



Natural Gas

Analysis and Price Outlook

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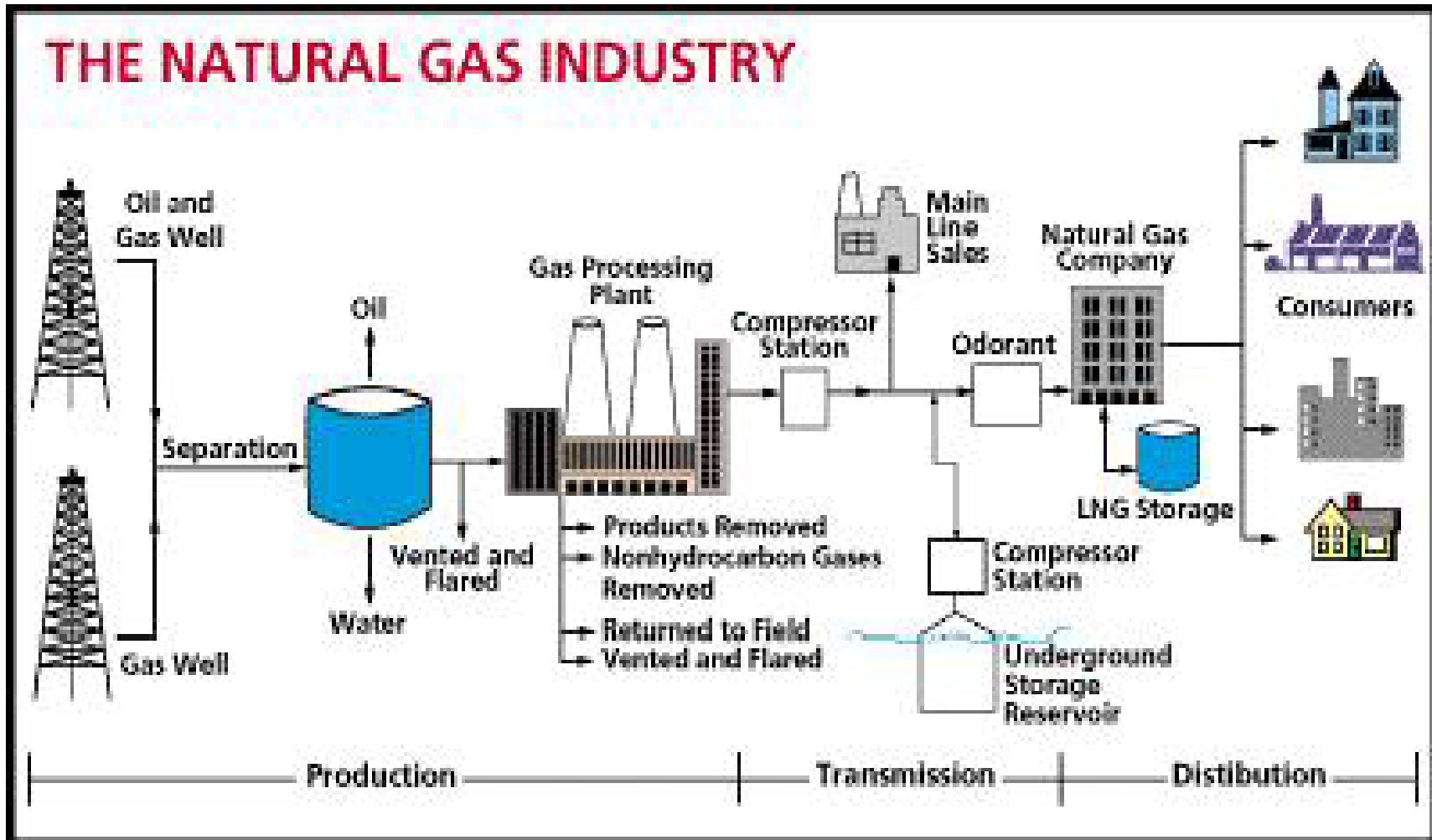


What is Natural Gas

- ◆ It is a Fossil Fuel
- ◆ Wet natural gas - hydrocarbons other than methane
- ◆ Dry natural gas - consisting only methane
- ◆ It is more environment friendly
- ◆ It is a clean Fuel
- ◆ Russia holds the largest reserve of the World
- ◆ USA is the largest producer as well as the consumer



Natural Gas Industry





Its Uses

- ◆ Residential use (Cooking, Heating, Air conditioning etc)
- ◆ Commercial use (Food Service, hotel, healthcare facilities etc)
- ◆ Industrial use (Paper, Metal, chemical manufactures etc)
- ◆ Power generation
- ◆ Fertilizer (Ammonia- Nitrogen Fertilizer)
- ◆ Alternative fuel to Gasoline (Compressed Natural Gas)
- ◆ Aviation fuel



Units of Measurement

- ◆ Natural Gas is measured in Cubic Feet (Volume) or in Btu (British Thermal Unit)
- ◆ One Btu is the heat required to raise the temperature of one pound water by one degree Fahrenheit

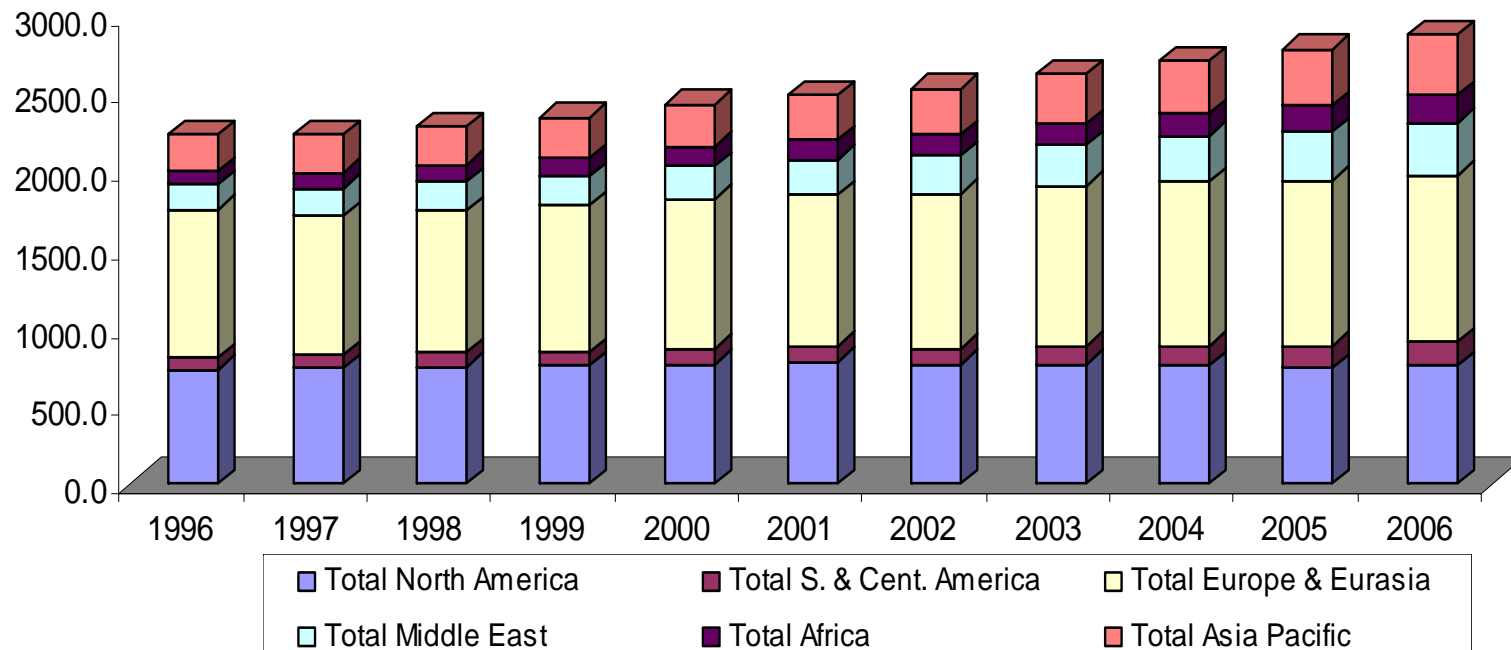
Few Facts

- 1 Cubic feet of NG = 1031 Btu
- Natural Gas is quoted in MMBtu (million Btu) on MCX
- One MMBtu = 969.93 cubic feet
- 1 kilowatt-hour of electricity = 3412 Btu
- 1 gallon of gasoline = 124,000 Btu



World Production of Natural gas

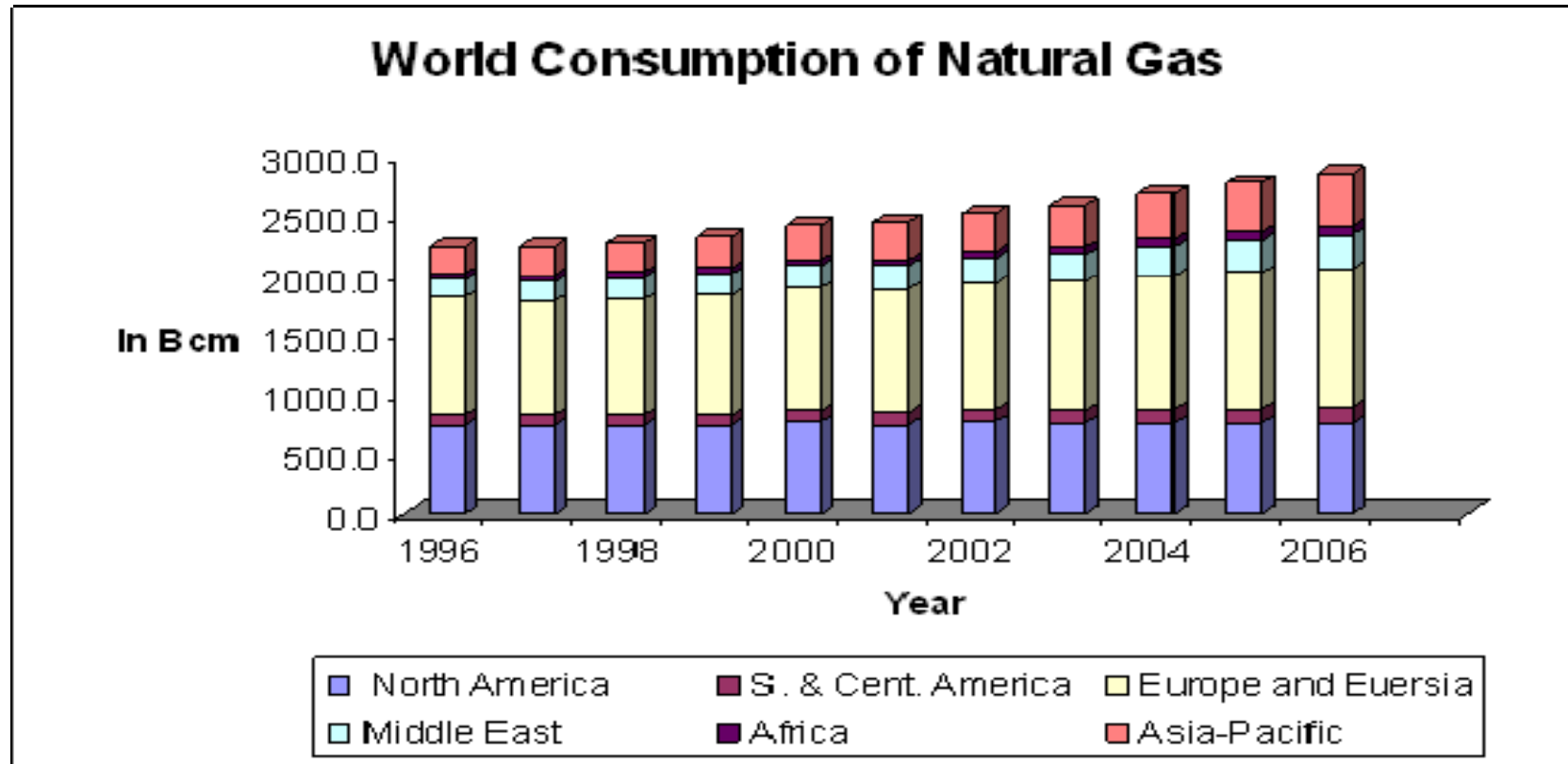
World Production of Natural Gas (In bcm)



Note- USA is the largest producer historically and contributed nearly 19% (2006) with Canada 6.5%, Iran 3.7% While in 2006 Russia Replaced USA and produced nearly 21.3% of the overall world production.



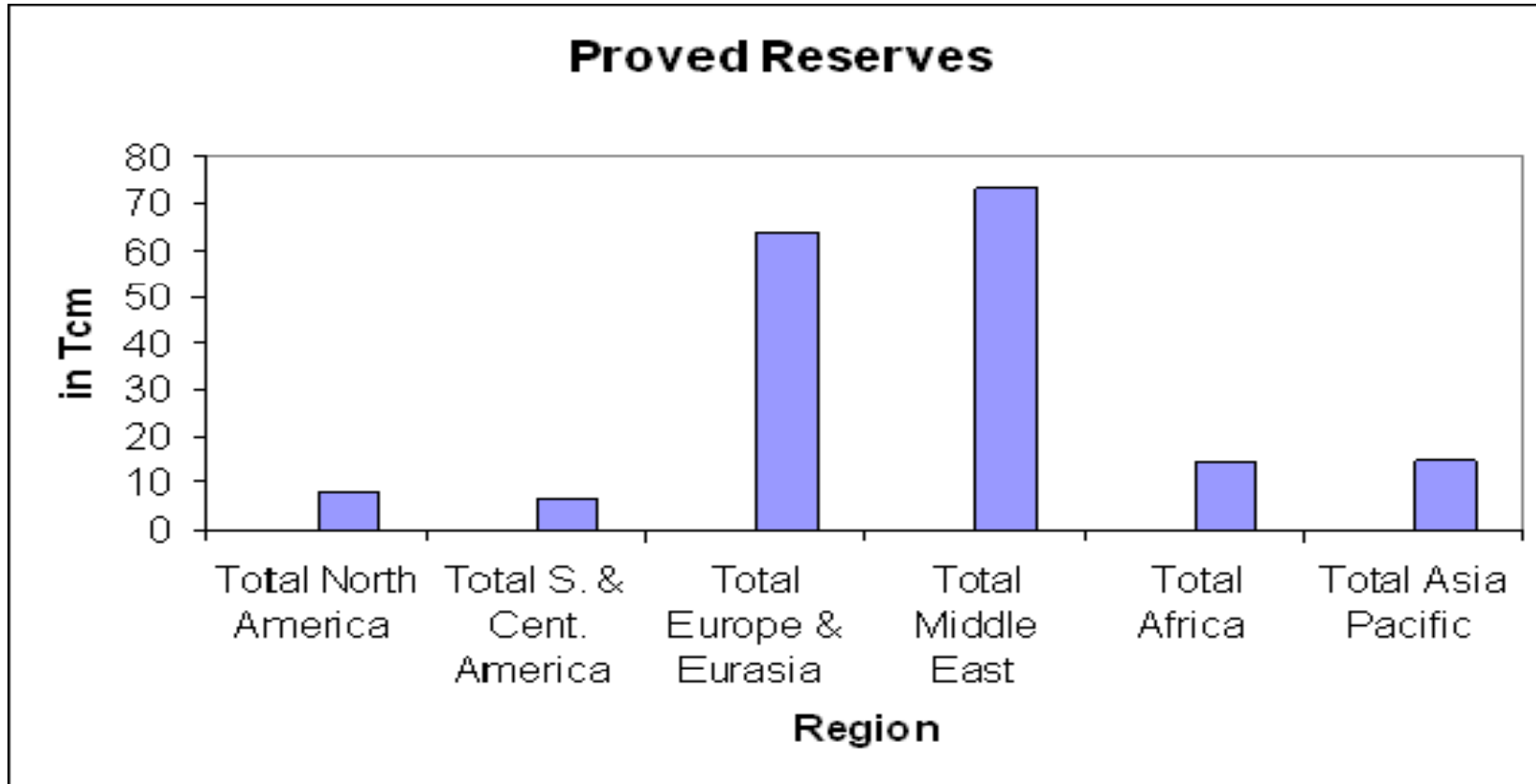
World Consumption of Natural Gas



Note- USA is the largest consumer with 22% followed by Russia (15.1%), Canada(3.4%), Germany(3%), Iran (3%) and Japan (3%)



World Proved Reserves of Natural Gas



Of the proved Reserves Russia holds 26.3% of the world Reserve, 15.5% by Iran, Qatar by 14% and 8.2% by USA. European Union contributes only 1.5%.

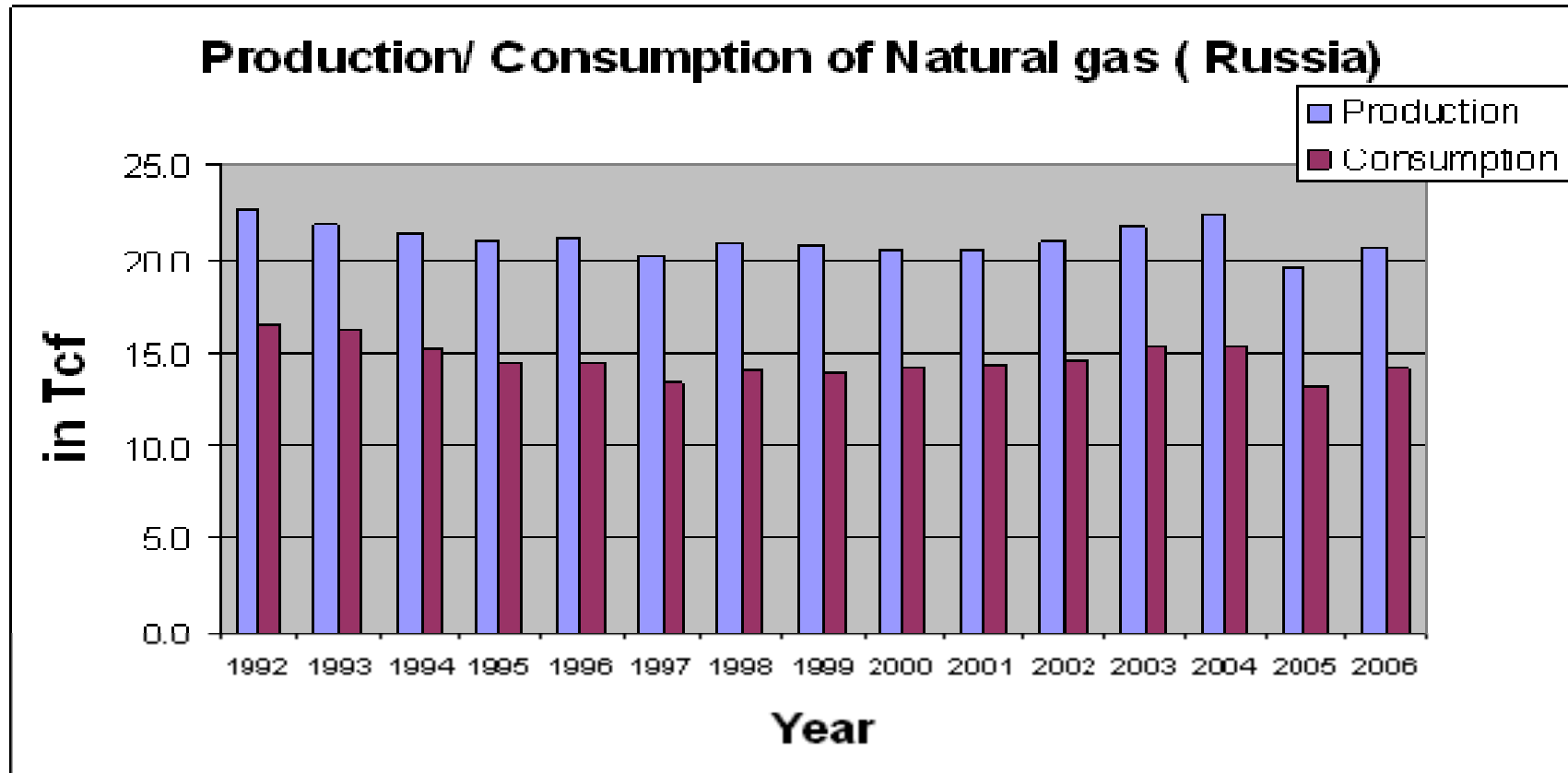


Russian Natural Gas

- ◆ Largest reserve holder of the world
- ◆ Gazprom is largest producing company of Russia and also world
- ◆ Exports of Oil and Gas contributes to 20% of Russia's GDP
- ◆ Three major fields (called the 'Big Three') of Western Siberia –Urengoy, Yamburg, and Medvezh'ye
- ◆ These comprise more than 70 percent of Gazprom's total natural gas production
- ◆ Major importers of Russian Natural gas - European countries



Production/ Consumption (Russia)





Indian Scenario

- ◆ Natural Gas contributes nearly 22% of overall energy consumption
- ◆ Major consumption – Power (40%) and Fertilizer(29%)
- ◆ India consumes nearly 35 billion cubic metre per year
- ◆ Domestic supply meets nearly 80% of the demand
- ◆ Major producing areas - Gujarat, Andhra Pradesh, Assam and Western offshore
- ◆ Prices mechanism - APM (Administered price Mechanism) and Market determined



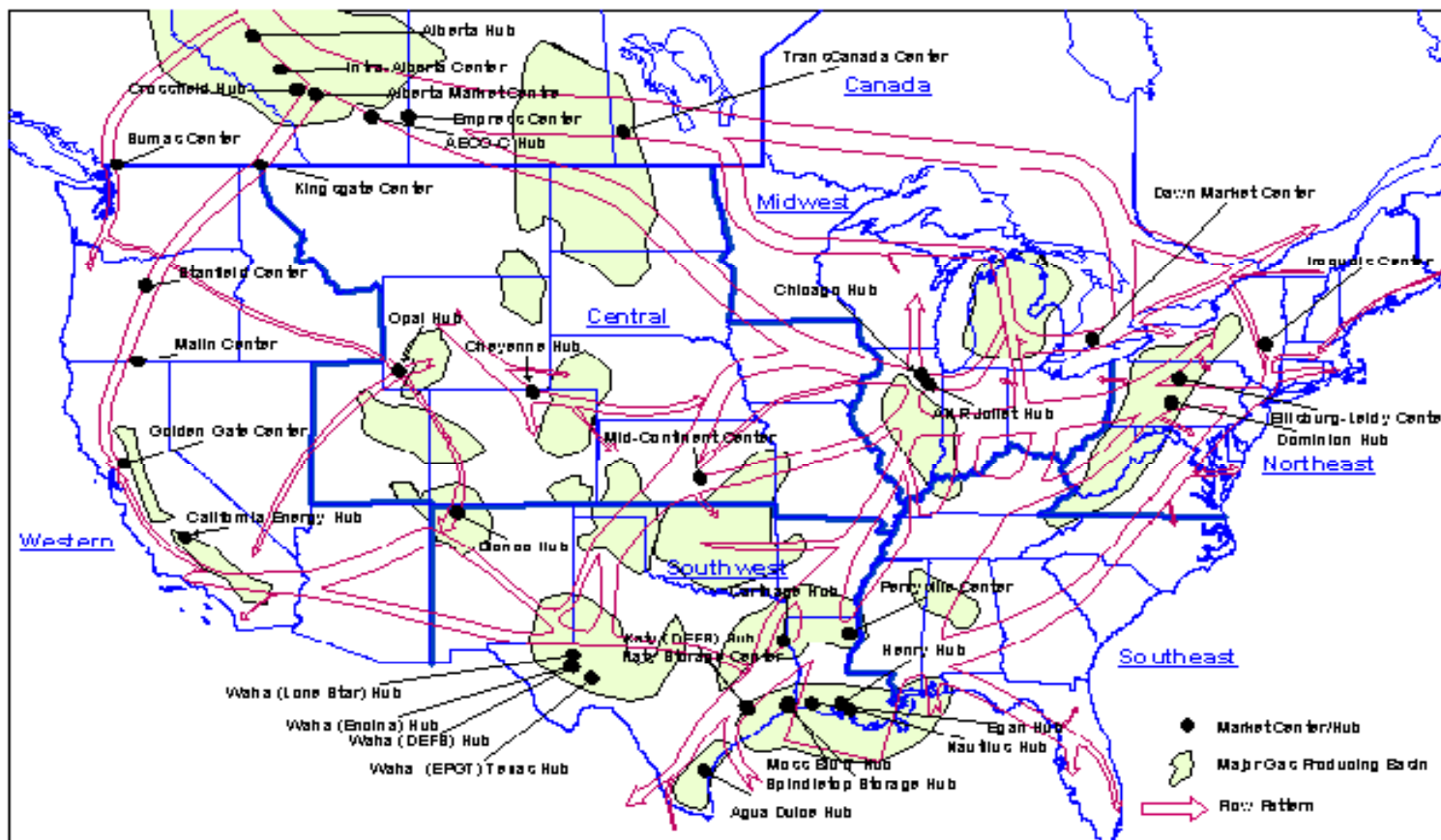
Natural Gas in USA - A Fact sheet

- ◆ Contributes nearly 23% of overall energy requirement
- ◆ Total Yearly consumption- 21653 Bcf
- ◆ Total Yearly production-18475 Bcf
- ◆ Total Reserves –19.45 Trillion Cubic feet.
- ◆ Major production regions - Texas, Louisiana and off-shore gulf of Mexico
- ◆ Major uses - Residential, commercial and electricity generation
- ◆ Actively traded commodity on NYMEX



Production Fact sheet (USA)

Figure 1. Natural Gas Centers/Hubs in Relation to Production Basins and Major Flow Corridors

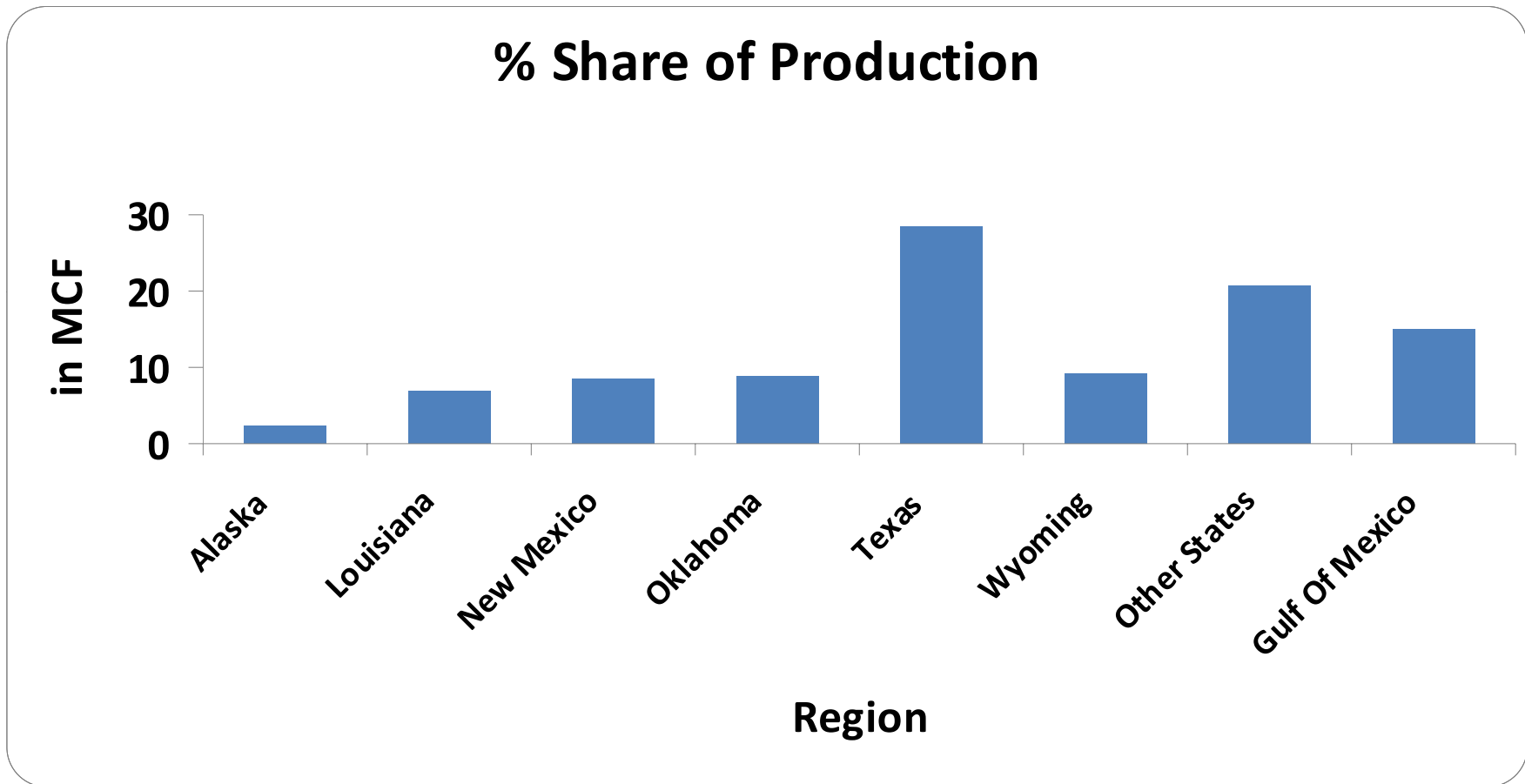


Note: DEFS = Duke Energy Field Services Co.; EPGT = EPGT Texas Pipeline Co.

Source: Energy Information Administration, GasTran Gas Transportation Information System, Natural Gas Market Hubs Database, as of August 2003.

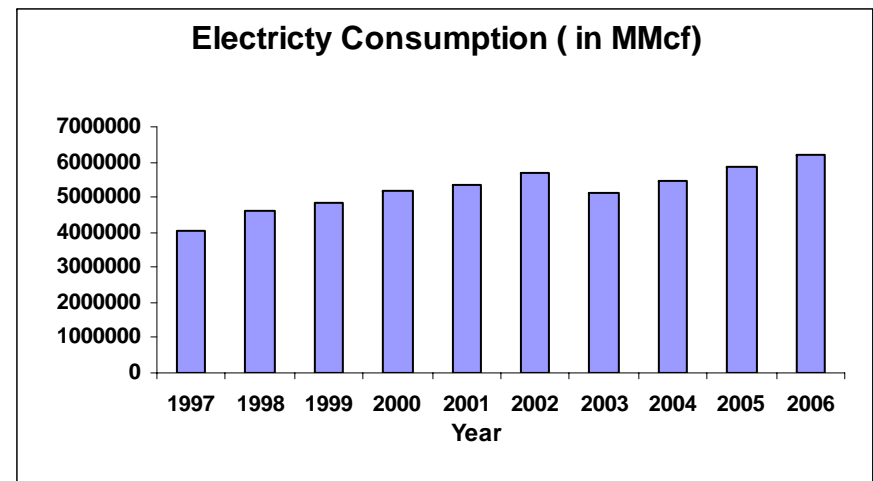
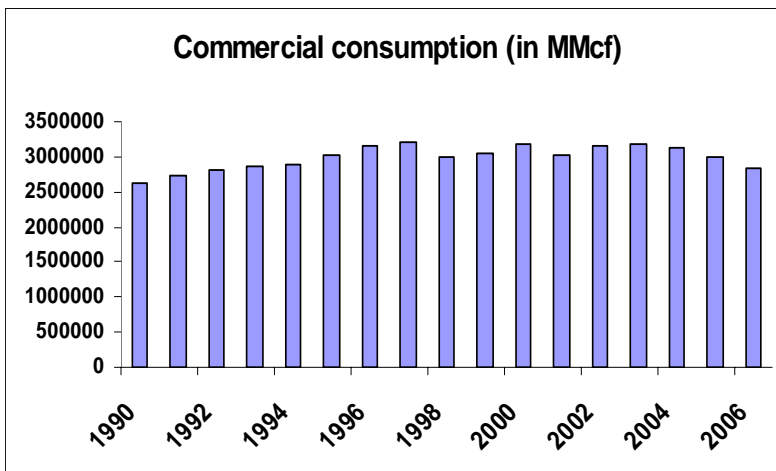
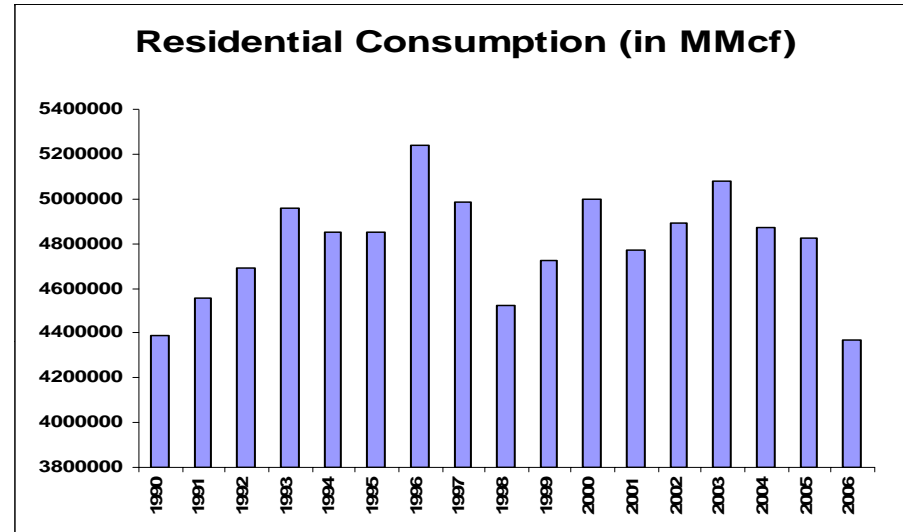
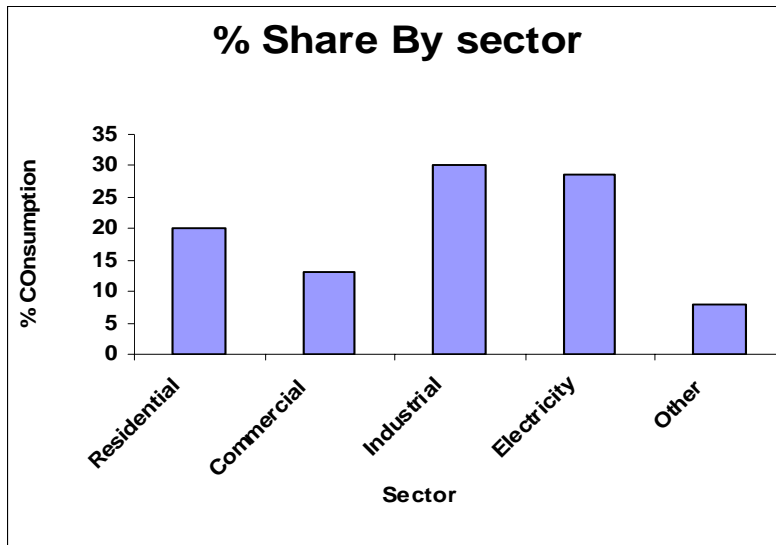


Production Fact sheet (USA)



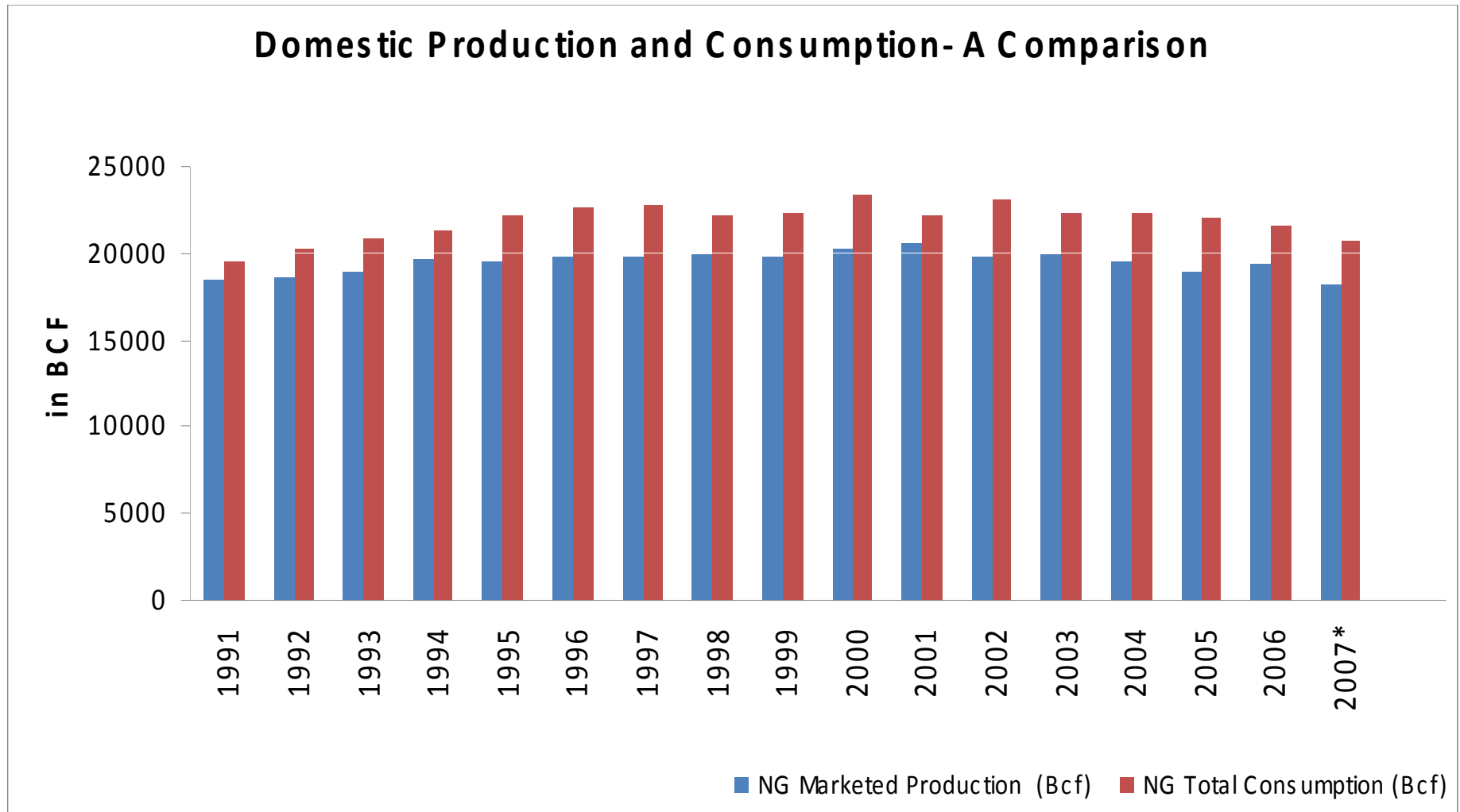


Sector Wise Consumption (USA)



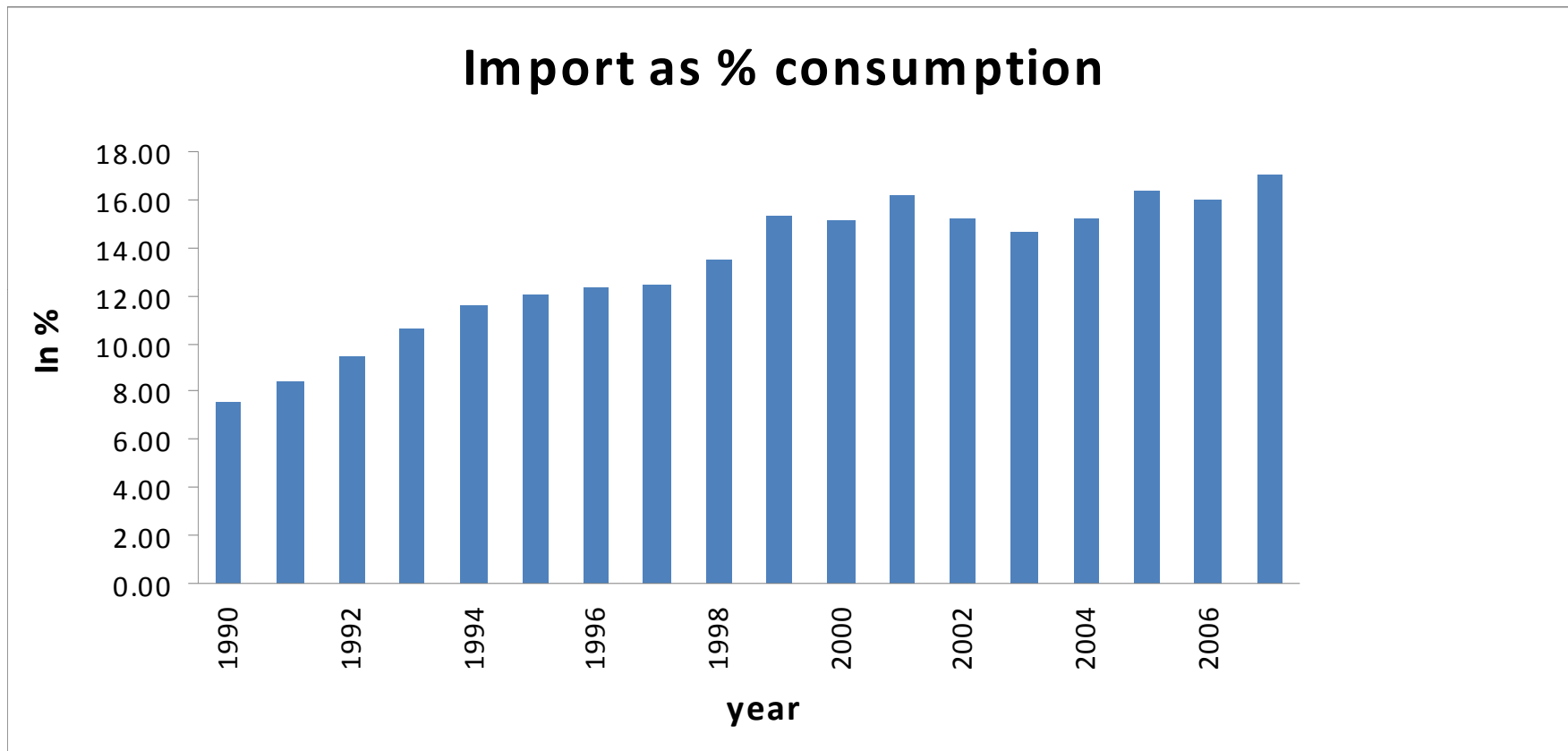


Consumption/ Production (USA)-Comparison





Imports (USA)



Note - USA imports Natural gas from Canada and it has international pipeline through Alberta.



Demand Perspective

- ◆ Peak Demand - Heating season (October 1st and May 31st)
- ◆ **Region wise Demand Break –up**
 - ◆ Northeast-18%, Midwest-22%, South Central-26%, South east-12% and Western -19%
 - ◆ North East and Mid west are the two largest regions for residential sector demand
- ◆ Electricity demand has grown by nearly 34% since 1997
- ◆ Commercial sector demand has increased by nearly 7% since 1990
- ◆ Residential demand is weather based.
- ◆ Natural Gas prices carries strong co-relation with electricity prices



Supply Perspective

- ◆ Supply is highly influenced by the weather conditions
- ◆ Production concentrated near the Gulf of Mexico region is affected by the Atlantic Hurricane season
- ◆ Bad weather condition may disrupt transportation from the producing to the LDC's
- ◆ Short term supply depends upon the Storage levels
- ◆ Long term supply is likely to be affected by the depleting reserves

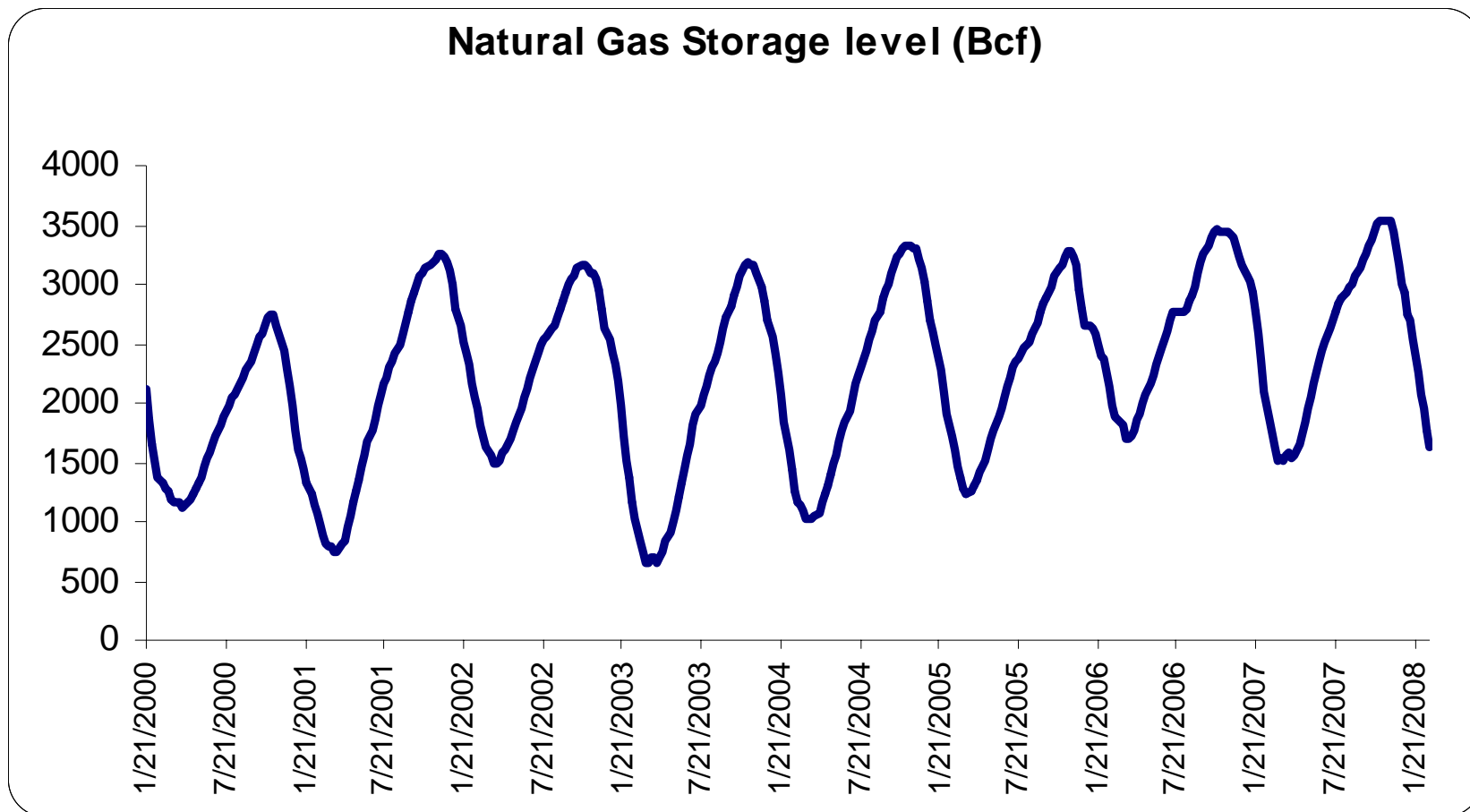


Major Trading Hubs in US

- ◆ Carthage-East Texas, Dominion –Pennsylvania, Cheyenne-Colorado, California Energy-California and Henry Hub-Louisiana
- ◆ Henry Hub- Louisiana
 - Gas pipeline located in Erath, Louisiana and owned by Sabine Pipe Line LLC
 - Henry Hub connects to four intrastate nine interstate pipelines
 - Henry Hub is the official delivery point of NYMEX Natural Gas future
 - The settlement prices at the Henry Hub are used as benchmarks for the entire North American natural gas market



Storage level (USA)



Observation: Stock level starts to fall from Nov till **March- April** and Start building up from **April** again.



Futures Trading

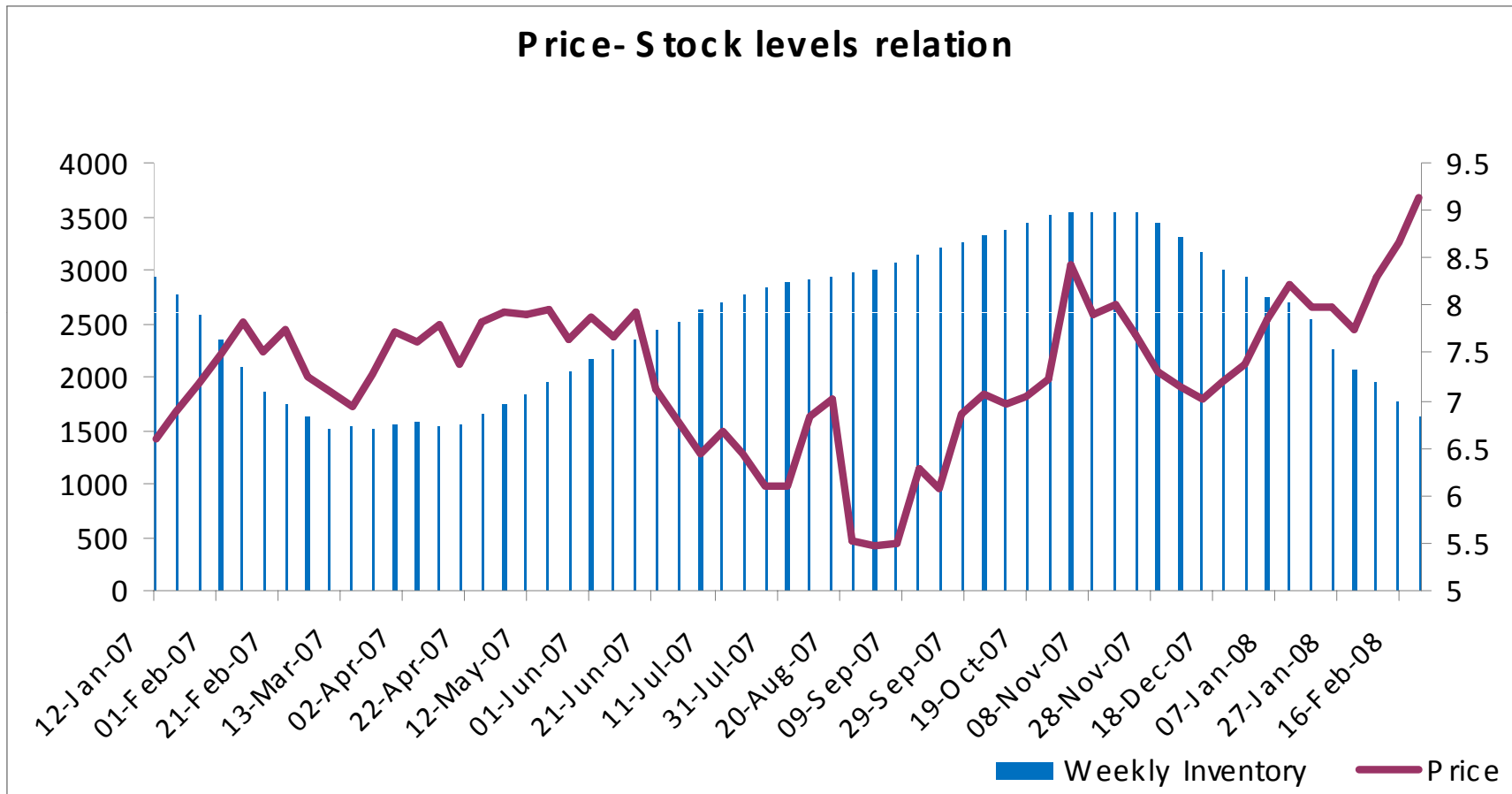
- ◆ Actively traded on NYMEX and IPE, ICE
- ◆ Prices are affected by local market condition with less impact from other international markets
- ◆ Indian Natural Gas traded on MCX is benchmarked with NYMEX

Contract specification on NYMEX

- ◆ Trading Unit-10,000 MMBtu
- ◆ Price Quotation-USD and cents per mmBtu
- ◆ Trading Hours -9AM-2.30 PM (New York time for open-outcry)
- ◆ Last Trading Day: Trading terminates three business days prior to the first calendar day of the delivery month
- ◆ Delivery point: Henry hub Louisiana



Inventories and Prices



The recent rise in the prices since Nov 2007 is attributed to the falling inventory levels in US.



Price Outlook for 2008

- ◆ Long term trend remains bullish
 - ◆ **Outlook for 2008**
 - Mid March – June: Slightly Negative
 - June – Dec : Bullish (highly volatile)
 - June and August- Mild Bullish
 - August to Dec-Bullish
 - ◆ Negative phase in March- June is expected due to informal end of Heating season
 - ◆ Prices may stay positive from August with expectation of Atlantic Hurricane
- (However, prices move will be determined by weather condition)



Technical Outlook



Resistance - \$10 (Psychological level) and then \$10.70 (Trend Channel Resistance)
 Support \$9.00 (Previous top) and \$8.10 (Trend Channel Support)
 Average long term Support \$6.50-\$7.00.



Thank You
