

16. “Conventional” Natural Gas II.

Distribution, consumption, and pricing

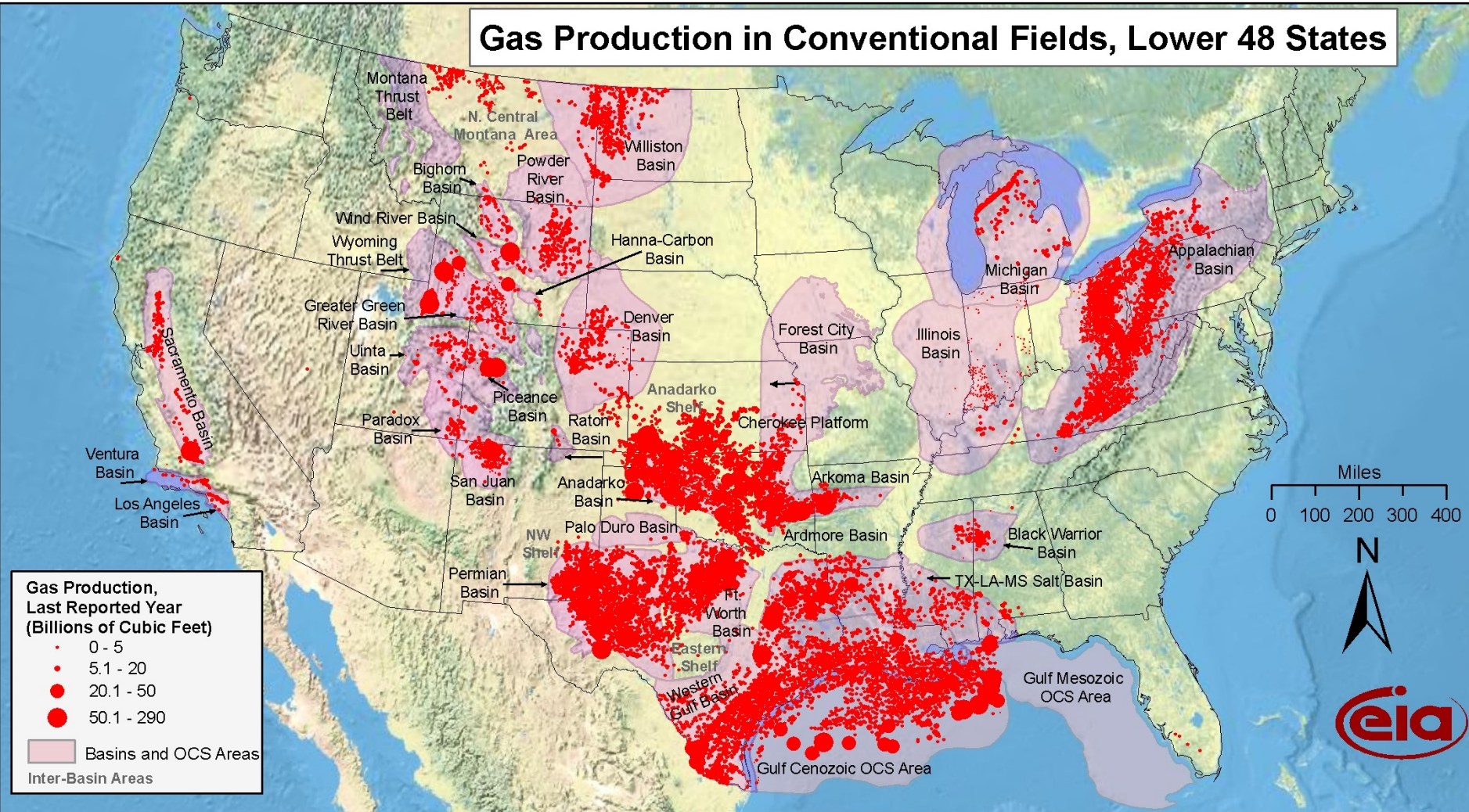
Kenneth M. Klemow, Ph.D.

EGY 105 at Wilkes University



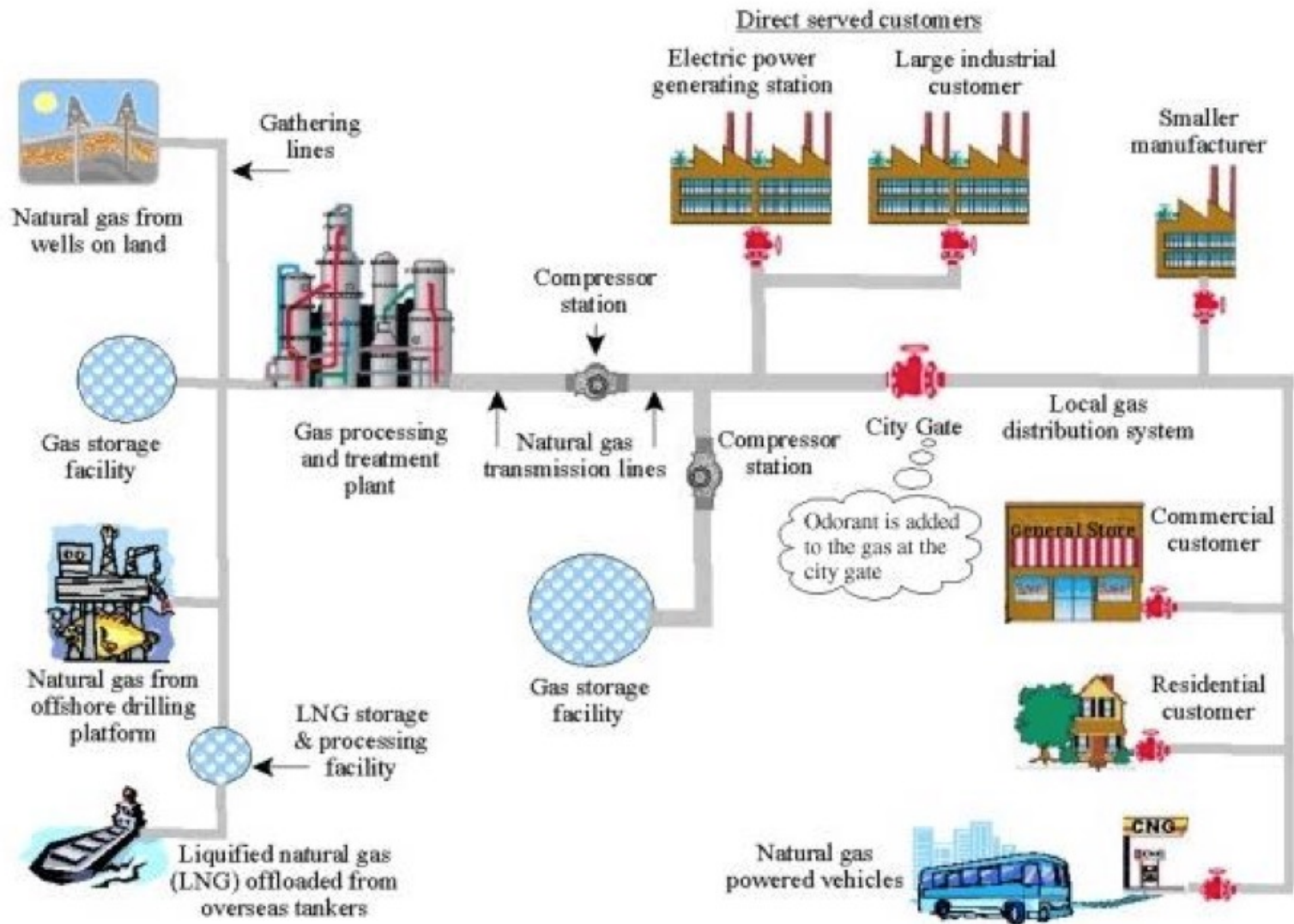
Location of conventional natural gas

Gas Production in Conventional Fields, Lower 48 States

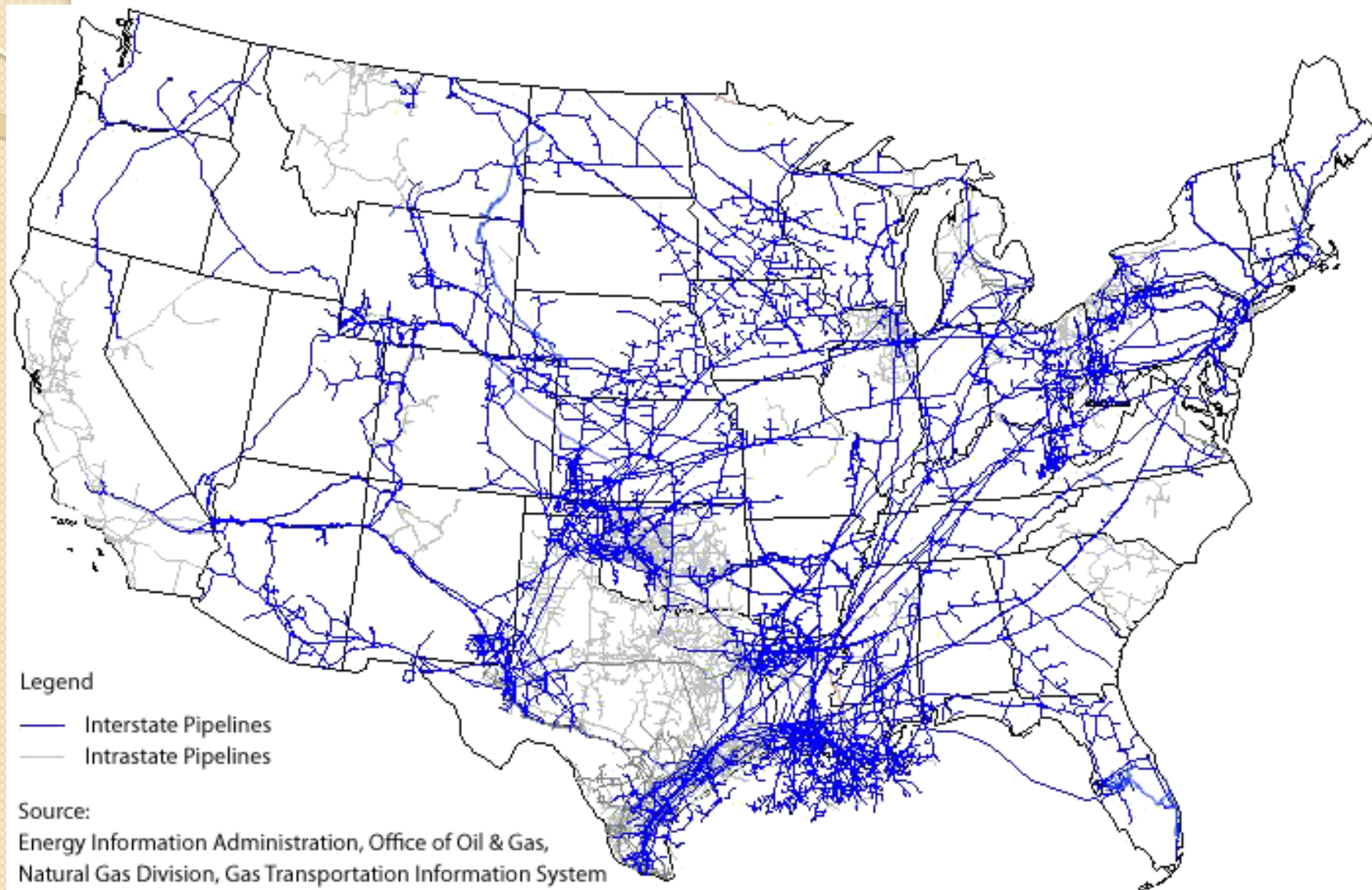


Source: Energy Information Administration based on data from HPDI, IN Geological Survey, USGS
Updated: April 8, 2009

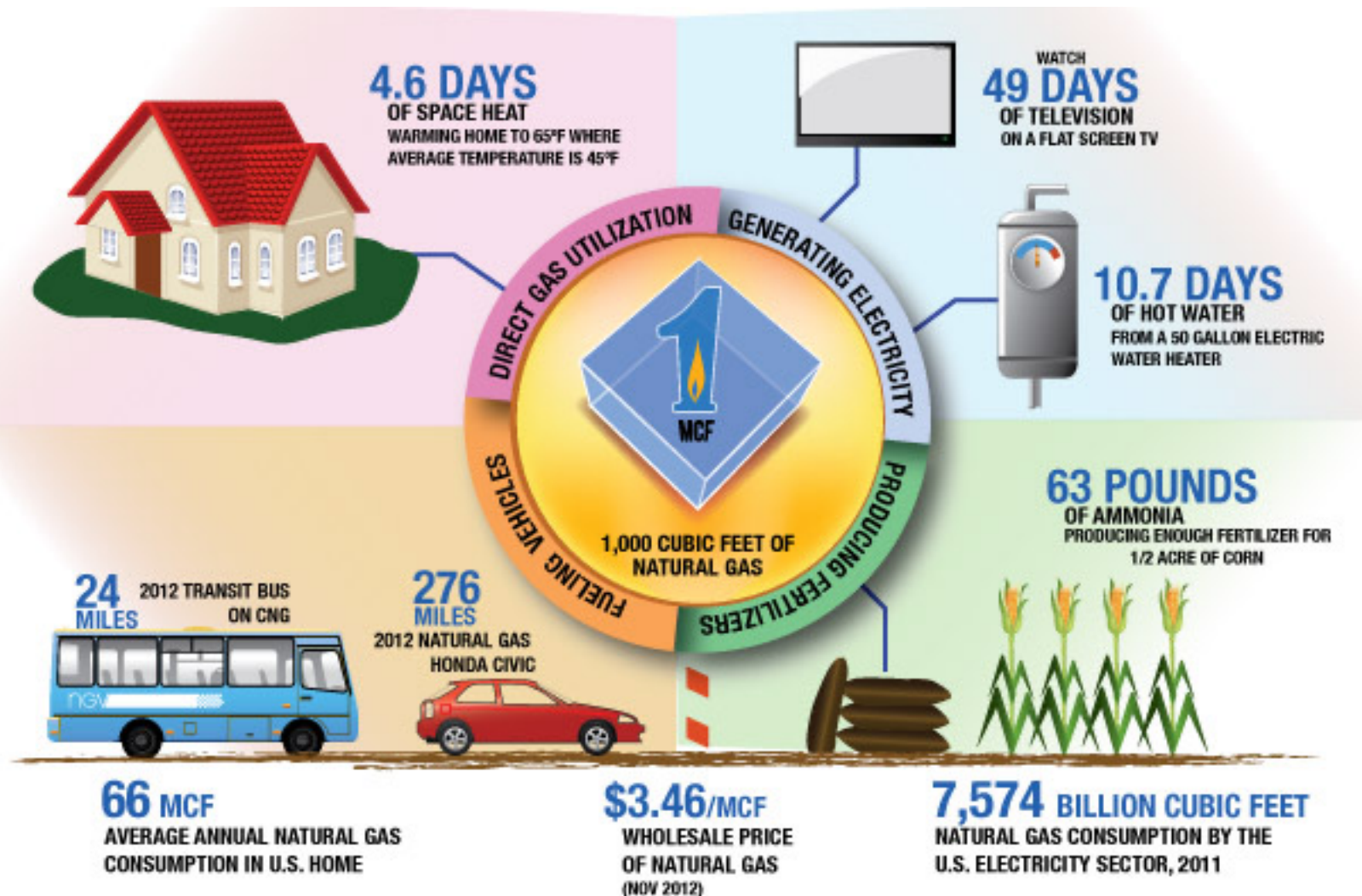
Gas distribution system



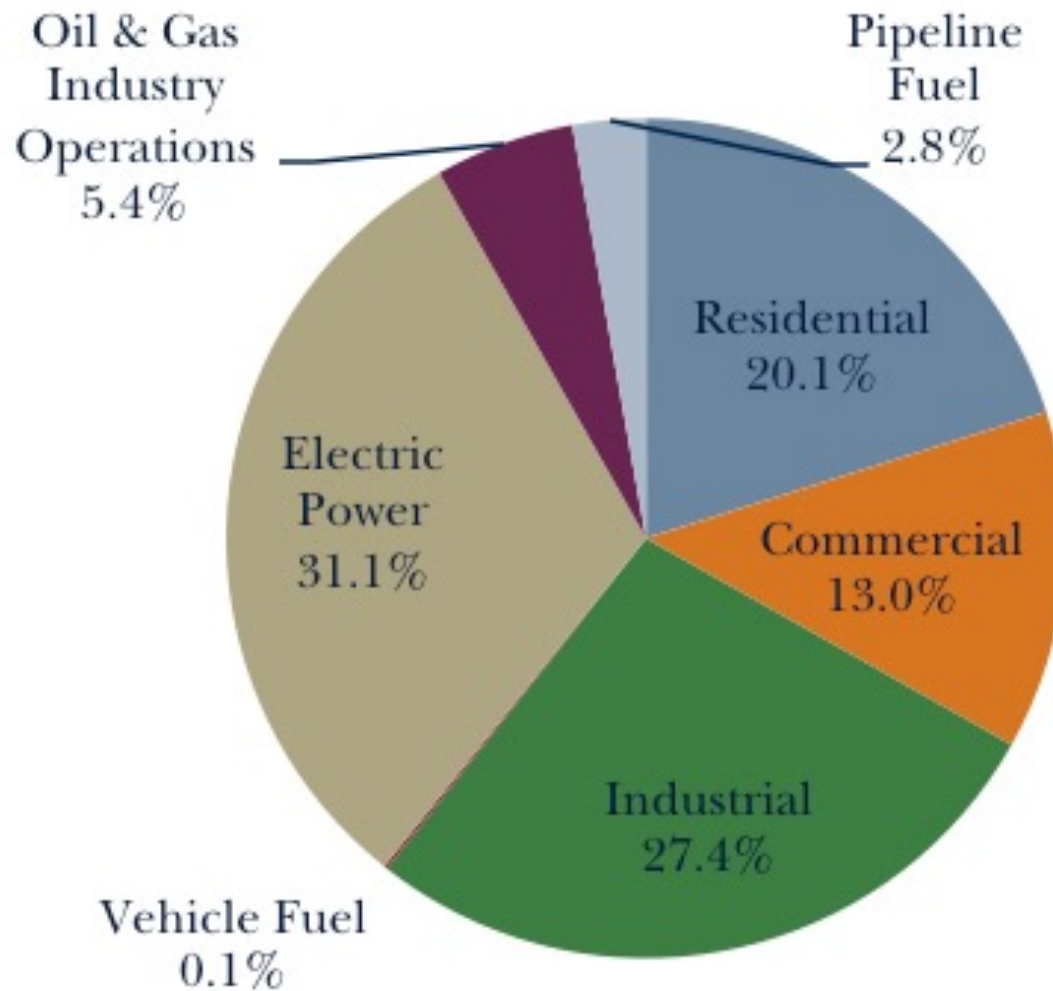
Major NG pipelines in US



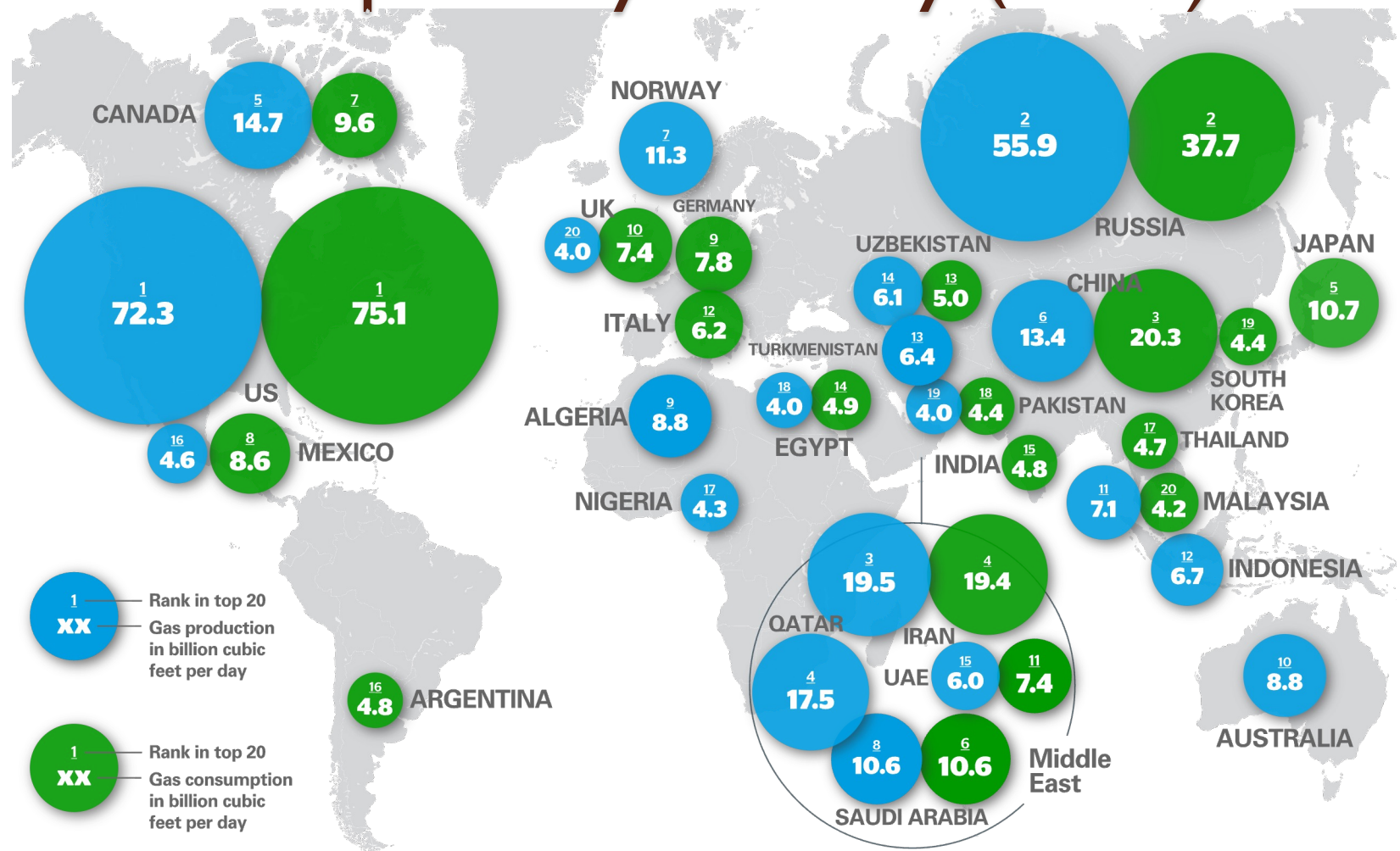
Gas utilization



Energy use of natural gas



Global gas production and consumption by country (2016)



NG can be compressed and liquified

- Both reduce volume making it easier to transport



CNG – Compressed to 1% original volume

- Used as a fuel for vehicles
 - Cars, trucks, buses, locomotives
 - Some engines run on both CNG and gasoline
 - Common in Iran, Pakistan, Argentina, Brazil
 - Efforts to increase use in US



<http://www.ngvglobal.com/>



<http://gas2.org/>

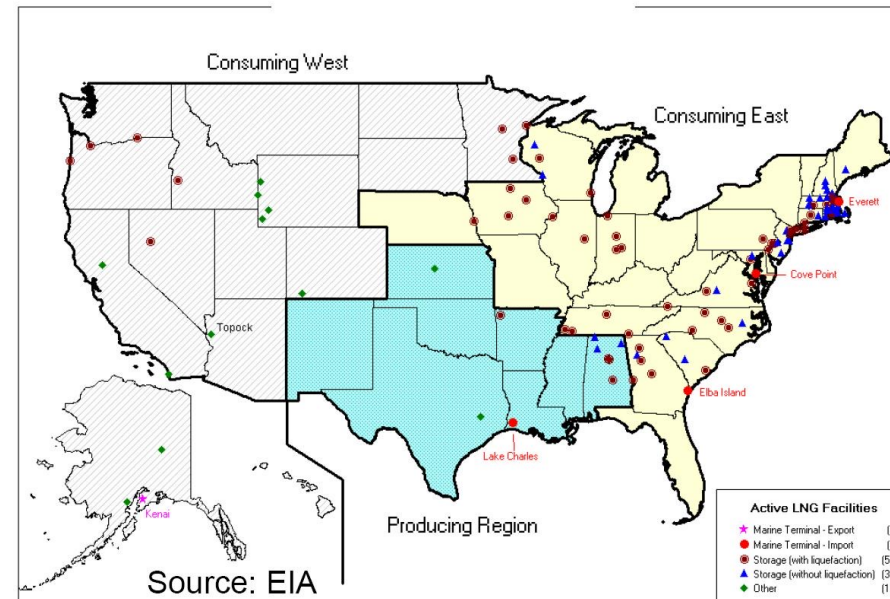
LNG – Cooled to -260°F

- Has 2.4 times more energy than CNG
- Transported via trucks and ships where pipelines not present
- Must be stored in cryogenic tanks
- Not used as fuel



<http://ubpost.mongolnews.mn>

U.S. Liquefied Natural Gas Facilities



<http://cryptome.org/eyeball/lng/lng-eyeball.htm>

Pricing natural gas

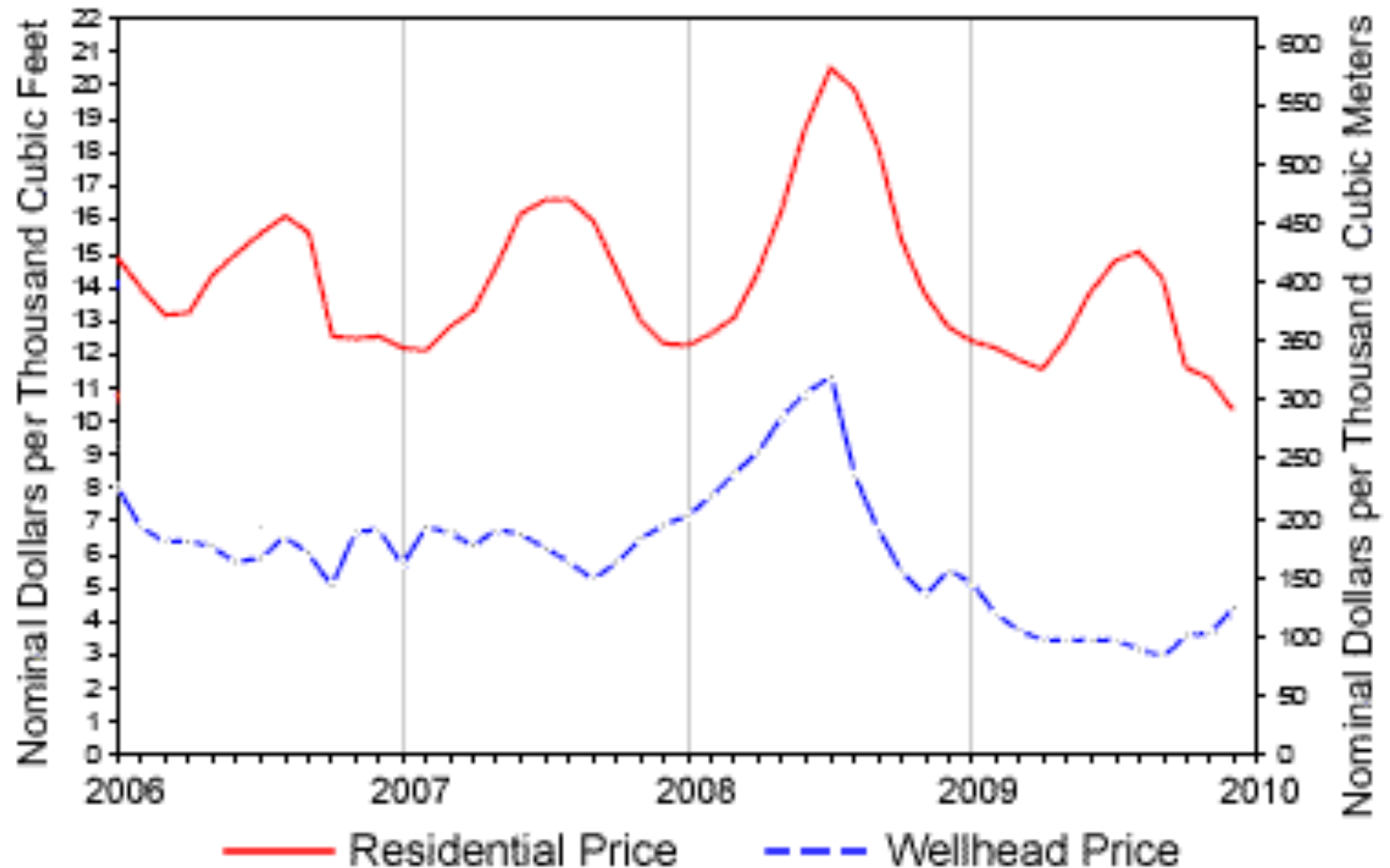
- Natural gas sold by volume
 - Typical basis 1000 cubic feet (Mcf)
 - Also used
 - 1 million cf (MMcf)
 - 1 billion cf (Bcf)
 - 1 trillion cf (Tcf)
 - 1 Mcf = 1 million BTU

Pricing natural gas

- Different prices often quoted
 - Wellhead – Unprocessed NG at well
 - Henry Hub – Port in Louisiana, used as basis for NY Mercantile Exchange
 - Futures price – Contract price for specified amount of gas at specified time
 - City Gate – Price paid by utility receiving gas from major pipeline
 - Electric Power price – Paid by electric utility
 - Residential price – Paid by consumer

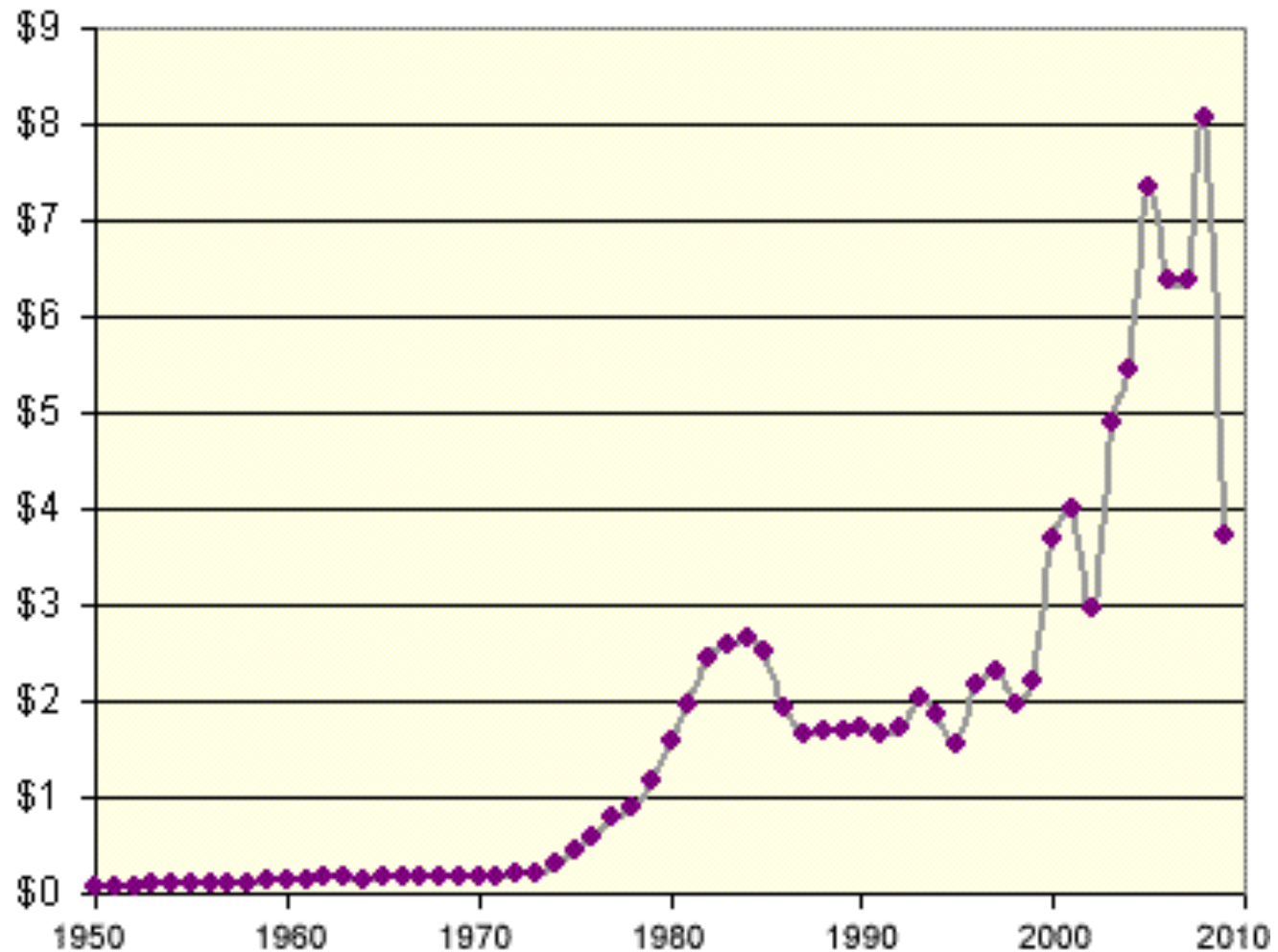
Pricing natural gas

Short-Term Price History: Residential vs Wellhead



Pricing long term trend

Long-Term History: Average Annual Wellhead Price



Benefits of Conventional Natural Gas

- High energy density
- Less polluting than coal
- Easy to transport
- Does not cause radioactivity
- Reliable

Drawbacks of Conventional Natural Gas

- Burning releases greenhouse gases
- Drilling and pipelines impacts habitat
- Supplies dwindling