

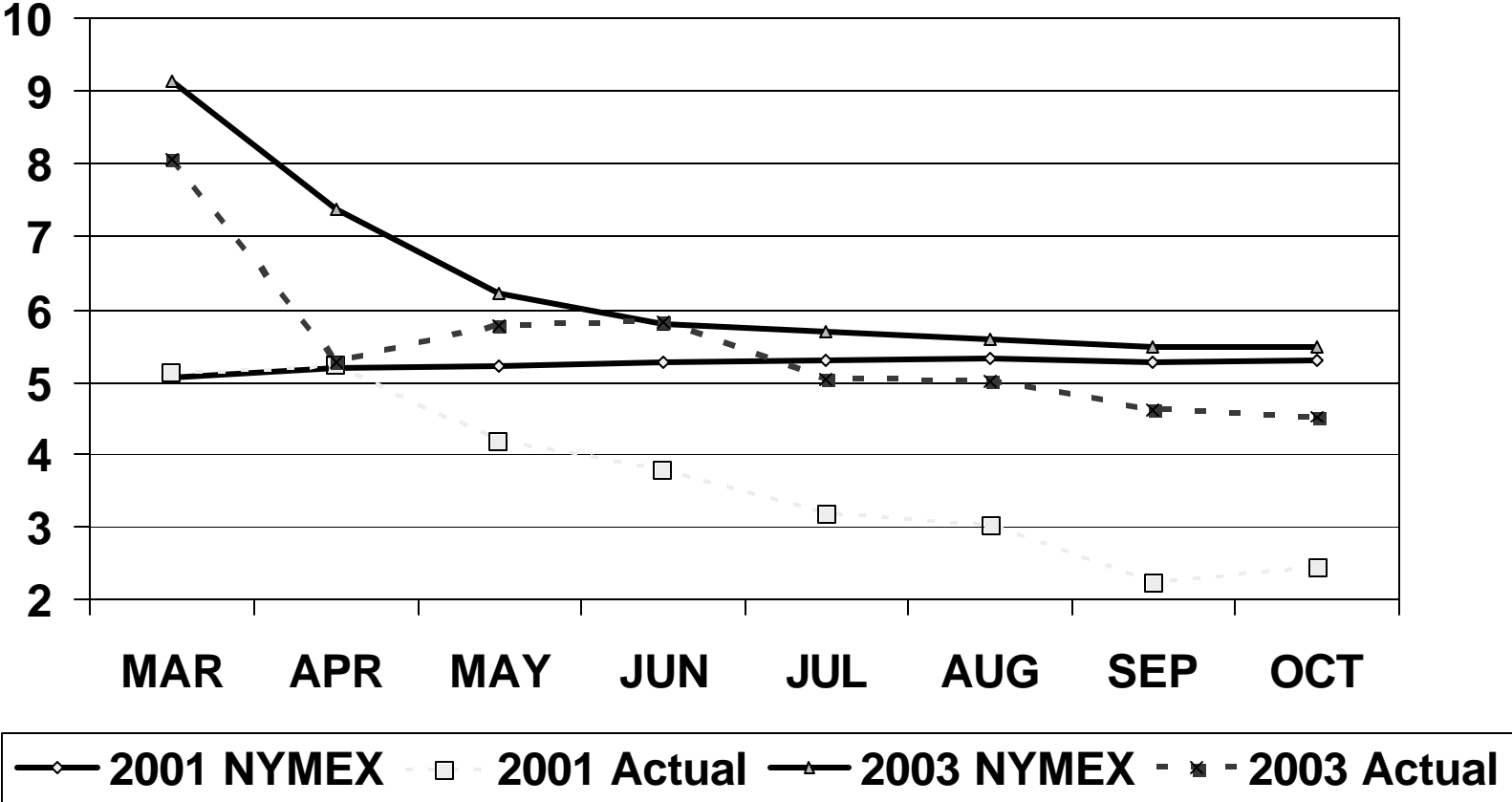
# **North American Natural Gas: Déjà vu All Over Again?**

*Lazard Freres & Co. LLC*

**February 24, 2004**

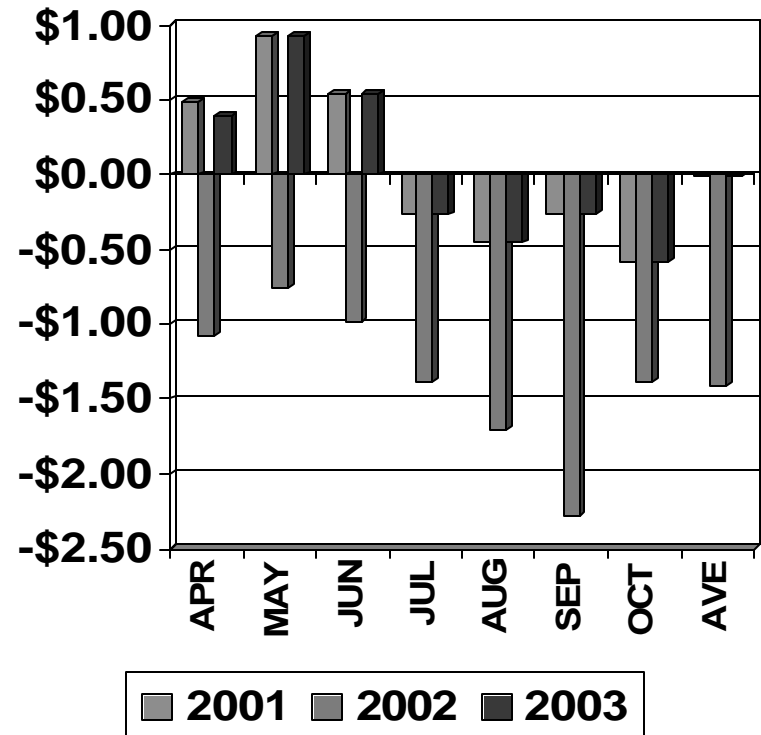
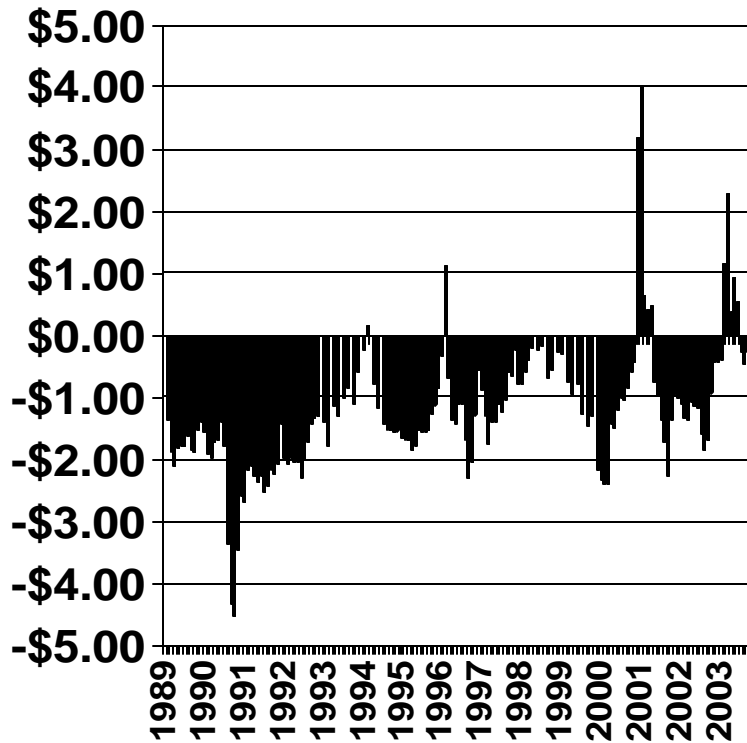
**Ron Denhardt  
Chief Executive Officer**

**In 2001 the Feb NYMEX (for March through October) exceeded actual cash prices by \$2.35 per MMBtu; in 2003 by \$.84 per MMBtu. Will 2004 be a repeat?**



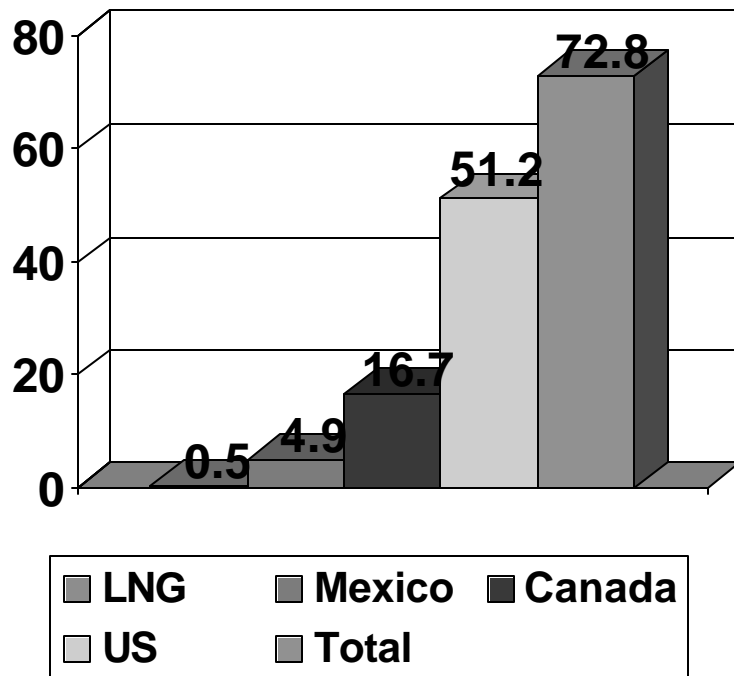
During the last two tight markets, Henry Hub prices averaged the same level as WTI over the non-heating season. In both years, Henry Hub started at a premium and then declined because too much demand was lost. While this is overly simplistic, it is a signpost.

Henry Hub Prices Less WTI (\$/MMBtu)

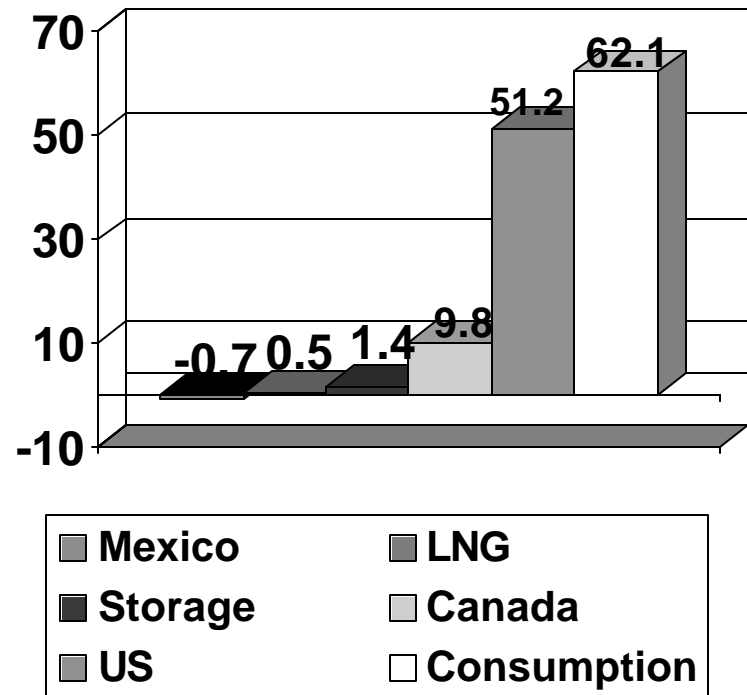


# 2002 North American Natural Gas Supply was 72.8 Bcfd and US Consumption was 62.1 Bcfd.

North American Natural Gas Supply (Bcfd)



US Natural Gas Supply (Bcfd)



**If March ends the heating season at 950 Bcf, working gas storage would end the non-heating season at 3050 Bcf versus 3150 Bcf last year and effective capacity of 3250 Bcf.**

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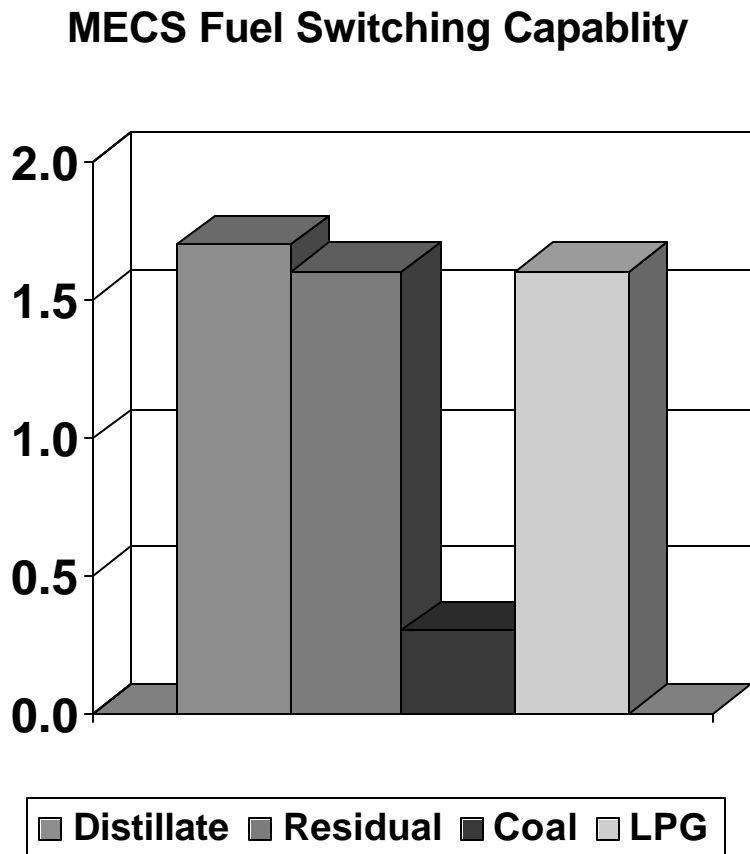
- **If injections were the same as last year, working gas storage would reach 3375.**
- **Natural gas consumption is projected to increase by 3.4% over the 2002 non-heating season ( 325 Bcf).**
  - Industrial gas consumption growth will be 5.3% ( 170 Bcf).
  - Electric power consumption is expected to grow 3.3% (110 Bcf).
- **Supply will be the same as last year.**
  - LNG imports will be up .3 Bcfd but offset by declines in imports from Canada and increased exports to Mexico. (Canadian production is expected to be essentially flat).
  - US production will benefit from a full year of Kern River and Deepwater growth but still show little growth.

**There are both upside and downside risks, for the non-heating season. We are mildly bearish.**

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- **Henry Hub prices have never exceed WTI on a Btu basis during the non-heating season (WTI \$30/bbl = \$5.17 per MMBtu, WTI \$25/bbl = \$4.31 per MMBtu).**
- **Industrial production is growing but it is not clear that gas consumption will follow.**
- **There is upside potential from lower than expected production and warmer than normal weather.**
- **If we have déjà vu all over again, it will be a mild case.**

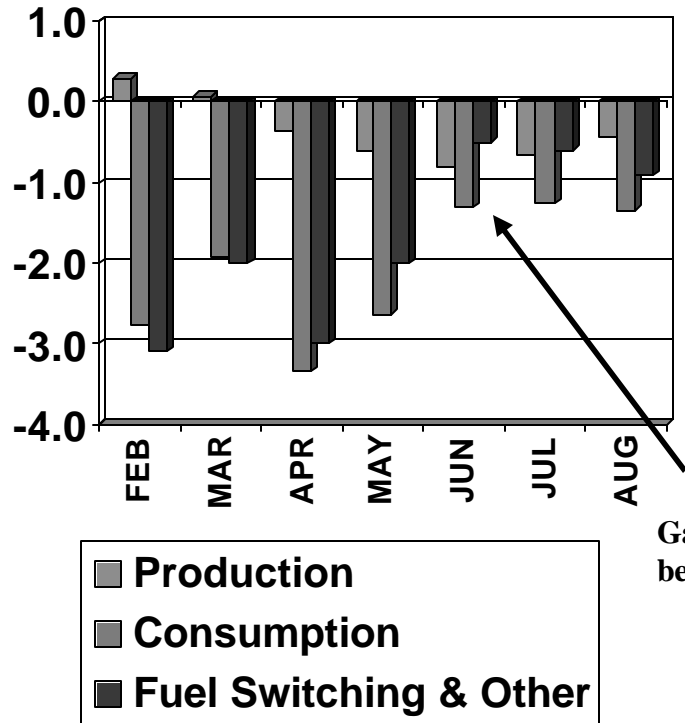
# How much industrial gas demand will return because of fuel switching? Most industrial fuel switching information is based on survey data.



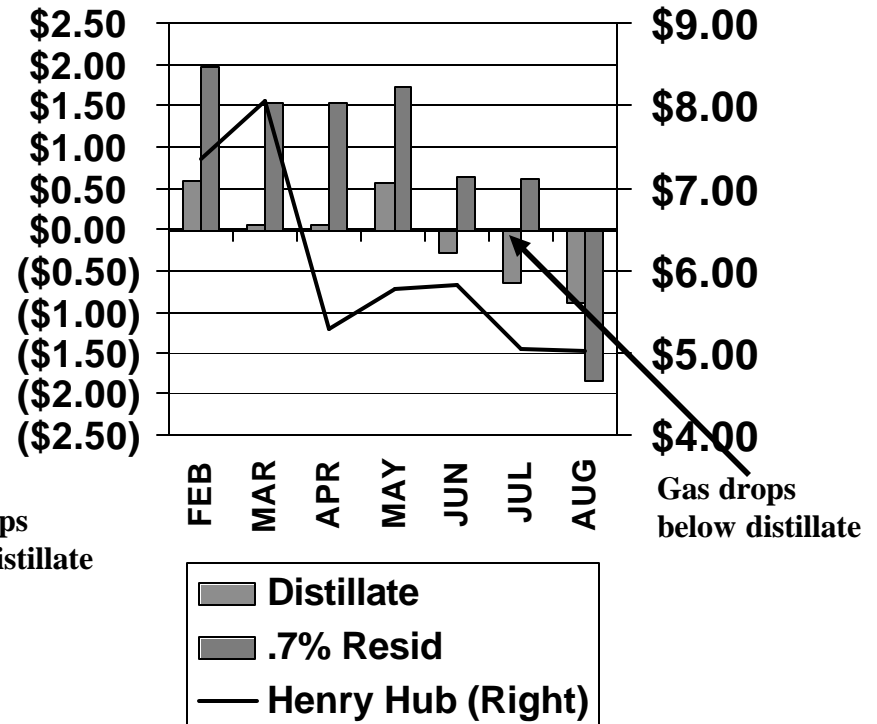
- The 1998 MECS study of switching capability is much higher than actual switching.
- Annual residual fuel oil consumption in the industrial sector is only about .5 Bcfd.
- A Department of Commerce study indicated about 500 Bcf per year (1.4 Bcfd) of boiler switching capability during 1994-98.
- NPC study suggests boiler switching capability of approximately 200 Bcf per year or less (.55 Bcfd)

**Changes in industrial production only accounted for a small portion of lost consumption in 2003. The remainder was fuel switching, index problems, conservation, and reporting error.**

**Industrial 2003 vs 2002**



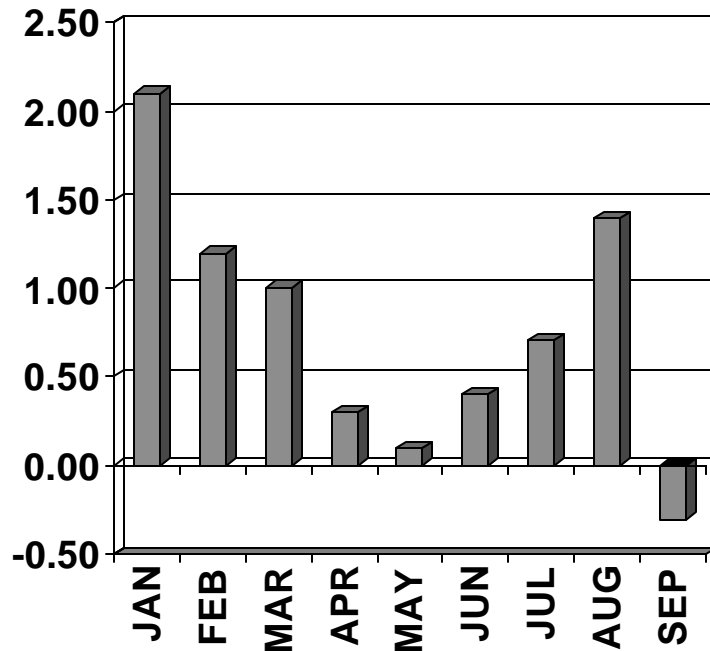
**LA Gas less Oil \$/MMBtu**





# Electric power fuel switching depends upon basis and whether steam units are dispatching.

2003 - 2002 YOY Change in Oil Consumption (Bcfd)



Northeast Residual Oil Switching Prices

	\$/MMBtu	
WTI = \$30/ bbl	<u>SEP</u>	<u>JAN</u>
1% Resid NY	3.65	3.65
Taxes & Shipping	0.45	0.45
Delivered NY	4.10	4.10
Basis	0.30	1.00
Henry Hub (Steam)	3.80	<u>3.10</u>
Henry Hub (CC)	<u>5.32</u>	4.34

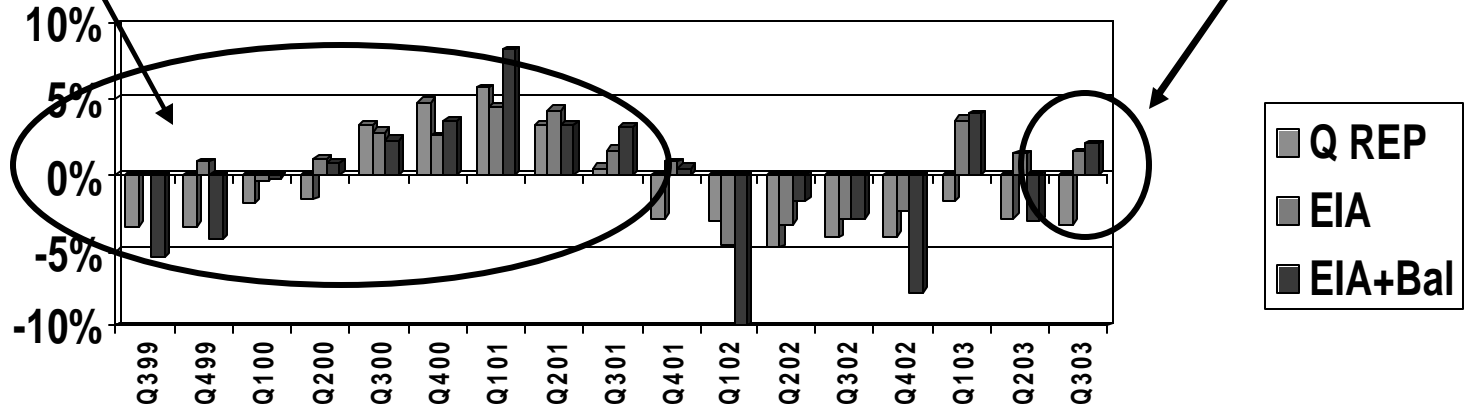
# The debate about production has important short-term and long-term implications.

- Company quarterly report data suggest production in 2003 declined 2.8% YOY versus EIA August YTD shows production up 2.4%.
- SEER estimates production declined .8% in 2003 and will be flat in 2004. Supply and disposition must balance but this is a tricky area.

EIA data shows growth  
Q Rep shows decline

Final EIA differs  
from Q Rep

YOY %Change in Production

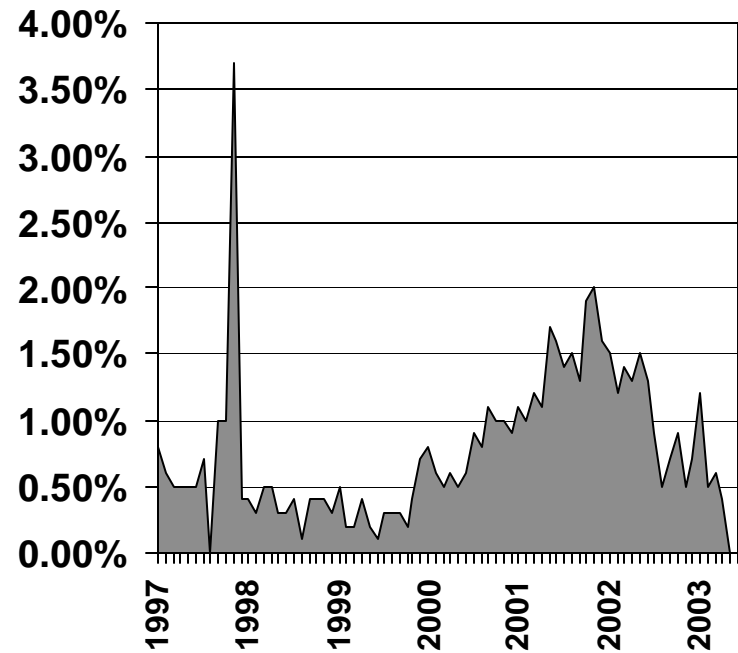


**Texas accounts for 30% of US production. Lags in reported data make it difficult to estimate production. However, final data is higher than initial projections.**

**Texas Production (Bcfd)**

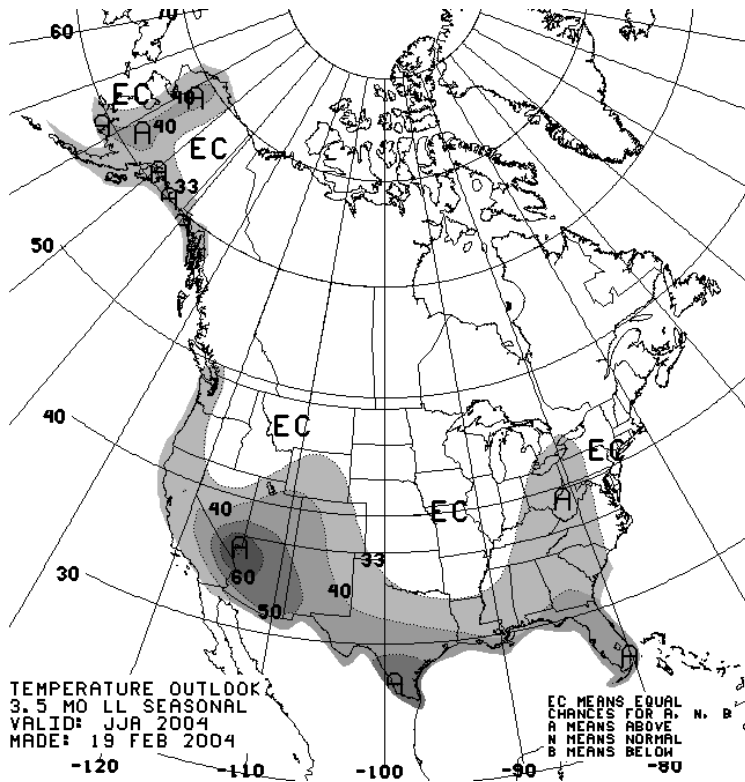
	<u>2002</u>	<u>2003</u>	<u>2002/ 2001</u>	<u>2003/ 2002</u>
JAN	15.6	15.2	-0.9%	-2.3%
FEB	15.6	15.4	-1.1%	-1.4%
MAR	15.6	15.8	-1.0%	1.1%
APR	15.6	15.7	-1.1%	0.2%
MAY	15.6	15.8	-1.4%	1.7%
JUN	15.6	16.0	-1.8%	3.0%
JUL	15.7	16.0	-0.8%	2.4%
AUG	15.6	16.0	-0.8%	2.1%
SEP	15.5	16.1	-2.2%	3.7%
OCT	15.6	15.1	-2.4%	-2.7%
NOV	15.4	15.6	-1.3%	1.5%
DEC	15.4			
YTD	15.6	15.7	-1.4%	0.8%

**Actual Production as % of Projected Production**

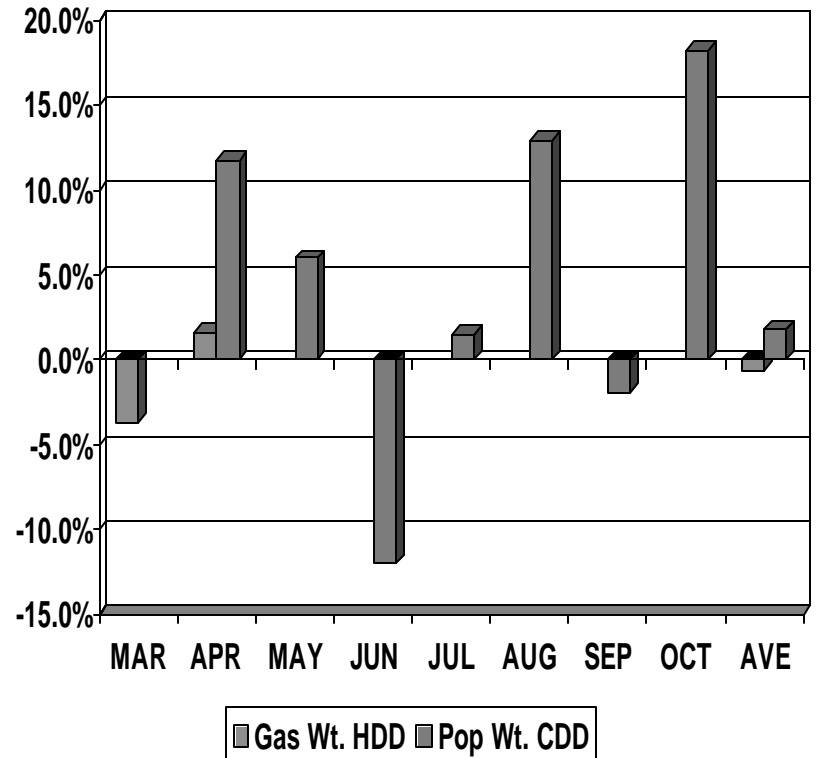


*Italics are estimates*

**March 2003 was 3.7% warmer than normal and the 2003 non-heating season was 1.8% warmer than normal. This non-heating season normal temperatures in key gas generation states could cause strong demand.**



2003 Degree Days Versus Normal

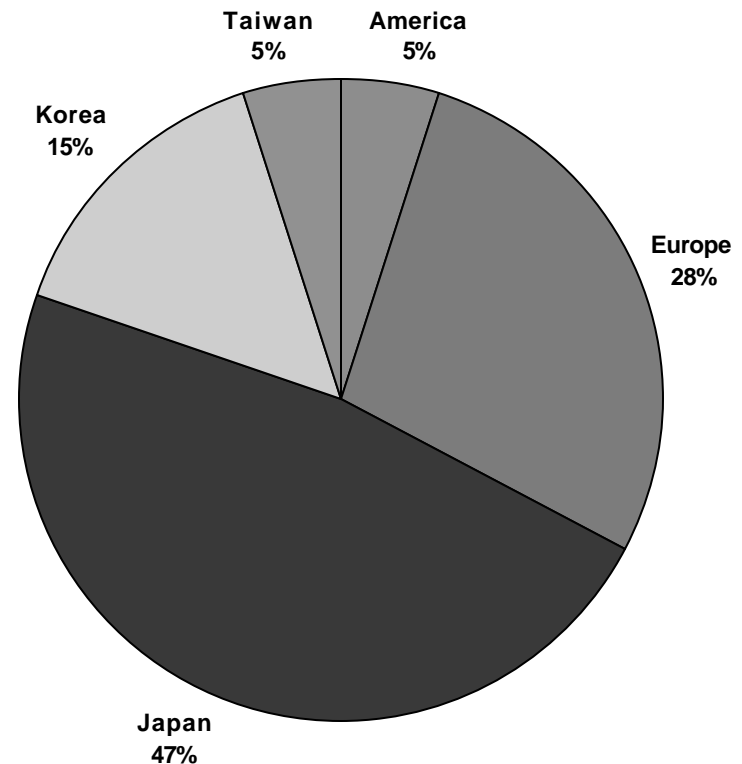


**The marginal cost of LNG is about \$3.50 per MMBtu and some supplies are economic at \$2.60 per MMBtu. However, liquefaction capacity will be a constraint on new supply and the US is a small player in the LNG market.**

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- **Asia accounts for 2/3 of LNG imports.**
- **Current world wide capacity is 17.8 Bcfd and probable expansion by 2007 is 4.3 Bcfd(1).**
- **World natural gas consumption is 155 Bcfd. Small changes in the world market can have a large impact on the availability of LNG.**

**Share of 2002 World LNG Imports  
(14.7 Bcfd)**

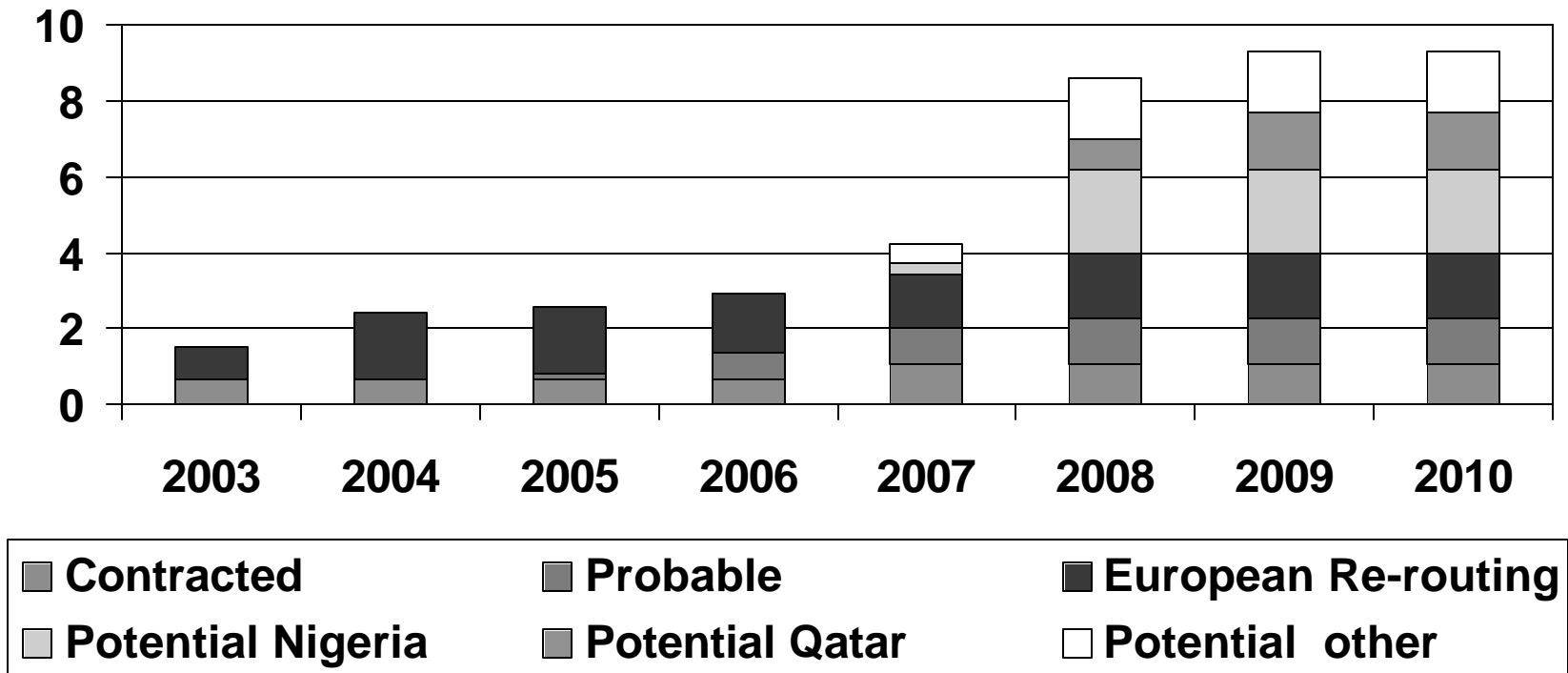


(1) Source James T. Jensen

**Until 2008, much of North American supply will depend upon re-routing from Europe and then increased supplies will depend on potential projects.**

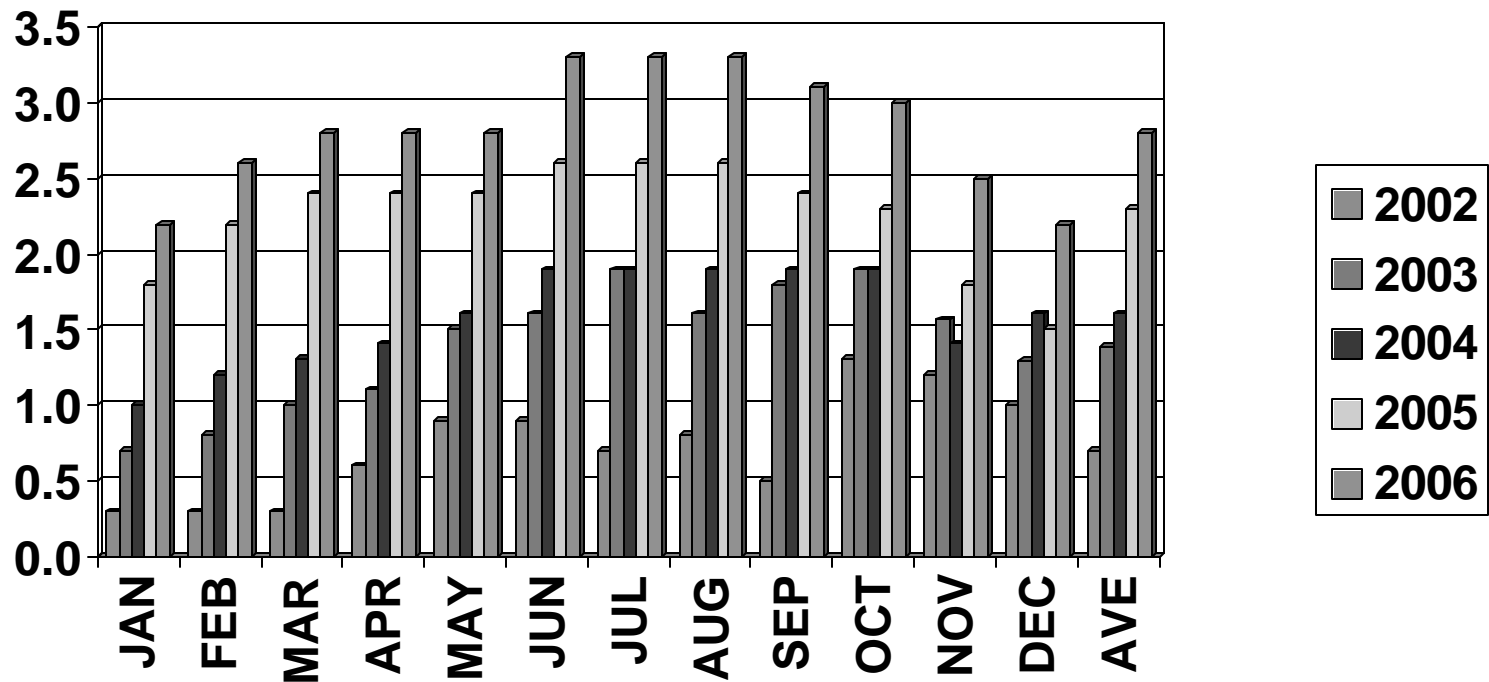
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### North American LNG Imports (Bcfd)



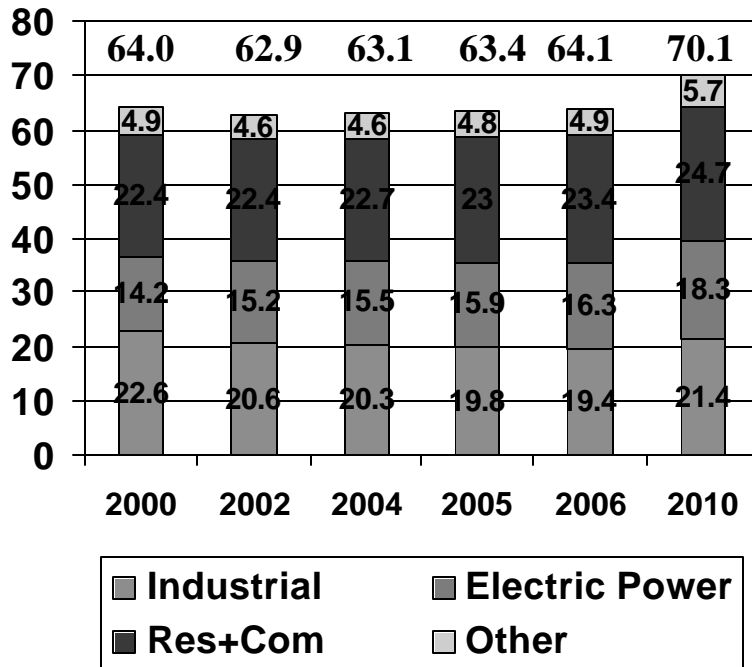
# The re-routing of LNG supplies will increase the seasonality of supply and the value of storage.

## US LNG Imports (Bcfd)

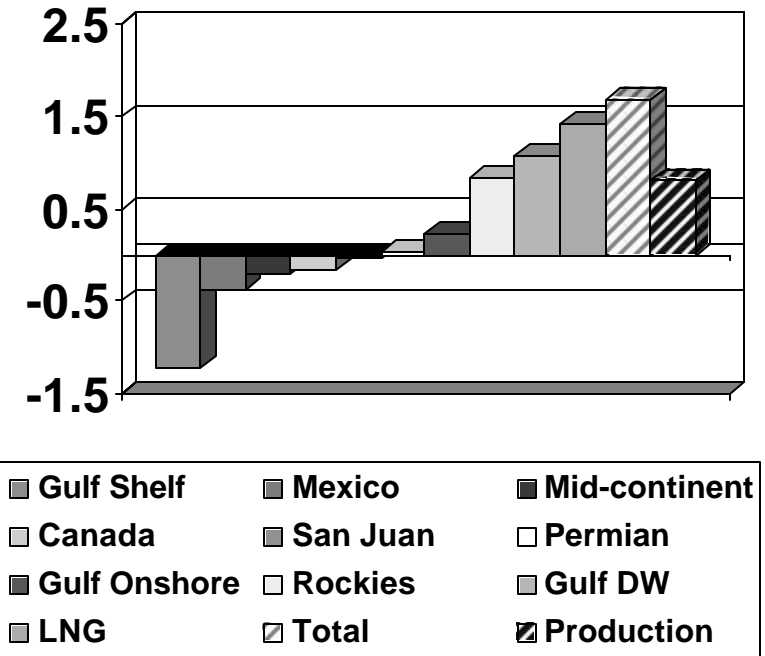


**Supply growth will be difficult to achieve during the next three years and most of the growth will occur in 2006. Prices might have to be high enough to cause further declines in industrial demand.**

**US Gas Consumption and Supply (Bcfd)**



**US Supply Growth (Bcfd) 2003 to 2006**





**Most Henry Hub price forecasts for 2010 are in the range of \$3.80 per MMBtu to \$4.25 per MMBtu in 2003 dollars.**

- **Marginal LNG is economic at \$3.50 per MMBtu (current dollars).**
- **Alaskan gas is economic at \$3.50 per MMBtu (2003 dollars).**
- **NSR could reduce gas consumption by 3.5 Bcfd.**
- **Historically, long run supply and demand elasticities have typically been underestimated.**

**Henry Hub (\$2003/MMBtu)**

