

## Western Natural Gas Regions



## Overview:

### Market Description

The Western market is becoming a more prolific supplier and consumer of natural gas. Natural gas is the marginal fuel for dispatching power plants throughout most of the West. However, gas use is dependent on a complex set of factors: weather, storage inventory levels, pipeline capacity availability, hydroelectric resource availability, power-related imports, transmission line congestion, and other fossil-plant availabilities. The Western gas market is much more robust than it was 5-years ago because of massive, across the board investments in all phases of the natural gas supply chain (upstream wells, gathering and processing facilities, interstate pipeline expansions, market area storage, and distribution systems). Because of expanded drilling, Rockies natural gas production now equals about 8 Bcfd or 15 percent of total U.S. domestic dry gas production. Imports from Western Canada supply another 2 to 3 Bcfd of natural gas to the West. California accounts for the more than one-half of total regional gas use. Overall regional gas use is split somewhat comparably amongst the residential, industrial, and power sectors. Physical and financial gas-related products are traded actively at numerous market locations in the West. Storage capacity limitations in the Southwest can influence pipeline operating conditions, especially during peak periods.

### Geography

**States covered:** Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming.

### Major Trading Hubs

Cheyenne Hub, Opal, PG&E Citygate, SoCal Border, El Paso San Juan, El Paso Permian, and Sumas.

## Storage

**State Capacity:** California and Montana have 68 percent of total West capacity.

Aquifer Capacity: 5%

Depleted Field Capacity: 95%

Total Capacity: 1,345 Bcf. Comprises 16 percent of total U.S. storage capacity.

Major Storage Pipelines and Capacity:

California

SoCal Gas: 130 Bcf

PG&E: 42 Bcf

Lodi: 17 Bcf

Wild Goose: 24 Bcf

Wyoming

Clay Basin: 51 Bcf

Washington

Jackson Prairie: 22 Bcf

Colorado

Fort Morgan: 8.5 Bcf

Young: 5.8 Bcf

Latigo: 8.3 Bcf

Flank: 7.2 Bcf

Boehm: 5.2 Bcf

**Demand by Sector (2005):**

- Residential: 22%
- Commercial: 12%
- Industrial: 28%

**State:** California accounts for 52 percent of total Western market demand. Arizona, Colorado, Oregon and Washington comprise about 30 percent of total West demand.

**Western Total:** 4.3 Tcf annually (11.9 Bcfd), which comprises 19 percent of total U.S. demand.

**Consumer Total:** 18.0 million, which is approximately 20 percent of total consumers in the U.S.

**Key Consuming States:** California, Arizona, Colorado, and Washington make up 55 percent of the consumers in the West and about 16 percent of the total consumers in the U.S.

**Residential Consumers:** 94%

**Production**

**State:** Colorado, Wyoming, and Utah make up 86 percent of total West production. They comprise 23 percent of total U.S. production.

**Total:** Total West production comprises 27 percent of total U.S. production.

## Pipeline Flows

**Major Pipelines:** Kern River Gas Transmission, El Paso Natural Gas, Transwestern Pipeline, TransCanada GTN, Northwest Pipeline, and Southern Trails Pipeline.

### Average Daily Rockies Deliveries to the Midwest:

2005: 3.3 Bcfd

2006: 3.3 Bcfd

**Major Pipelines:** Trailblazer, Cheyenne Plains, El Paso and Colorado Interstate Gas carry a significant amount of gas from the Rockies to the Midwest. They carried:

2005: 73%

2006: 72%

### Average Daily Rockies Deliveries to the West:

2005: 5.1 Bcfd

2006: 5.5 Bcfd

**Major Pipelines:** El Paso, Kern River and Northwest carry most of the gas from the Rockies further to the West. They flow:

2005: 88%

2006: 88%

## Imports and Exports

### Average Daily Imports from Canada into the West:

2005: 2.5 Bcfd

2006: 2.5 Bcfd

**Major Importers:** Northwest and GTN are the only two pipelines importing all of the gas from Canada into the Western U.S.

## Yearly Average of Spot Hub Prices

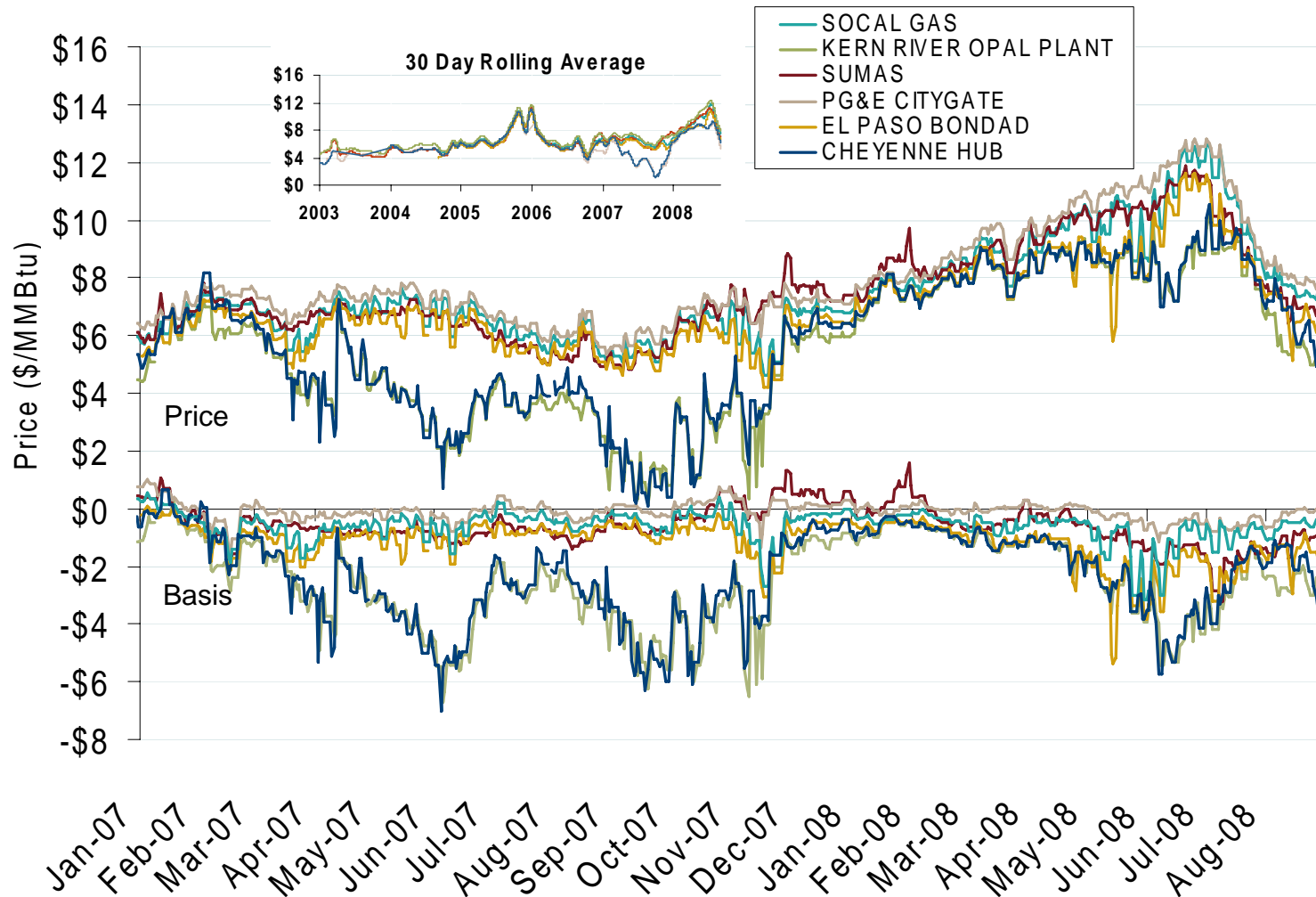
Annual Average Day Ahead Prices (\$/MMBtu)				
	2005	2006	2007	5 Years
Socal Border	\$7.56	\$6.10	\$6.41	\$6.13
PG&E Citygate	\$7.94	\$6.47	\$6.89	\$6.45
Opal	\$7.17	\$5.39	\$4.07	\$5.22
Sumas (Huntington)	\$7.40	\$6.01	\$6.49	\$5.95
El Paso Bondad	\$7.17	\$5.73	\$6.02	\$5.69
El Paso San Juan	\$7.18	\$5.76	\$6.07	\$5.75
Malin	\$7.57	\$6.11	\$6.48	\$6.08

Source: Derived from *Platts* data.

Updated March 7, 2008

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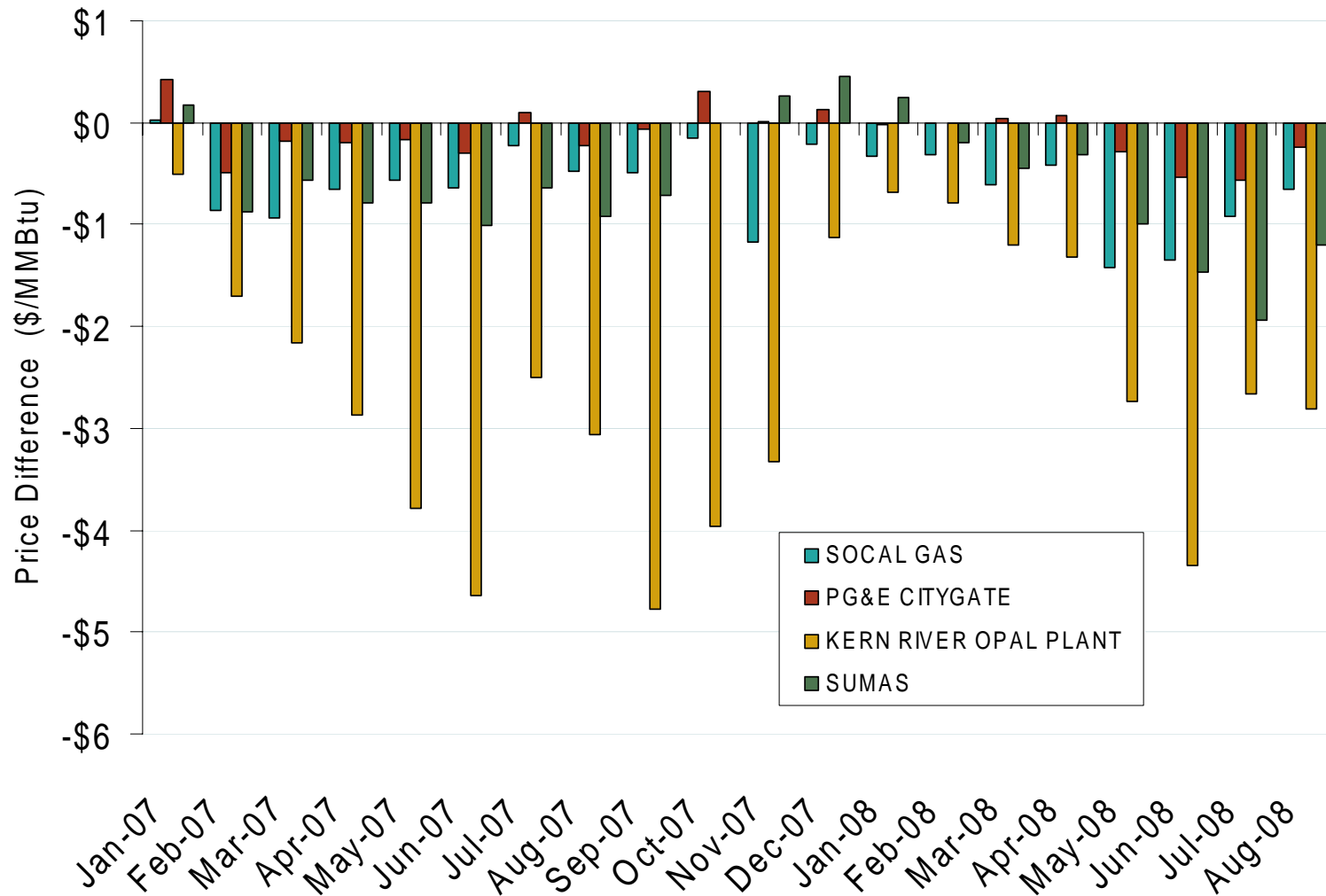
# Western Day-Ahead Hub Spot Prices and Basis



Source: Derived from *Platts* data.

Updated September 5, 2008<sub>2072</sub>

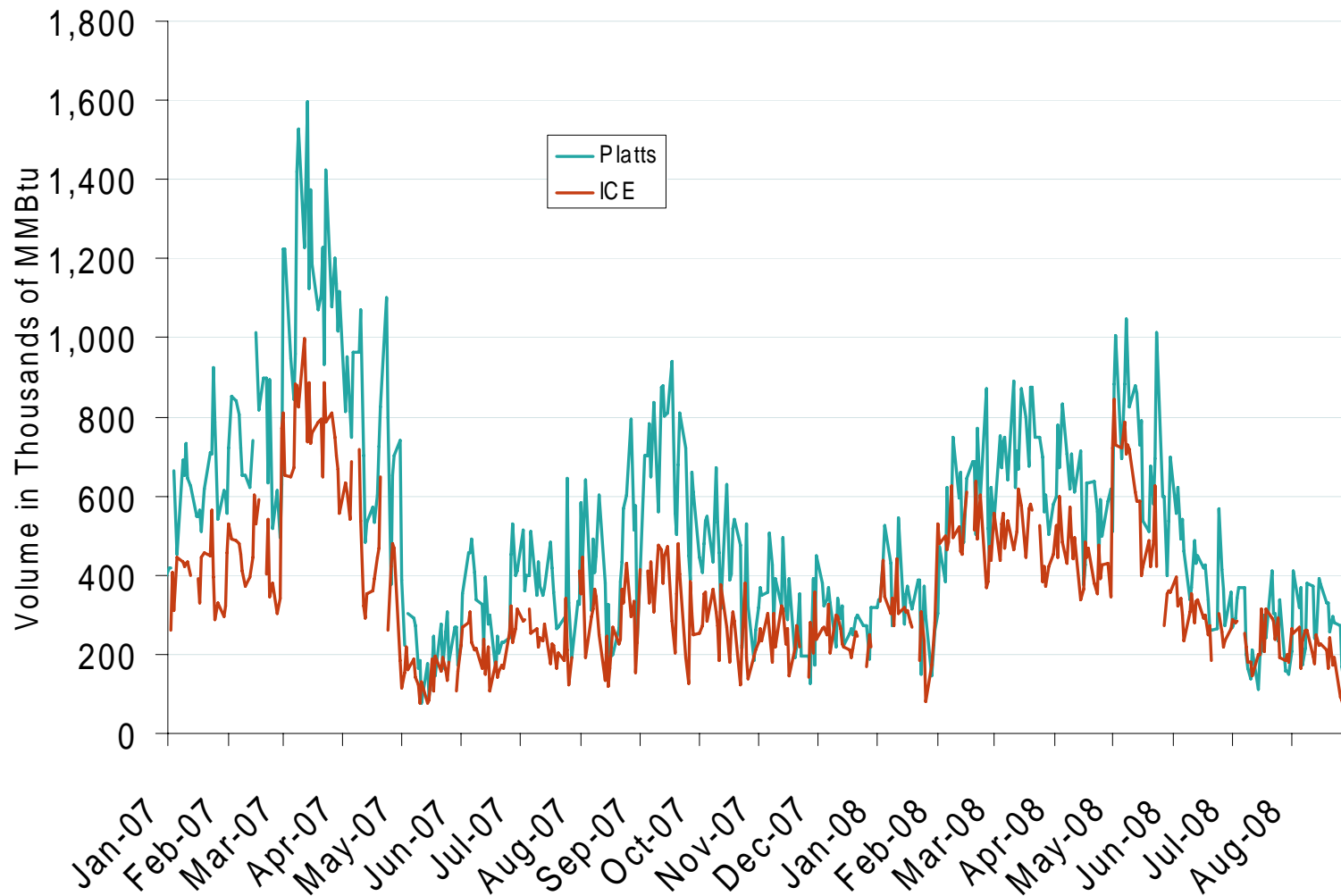
## Western Monthly Average Basis Value to Henry Hub



Source: Derived from *Platts* data.



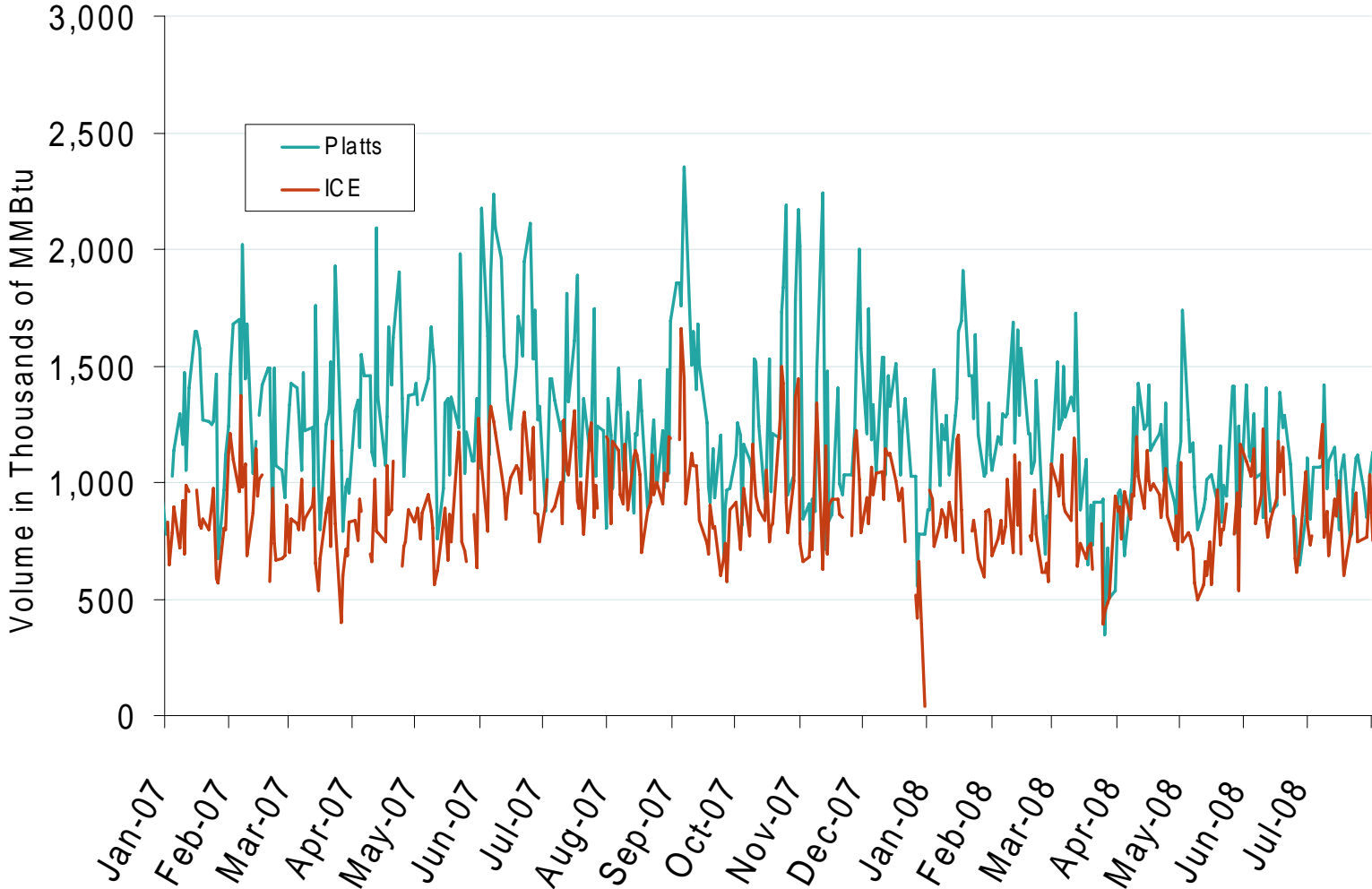
## Published and Traded Daily Spot Volumes at Kern River



Source: Derived from *Platts* and *ICE* data.

Updated September 5, 2008 <sup>2154</sup>

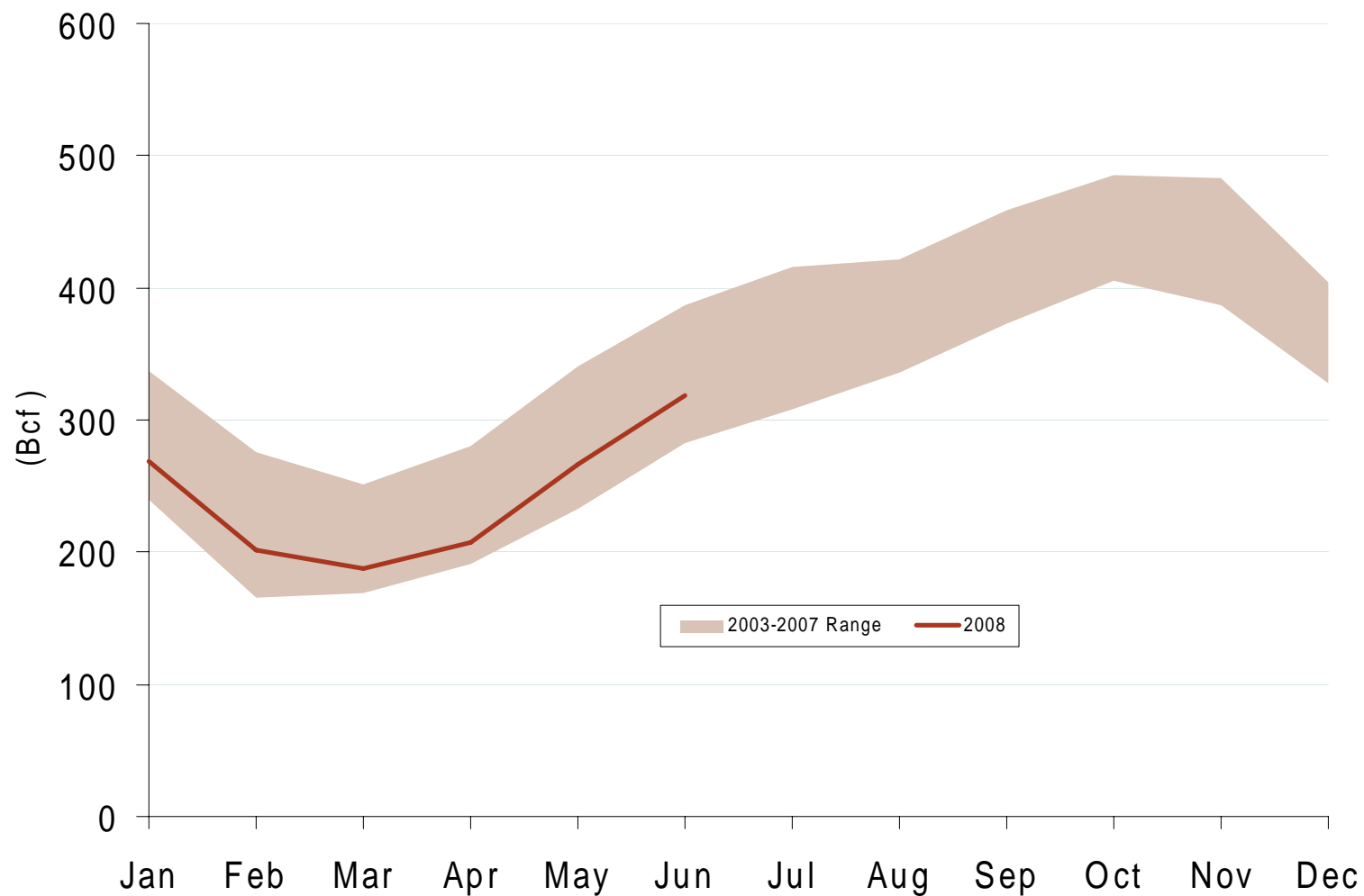
# Published and Traded Daily Spot Volumes at Socal Border



Source: Derived from *Platts* and *ICE* data.

Updated September 5, 2008 2154

## Western Region Underground Working NG In Storage



Source: Derived from EIA data.

Updated September 5, 2008

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