



California Energy Commission

California's Natural Gas Needs and Supply

Prevention First 2008

An Onshore and Offshore Pollution Prevention

Symposium & Technology Exhibition

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Topics of Presentation

- *2007 Integrated Energy Policy Report*
- Natural Gas Role in Climate Change Era
- Natural Gas Supply, Demand & Prices
- Natural Gas Uncertainties



2007 Integrated Energy Policy Report

- The Energy Commission has the responsibility to conduct assessments and forecasts of energy industry supply, production, transportation, delivery and distribution, demand, and prices (SB 1389, Bowen & Sher, Ch. 568, 2002)
- The Energy Commission uses these assessments and forecasts from the various energy sectors to develop state energy policies that:
 - enhance the state's economy
 - protect public health and safety
 - ensure energy reliability
 - protect the environment
 - conserve resources



Energy Policy

To Meet Growing Energy Demand

The state's *Integrated Energy Policy Report* and *Energy Action Plan* defined and adopted a “**loading order**” to meet California’s growing electricity needs.

- (1) energy efficiency and demand response
- (2) renewable energy and distributed generation
- (3) clean fossil-fueled generation and infrastructure improvements



The Role of Natural Gas In Climate Change Era

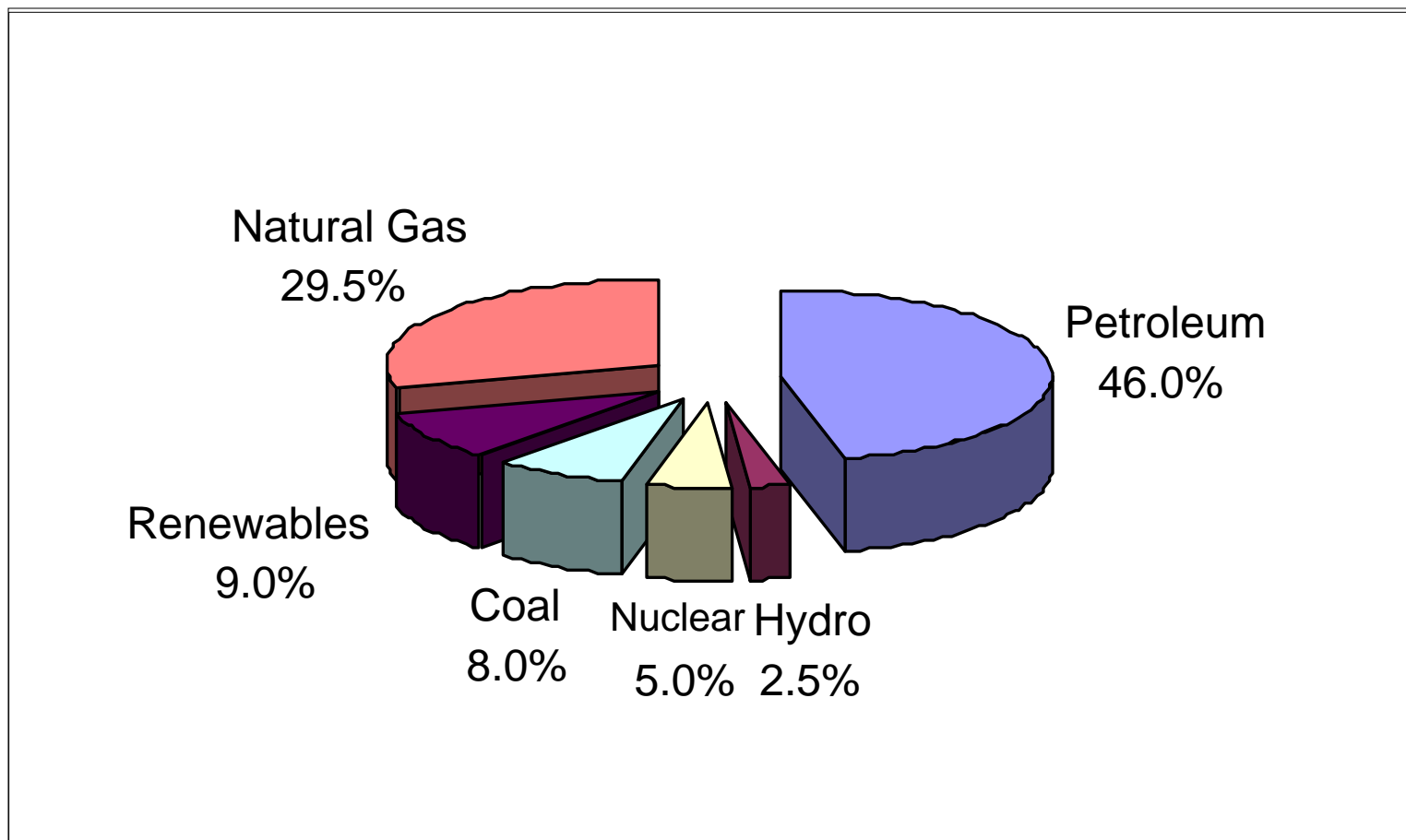
- *“...natural gas is the fossil fuel of choice and will likely play an even more important role in California’s energy future, despite policy makers’ emphasis on efficiency and renewables.” (2007 IEPR, page 167)*
- *“Even with uncertainties of domestic supplies and prices, California most likely will continue to build new natural gas power plants for years to come.” (2007 IEPR, page 168)*
- *“Natural gas is and will remain the major fuel in California’s supply portfolio and must be used prudently as a complementary strategy to reduce greenhouse gas emissions.” (2007 IEPR, page 186)*



NATURAL GAS SUPPLY



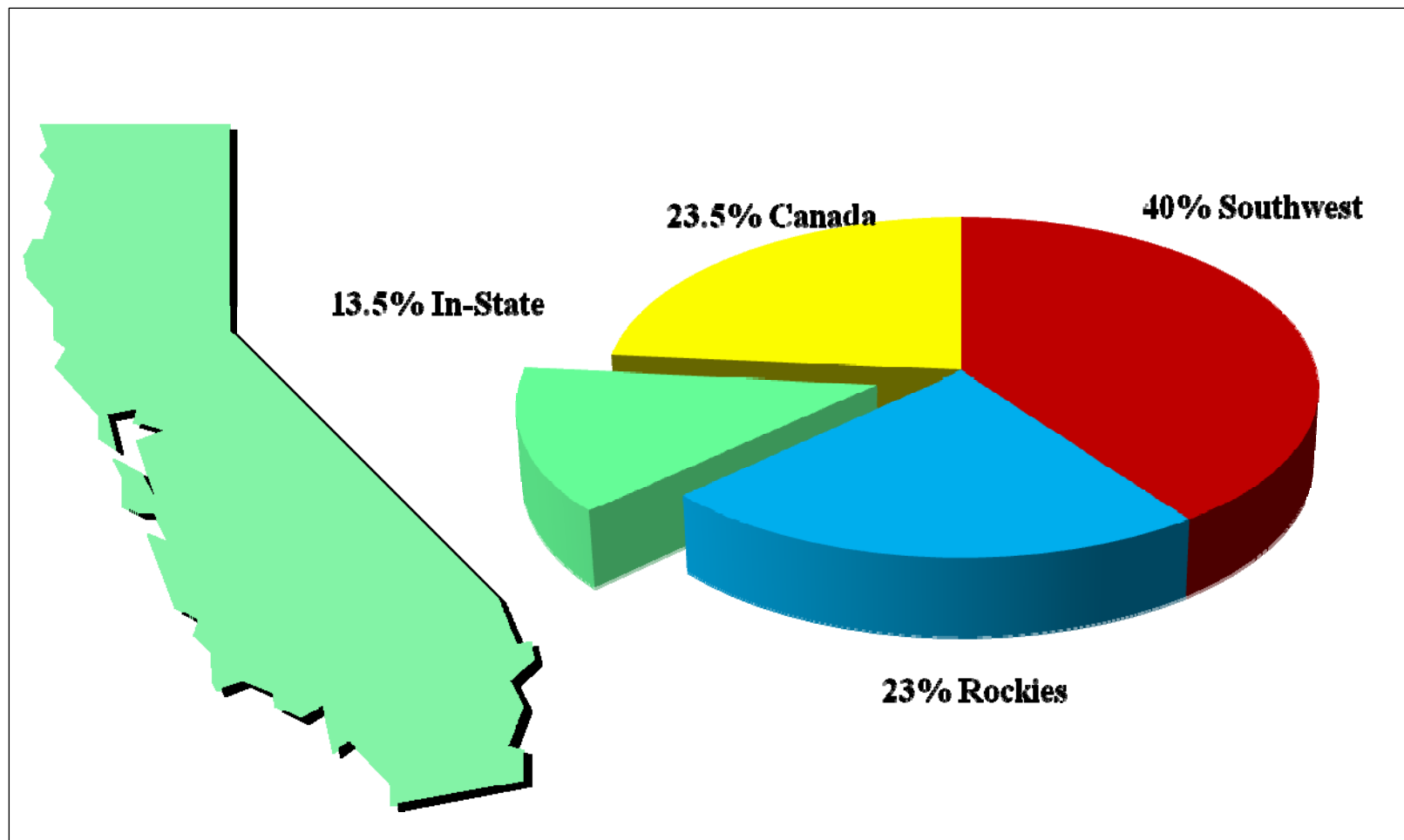
California Energy Supply Mix



California Energy Commission Staff, 2007



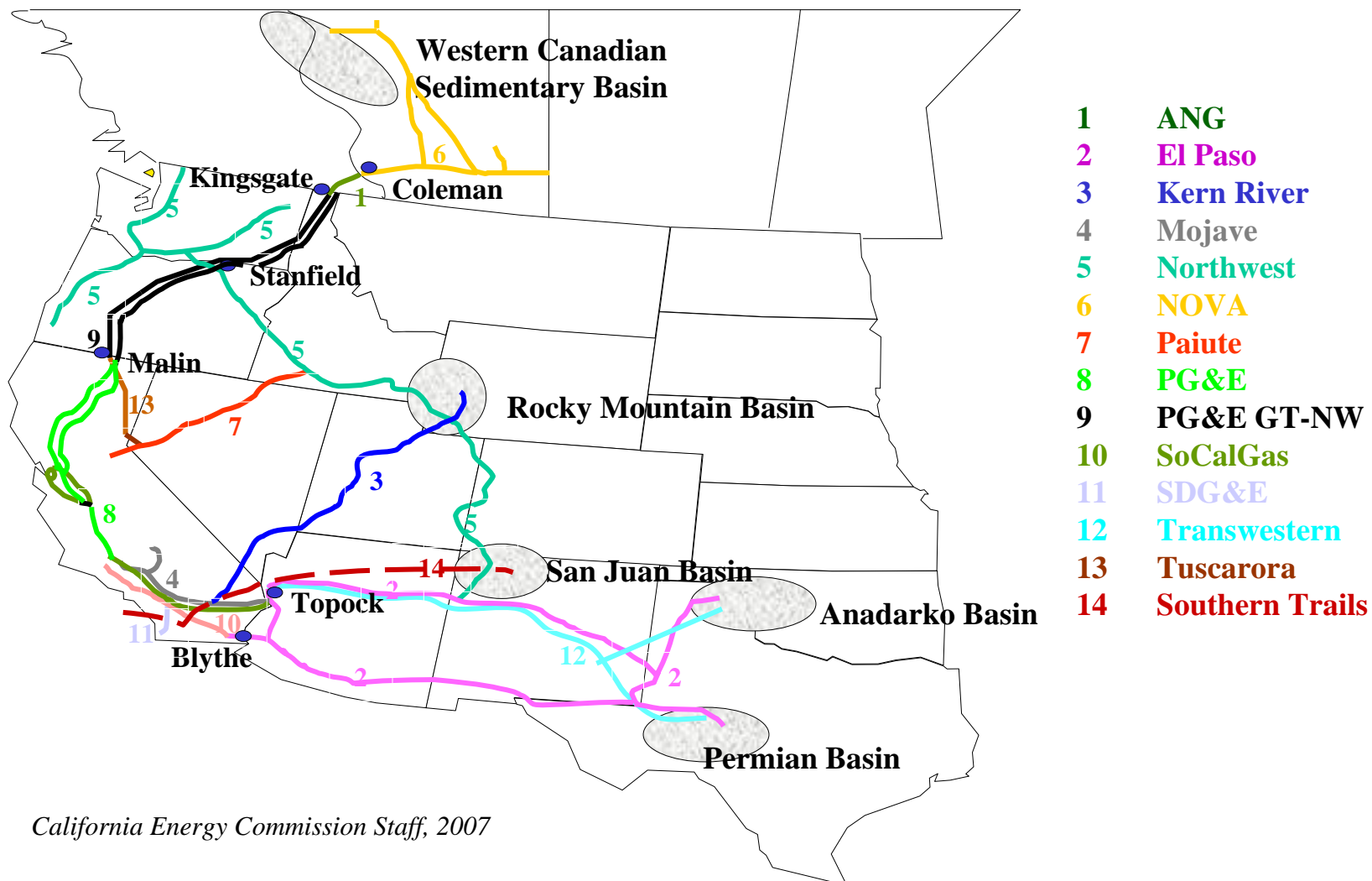
California Sources of Natural Gas



California Energy Commission Staff, 2007



Major Production Basins Serving Western US, Canada and California



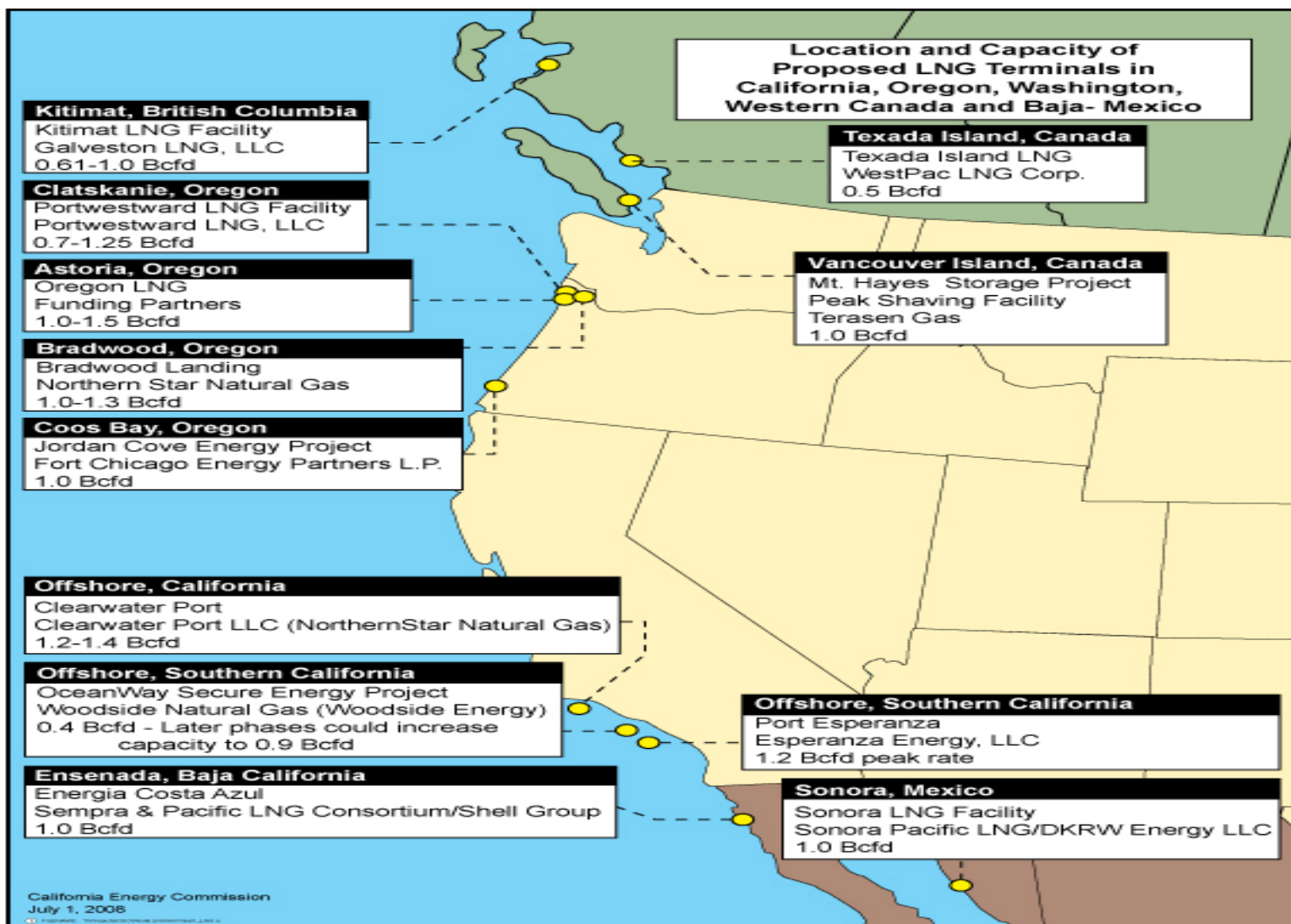
Future Natural Gas Pipelines Rockies To West Coast



- Ruby Pipeline: 680 mile, 1.2 bcf/d capacity line from Opal, Wyoming to Malin, Oregon. In-service date: early 2011
- 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
- Sunstone Pipeline: 585 mile, 1.2 bcf/d capacity line from Opal, Wyoming to Stanfield, Oregon. In-service date: late 2011



Proposed West Coast LNG Facilities





Natural Gas Supply

- US LNG imports are down 60% from 2007
- 2008 LNG imports projected at 480 Bcf, 38% less than 2007's record level of 770 Bcf



Natural Gas Supply

- United States natural gas production from 1998 to 2006 was flat
 - 2007 4% increase
 - 2008 8.0% projected increase
 - 2009 3.7% projected increase



Natural Gas Supply

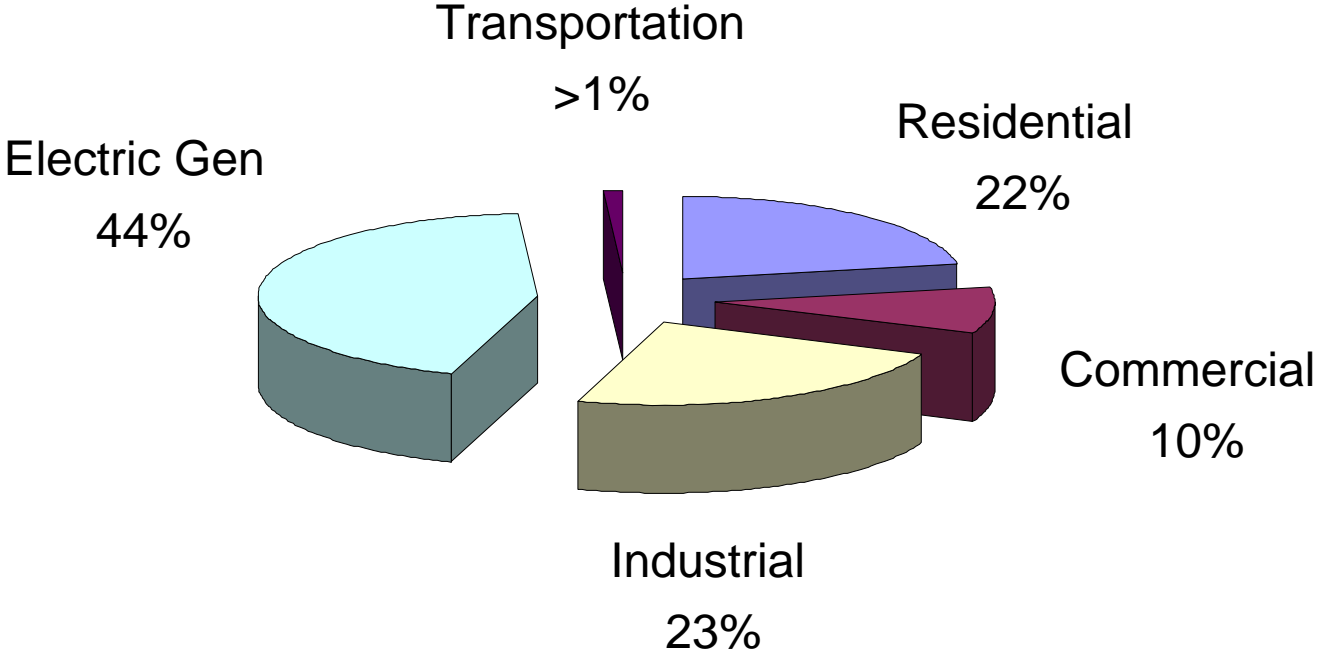
- Production increases:
 1. Higher prices drive additional drilling
 2. Discoveries of new, substantial reserves
 3. Technological advancements



NATURAL GAS

DEMAND

California Natural Gas Use by Sector



Source: Utility and pipeline filings to the California Energy Commission



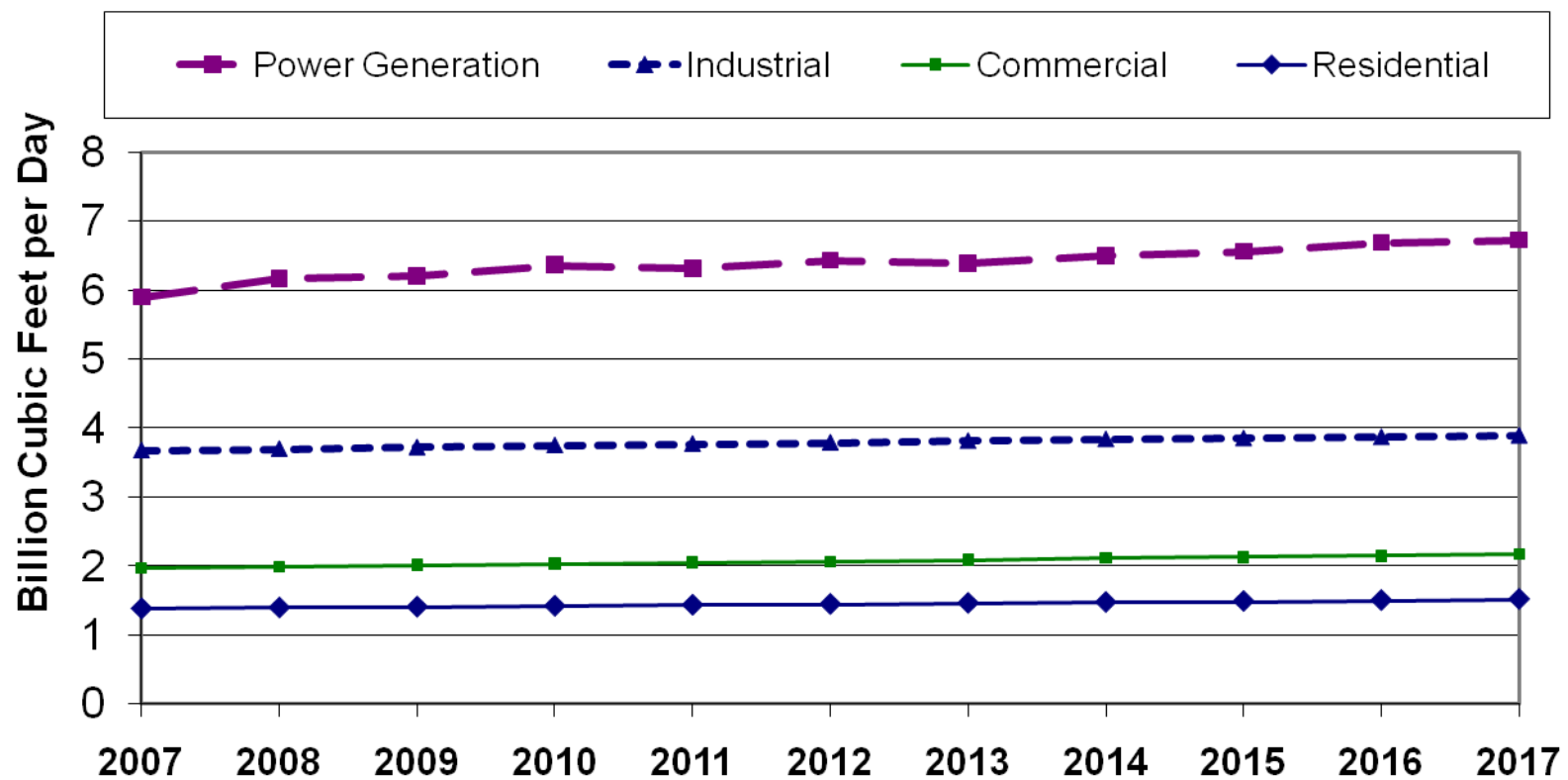
Natural Gas Demand Growth In the Next Decade

- Energy Commission staff projects continued demand growth over the next decade

Projected Natural Gas Demand Percentage Increase Per Year for Next Decade		
	<u>Overall Demand</u>	<u>Power Generation</u>
North America	2.3	5.7
United States	2.1	5.6
California	1.3	2.4

Source: 2007 Natural Gas Market Assessment Report

California's Outlook Natural Gas Demand



California Energy Commission Staff, 2007



Natural Gas Demand

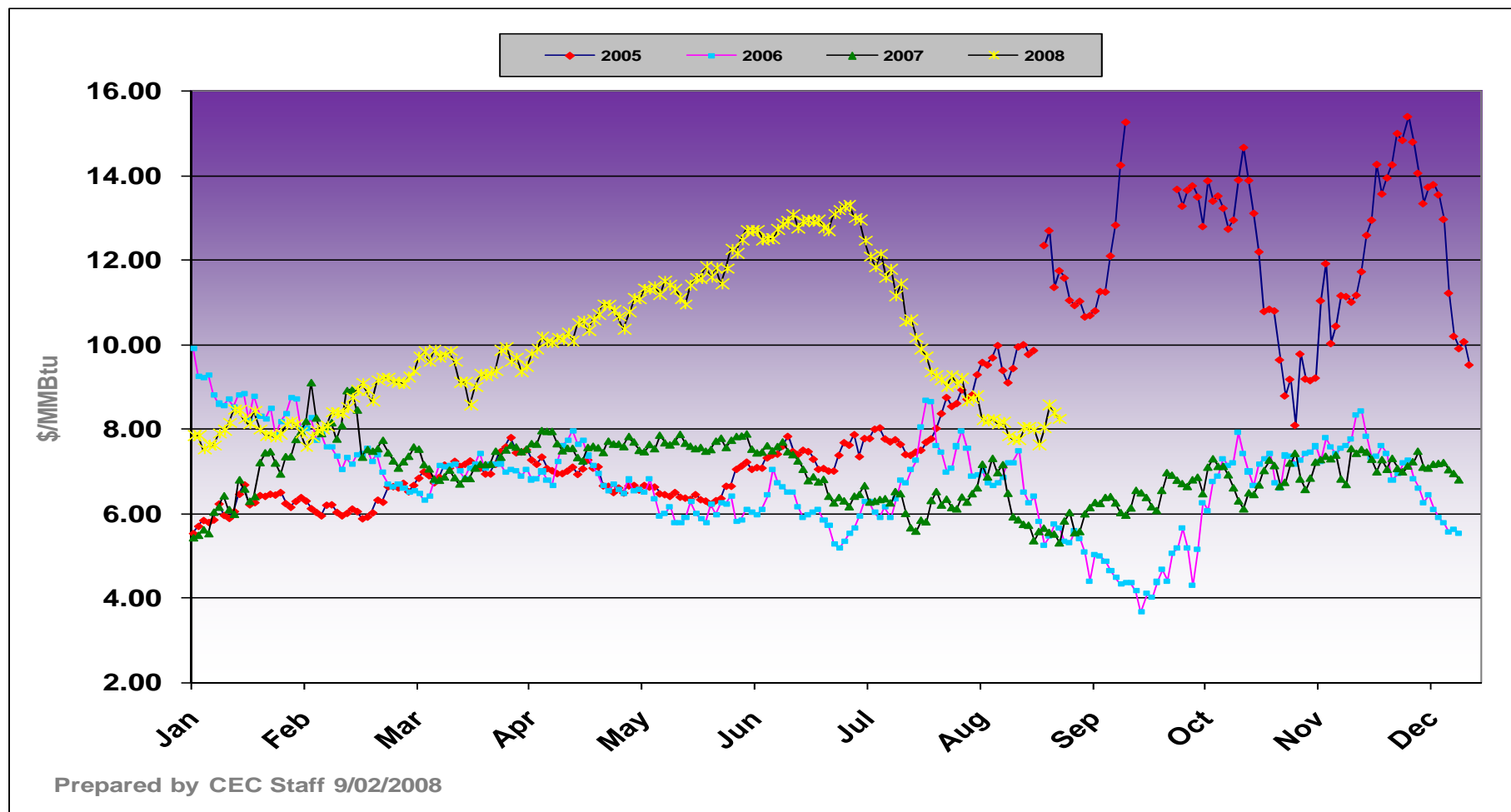
- Natural gas is critical to meet CA's energy needs
- Electricity generation, fastest growing use of NG
- Strong worldwide demand and higher prices
- Energy efficiency advances
- Aggressive Renewable generation goals of AB 32



NATURAL GAS PRICES

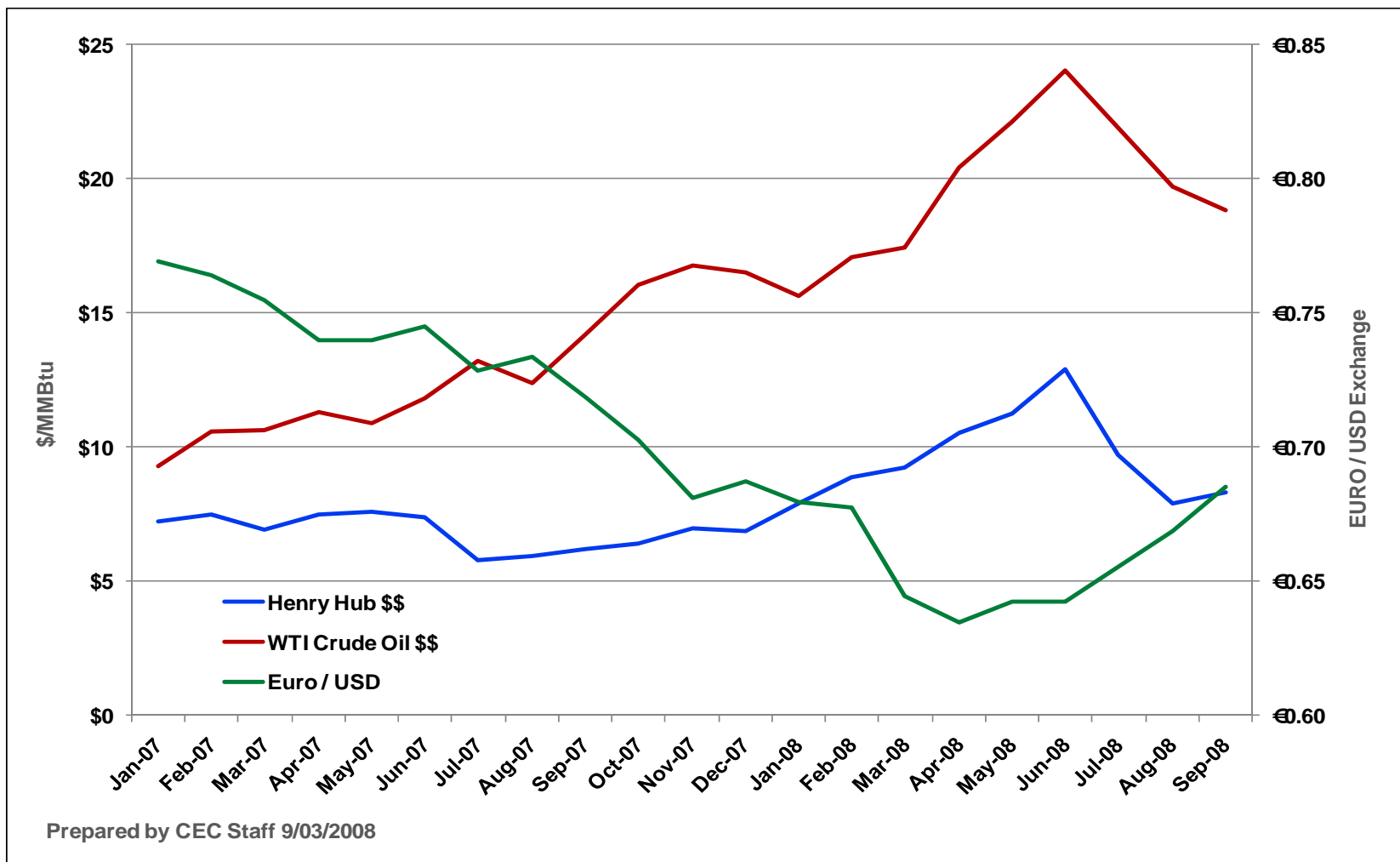


Henry Hub Daily Spot Prices



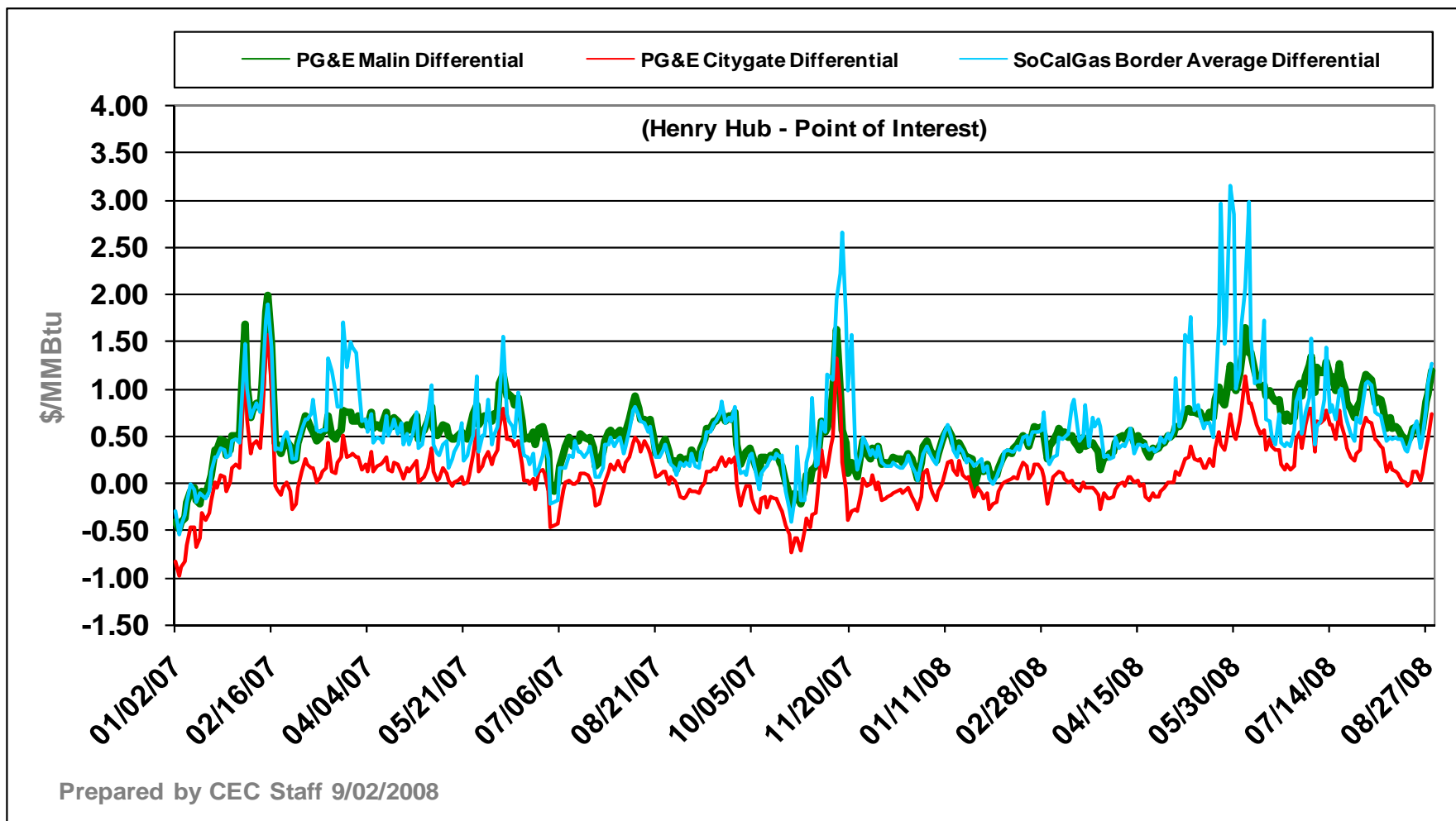


Natural Gas & Oil Spot Prices US Dollar – Euro Value



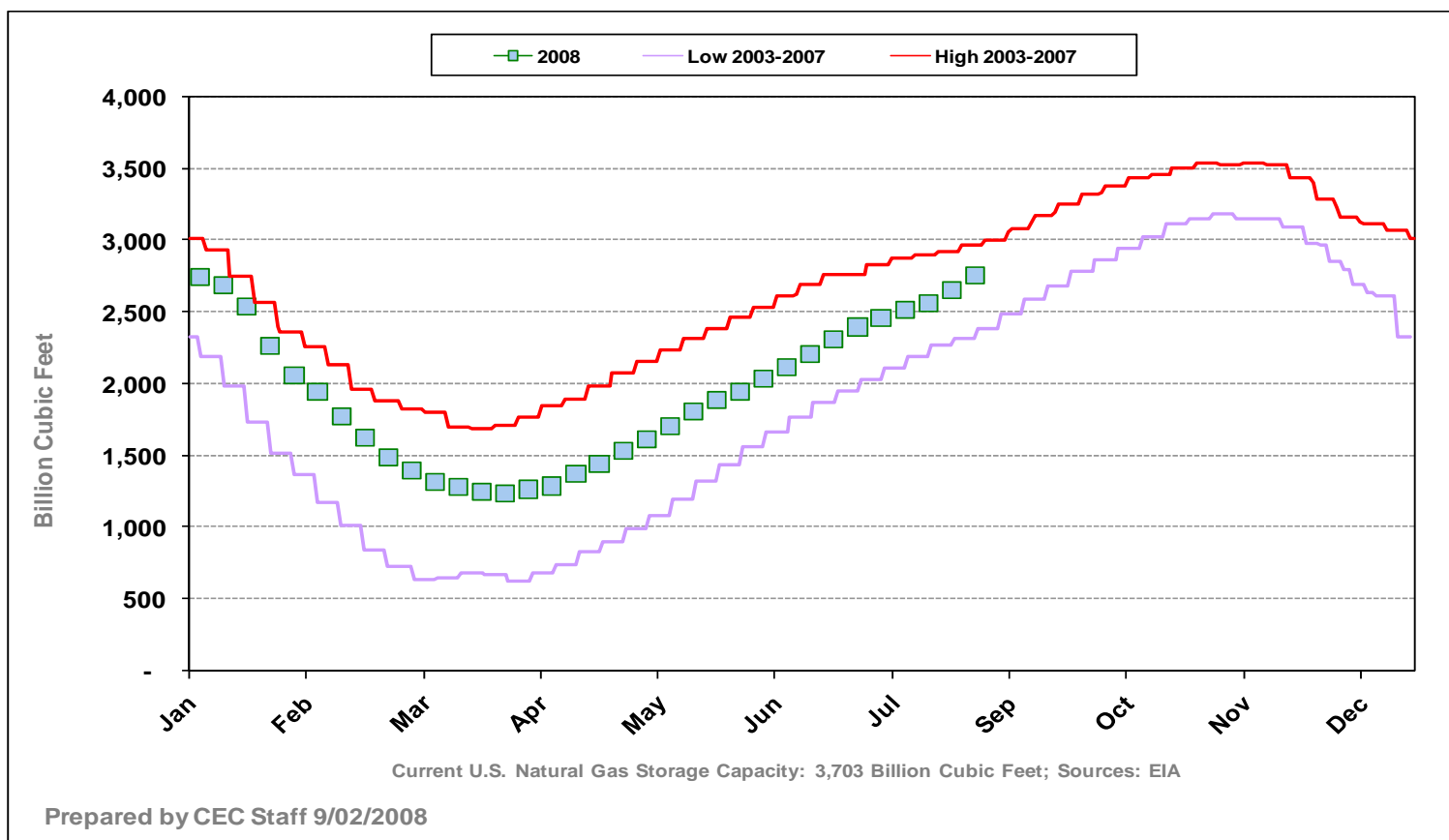


Henry Hub Spot Prices - California Differential -



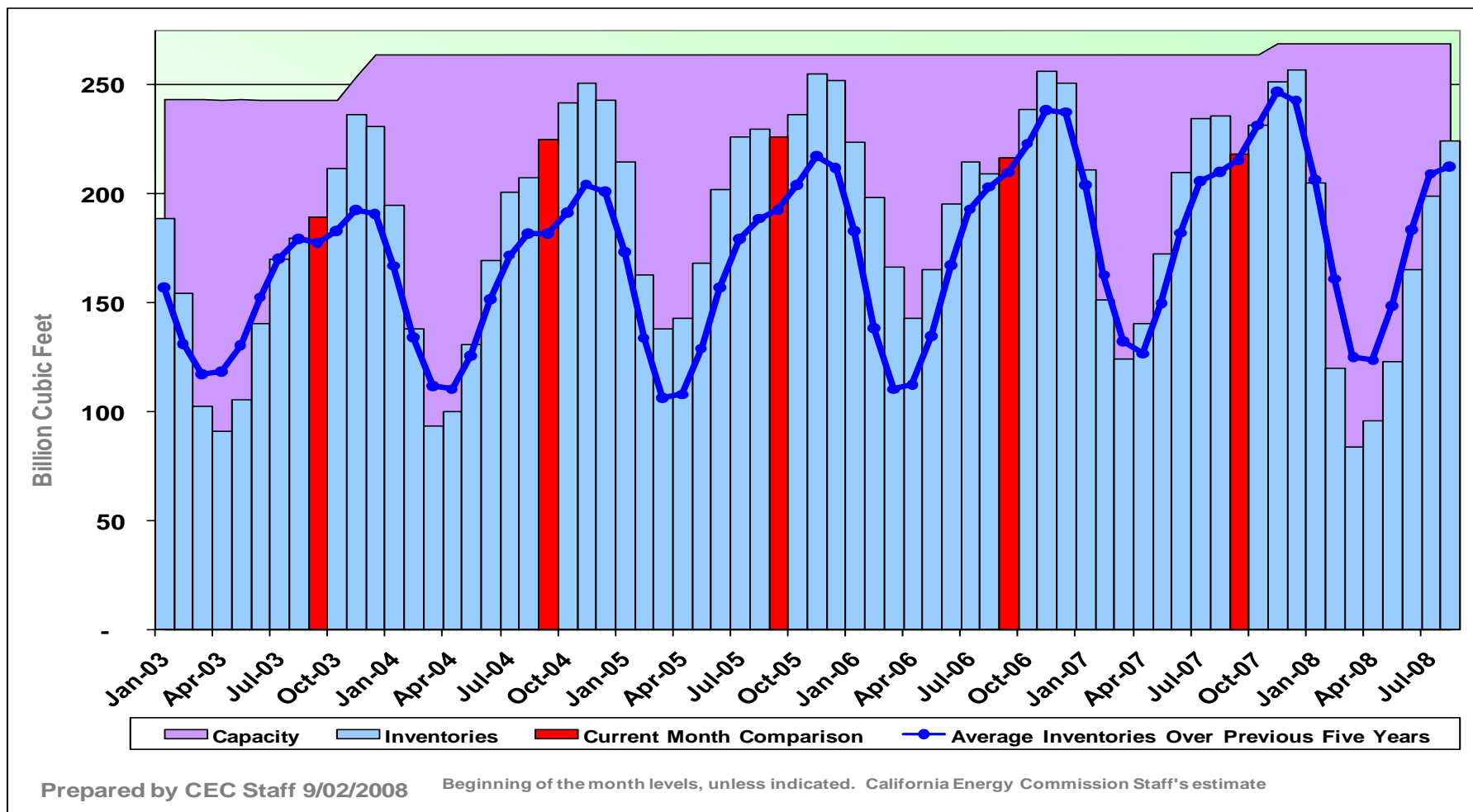


U.S. Storage Monthly Inventory





California Storage Capacity and Utilization





Natural Gas Prices

Supply Issues

- LNG imports are down significantly
- Low storage levels coming out of winter
- Independence Hub shutdown
- Active hurricane season in the Gulf of Mexico
- Increasing domestic production



Natural Gas Prices

Demand Issues

- Electric generation demand for natural gas
- Worldwide LNG demand remains strong
- Energy efficiency and Renewables impact on natural gas demand



Natural Gas Prices

Non-Market Fundamentals

- Weak dollar increases attraction of dollar traded commodities
- Link to higher petroleum prices
- Escalating costs of drilling equipment



Natural Gas Uncertainties

- GHG impacts from escalating use of NG for power generation
- Impact on demand as more Renewable resources come online
- LNG: liquefaction vs. regasification balance
- Continuing geo-political risks
- Creation of a NG/LNG international cartel