



# EIA FORECASTS AND OUR NATURAL GAS DILEMMA

**Frank Clemente Ph.D.**  
**Senior Professor of Social Science & Energy Policy**  
**Penn State University**  
[fac226@psu.edu](mailto:fac226@psu.edu)



## Six Basic Premises

- 1. The U.S. is continuing to build a vast infrastructure based on NG consumption**
- 2. Depletion is the relentless adversary of NG production increases**
- 3. Due to global competition, “ pricing for LNG is being forced to oil price parity” (UBS,2007).**



## **Six Basic Premises (con't)**

- 4. Our understanding of the NG situation has been dimmed by systematically optimistic forecasts.**
- 5. We are developing and implementing energy policies based on untested assumptions and questionable predictions.**
- 6. The die is cast. We face higher NG prices, increasing supply concerns and probable impacts on electric reliability.**



## **Systematic Bias: Since 2000, EIA has:**

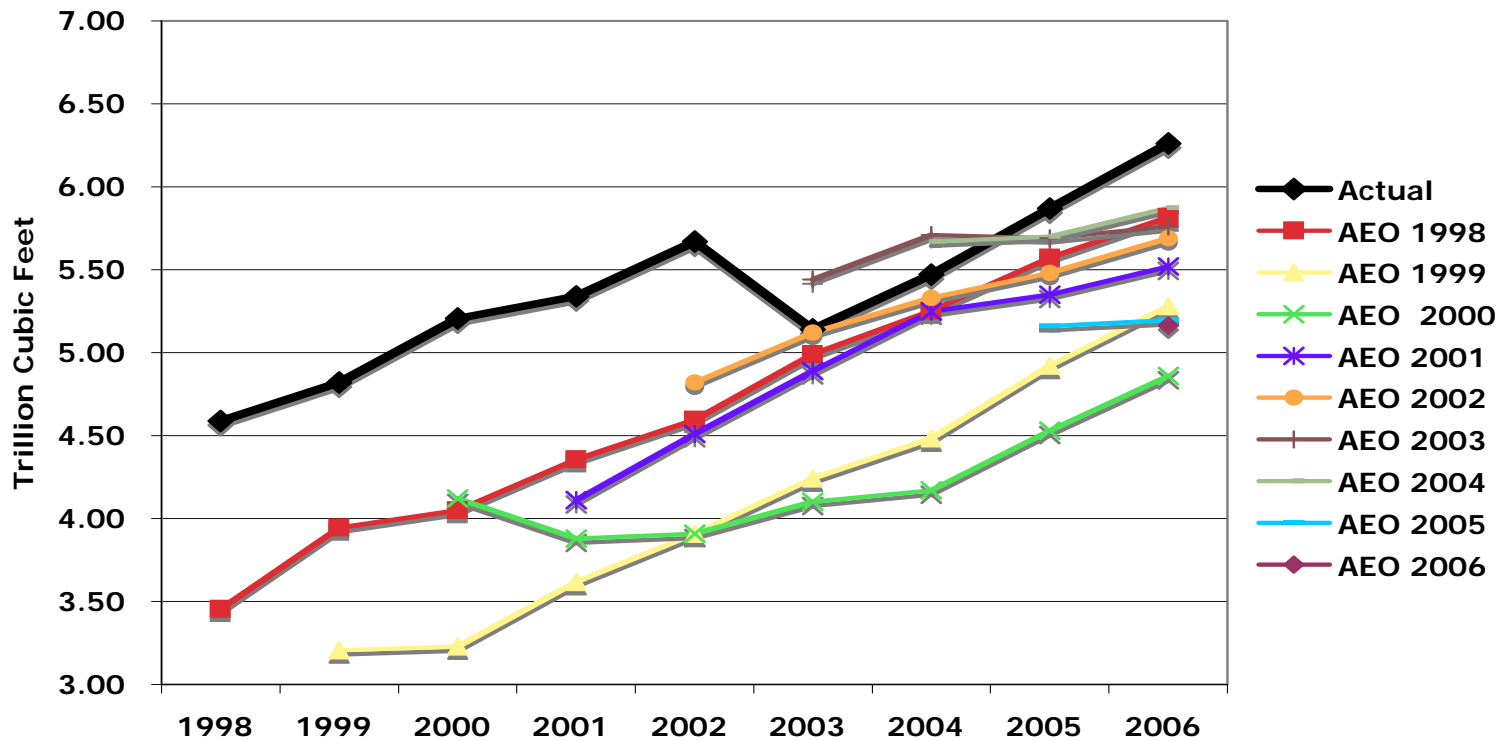
- **Overestimated NG production in 23 of 28 forecasts**
- **Underestimated NG used for generation in 27 of 28 forecasts**
- **Underestimated price of NG to generators in 27 of 28 forecasts**

See our article in *Public Utilities Fortnightly*, July, 2007



# How EIA Has Underestimated NG Consumption in Electric Sector

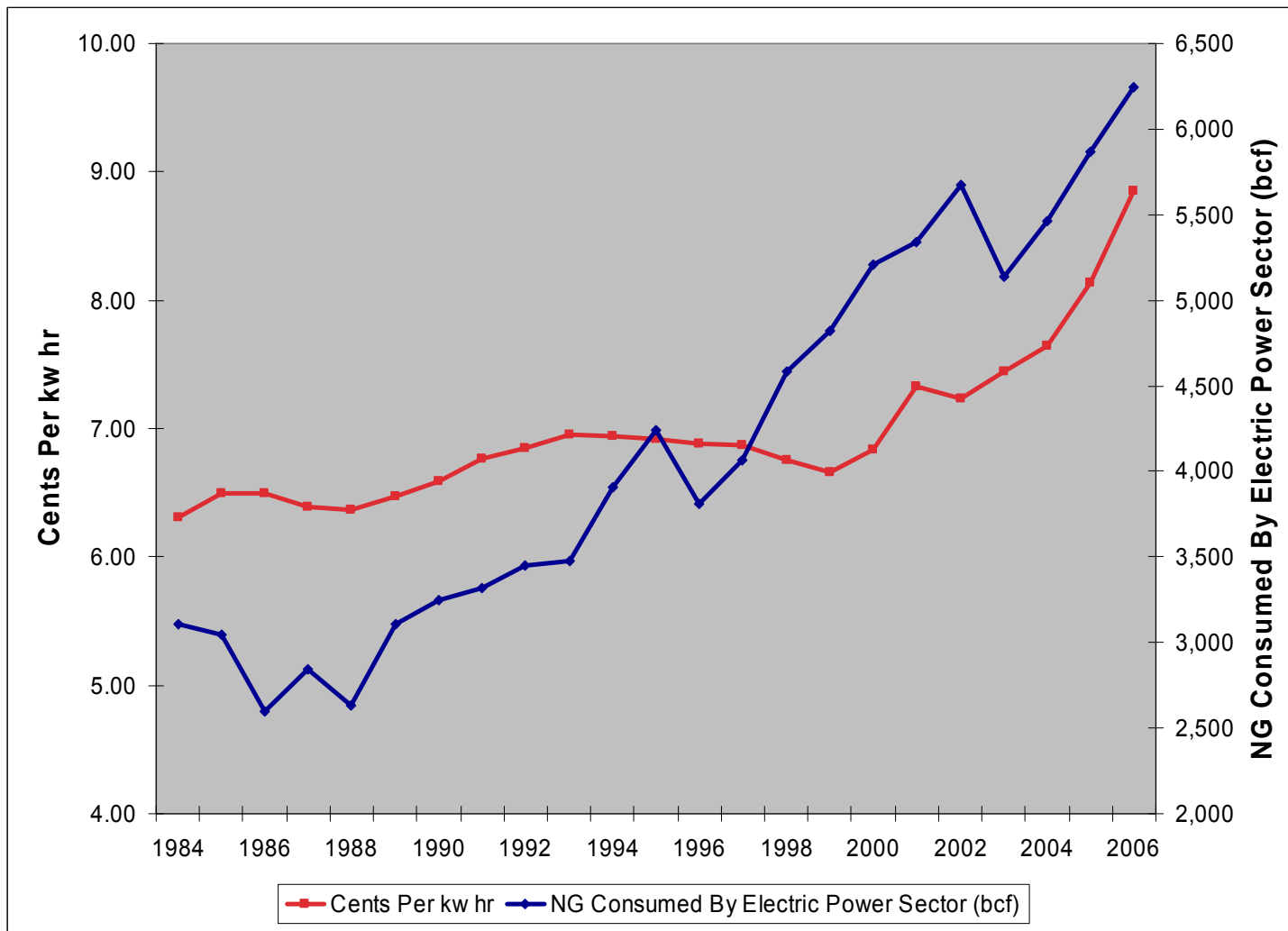
Actual and Forecast Natural Gas Consumption by Electric Generators



Source: Energy Information Administration



# More NG for Electricity has meant higher prices



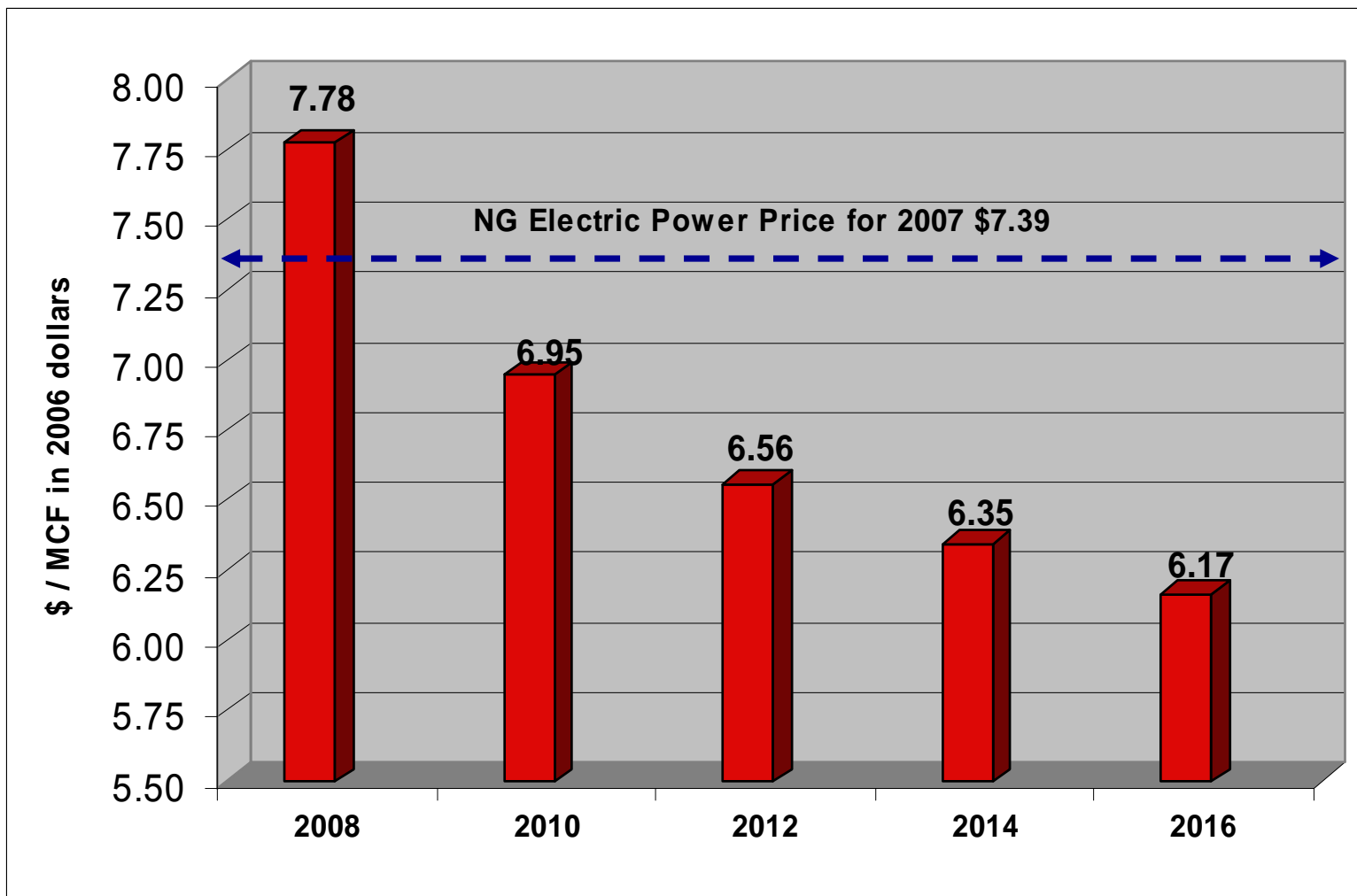


## Summary of EIA Modeling Problems

- Electric utility demand model underestimated
- Ad hoc formulation of price determination
  - Inconsistent with long-run equilibrium w/ oil
- Supply-side problems: Underestimates:
  - cost escalation—materials and drilling
  - depletion rates & reserve dynamics
- Over-estimating LNG imports & under-estimating the world price for LNG



# EIA Forecast of Electric Power Prices for NG Through 2016





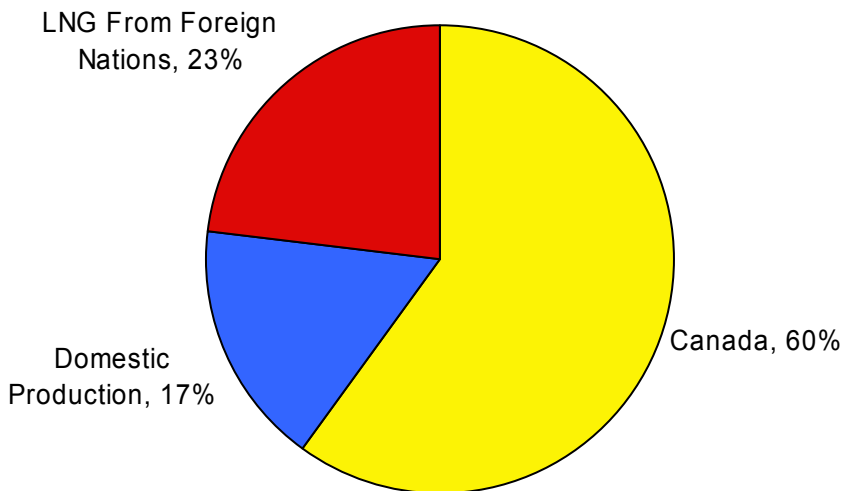
## **These Optimistic Projections have Consequences:**

- **EIA analysis of McCain-Lieberman bill concludes electric power price for NG will decline 9 % even if S.280 is enacted**
- **Opponents of coal utilize optimistic projections for NG/LNG as justification**
- **California Energy Commission has based its new energy plan on average of \$4.75 landed cost of LNG (page 63)**

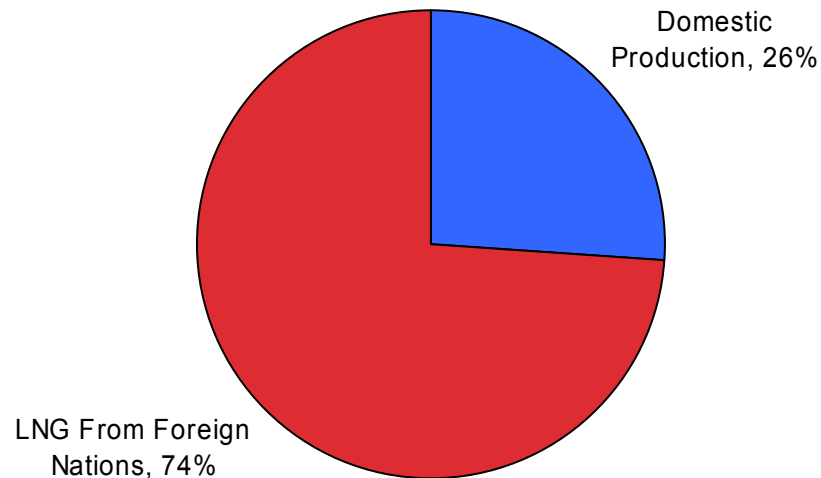


# The U.S. Bets On A Brave New World

**Where new NG supply came from 1993 - 2006**



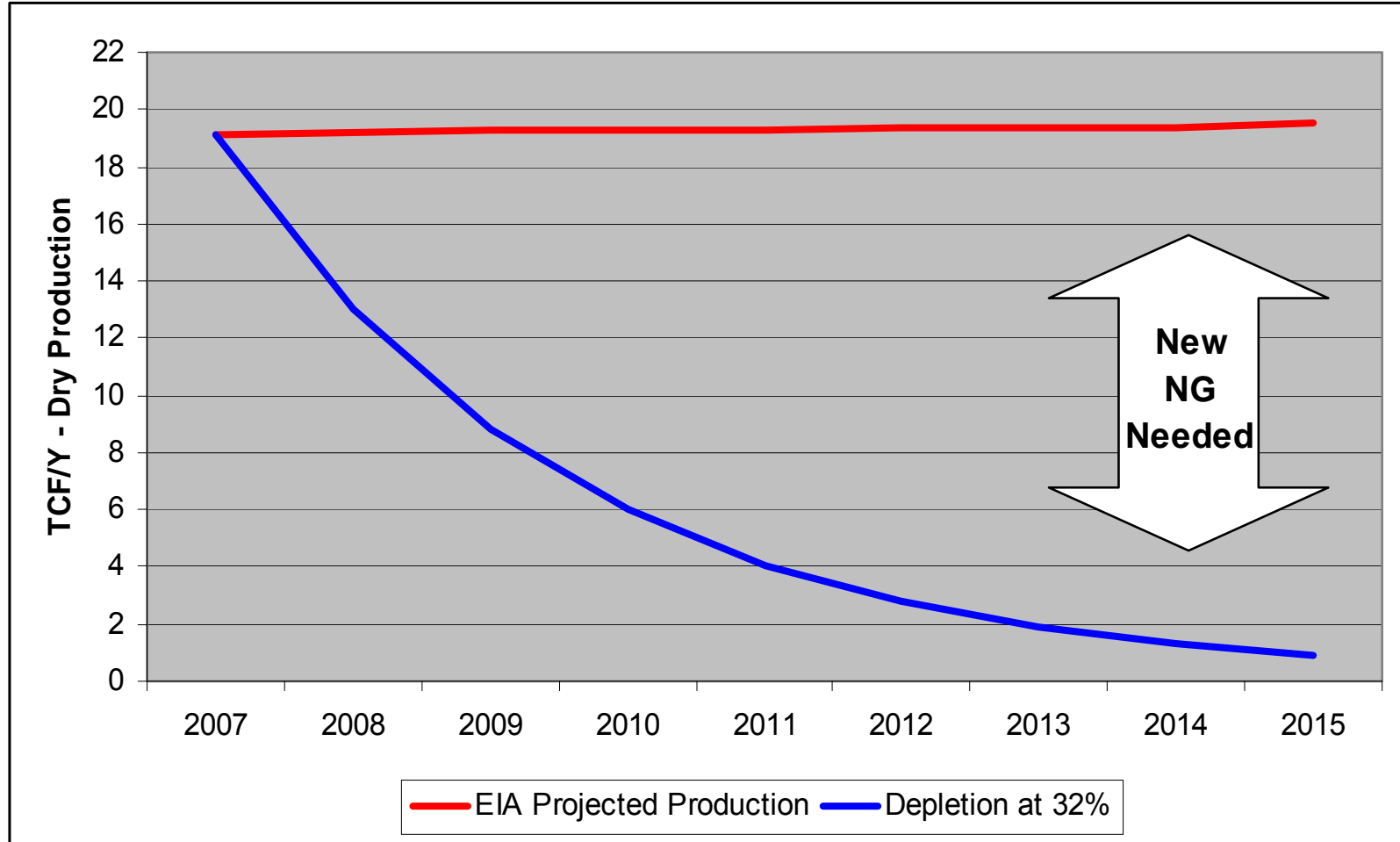
**Where new supply is projected to come from 2006-2019**



**“North America is setting itself to import LNG in large quantities” (IEA, 2007)**



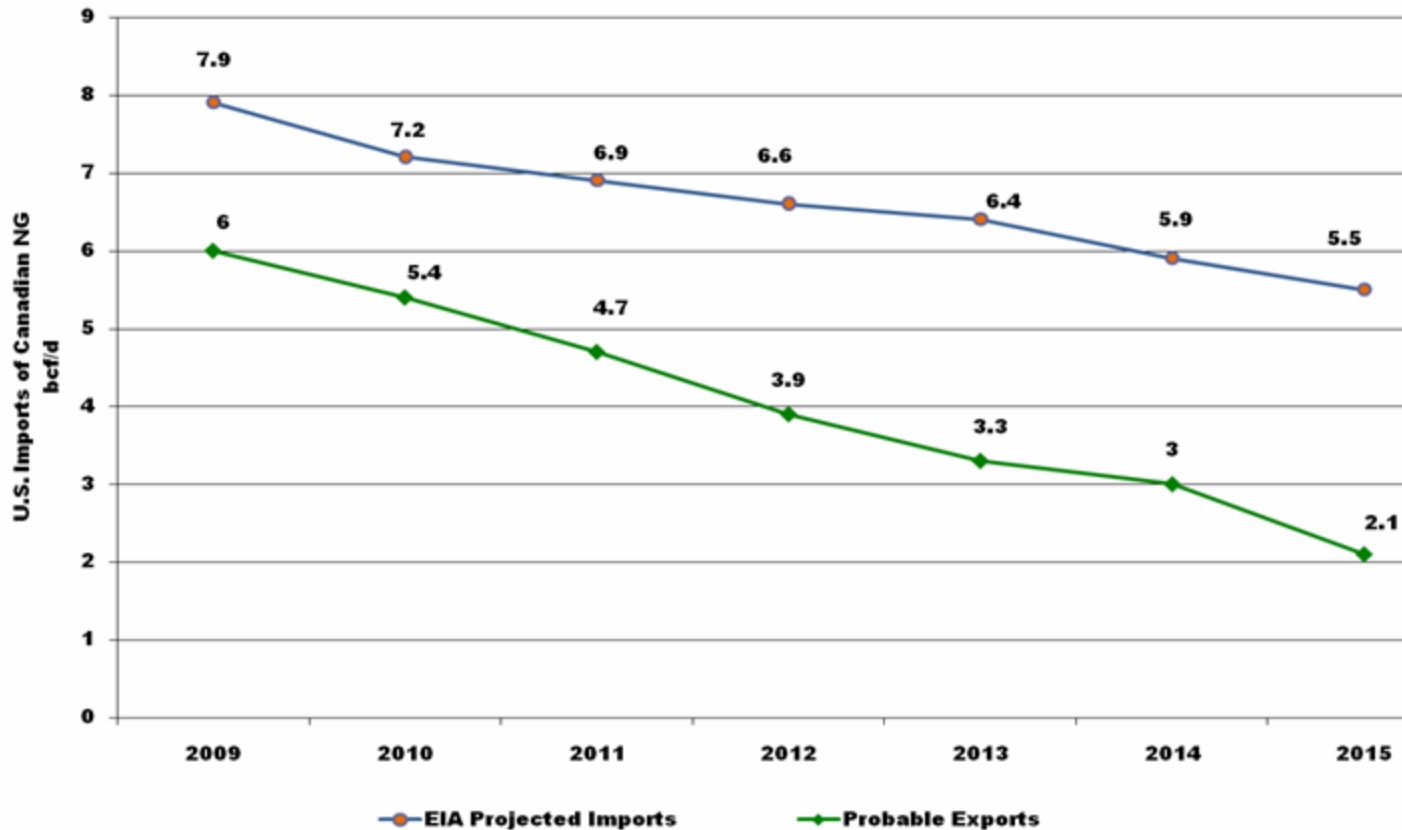
# Depletion Sets the Context: Wanted: A New Texas Every Year (6 TCF)



Sources: EIA; EOG; CIBC World Markets



## Probable Canadian Exports Compared to EIA Projections: 2009-2015

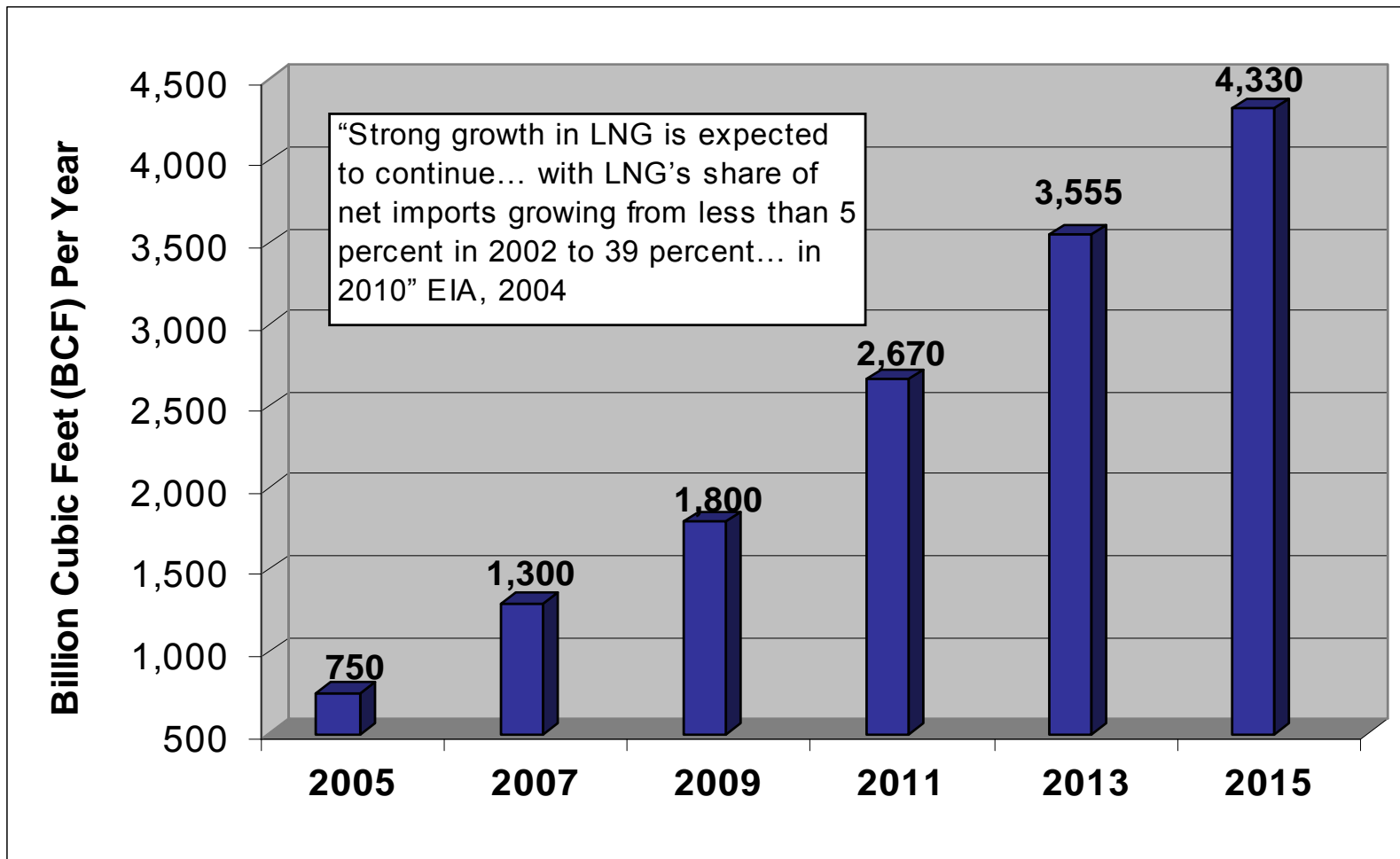




# LNG FORECASTS ARE NOW THE GREATEST PROBLEM



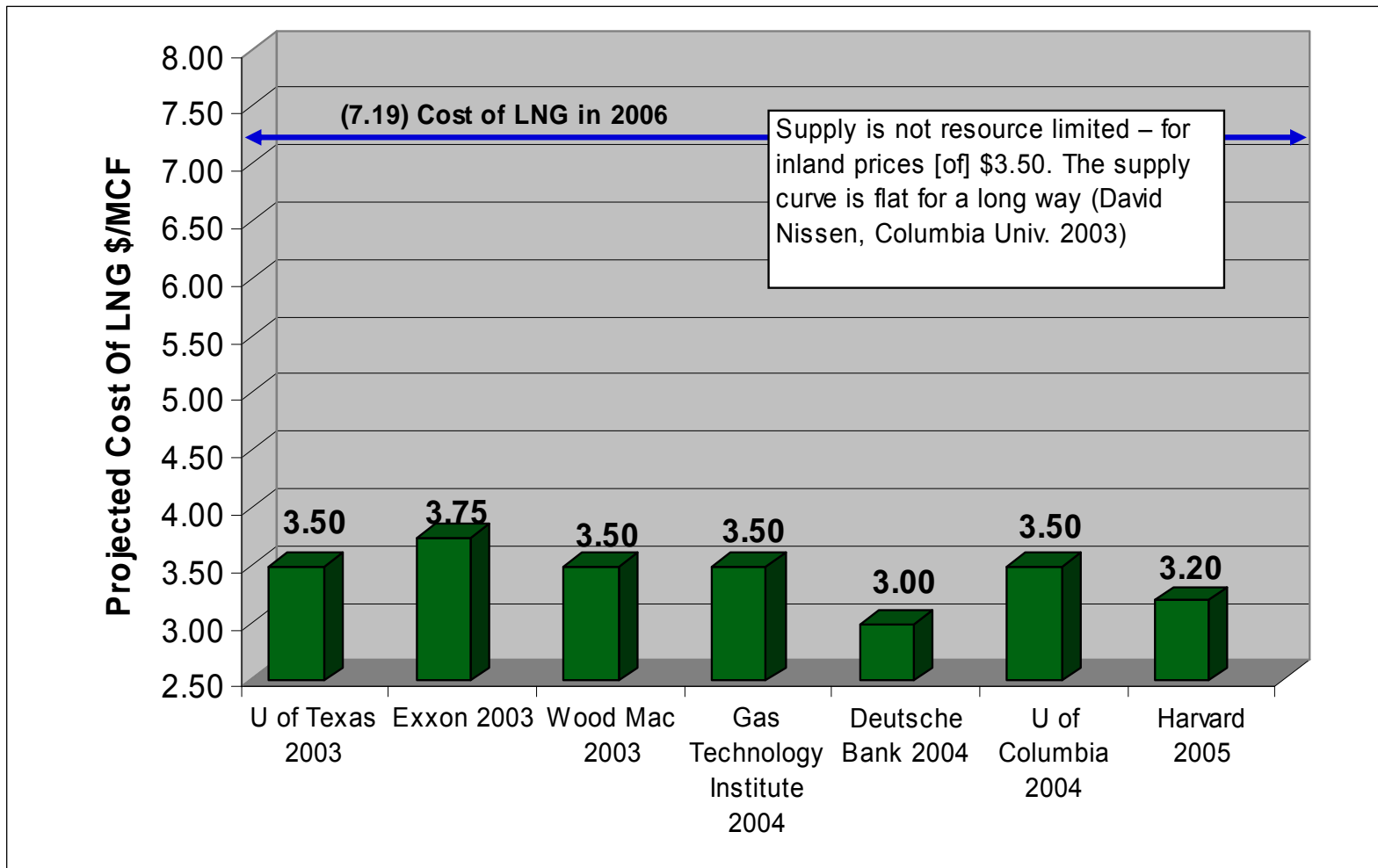
# EIA 2005 Outlook Set the Stage for Optimism



In 2005, EIA projected these increases through 2015.  
 \* Actual was only 631 BCF in 2005 and in 2007 was 774

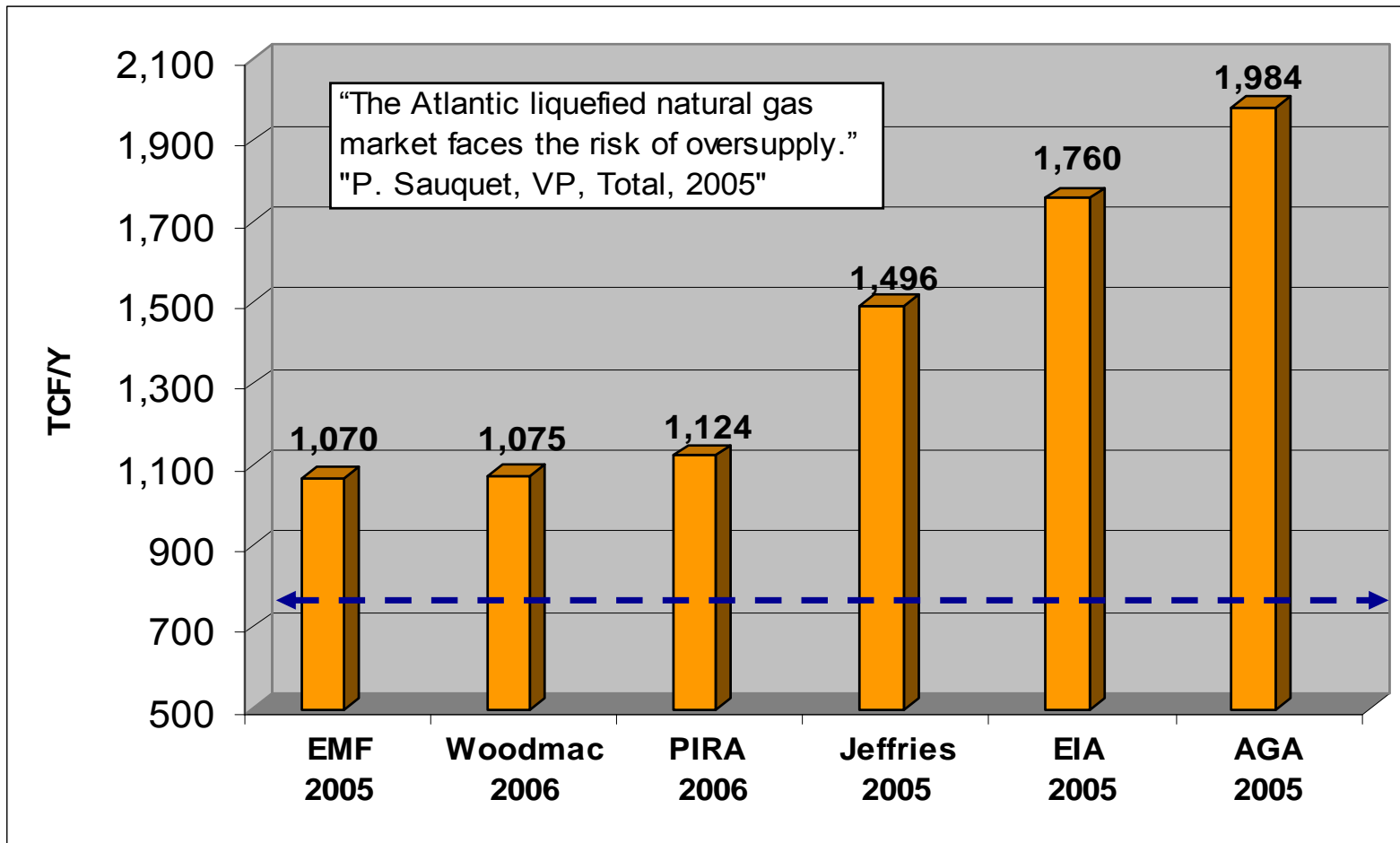


# LNG Prices Would be Low and Stable



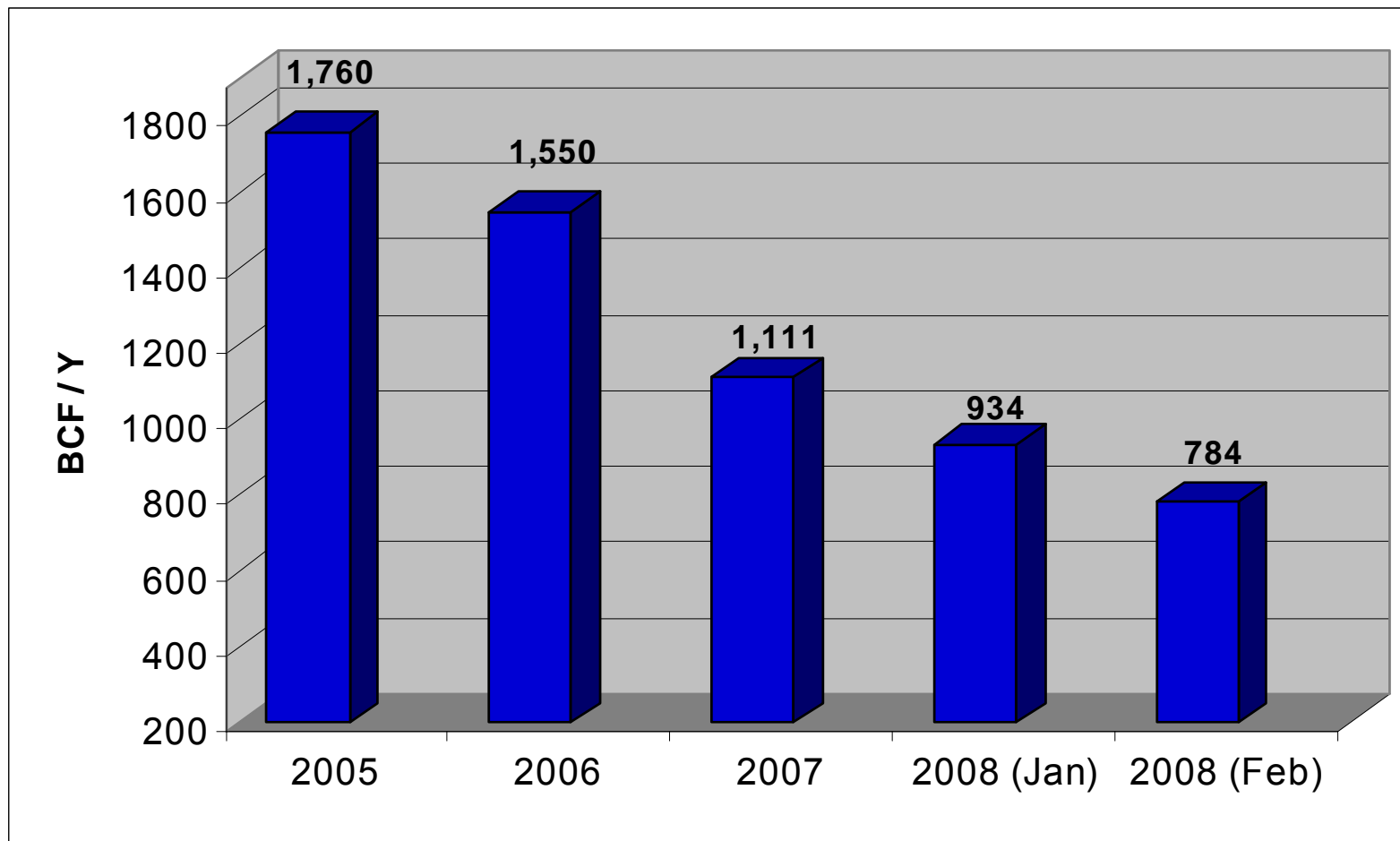


# Optimistic Supply Projections to 2008 From as Recently as Three Years Ago Never Materialized





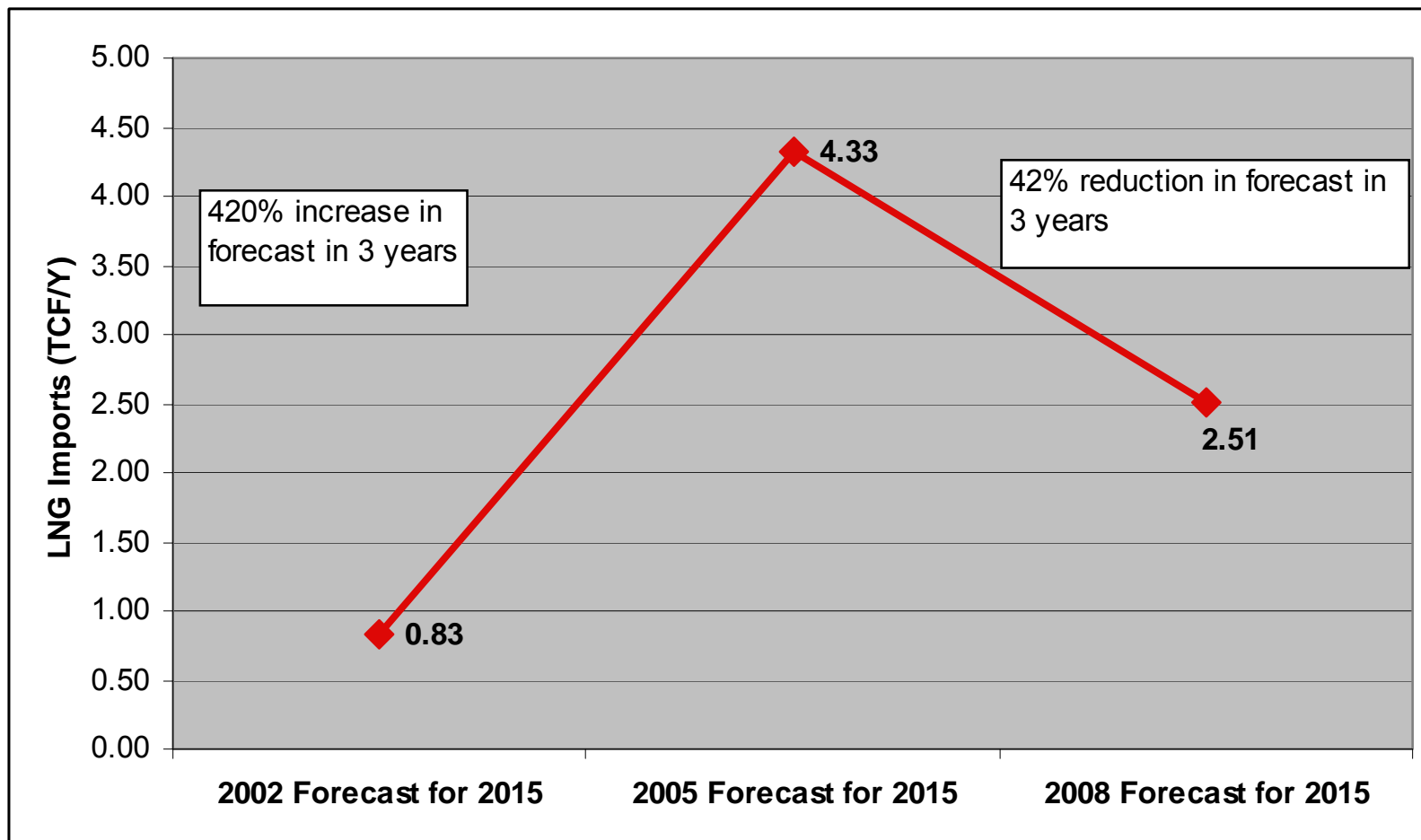
# Reality Sets In: The Steady Decline in EIA Forecasts of U.S. Imports of LNG in 2008



Year Forecast Made For 2008 Imports

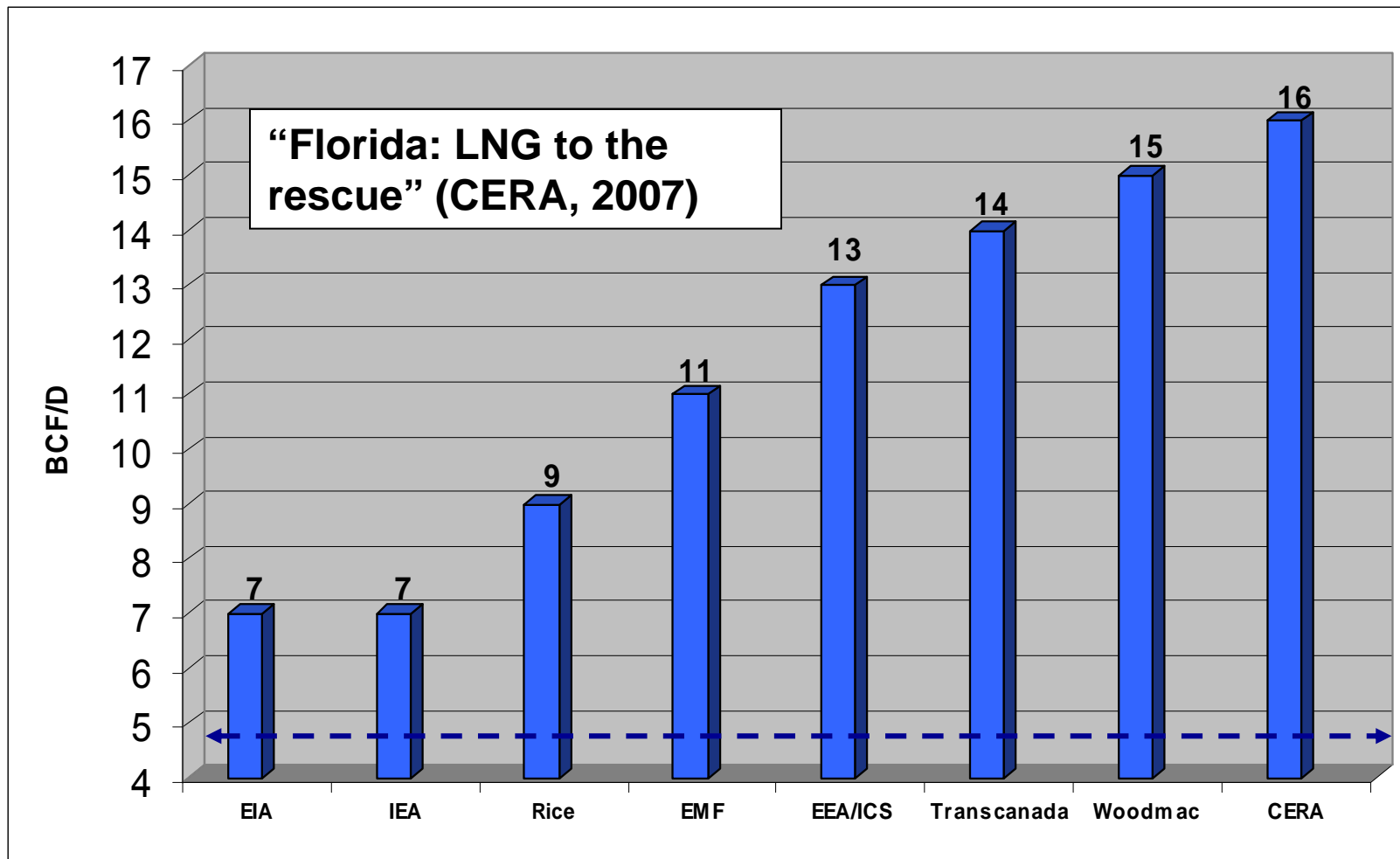


# The Sweep of Exuberance Fades: EIA Forecasted Imports for 2015



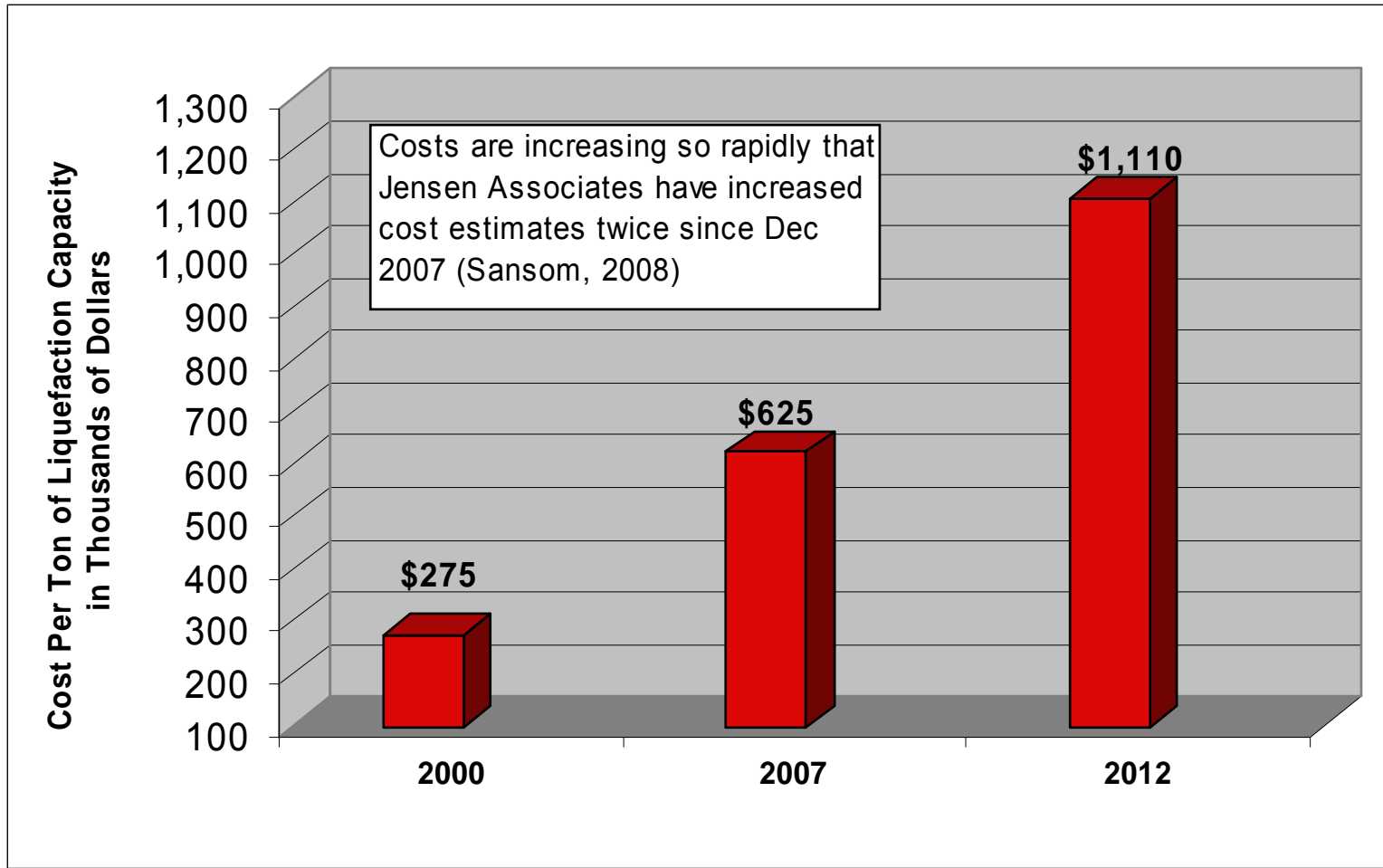


# Optimism Still Dominates: Projected North American LNG Imports in 2015





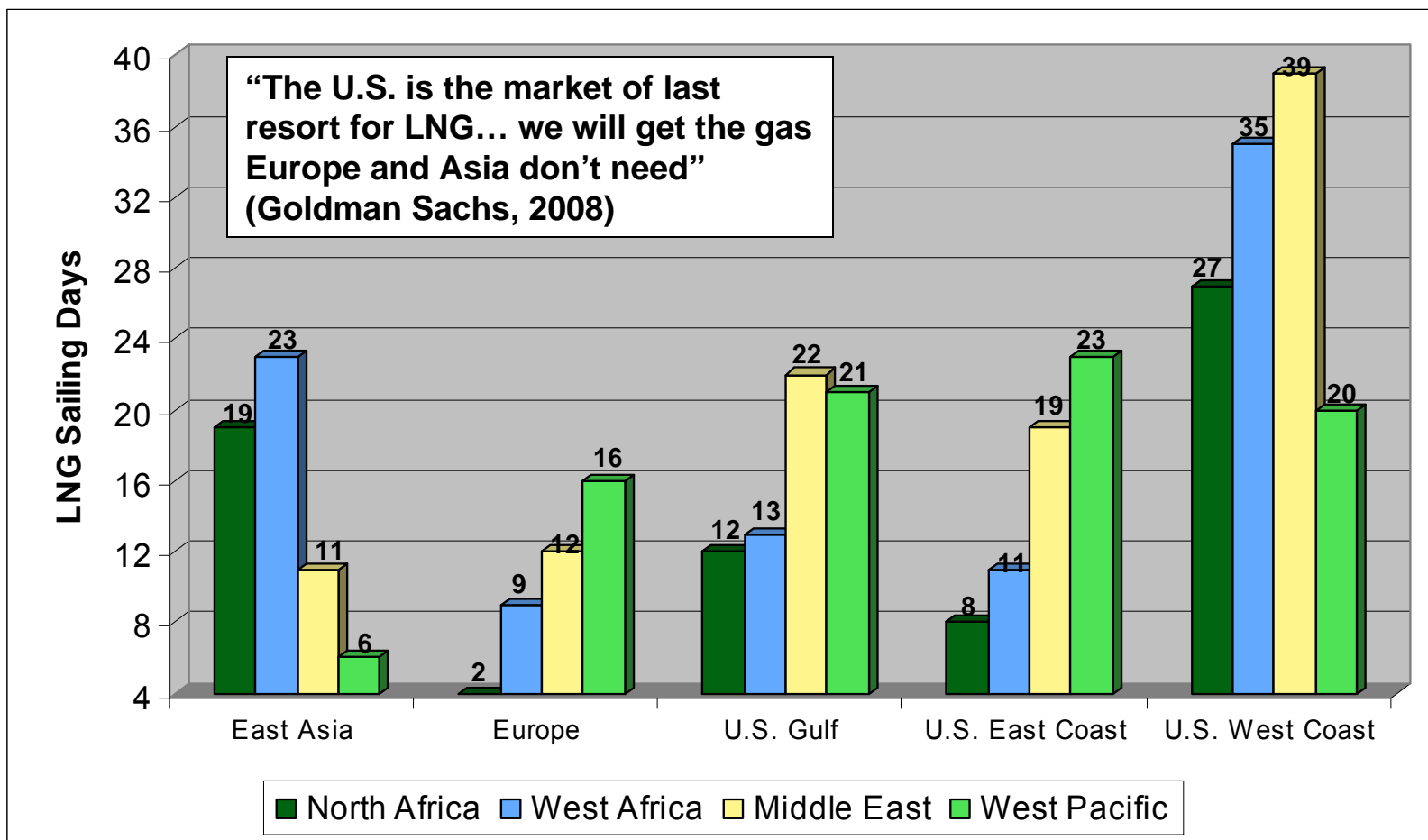
# Construction Costs of Liquefaction Plants are Rising Dramatically



Source: Jensen Associates, December 2007. Estimates by James Jensen



# We Will Look To Distant Sources and Pay a Premium

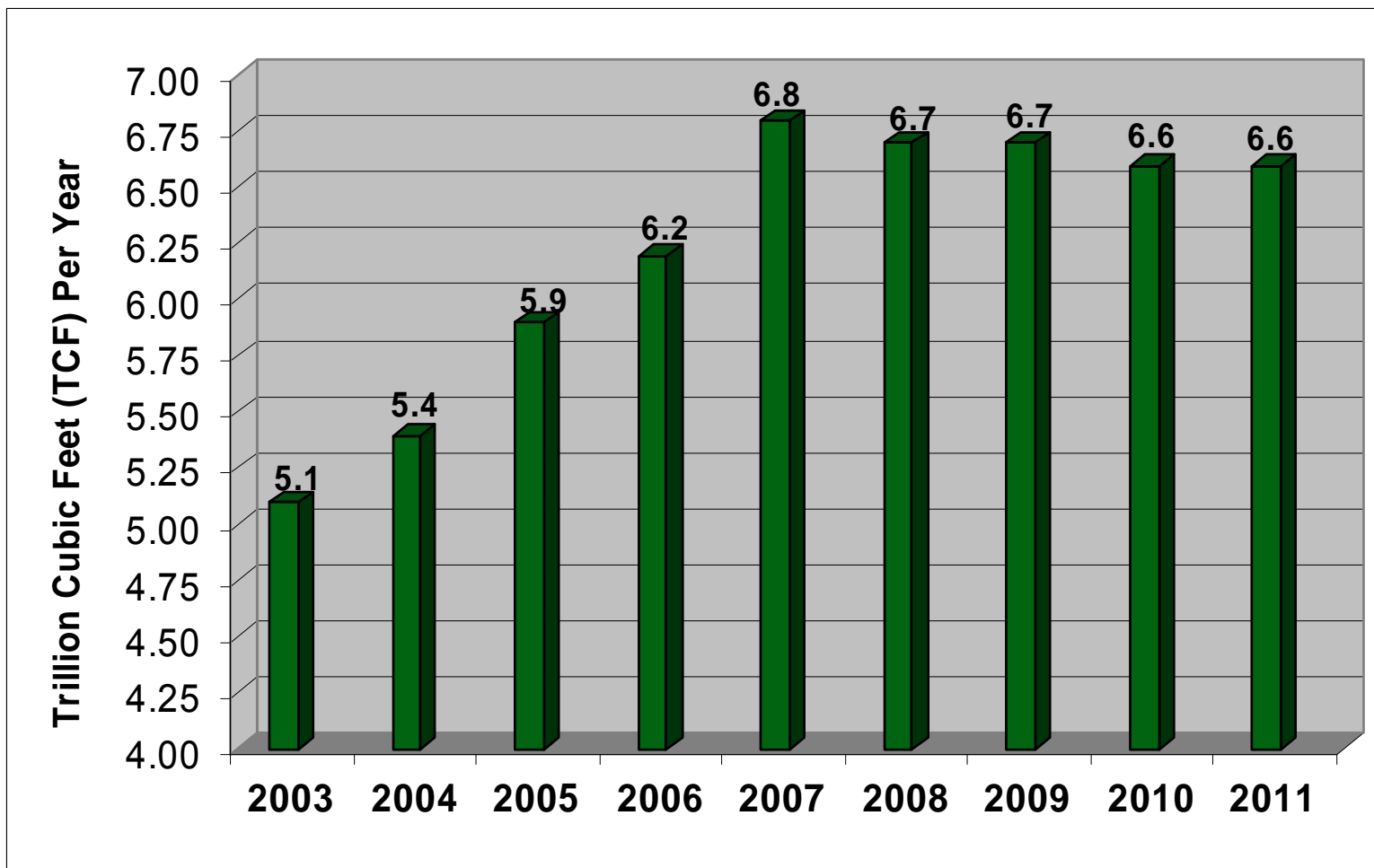




# **EIA IS STILL MISSING THE BOAT ON ELECTRIC POWER**

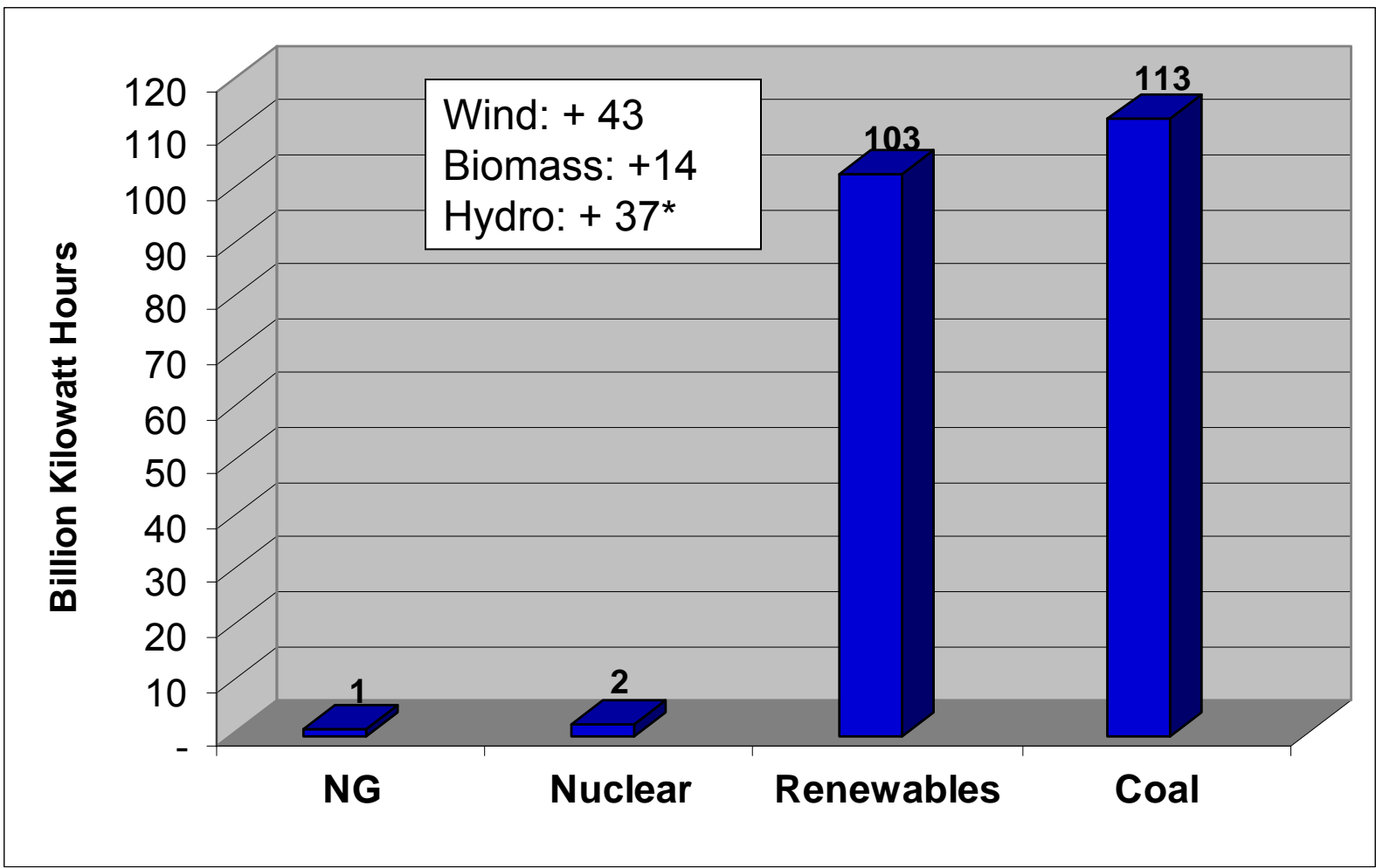


## The Drumbeat of NG Consumption For Electric Power Generation is Projected by to Stall





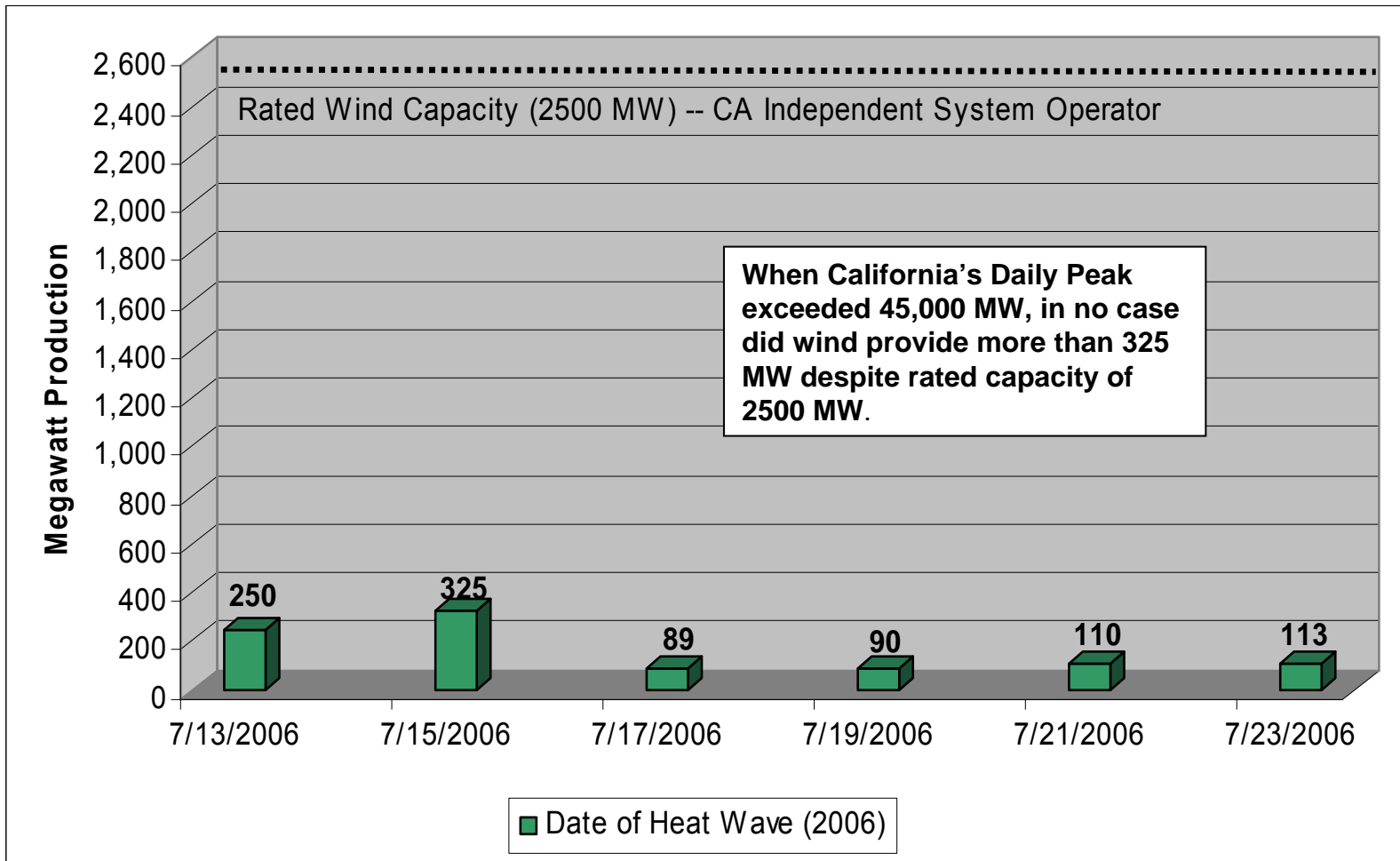
# Sources of Additional Generation 2008-2012: EIA Forecast



\* 2007 was a low hydro year



# Wind Generation's Performance During 2006 California Heat Wave



\* Adapted and estimated from Dixon, U.S. DOE (2006)



# Lest We Forget : US Coal Reserves vs. Oil and NG Reserves

