

COMMENTS TO LEGISLATURE

on GAS CONTRACT and FISCAL INTEREST FINDINGS

to Alaska State Legislative Budget & Audit Committee
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What Natural Gas Prices Should Be Used?

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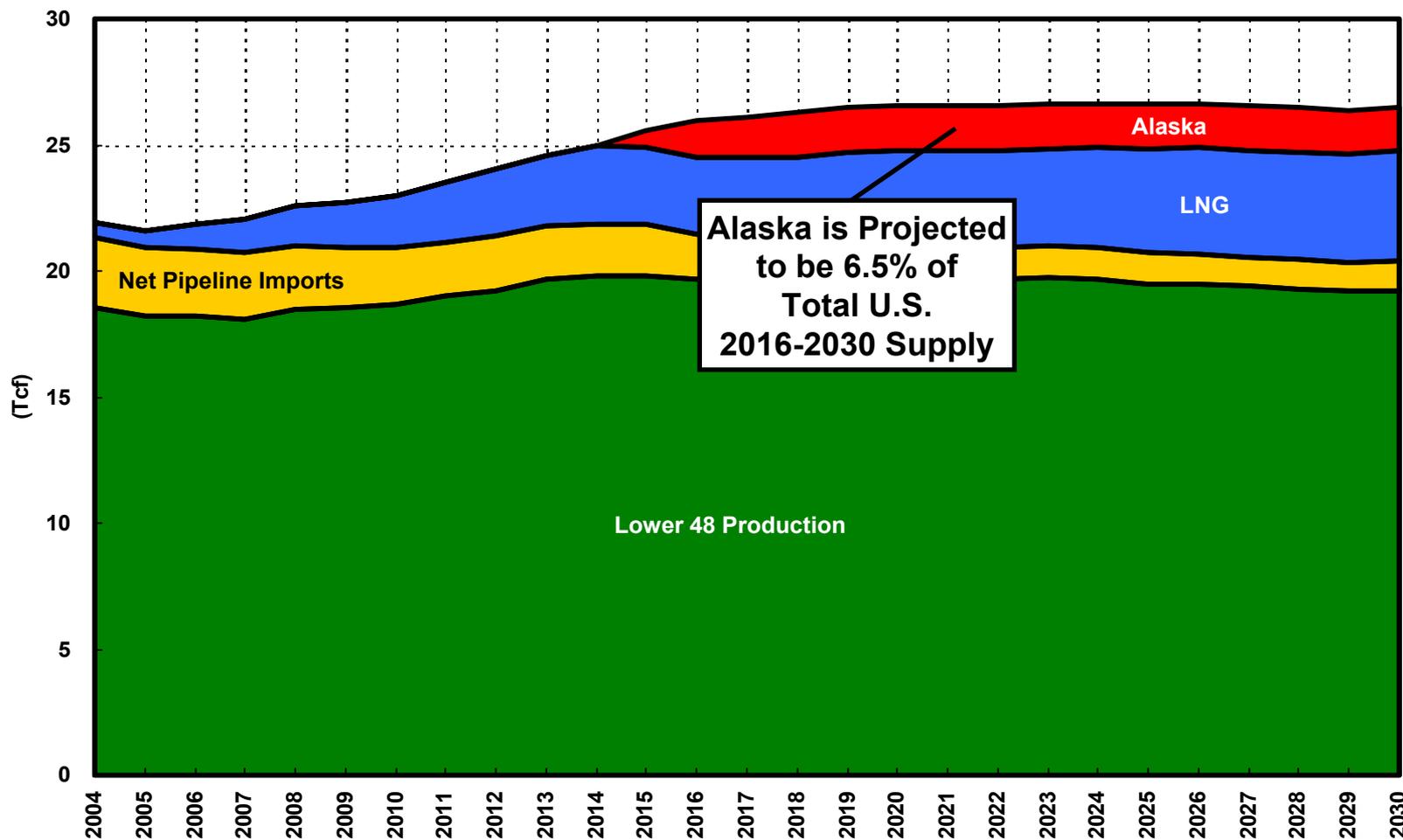
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Projected U.S. Natural Gas Supply



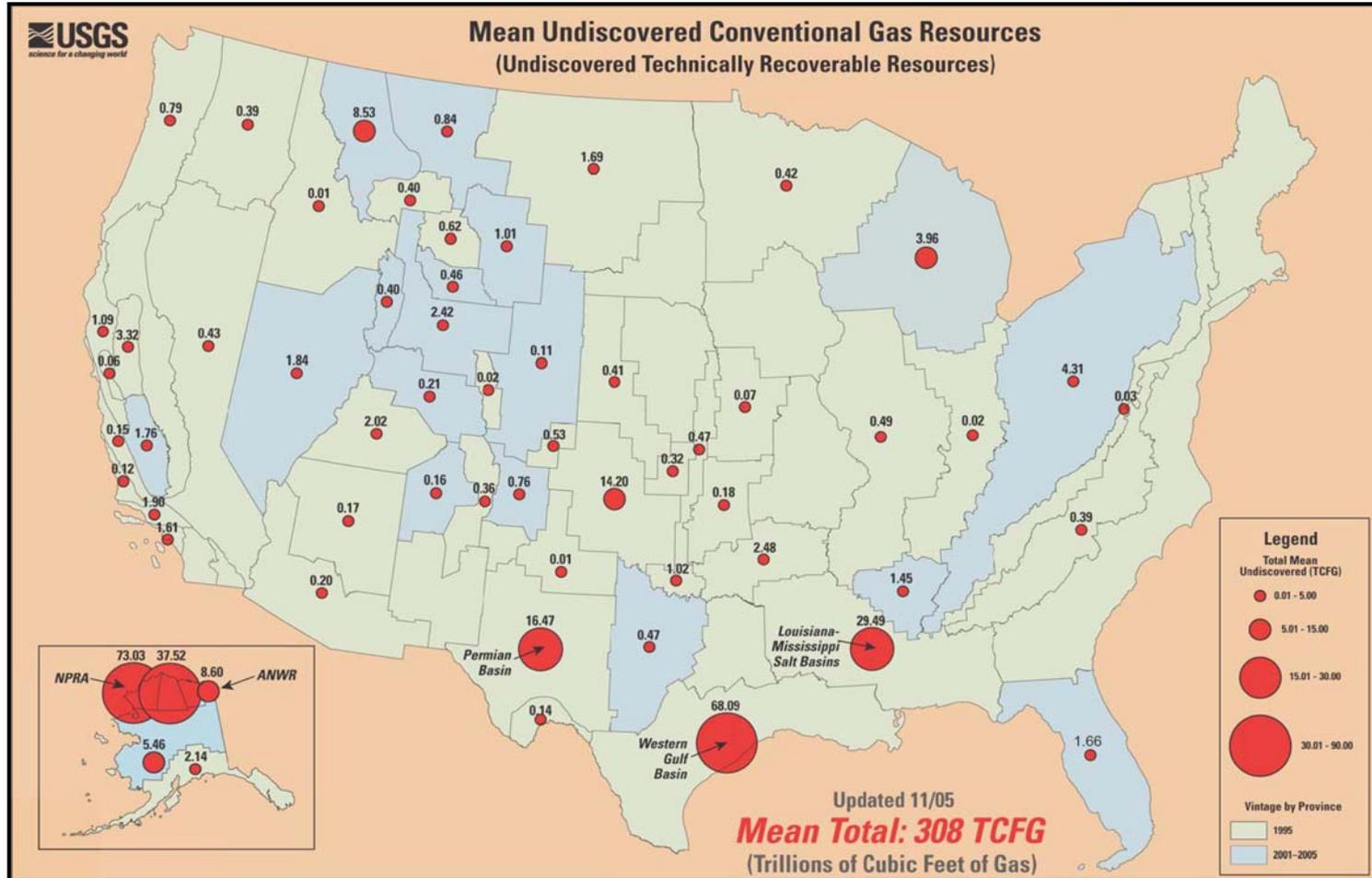
Source: EIA, *Annual Energy Outlook* (2006).

Alaska North Slope Resource Potential (Conventional Reserves)

		<u>Years at 4.5 Bcf/d</u>	<u>Years at 6.0 Bcf/d</u>
Known Reserves	~ 35 Tcf	21	16
Estimated Undiscovered Reserves	~ 120 Tcf	73	54
Total Conventional	~ 155 Tcf	94	70

National Supply Picture

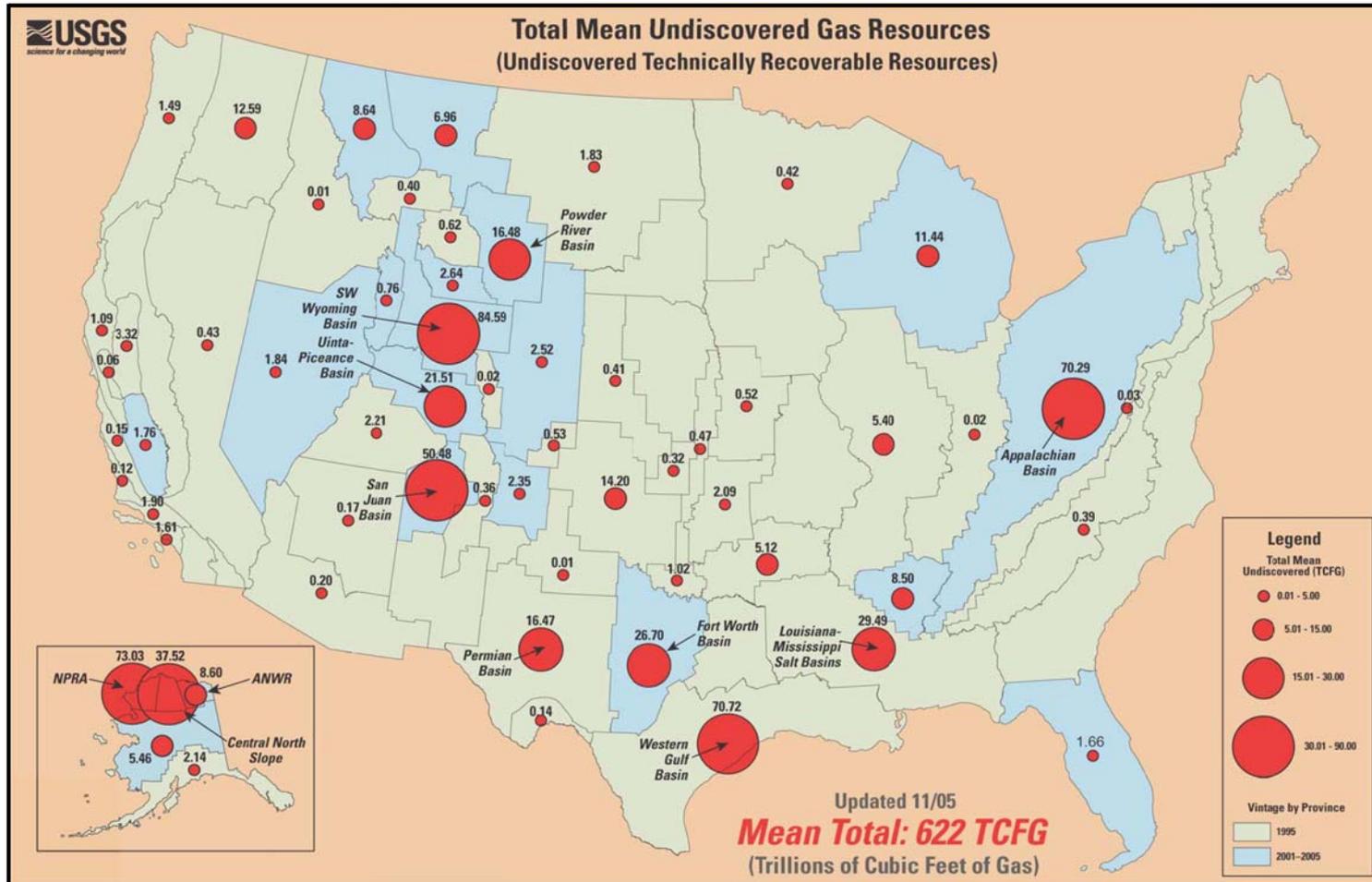
Alaska Contains Approximately 40% of Estimated Undiscovered U.S. Reserves



Source: USGS.

National Supply Picture

Even Adding Lower 48 Unconventional, Alaska is Approximately 20% of U.S. Reserves



Some Critical Uncertainties Facing Alaskan Gas

- **Strength of natural gas market**
- **Extent of LNG penetration**
- **Competition of gas with alternative energy**

Future Natural Gas Markets

- **North American natural gas supply tight**
 - **Lower-48 (L-48) continues decline**
 - **Canadian supply increases**
 - **LNG limited**
- **Electric Utilities growth limited by high gas prices**
 - **Will face competition from coal at sustained \$4-5/mmbtu gas prices (AEO 2006 forecast shows inroads of coal and renewables)**
- **Household/Commercial growth in line with income growth**
- **Industrial growth in line with GNP growth**
- **Little or no penetration in Transportation markets**
- **Current natural gas prices falling from cyclical high**

U.S. Natural Gas Demand Outlook

- Higher natural gas prices have lowered forecasts of penetration in power markets
- Less than one-quarter of incremental growth in natural gas consumption expected to be for electricity generation (previous view was one-half)
 - Previously 75% of new electricity generation capacity expected to be gas plants – now 50%

U.S. Natural Gas Consumption (TCF per year)

Sector	2005	2030	Change
Residential & Commercial	7.9	9.6	+1.7
Industrial	7.0	8.8	+1.8
Electric Utilities	5.4	6.4	+1.0
Transportation & Other	1.8	2.0	+0.2
Total	22.2	26.9	+4.7

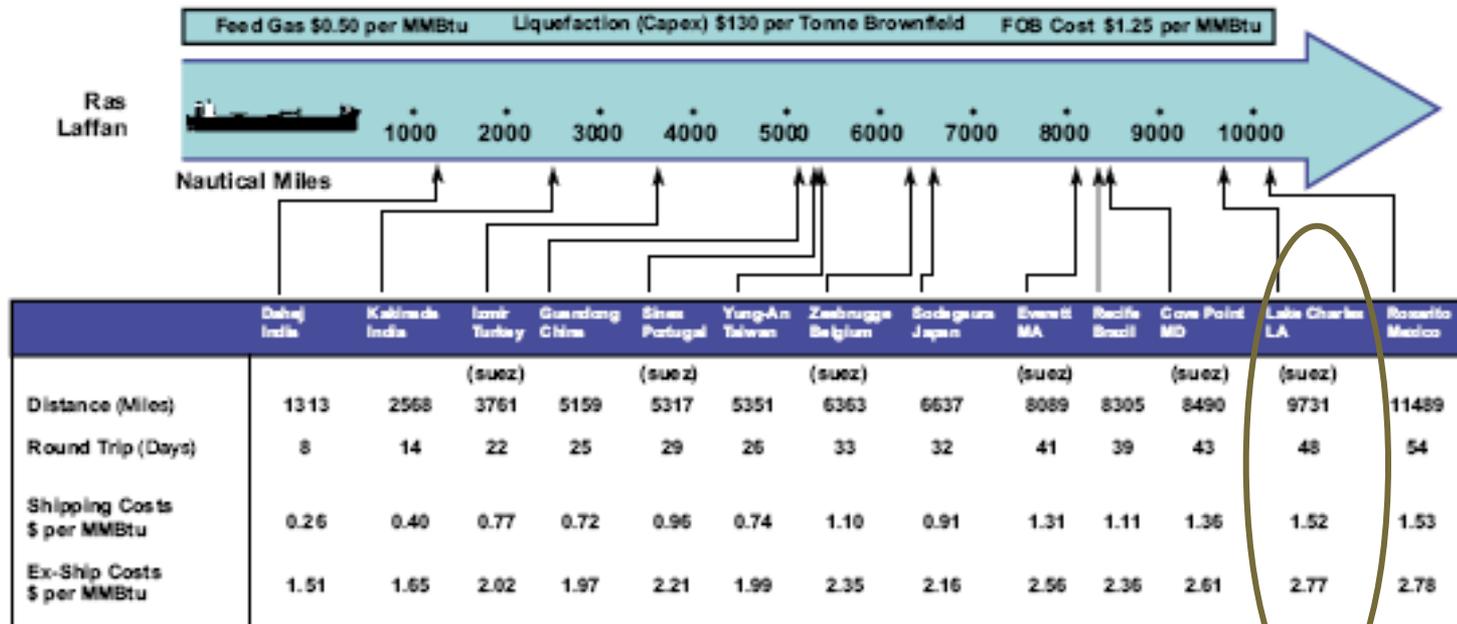
Source: US DOE EIA "Annual Energy Outlook 2006" (December 2005)

LNG

- **LNG needed in supply mix ~3-4 TCF/yr**
- **Can be delivered to market for \$3.00 - 3.50/mmbtu, but will be sold at prevailing domestic gas prices**
- **LNG costs from Qatar to the US: ~\$2.50/mmbtu**
 - **\$.80 liquefaction, \$1.25 shipping, \$0.40 regas, \$0.10 P/I system access**
- **Limited regasification facilities**
- **LNG is not marginal supply and will NOT set future gas prices. Set by needed higher cost L-48 supplies**

Sample LNG Costs

Qatar LNG Transportation and Delivery Costs



Source: Cambridge Energy Research Associates.

Alternative Energy Sources

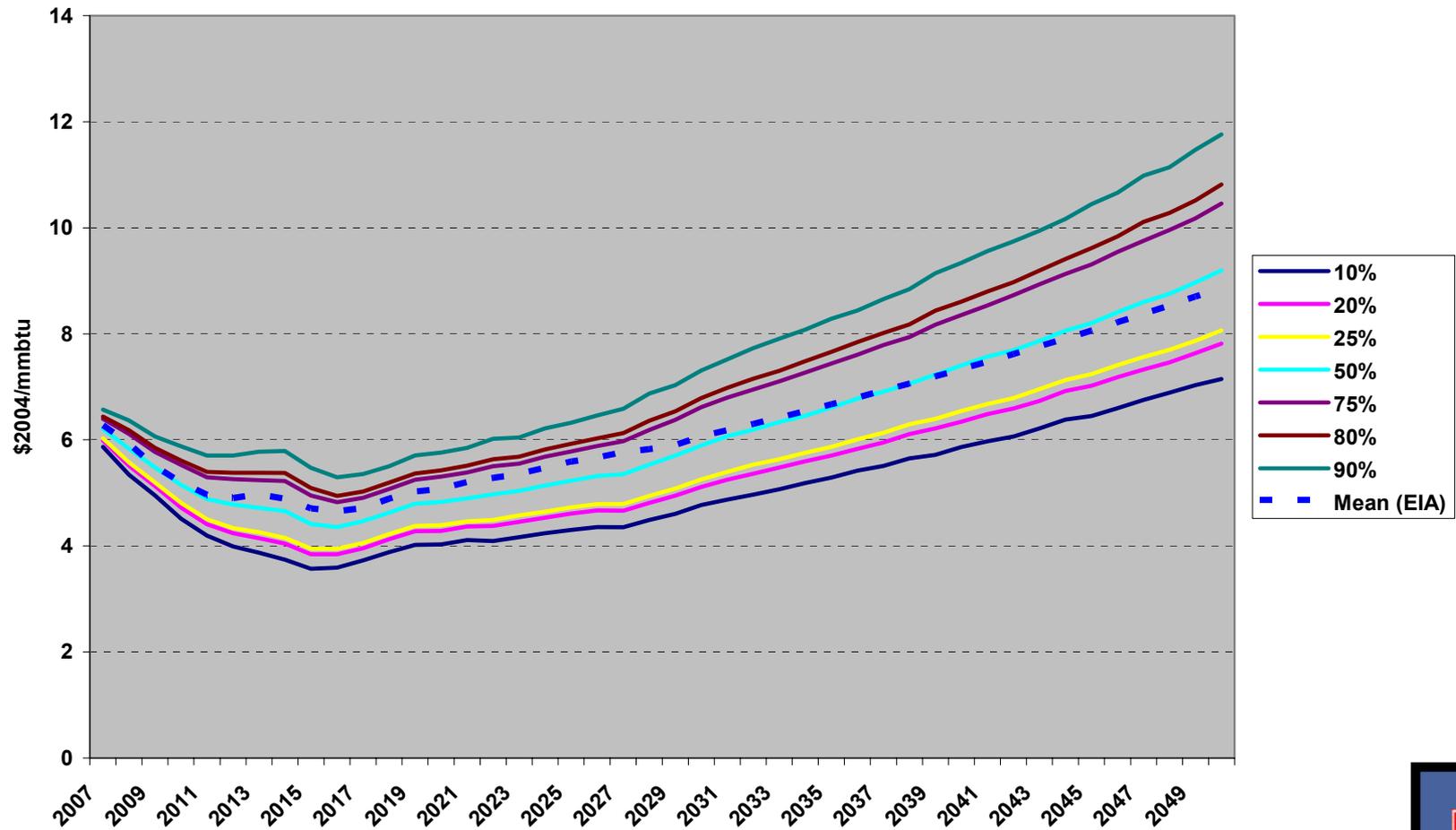
- **Natural gas faces threat from alternative power technologies when prices are high**
 - **CCGT (Combined-Cycle Gas Turbine) and thermal coal competitive at \$4+/mmbtu**
 - Coal has higher capital cost but low variable costs
 - **Clean Coal IGCC (Integrated Gasification Combined Cycle) power technology competitive at sustained \$4-5 /mmbtu gas price**

Public Natural Gas Price Forecasts

- **EIA's Annual Energy Outlook (AEO) – January 2006**
 - Forecast of average wellhead prices (through 2030, converted to Henry Hub)
 - Econ One developed probabilistic distribution with assistance of EIA
- **NYMEX Futures market**
 - Natural gas contract (tied to Henry Hub) traded since 1990
 - Offers implied price forecast out to 2011 – recently about \$5.25 (\$2005)

EIA (AEO 2006) Natural Gas Price Outlook

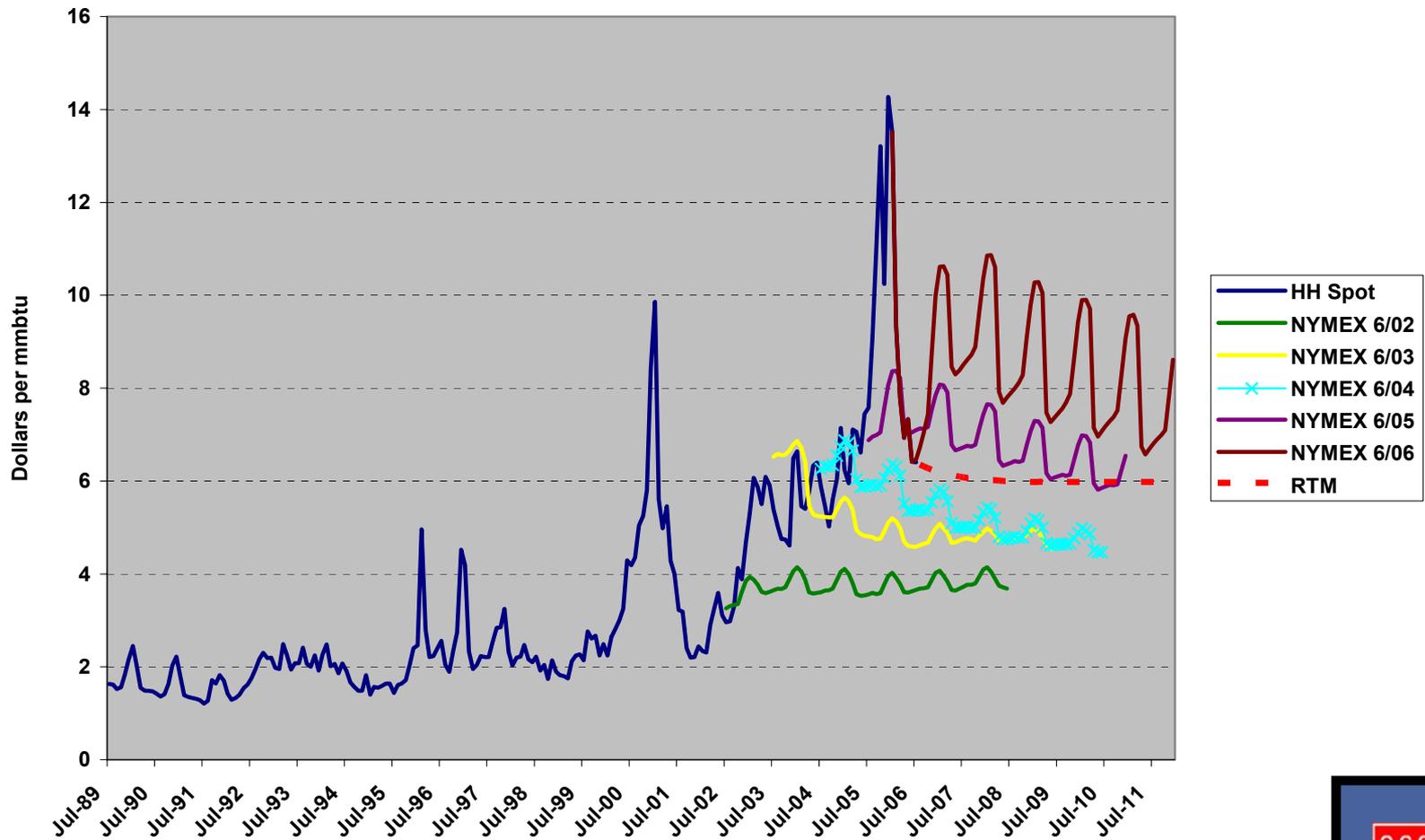
Henry Hub Gas Price Distribution
EIA AEO 2006



Forecasting Content of NYMEX Futures

- **Reflects market's expectation of future gas prices, but ...**
 - **Not highly accurate forecasts of gas prices**
 - **They do outperform model based forecasts, e.g. EIA's AEO**
 - **Currently, future "strip" is below EIA's forecast**

Henry Hub Natural Gas Prices with Selected NYMEX Natural Gas Futures



Notional Oil Company Price Views

Implied by Recent Acquisitions

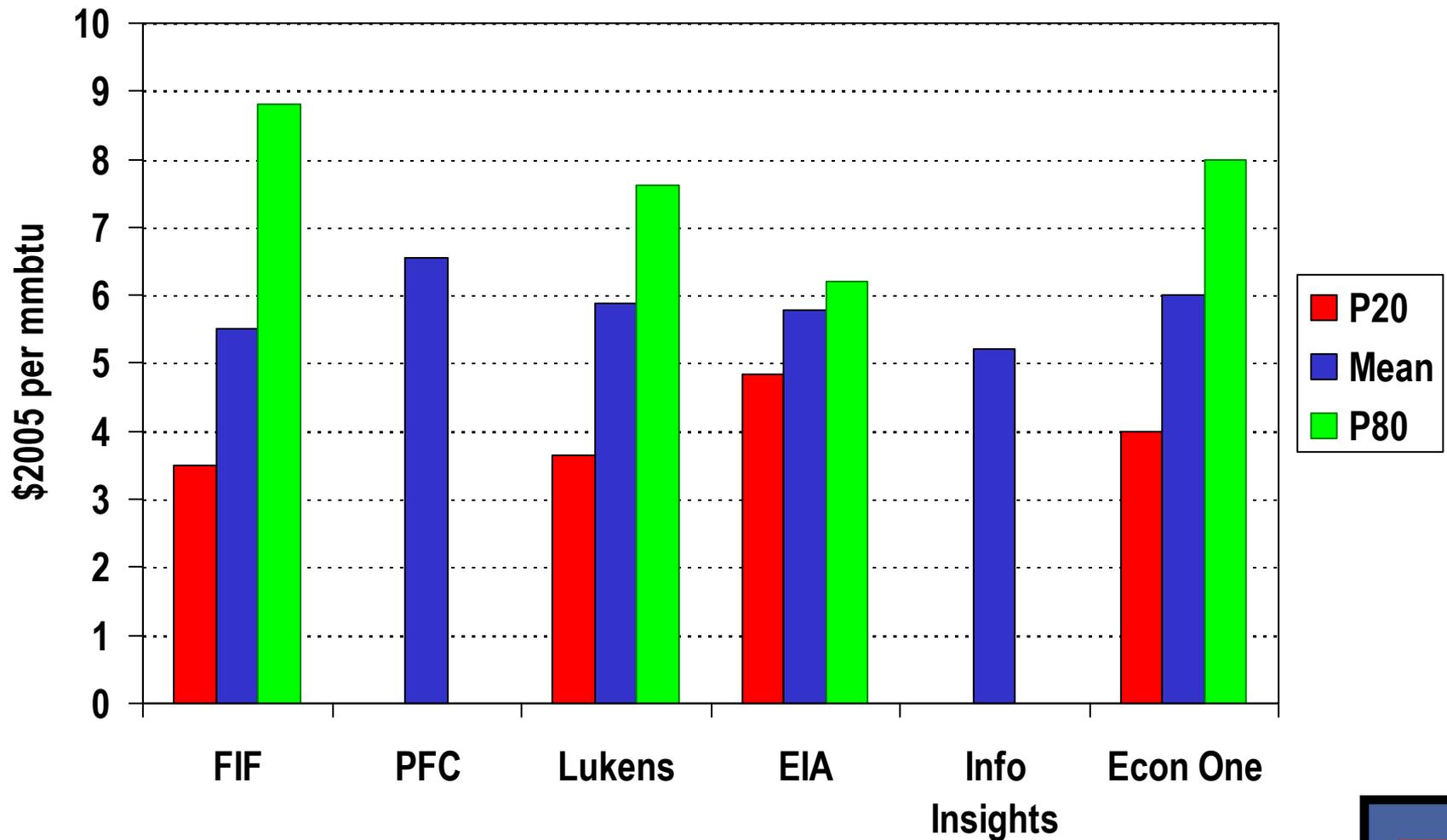
- Marubeni acquisition (2/23/06) of Pioneer GOM assets: ~ \$6.67
- Norsk Hydro acquisition (9/19/05) of Spinnaker Exploration: ~\$4-8
- Statoil acquisition (4/28/05) of EnCana's Deepwater GOM: ~ \$30, gas unknown

Oil Company Management Statements

- “What we really look at is prices of \$7 to \$8 ... and if they're north of that, that's all the better for the transaction. We tested also at about \$5 per mcf. We don't think you're going to see \$5mcf gas prices – quite likely we will see \$7 or \$8 and we pretty strongly believe we'll see double-digit gas prices as we go out over the next two or three years.”

Jim Mulva, Chairman, ConocoPhillips, *Petroleum News*, 12/8/05

Representative Natural Gas Price Forecasts



Note: Lukens and EIA 2006 forecasts converted to flat real on basis of present value equivalence

Expected Price, High and Low/ Stress Price Cases

“Best Practices”

- Requires evaluation against a range of price cases, including a “Low Price” or “Stress Price” case in addition to an Expected Price case
 - Gasline project should have at least a “modest” return in the low price case

“Expected” Prices

- Average of publicly available forecasts – about **\$6/mmbtu**

“Low/Stress” Price Test Case

- Rating agencies test projects against a sustained low price
 - Recently about **\$4/mmbtu**
- **\$3.50/mmbtu** has been used in recent times, but now seems too low

“High” Price Case

- **\$8/mmbtu**

Note: All prices stated in real \$2005

Producer View of Future Gas Prices

- **Producers have been “burned” by their forecasts of high gas prices in the past**
 - e.g. Gas Bubble of 1990s
- **Producers will test their projects against a price path that is below their “Most Likely” view**
 - They use the “official price view” as a speed limit to signal aggressiveness
 - By “high-grading,” they will have a suite of projects resilient to price risk
 - Their price view lags the current market price by as much as 5-7 years as prices rise, and by 2 years as prices fall. Current view might be: \$35 oil or \$6 gas)
- **Producers will also “stress” test their projects – at \$4.00/mmbtu**
- **The consequences of error are not symmetrical**
 - If a producer underestimates the future path of prices, they will not undertake high risk projects and their returns will skyrocket (the current situation relative to a few years ago)
 - If a producer overestimates the future path of prices, they will be scorned by Wall Street and investors (their position in the late 1990s)
 - They will “miss” opportunities, but these misses will not be fully “penalized” by the market

Note: All prices stated in real \$2005

Natural Gas Prices Used for Analysis

- **Upside (P80): \$8**
- **Best Estimate (mean): \$6**
- **Downside (P20)'' \$4**

Note: All prices stated in real \$2005