



# Current Trends: Natural Gas Pricing

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**Staff Workshop**

**2011 Integrated Energy Policy Report**

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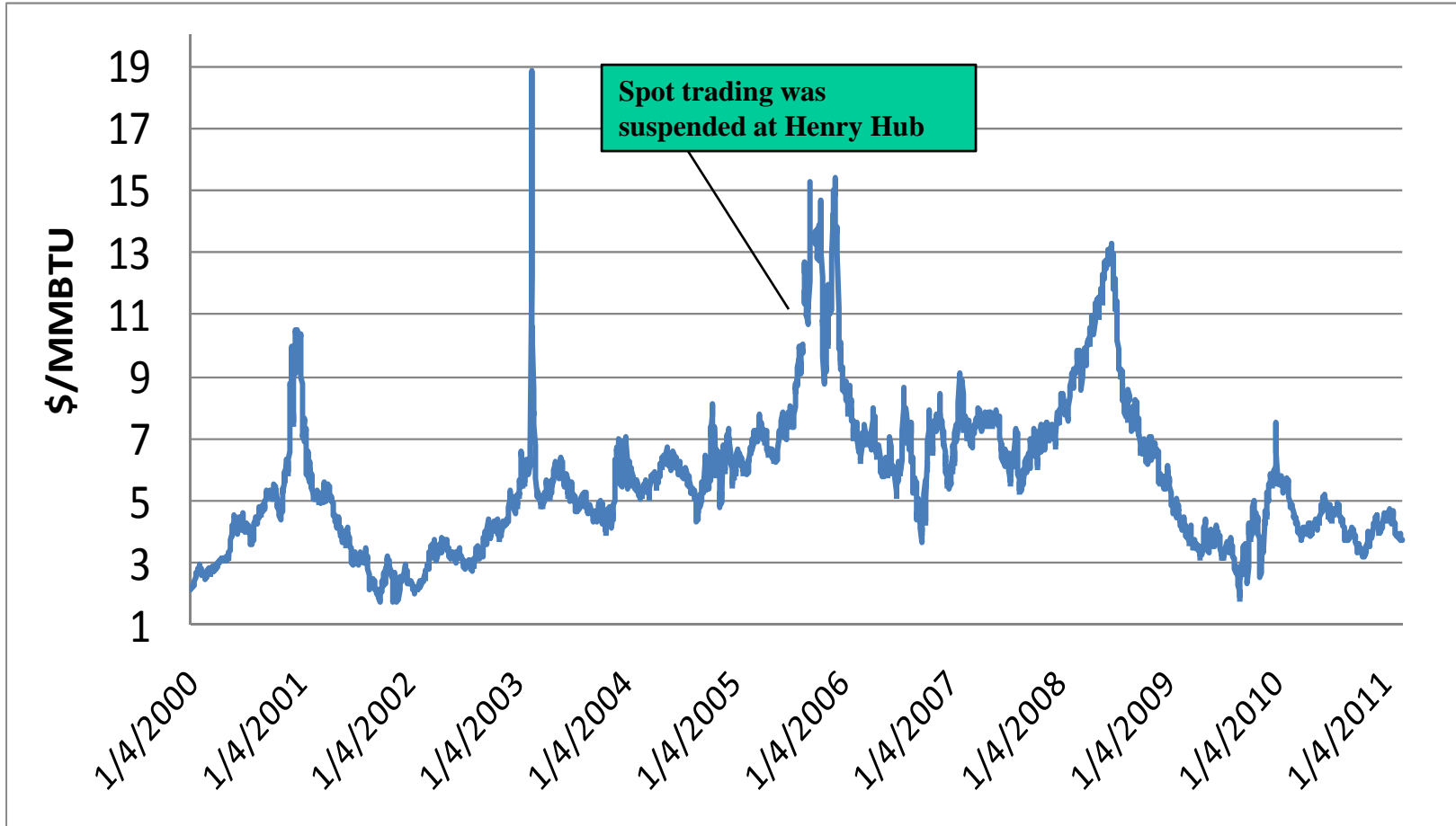
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# Henry Hub Daily Spot Prices



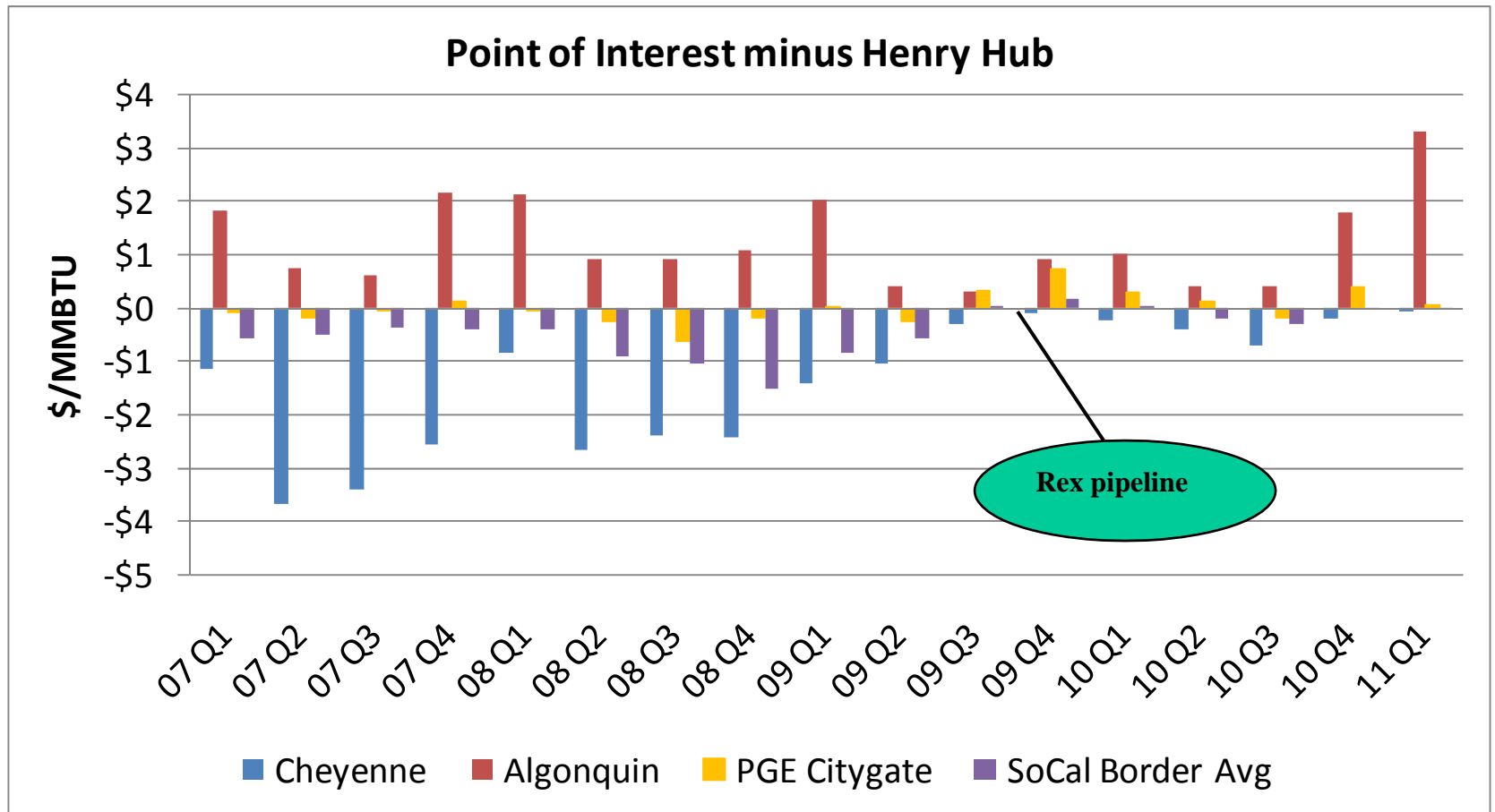


# Basis Differentials

- 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- Some procured via daily spot purchases, multi-month contracts, or withdrawn from storage.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 by 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.



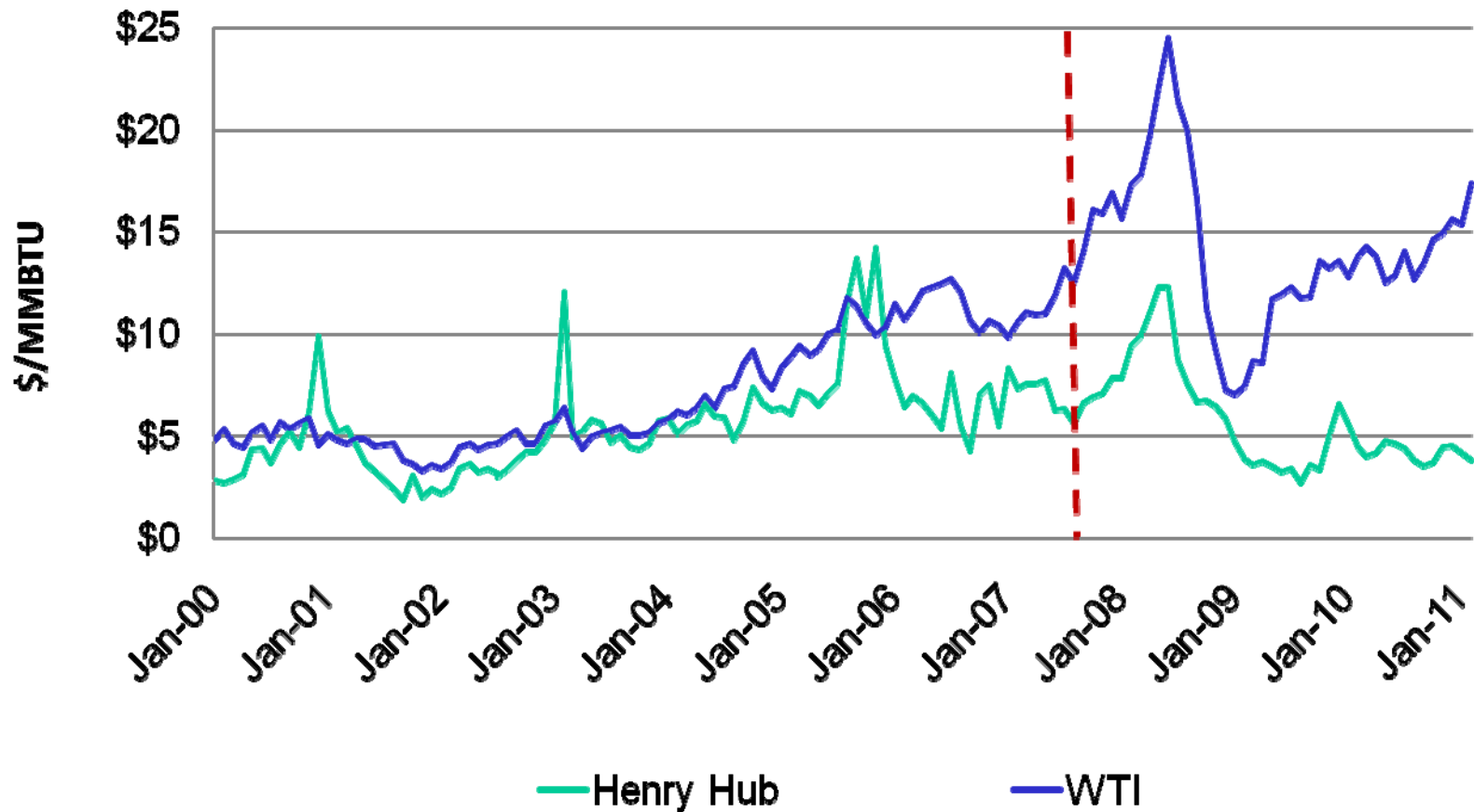


# Oil/Gas Price Relationship

- 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.



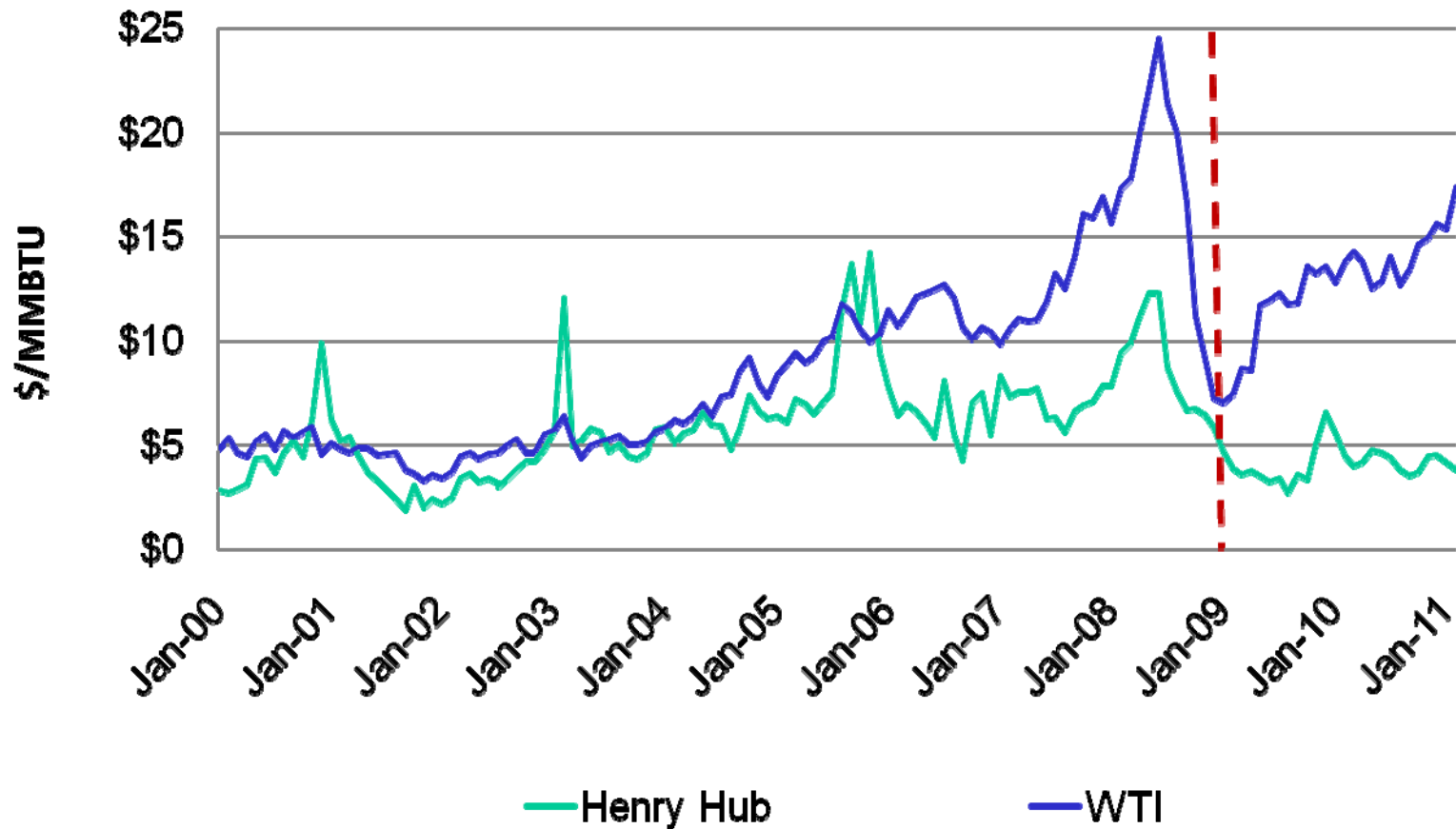
# Natural Gas And Crude Oil Relationship





## California Energy Commission

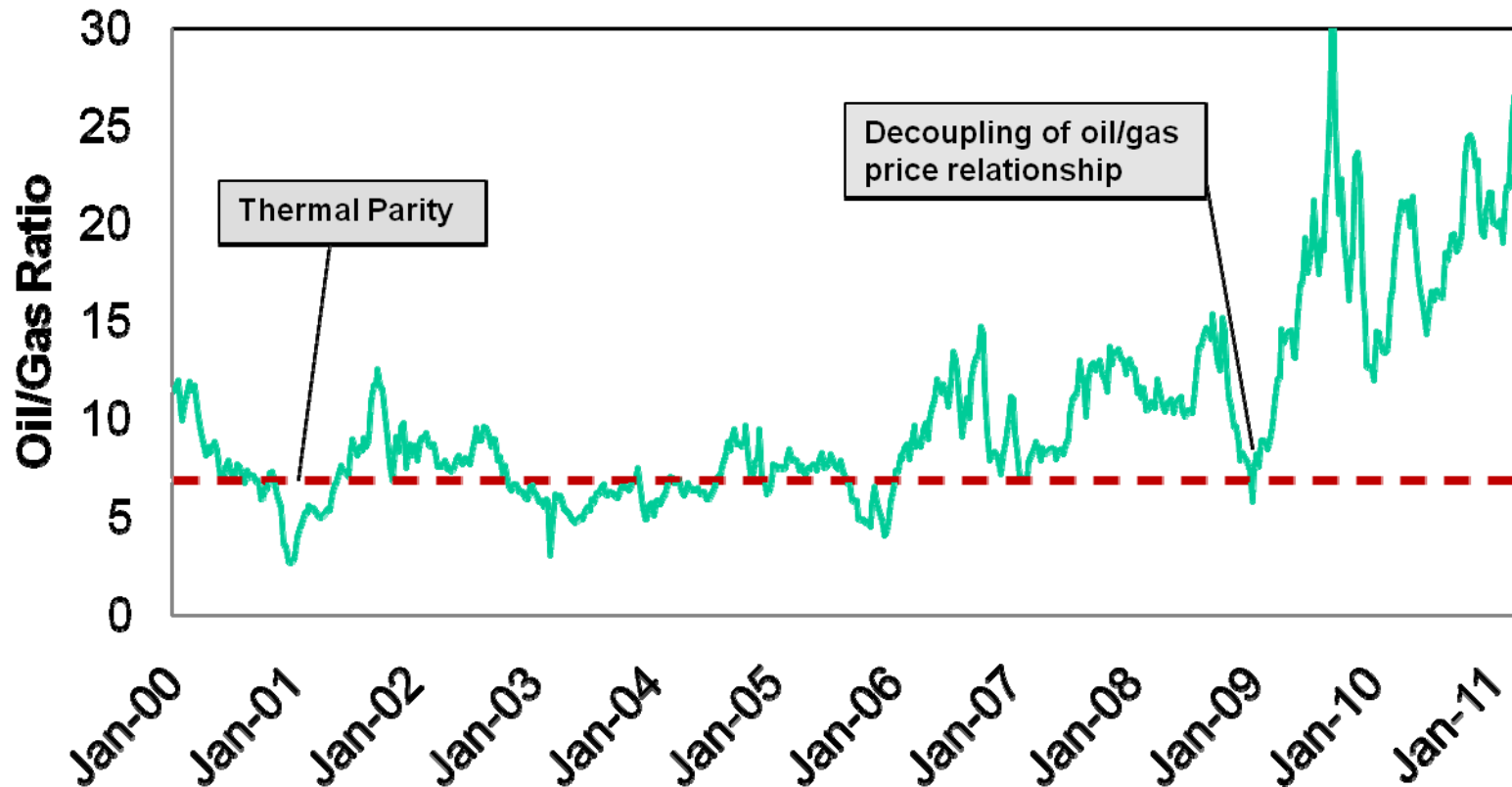
# Natural Gas And Crude Oil Relationship





# Oil/Gas Price Ratio Not At Parity

## Oil/Gas Price Ratio





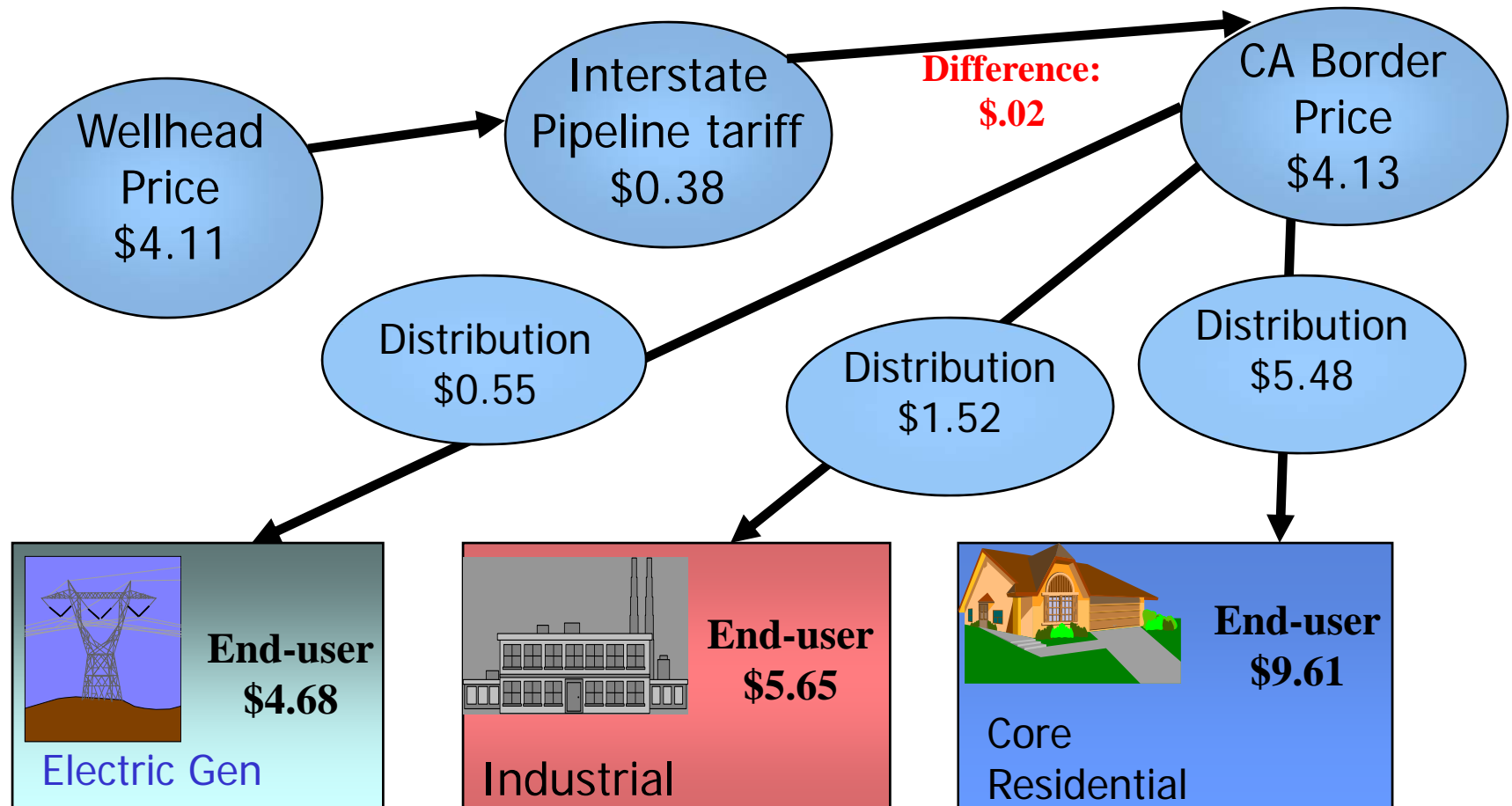
# Factors Affecting Delivered Cost

- 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



## California Energy Commission

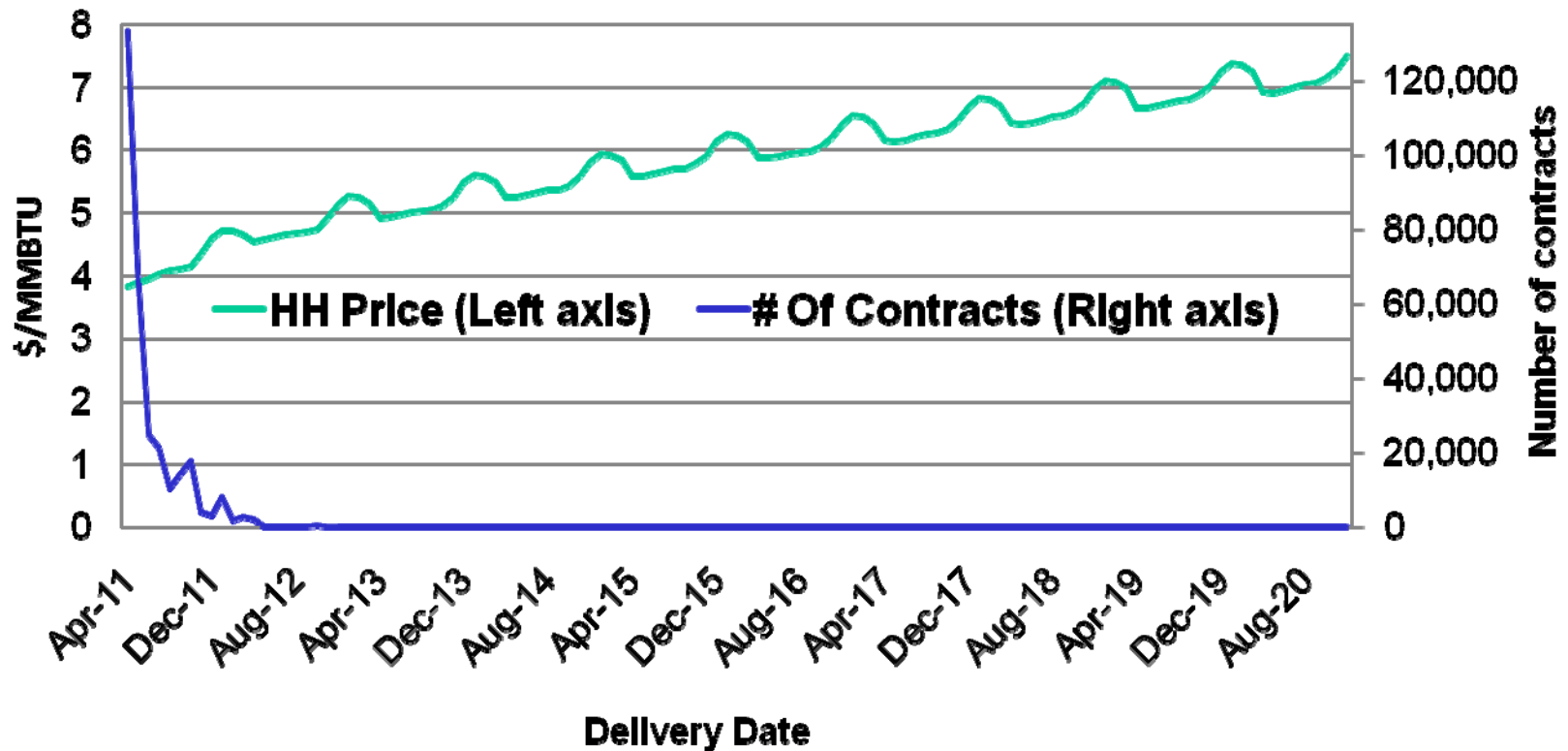
# Gas From Juan Basin To End User: February 2011 (Prices in \$/MMBTU)





# 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