



# Energy Action Plan Natural Gas Update

California Public Utilities Commission  
California Energy Commission  
Randy Roesser  
December 8, 2008

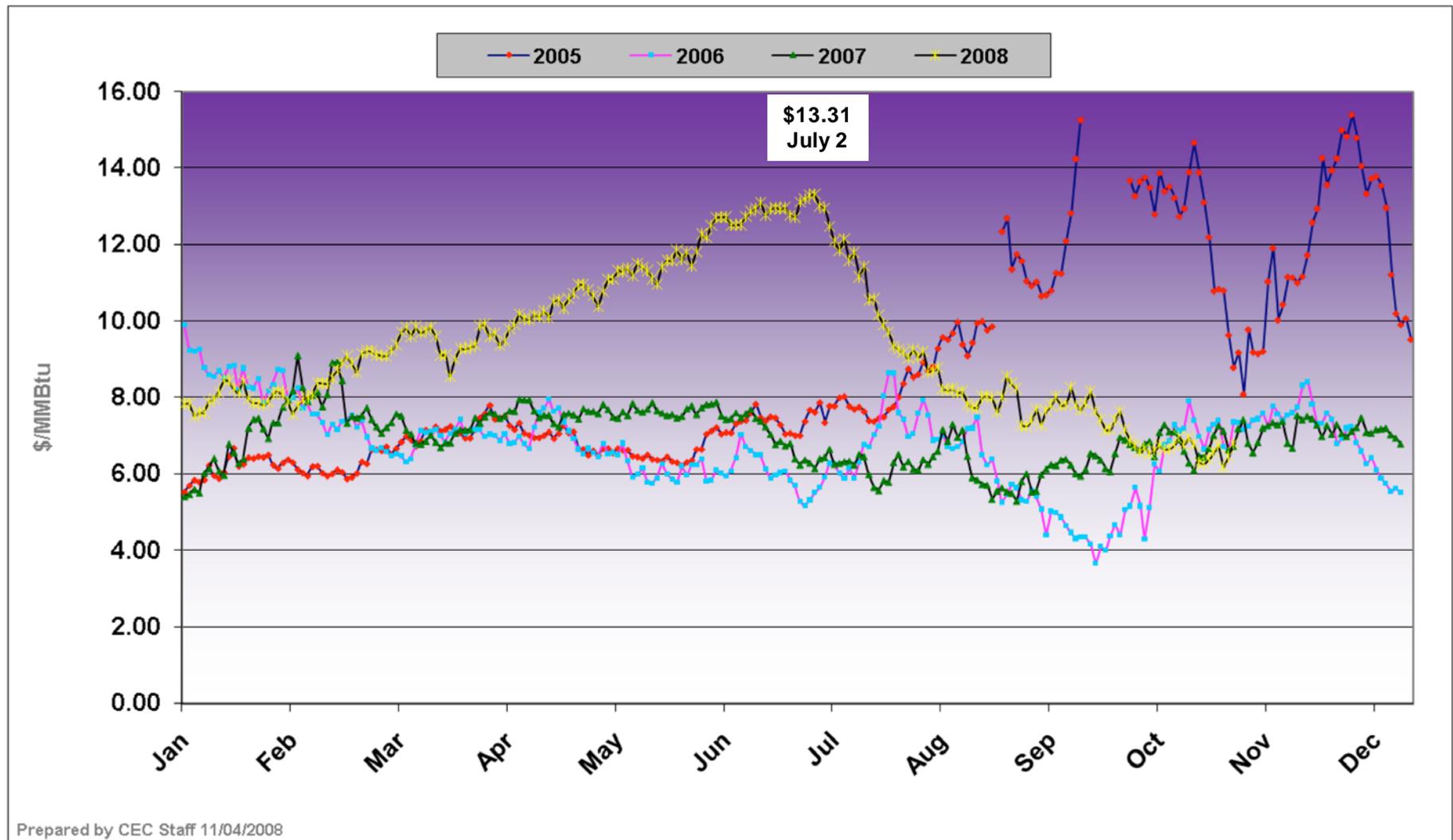


# NATURAL GAS

# PRICES



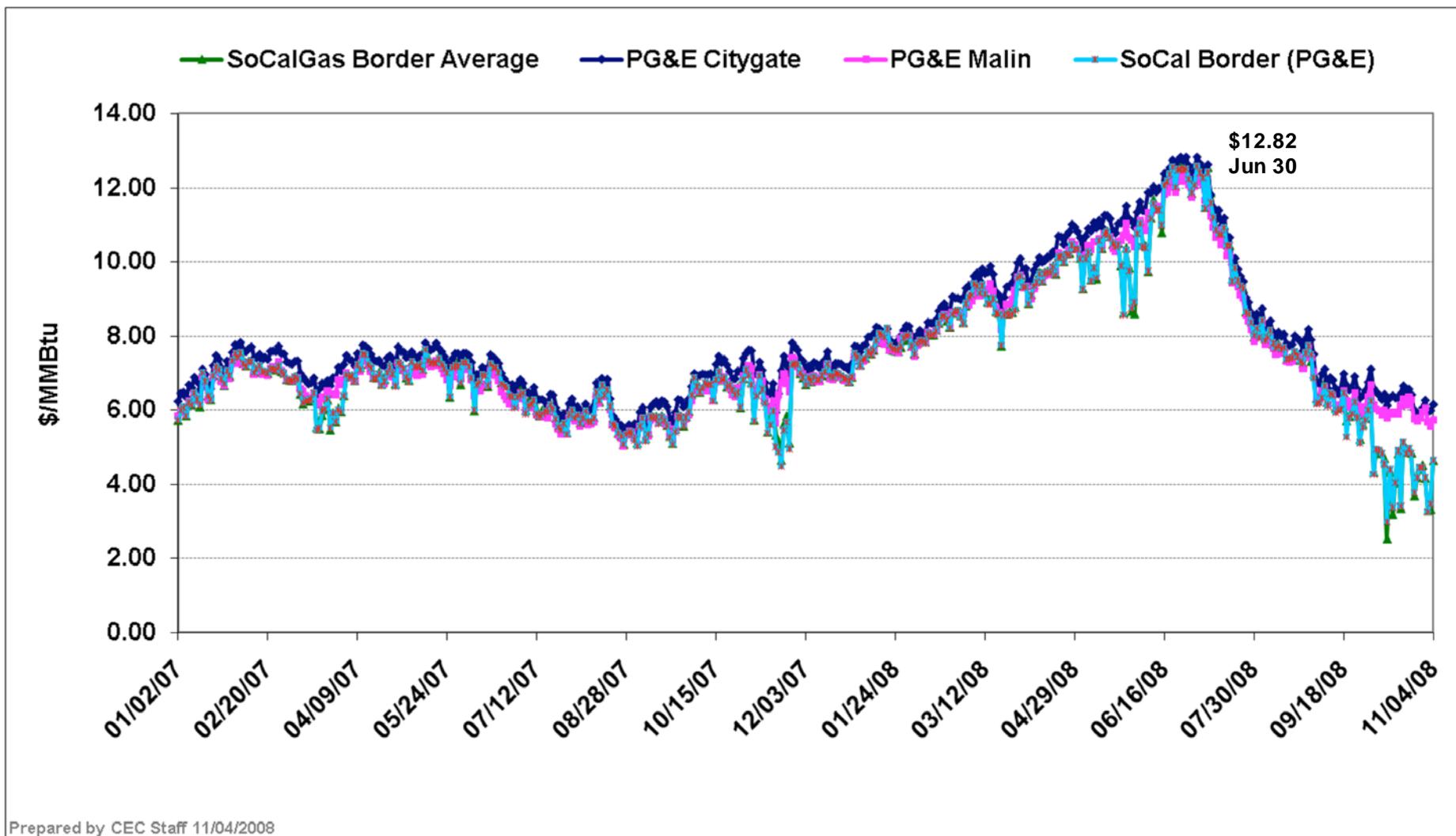
# Henry Hub Daily Spot Prices



Prepared by CEC Staff 11/04/2008



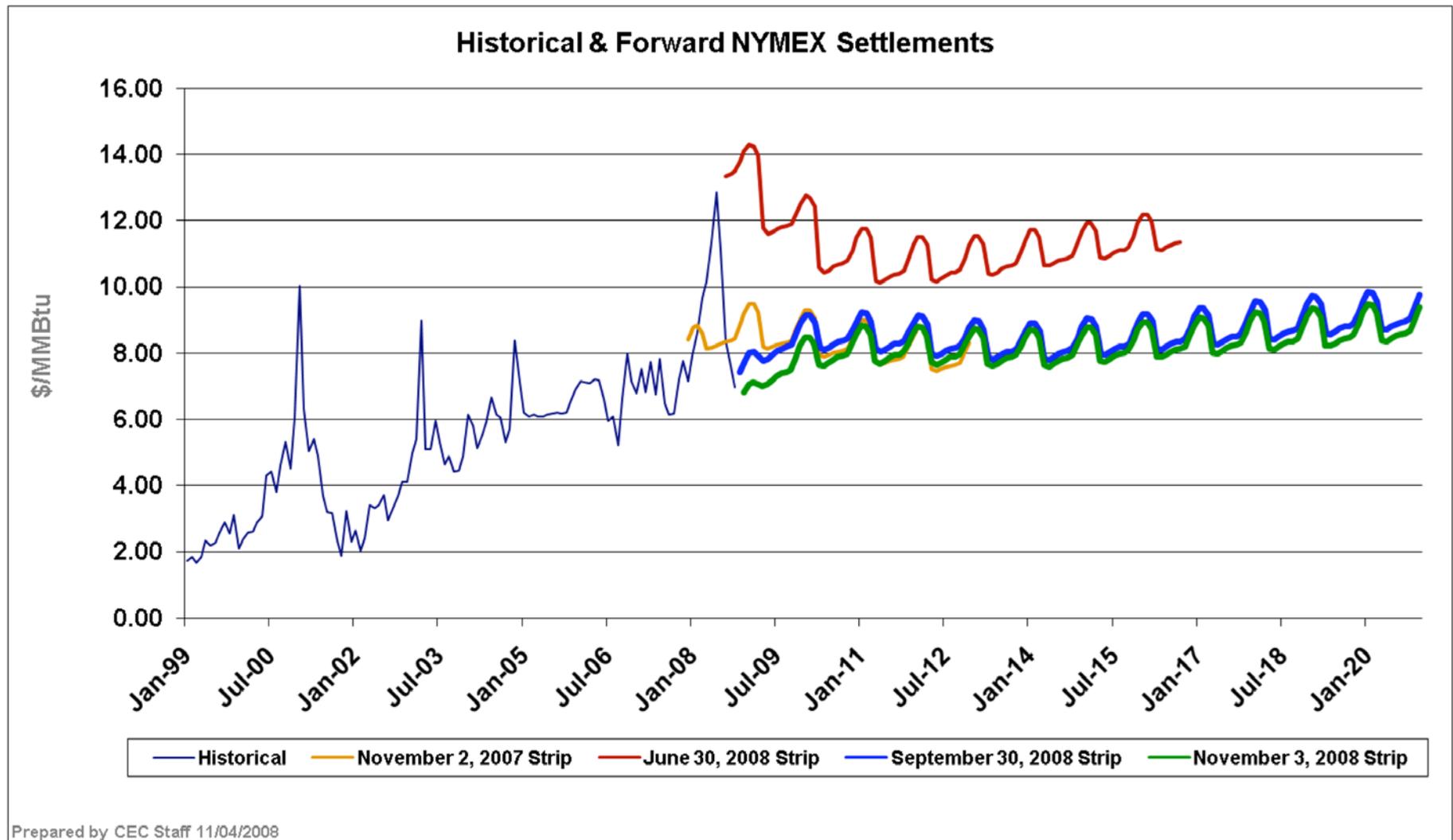
# CA Natural Gas Spot Prices



Prepared by CEC Staff 11/04/2008

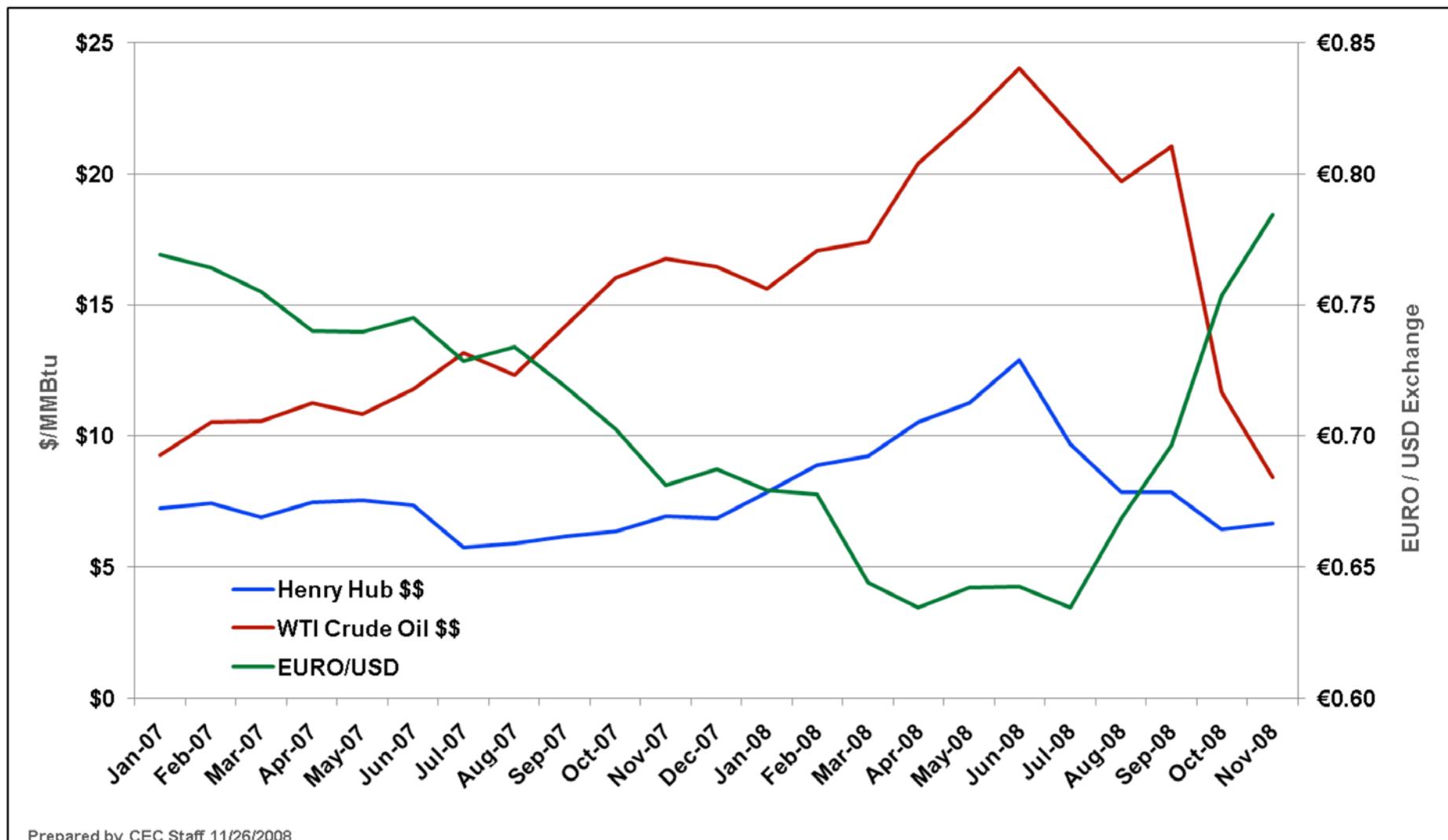


# U.S. Natural Gas Futures Prices





# NG-Oil Spot Prices EURO / USD



Prepared by CEC Staff 11/26/2008

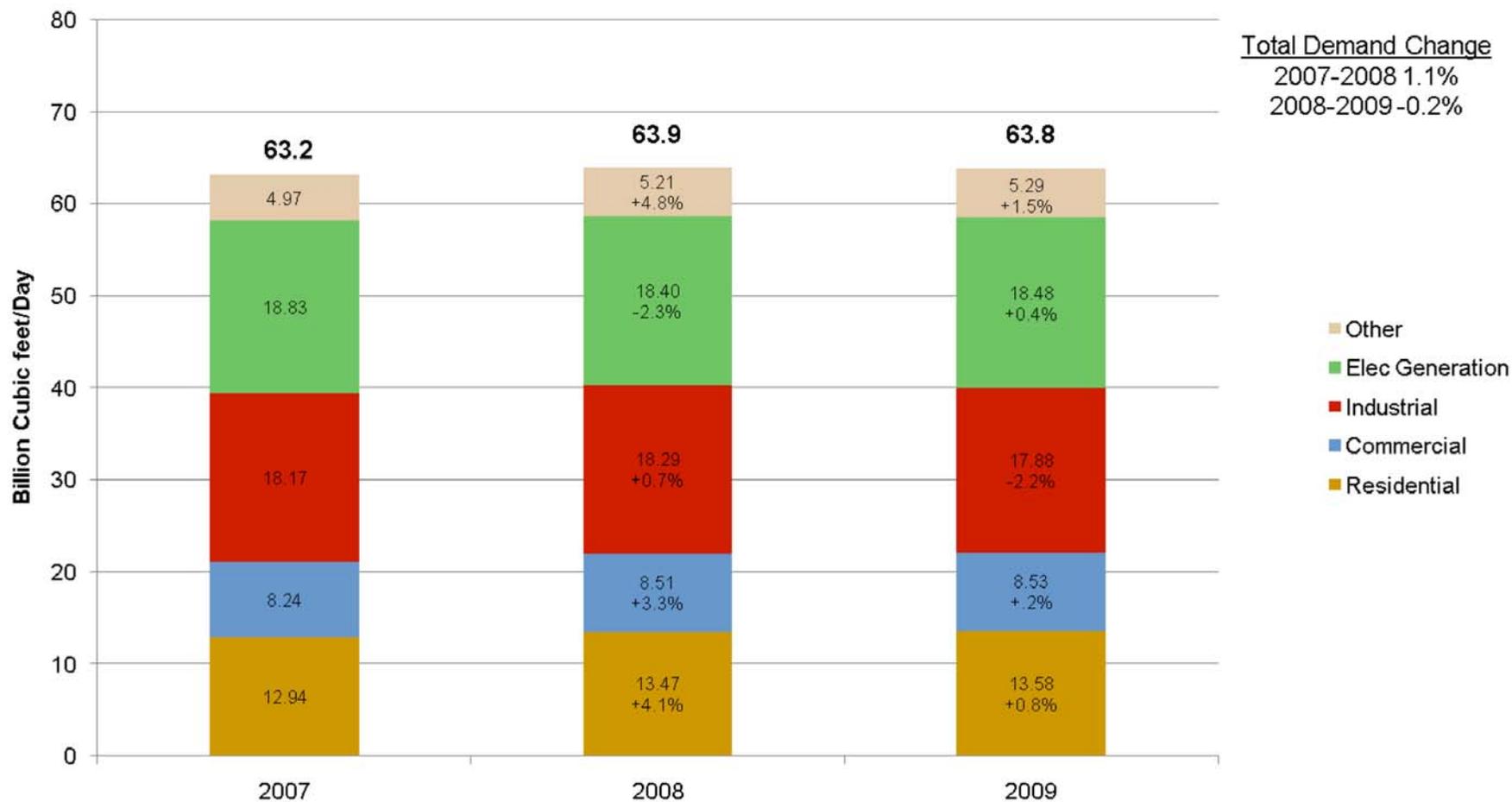


# NATURAL GAS

# DEMAND



# U.S. Natural Gas Demand



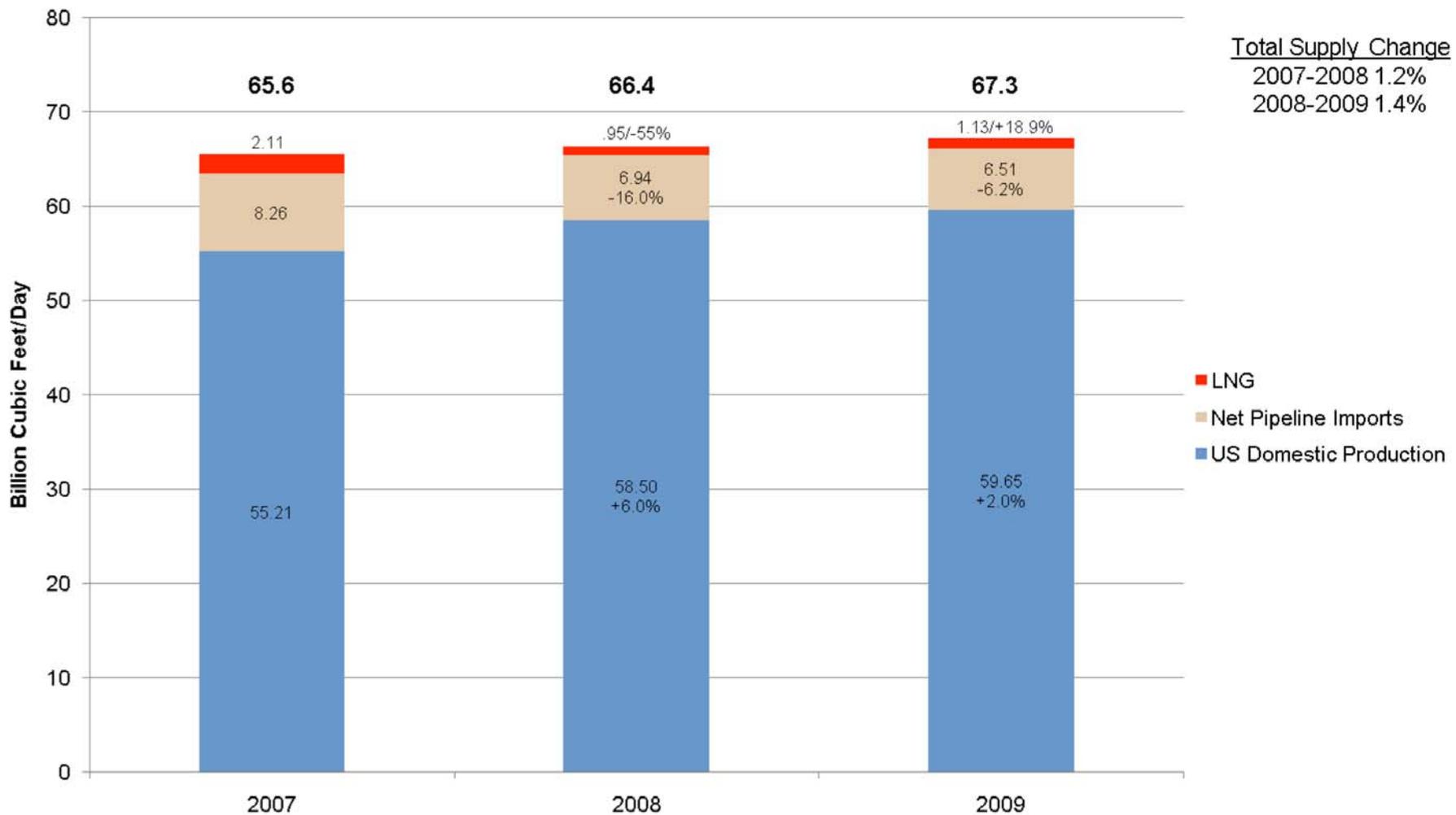


# NATURAL GAS

# SUPPLY

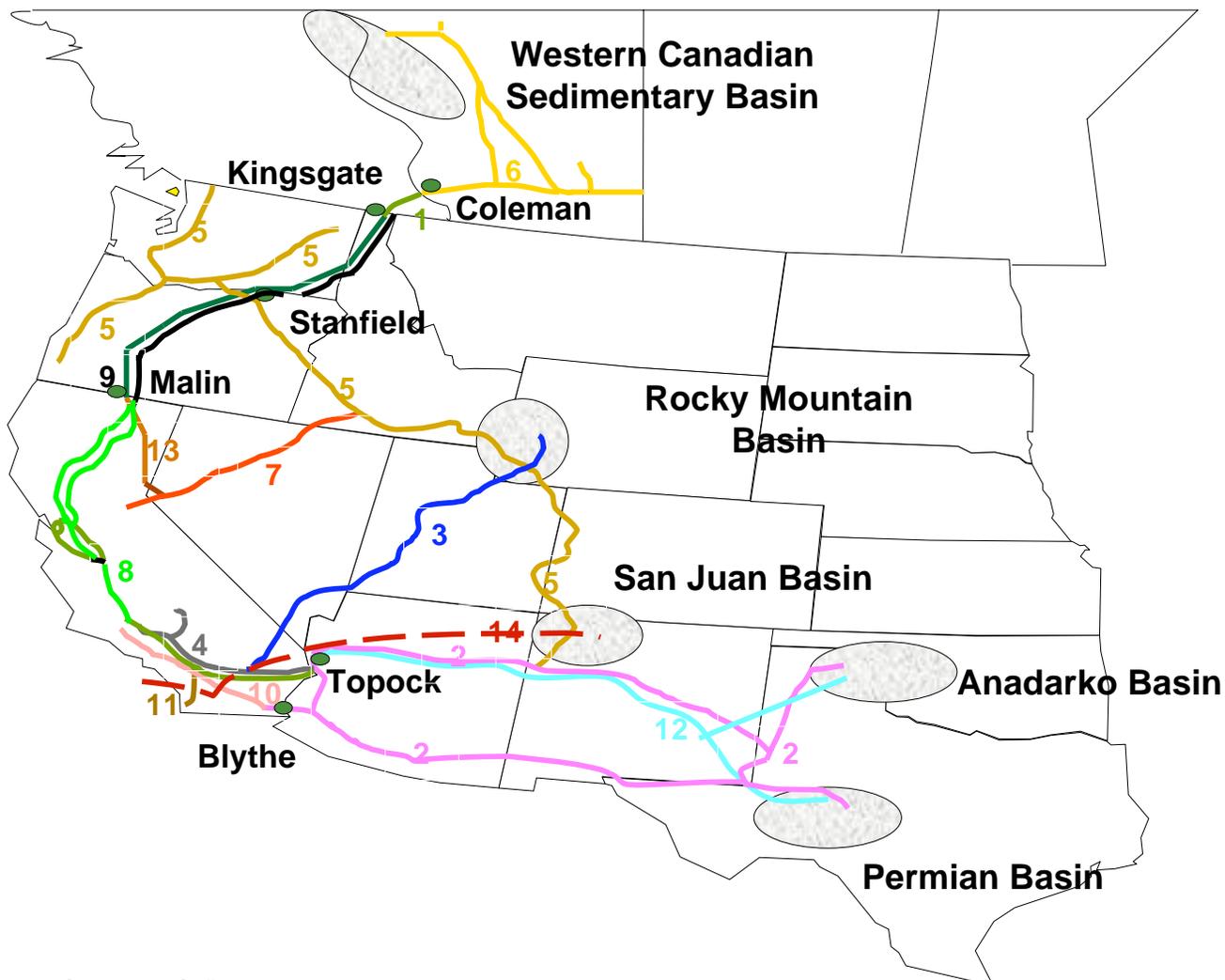


# U.S. Natural Gas Supply





# Major Production Basins Serving Western US, Canada and California



- 1 ANG
- 2 El Paso
- 3 Kern River
- 4 Mojave
- 5 Northwest
- 6 NOVA
- 7 Paiute
- 8 PG&E
- 9 PG&E GT-NW
- 10 SoCalGas
- 11 SDG&E
- 12 Transwestern
- 13 Tuscarora
- 14 Southern Trails

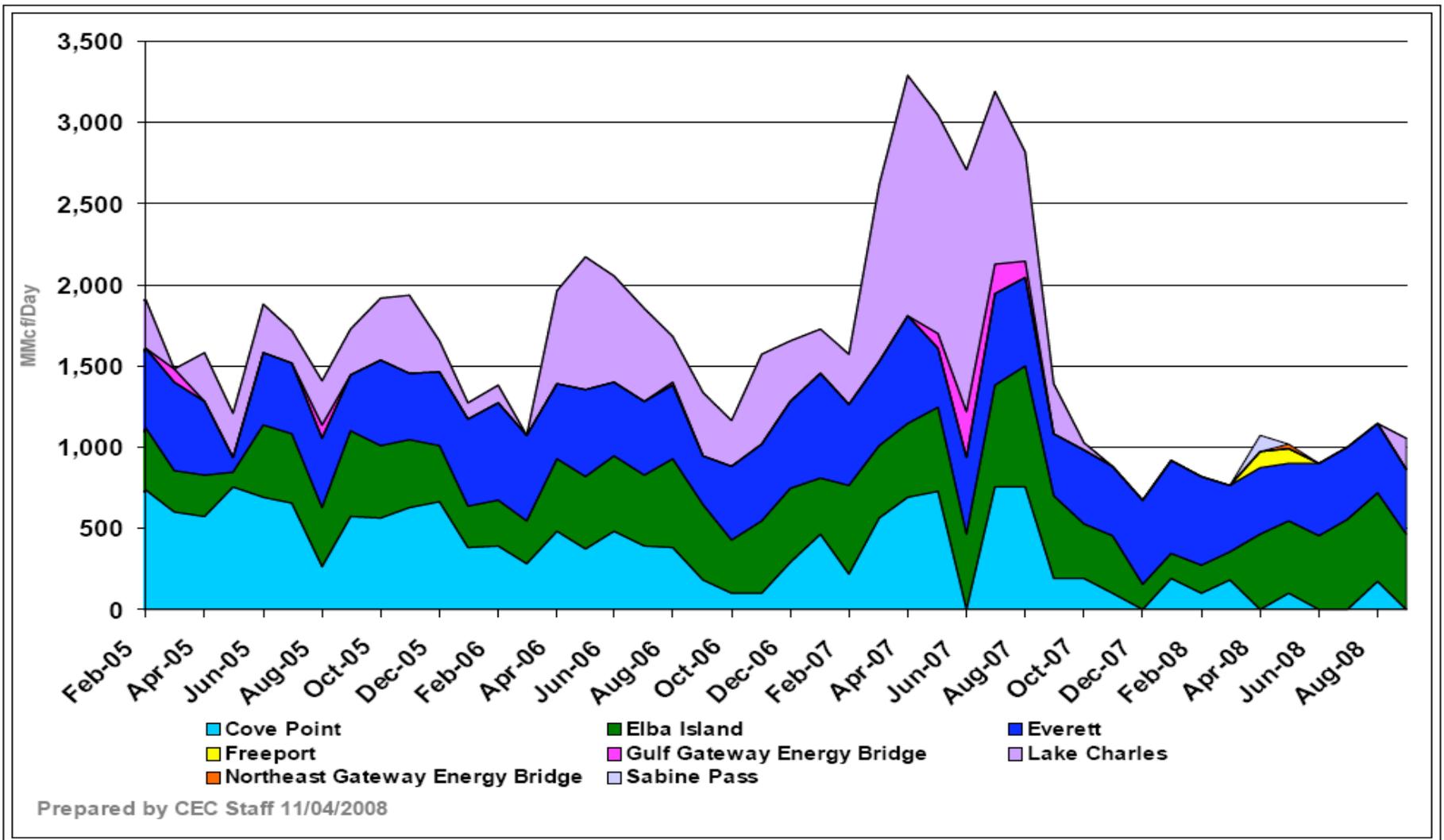


## Proposed Natural Gas Pipelines Rocky Mountains To West Coast

- Kern River: 0.2 to 1.0 bcf/d expansion of existing 1,650 mile 1.7 bcf/d pipeline from Wyoming to Southern California. In-service date: late 2010
- Ruby Pipeline: 680 mile, 1.2 bcf/d capacity line from Opal, Wyoming to Malin, Oregon. In-service date: early 2011
- Sunstone Pipeline: 585 mile, 1.2 bcf/d capacity line from Opal, Wyoming to Stanfield, Oregon. In-service date: late 2011

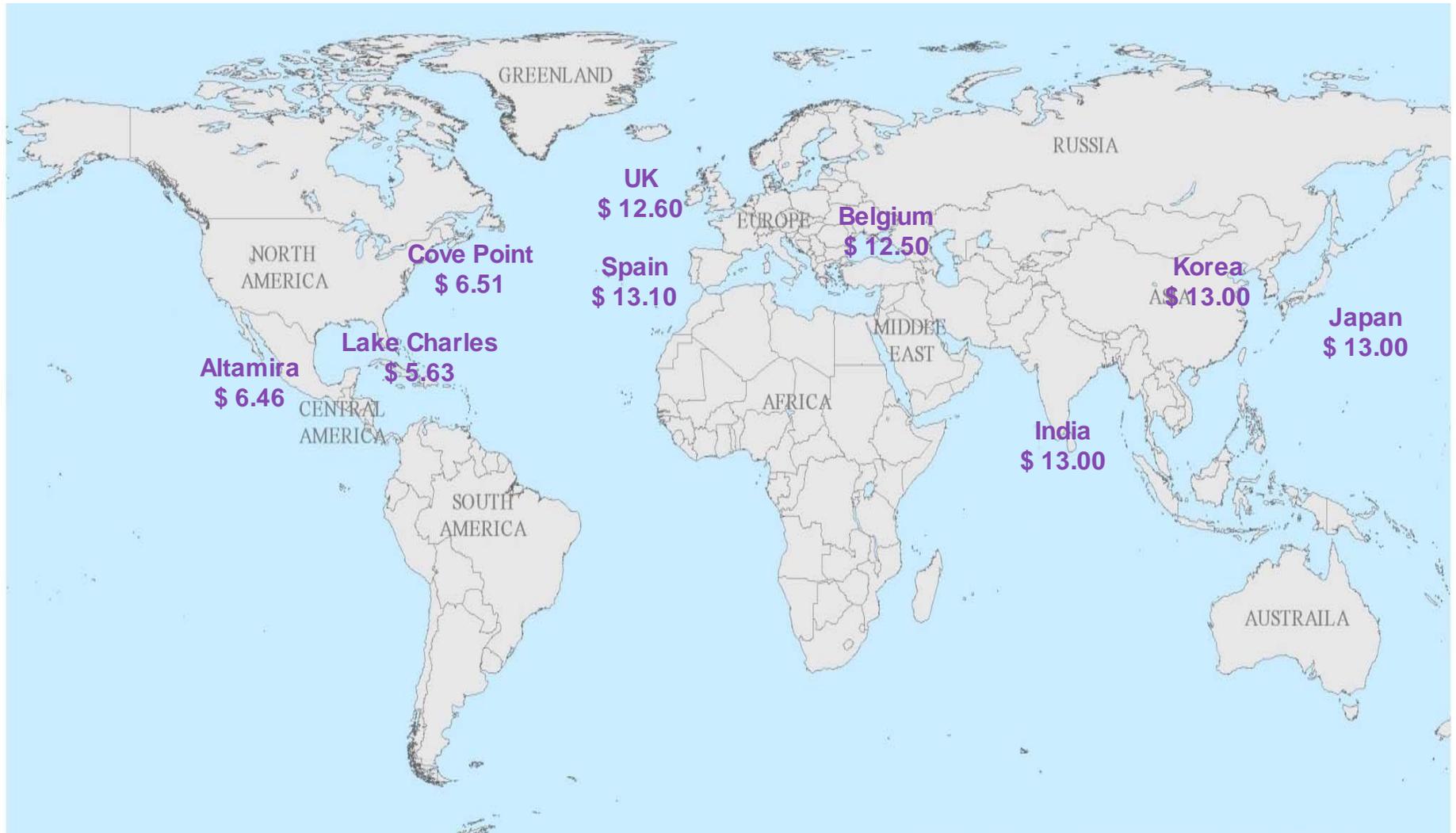


# LNG Imports



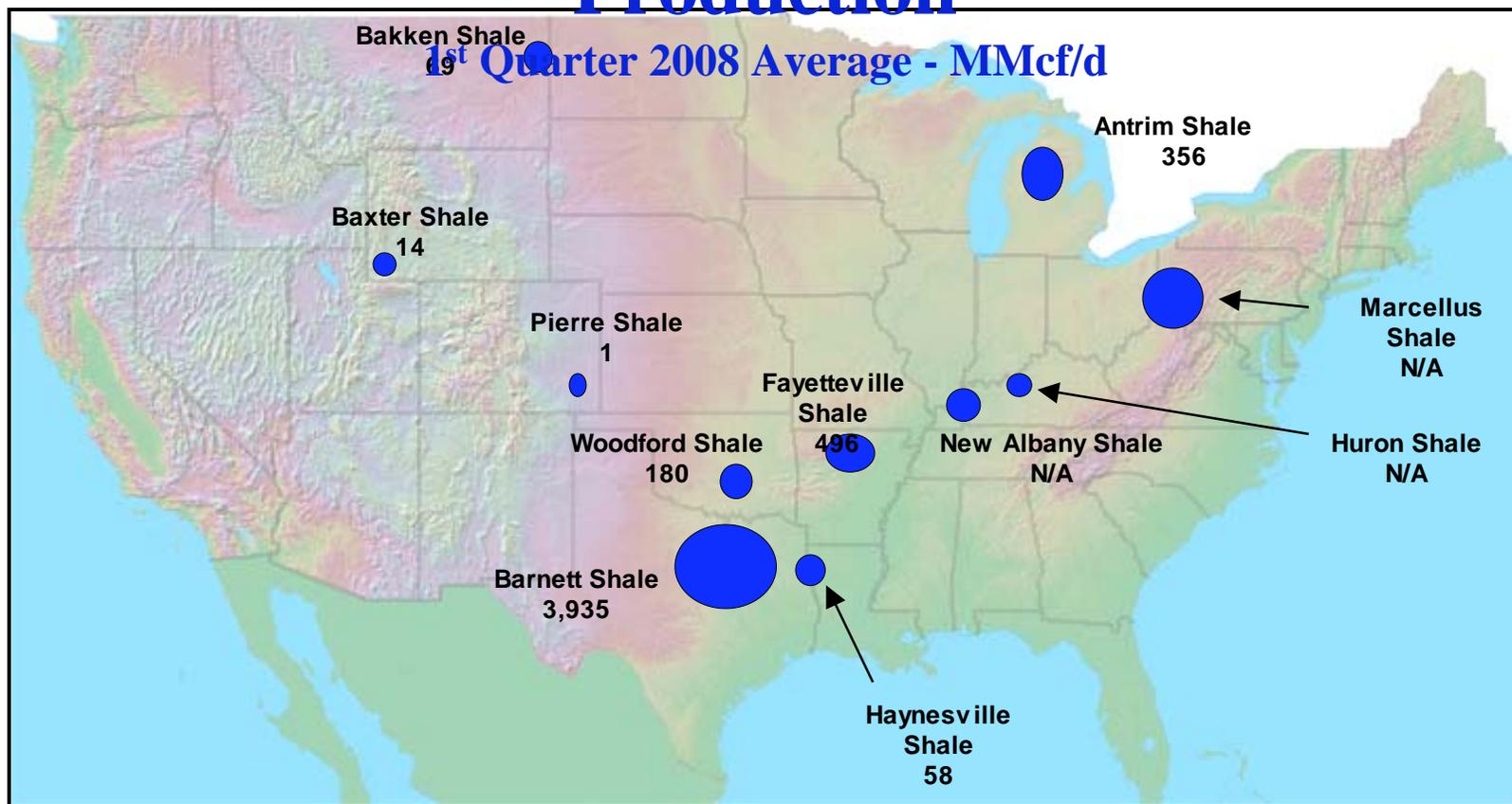


# World LNG Estimated November 2008 Prices





# Lower 48 States Shale Production



**1<sup>st</sup> Quarter 2008 Total Lower 48 Shale: 5,109 MMcf/d  
(33% increase over 2007 production)**



## Domestic Shale Production

- Shale fastest growing unconventional supply
- Over 20 shale basins have been identified in the US
- 6 shale basins currently producing
- Unconventional production up 65% over the past decade –  
1998: 5.4 tcf (14.8 bcf/d) or 28% of total NG production  
2007: 8.9 tcf (24.4 bcf/d) or 46% of total NG production
- Recent EIA shale production forecasts have significantly underestimated actual production