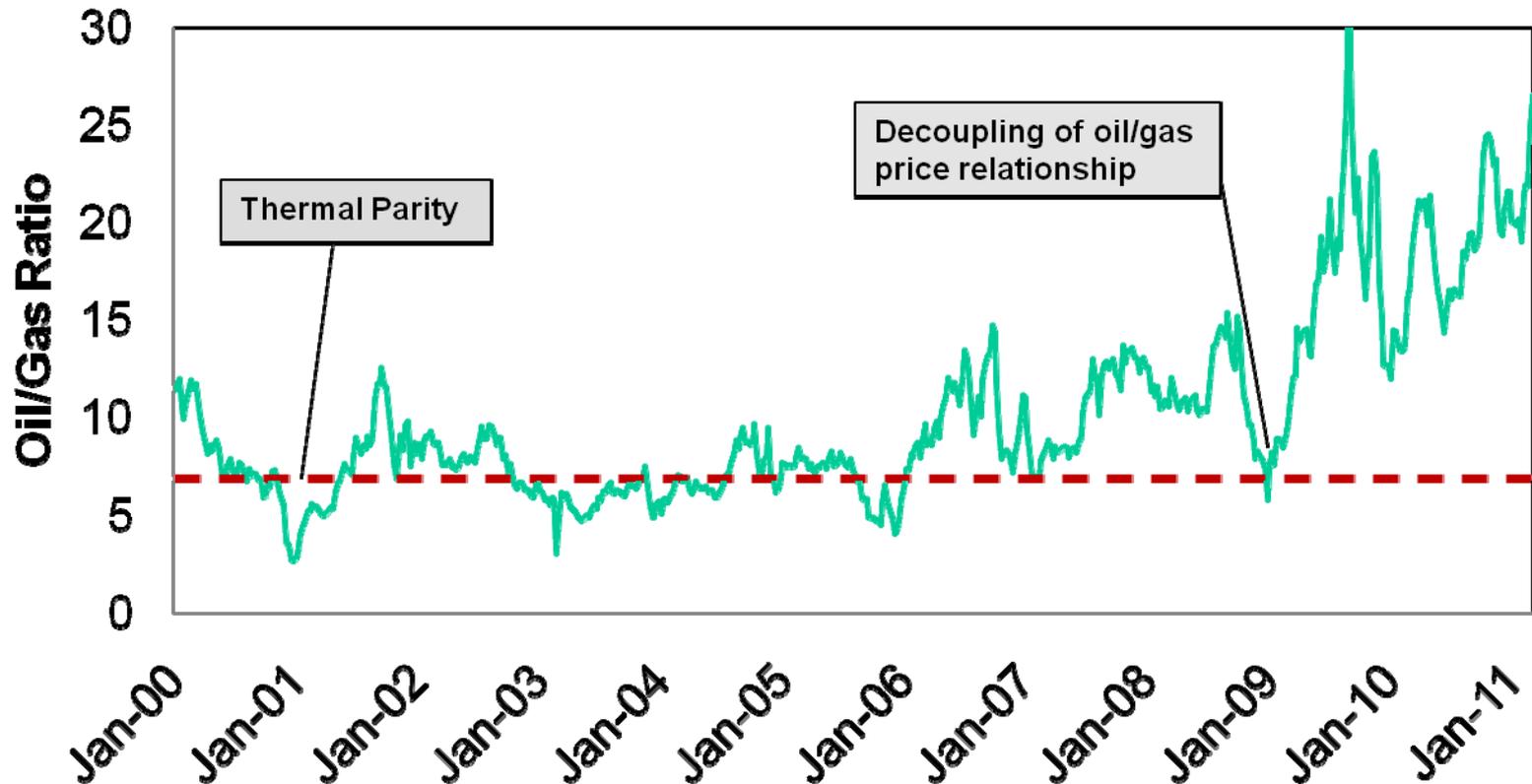
Natural Gas And Crude Oil Relationship





Oil/Gas Price Ratio Not At Parity

Oil/Gas Price Ratio





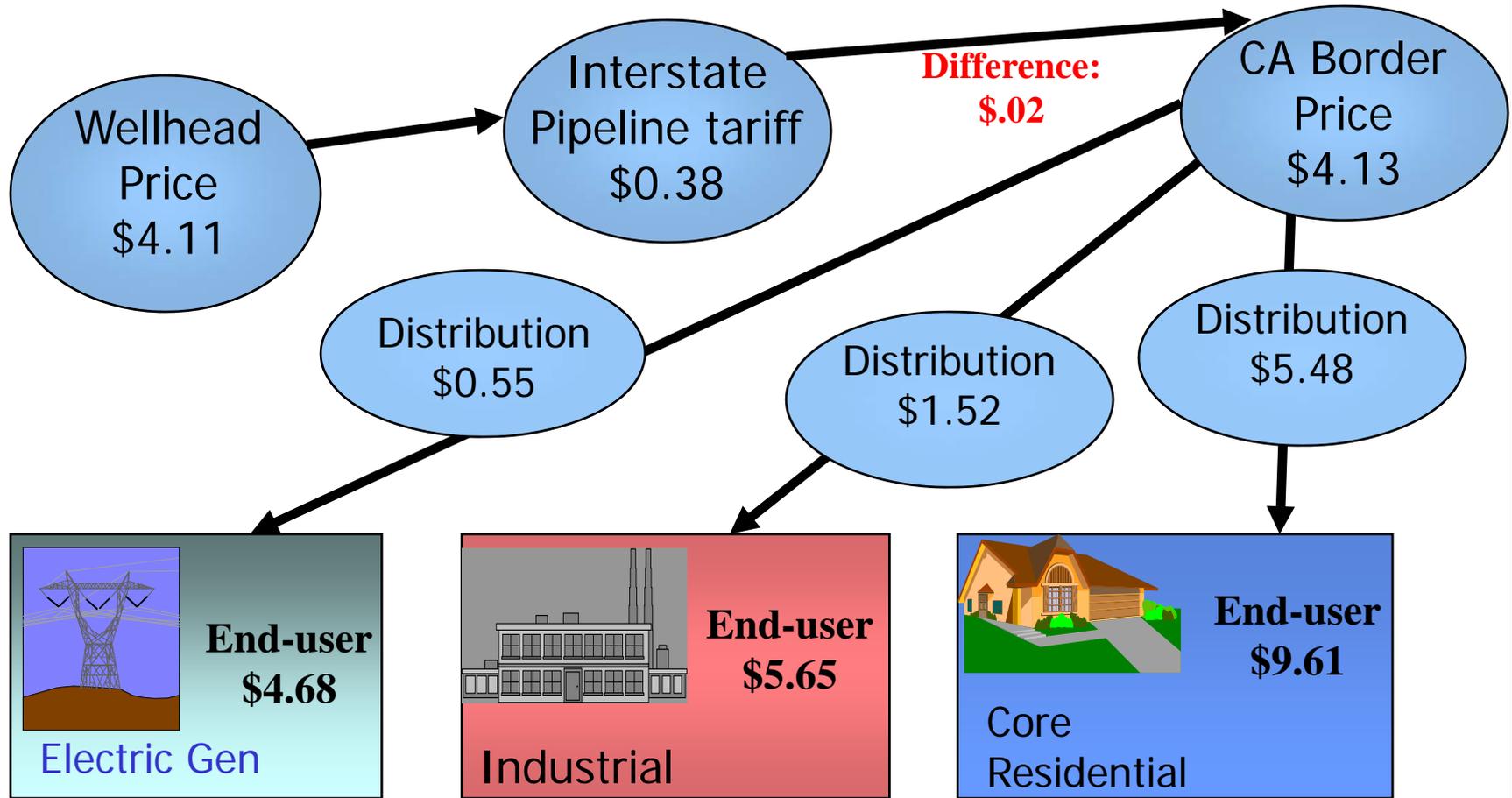
Factors Affecting Delivered Cost

- Delivered cost of gas is commodity price plus transportation rate to end-use meter.
- Some shifting among classes but both inter- and intrastate transport rates as more stable than commodity prices.
- New costs may change rate base.
 - Gas displacement of coal
 - EPA's rulemaking for reassessment of PCBs
 - Lost and unaccounted for gas/GHG reporting
 - Replace old CA pipelines



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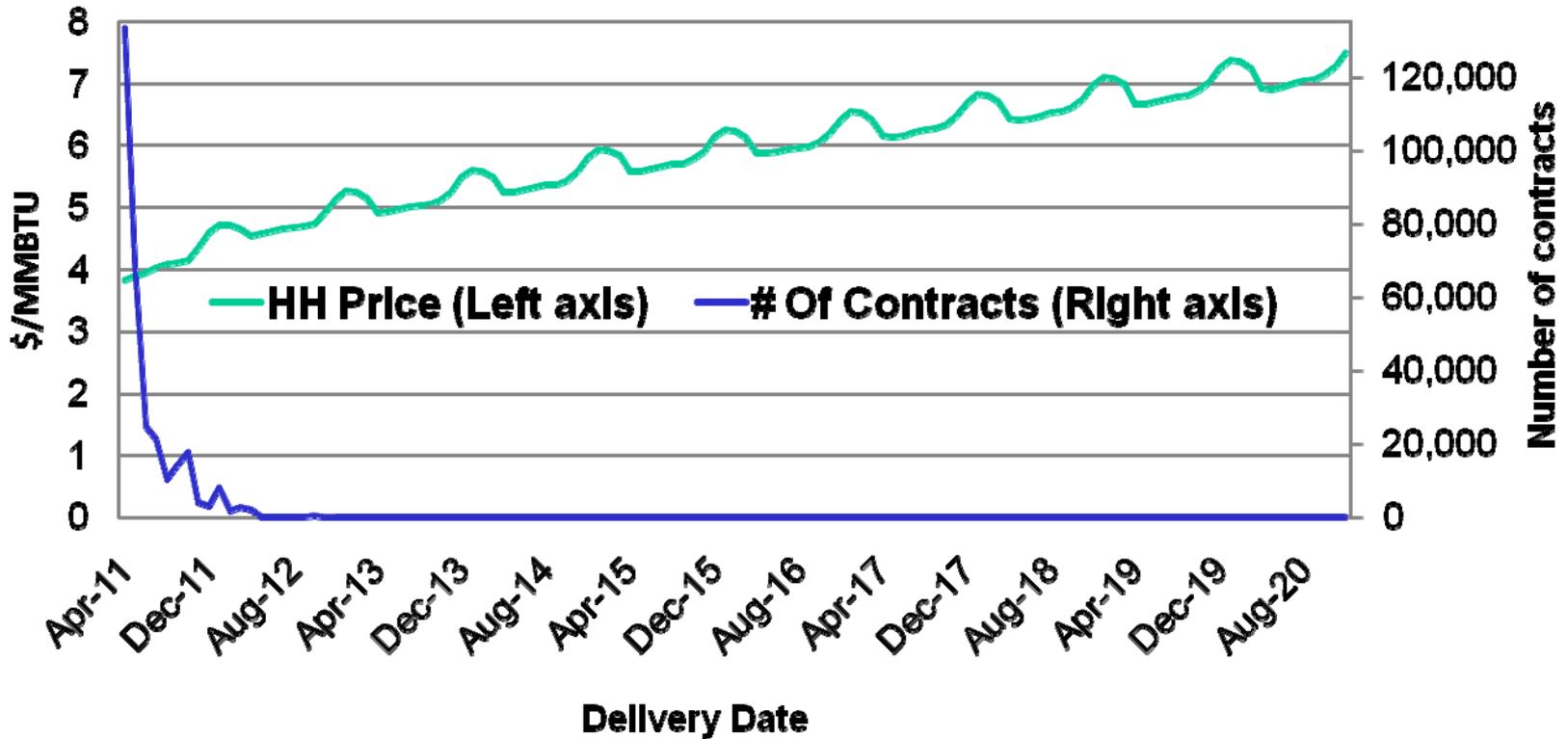
Gas From Juan Basin To End User: February 2011 (Prices in \$/MMBTU)





Henry Hub Natural Gas Futures

Trading date 3/11/2011





Blending Forwards Prices Into a Fundamental Forecast

- Use the first few years of forward prices and then use a fundamental forecast thereafter.
- Belief that no forecast performs well in the short run.
- Forward prices at least provide collective judgment of “the market”.



Blending Forwards Prices Into a Fundamental Forecast Cont.

- Issues associated with a blended forecast:
 - Do not know what assumptions were made by traders relative to staff model inputs
 - Curve changes daily in response to events
 - Demonstrated not to be a good forecast
 - Lack of long term liquidity
 - Herd behavior accountability avoidance