Natural Gas and Climate Change -- Will the Potential be Realized?

September 2006

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Washington, D.C.

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THE POTENTIAL OF NATURAL GAS

- Cleaner fuel
- Abundant
- Efficient production/delivery system
- New technologies
- Can and must be a major contributor

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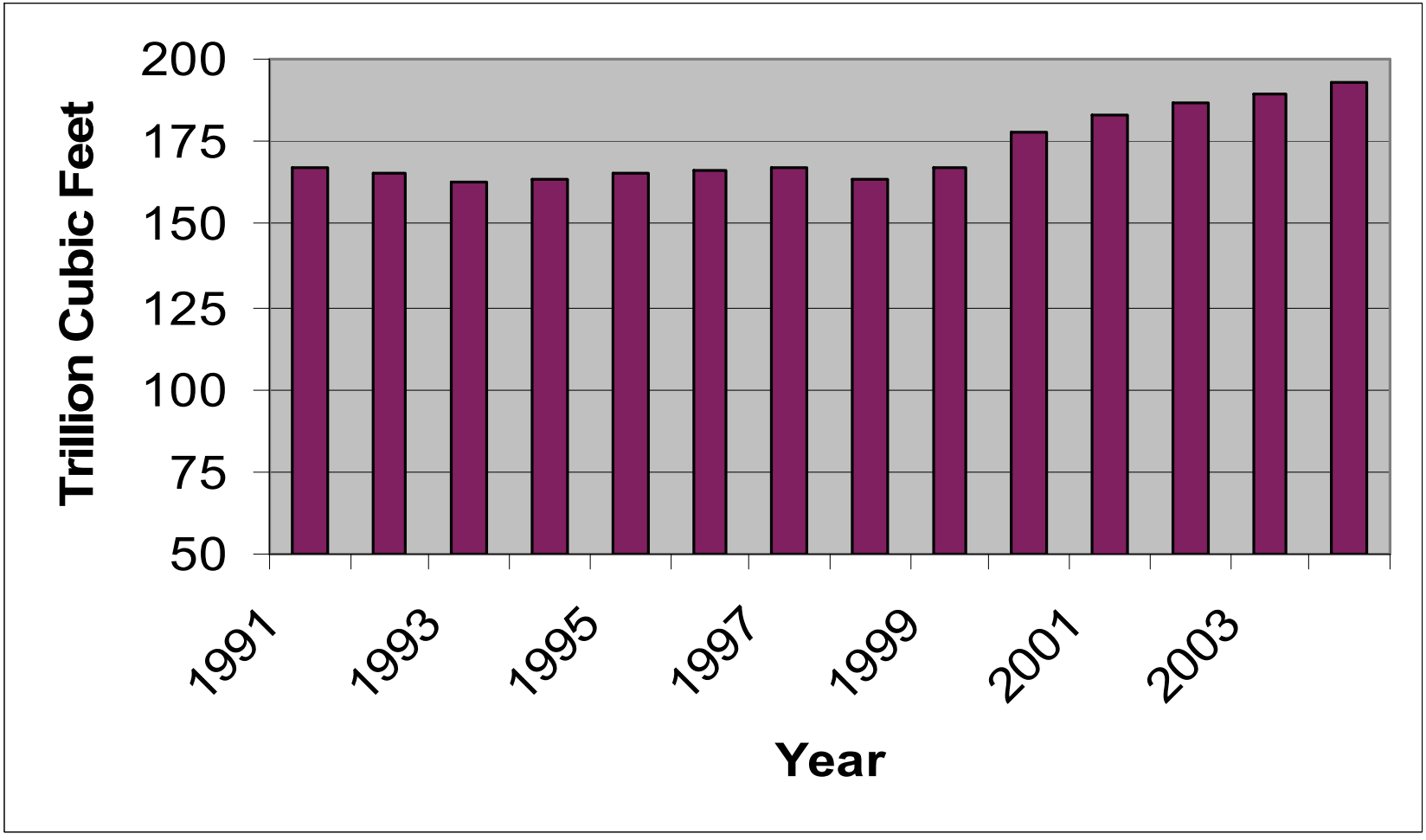
NATURAL GAS PROVED RESERVES 1991 – 2004



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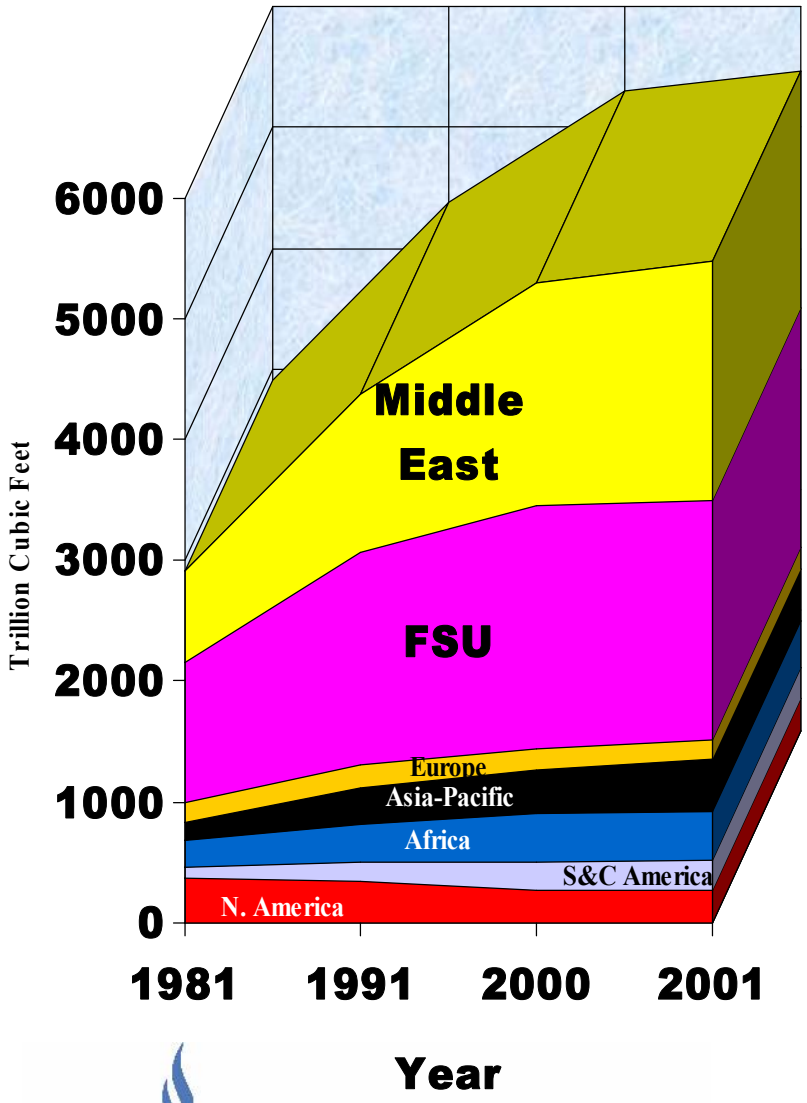
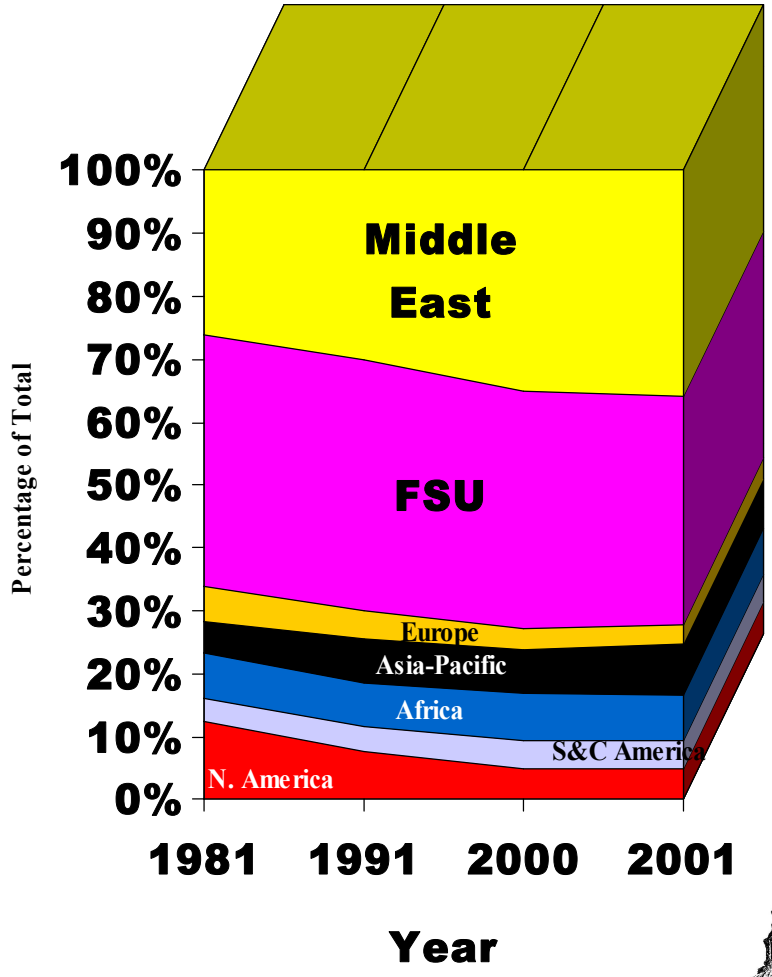
Source: Energy Information Administration

WORLD GAS RESERVES: 1981 - 2001





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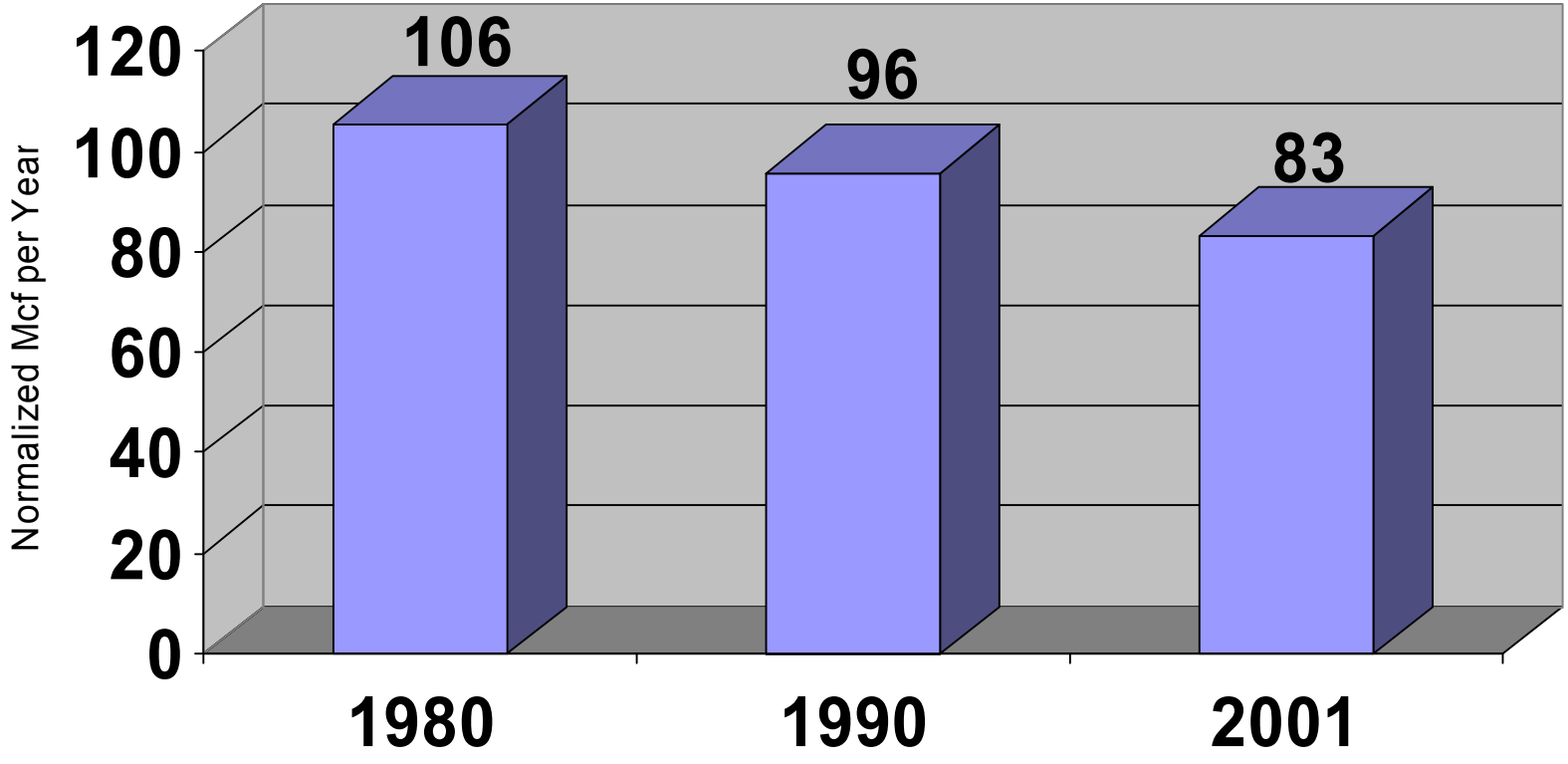
Source: BP

NATURAL GAS USE PER RESIDENTIAL CUSTOMER IS DECLINING



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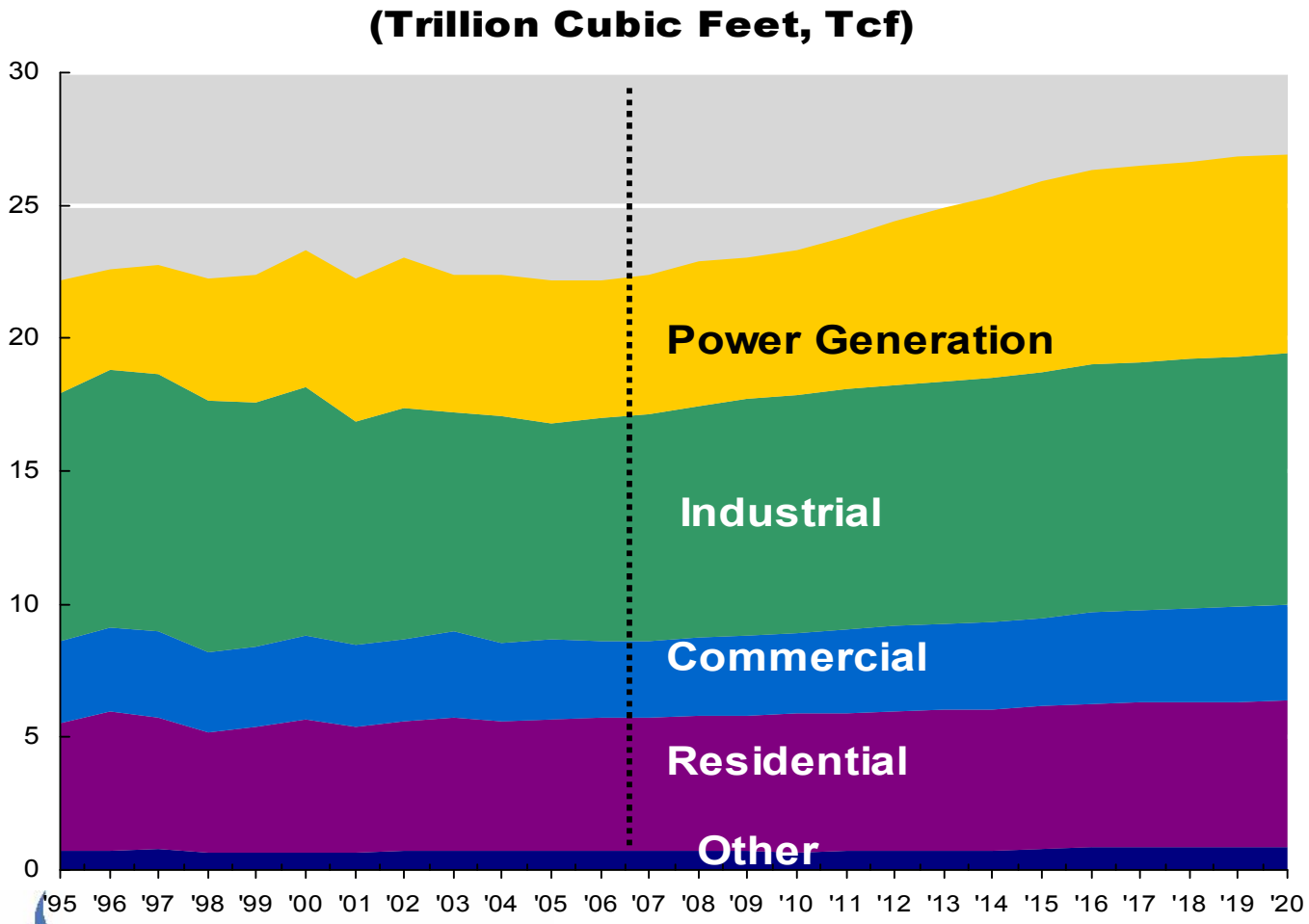
GAS CONSUMPTION COULD GROW BY MORE THAN 20% BY 2020



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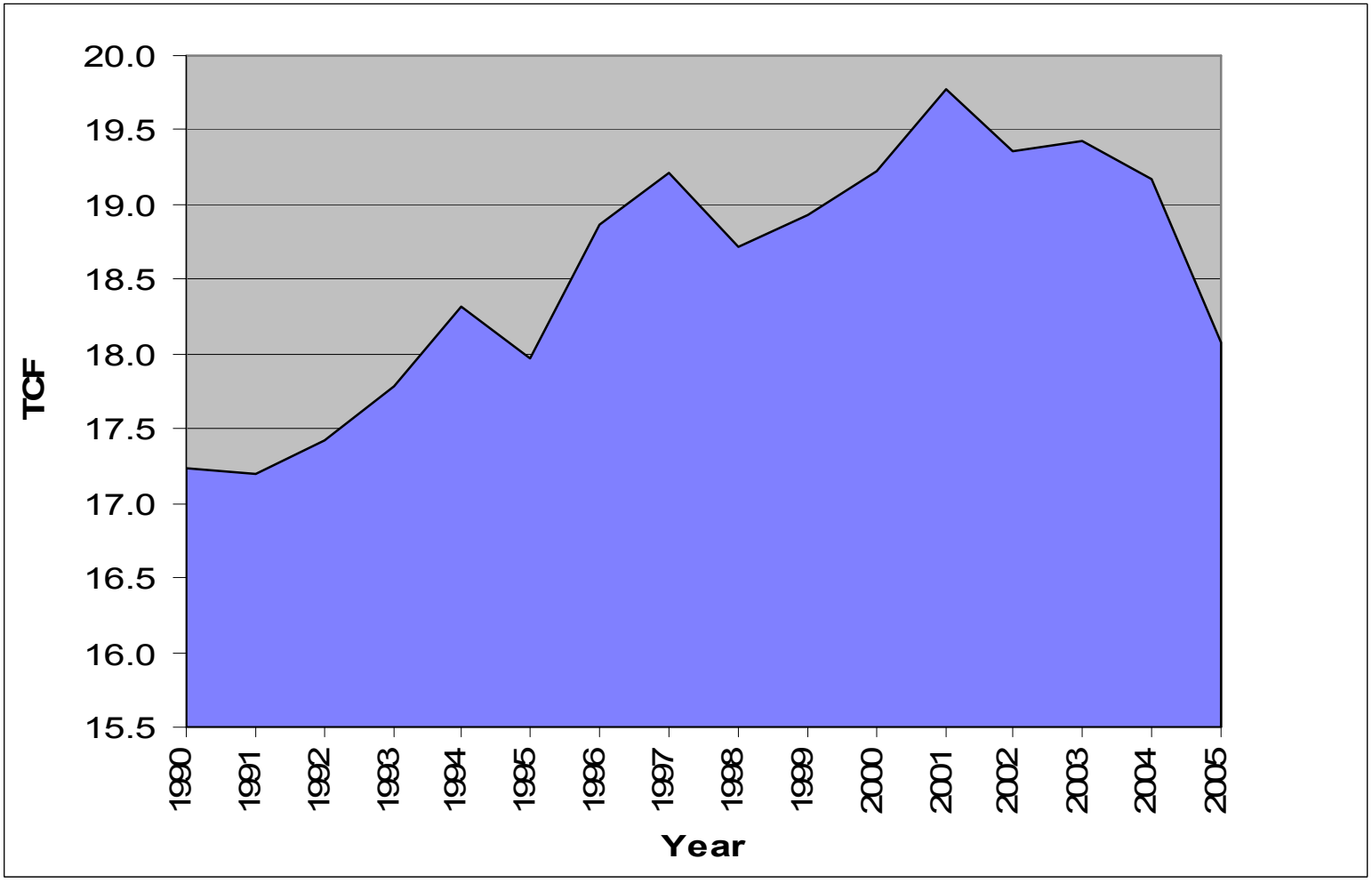
Source: Energy Information Administration

US NATURAL GAS PRODUCTION



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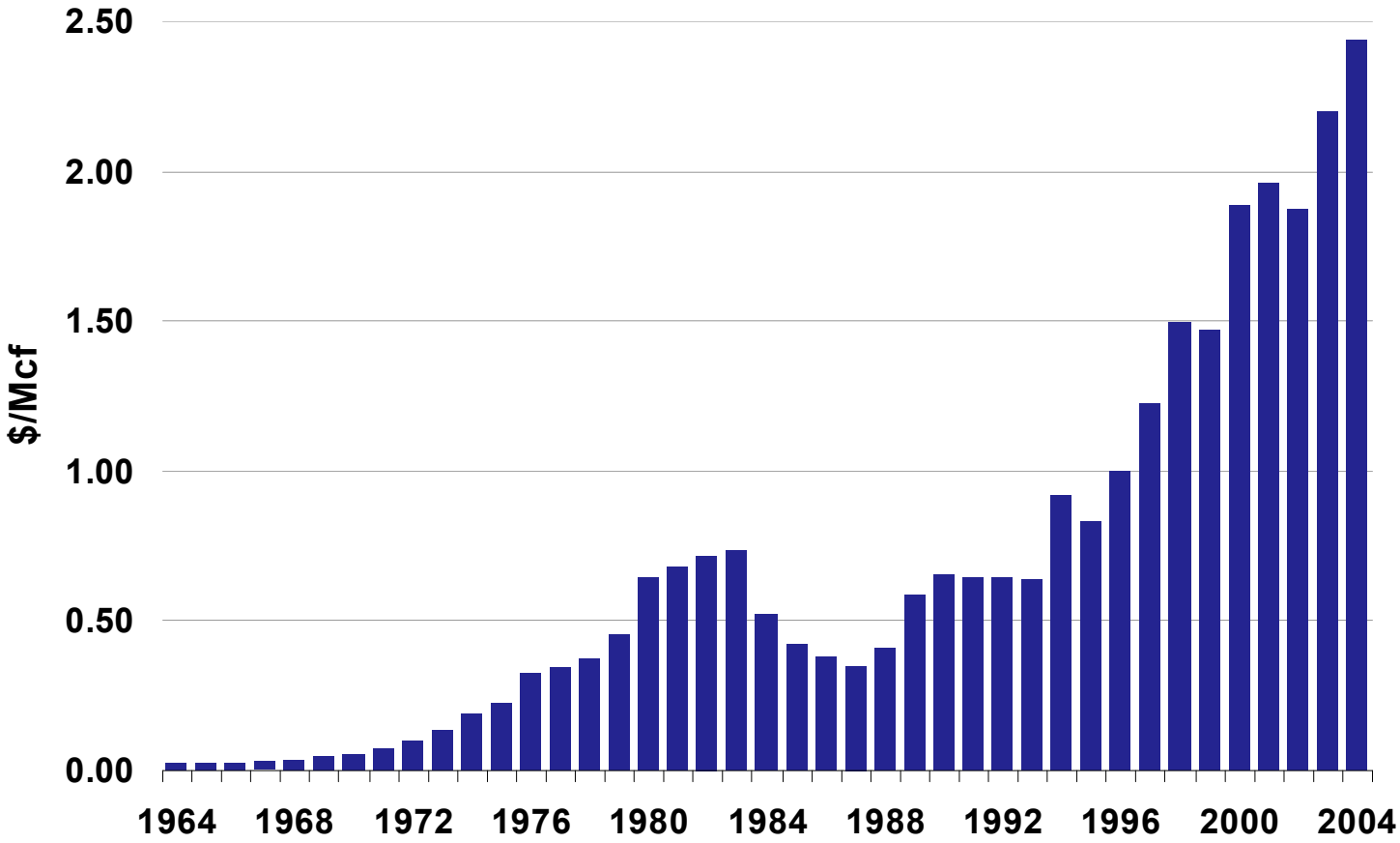
Source: Energy Information Administration

INDUSTRY AVERAGE FINDING & DEVELOPMENT COST: NATURAL GAS

(TRAILING 5 YEAR MOVING AVERAGE)



Note: Industry data shown on a 5-yr rolling average basis and based on reserve additions. Total capital is allocated as a portion of successful total well completions. Excludes Frontier and non-conventional activity since 1995. Includes natural gas liquids converted at 1 Bbl:6 Mcfe.

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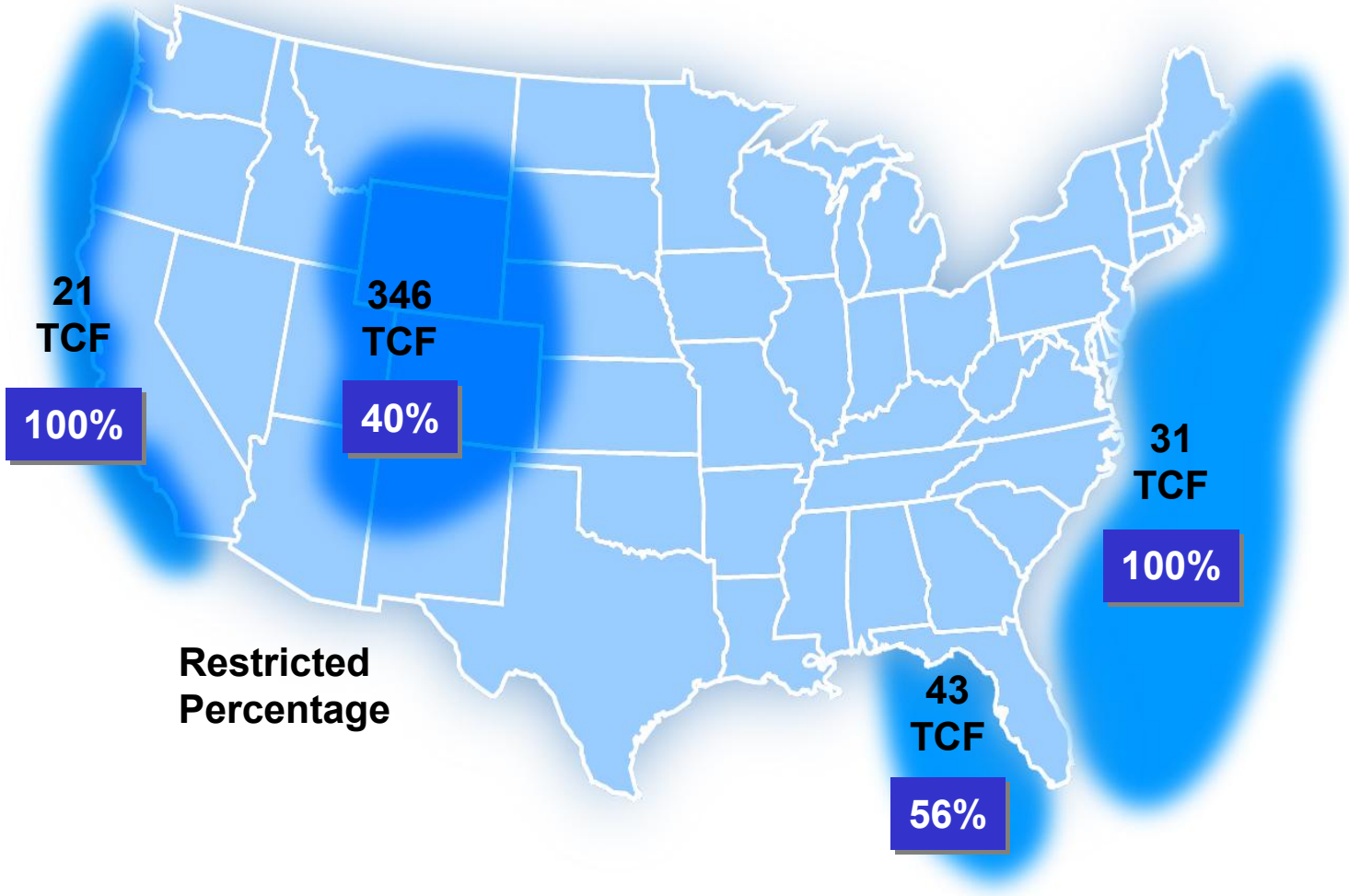
Source: Canadian Association of Petroleum Producers

MAJOR PORTIONS OF THE GAS RESOURCE BASE ARE NOT ACCESSIBLE



Approximately 29 trillion cubic feet (TCF) of the Rockies gas resources are closed to development and 108 TCF are available with restrictions.

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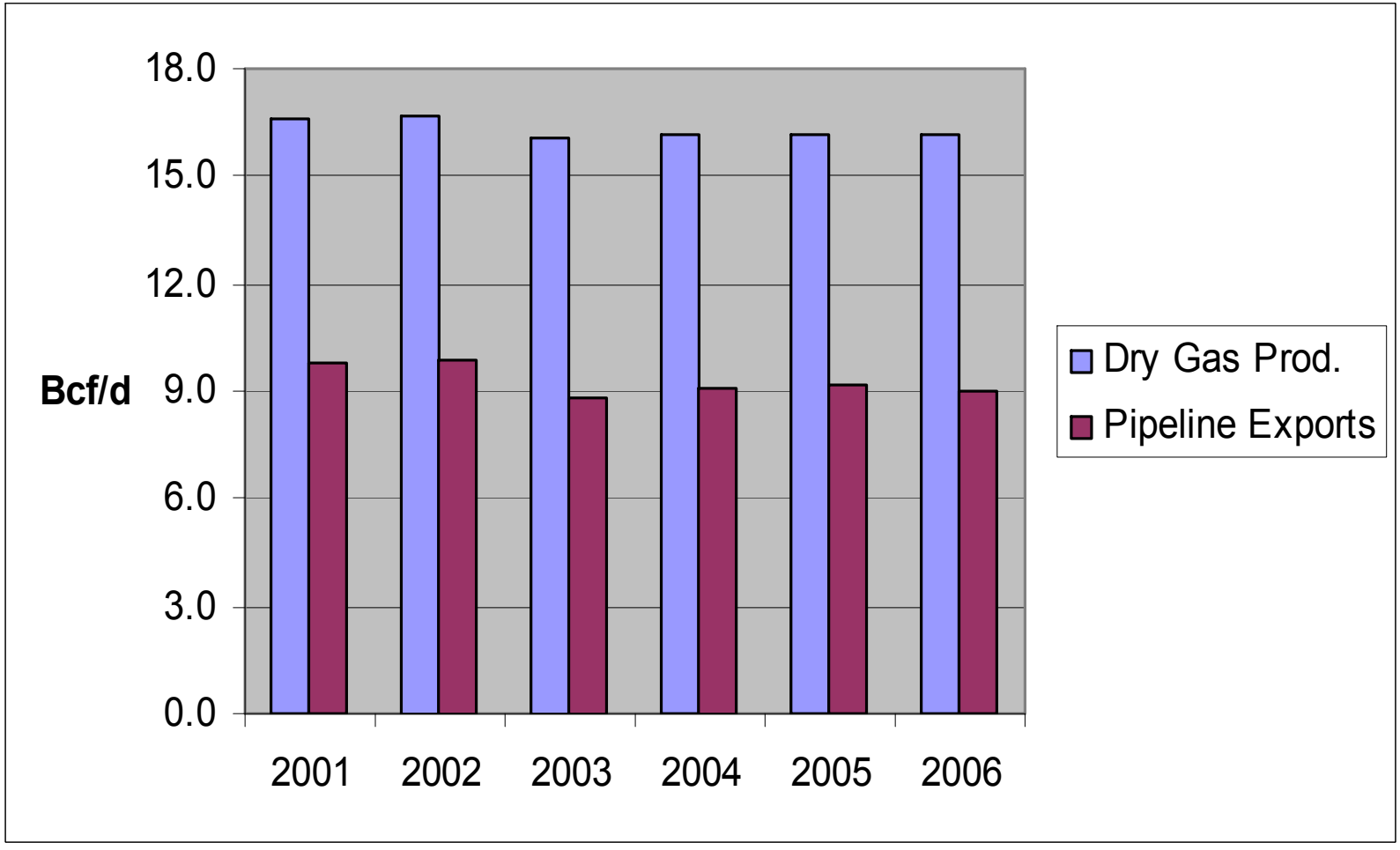
CANADA
DRY GAS PRODUCTION AND US PIPELINE EXPORTS



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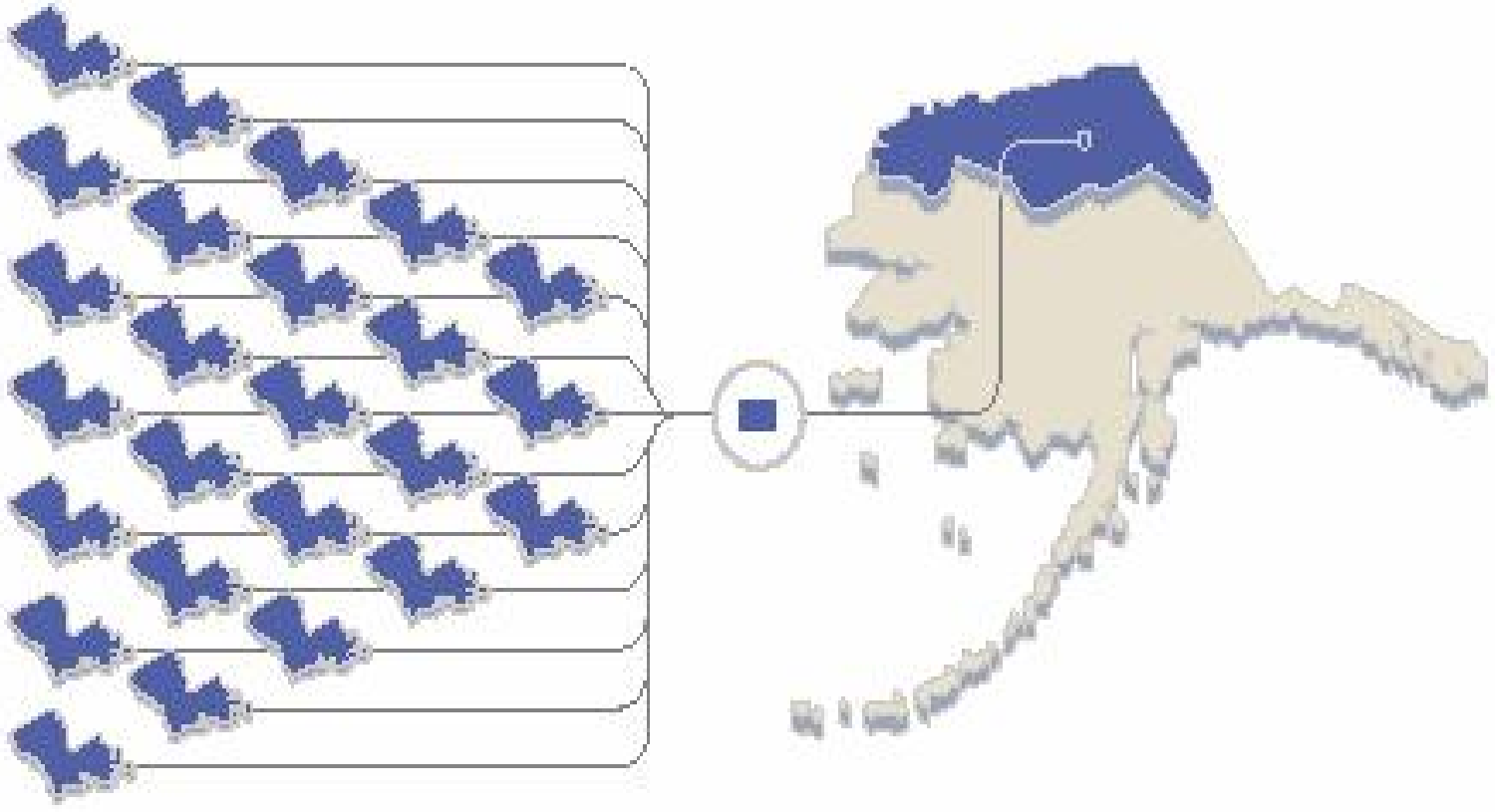
Source: Lippman Consulting, Inc.

ALASKA



25 years of production from onshore Louisiana is equivalent to proved gas reserves on the North Slope of Alaska alone.

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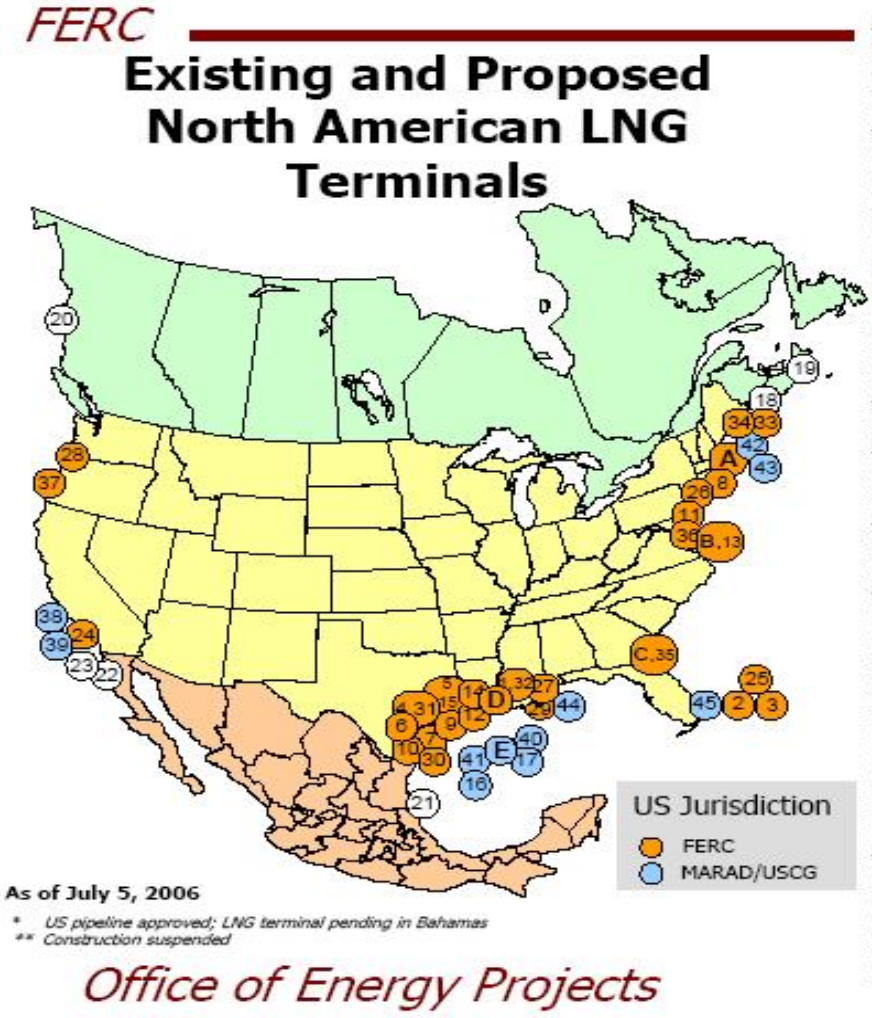
EXISTING AND PROPOSED NORTH AMERICAN LNG TERMINALS



CONSTRUCTED
A. Everett, MA : 1.035 Bcfd (SUEZ/Tractebel - DOMAC)
B. Cove Point, MD : 1.0 Bcfd (Dominion - Cove Point LNG)
C. Elba Island, GA : 1.2 Bcfd (El Paso - Southern LNG)
D. Lake Charles, LA : 2.1 Bcfd (Southern Union - Trunkline LNG)
E. Gulf of Mexico: 0.5 Bcfd (Gulf Gateway Energy Bridge - Excelerate Energy)

APPROVED BY FERC
1. Hackberry, LA : 1.5 Bcfd (Cameron LNG - Sempra Energy)
2. Bahamas : 0.84 Bcfd (AES Ocean Express)*
3. Bahamas : 0.83 Bcfd (Calypso Tractebel)*
4. Freeport, TX : 1.5 Bcfd (Cheniere/Freeport LNG Dev.)
5. Sabine, LA : 2.6 Bcfd (Sabine Pass Cheniere LNG)
6. Corpus Christi, TX: 2.6 Bcfd (Cheniere LNG)
7. Corpus Christi, TX : 1.1 Bcfd (Vista Del Sol - ExxonMobil)
8. Fall River, MA : 0.8 Bcfd (Weaver's Cove Energy/Hess LNG)
9. Sabine, TX : 2.0 Bcfd (Golden Pass - ExxonMobil)
10. Corpus Christi, TX: 1.0 Bcfd (Ingleside Energy - Occidental Energy Ventures)
11. Logan Township, NJ : 1.2 Bcfd (Crown Landing LNG - BP)
12. Port Arthur, TX: 3.0 Bcfd (Sempra)
13. Cove Point, MD : 0.8 Bcfd (Dominion)
14. Cameron, LA: 3.3 Bcfd (Creole Trail LNG - Cheniere LNG)
15. Sabine, LA: 1.4 Bcfd (Sabine Pass Cheniere LNG - Expansion)

APPROVED BY MARAD/COAST GUARD
16. Port Pelican: 1.6 Bcfd (Chevron Texaco)
17. Louisiana Offshore : 1.0 Bcfd (Gulf Landing - Shell)

CANADIAN APPROVED TERMINALS
18. St. John, NB : 1.0 Bcfd (Canaport - Irving Oil)
19. Point Tupper, NS 1.0 Bcf/d (Bear Head LNG - Anadarko)
20. Kitimat, BC: 0.61 Bcfd (Galveston LNG)

MEXICAN APPROVED TERMINALS
21. Altamira, Tamulipas : 0.7 Bcfd (Shell/Total/Mitsui)
22. Baja California, MX : 1.0 Bcfd (Energy Costa Azul - Sempra)
23. Baja California - Offshore : 1.4 Bcfd (Chevron Texaco)

PROPOSED TO FERC
24. Long Beach, CA : 0.7 Bcfd, (Mitsubishi/ConocoPhillips - Sound Energy Solutions)
25. Bahamas : 1.0 Bcfd, (Seafarer - El Paso/FPL)
26. LI Sound, NY: 1.0 Bcfd (Broadwater Energy - TransCanada/Shell)
27. Pascagoula, MS: 1.5 Bcfd (Gulf LNG Energy LLC)
28. Bradwood, OR: 1.0 Bcfd (Northern Star LNG - Northern Star Natural Gas LLC)
29. Pascagoula, MS: 1.3 Bcfd (Casotte Landing - ChevronTexaco)
30. Port Lavaca, TX: 1.0 Bcfd (Calhoun LNG - Gulf Coast LNG Partners)
31. Freeport, TX: 2.5 Bcfd (Cheniere/Freeport LNG Dev. - Expansion)
32. Hackberry, LA : 1.15 Bcfd (Cameron LNG - Sempra Energy - Expansion)
33. Pleasant Point, ME : 2.0 Bcfd (Quoddy Bay, LLC)
34. Robbinston, ME: 0.5 Bcfd (Downeast LNG - Kestrel Energy)
35. Elba Island, GA: 0.9 Bcfd (El Paso - Southern LNG)
36. Baltimore, MD: 1.5 Bcfd (AES Sparrows Point – AES Corp.)
37. Coos Bay, OR: 1.0 Bcfd (Jordan Cove Energy Project)

PROPOSED TO MARAD/COAST GUARD
38. Offshore California : 1.5 Bcfd (Cabrillo Port - BHP Billiton)
39. Offshore California : 0.5 Bcfd, (Clearwater Port LLC - Northernstar NG LLC)
40. Offshore Louisiana : 1.0 Bcfd (Main Pass McMoRan Exp.)
41. Gulf of Mexico: 1.5 Bcfd (Beacon Port Clean Energy Terminal - ConocoPhillips)
42. Offshore Boston: 0.4 Bcfd (Neptune LNG - Tractebel)
43. Offshore Boston: 0.8 Bcfd (Northeast Gateway - Excelerate Energy)
44. Gulf of Mexico: 1.4 Bcfd (Bienville Offshore Energy Terminal - TORP)
45. Offshore Florida: ? Bcfd (SUEZ Calypso - SUEZ LNG)

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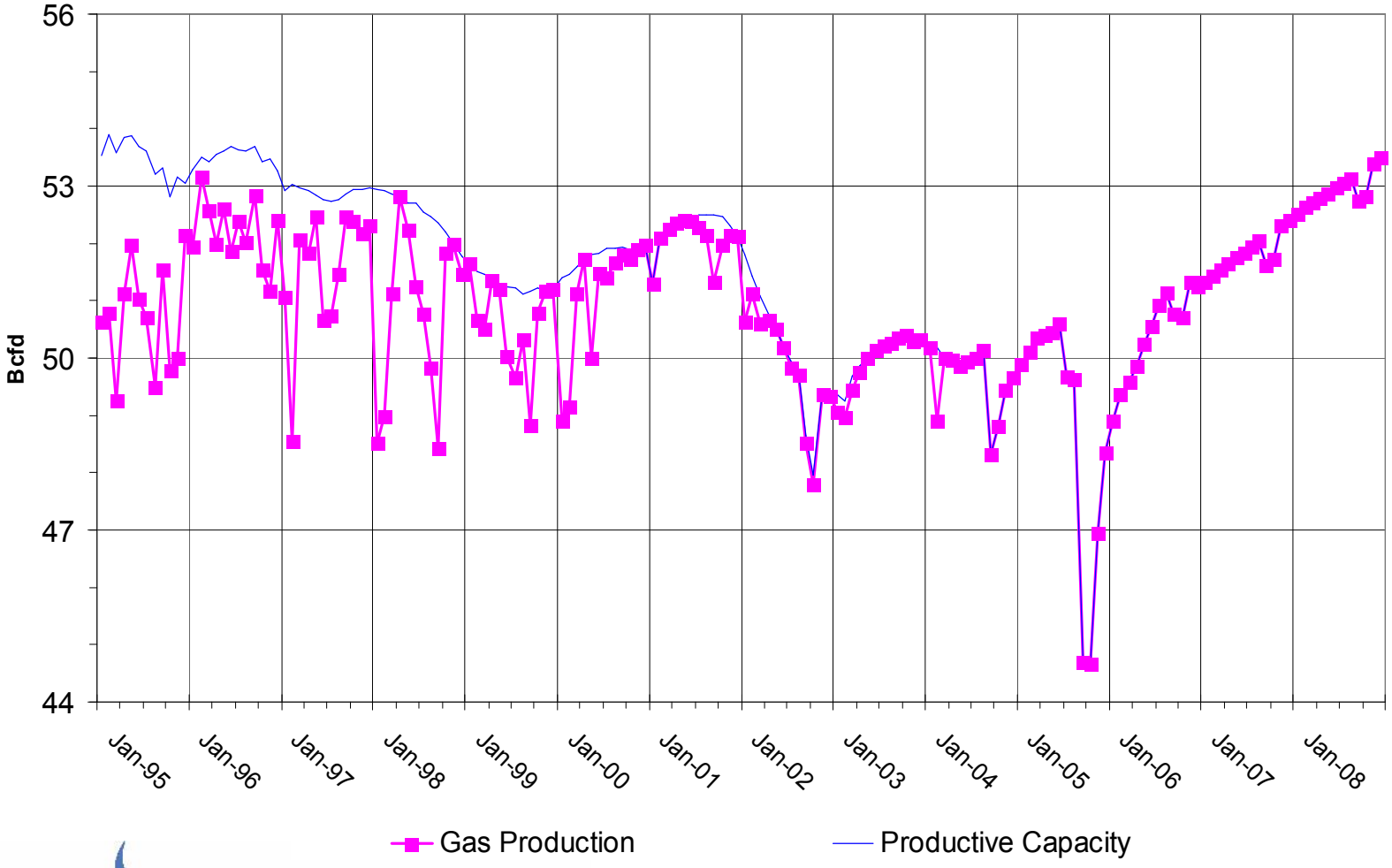
LOWER-48 DRY GAS PRODUCTION VS. DRY GAS PRODUCTIVE CAPACITY



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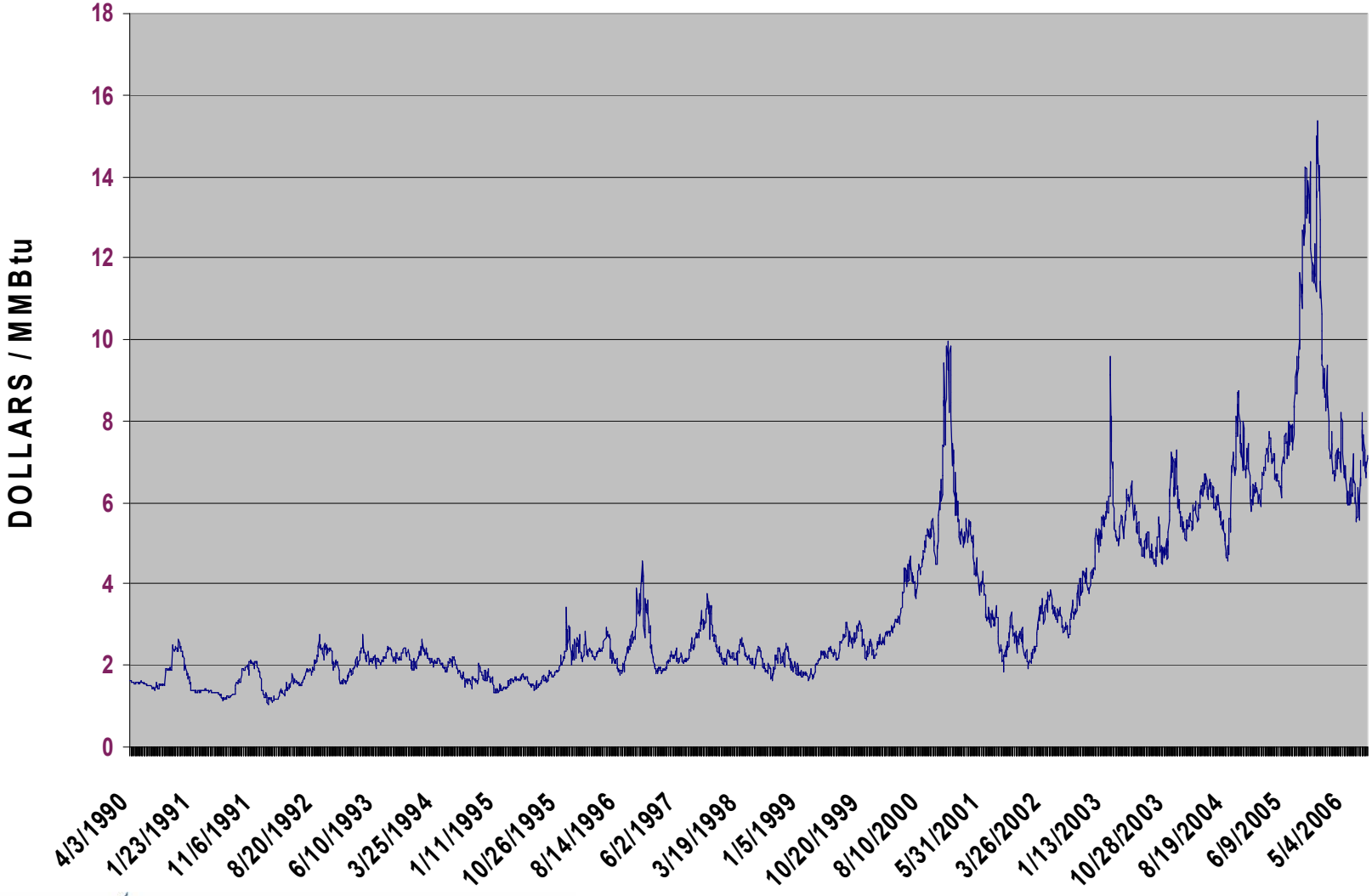
Source: Energy and Environmental Analysis, Inc.

NYMEX NATURAL GAS SPOT MONTH SETTLEMENT



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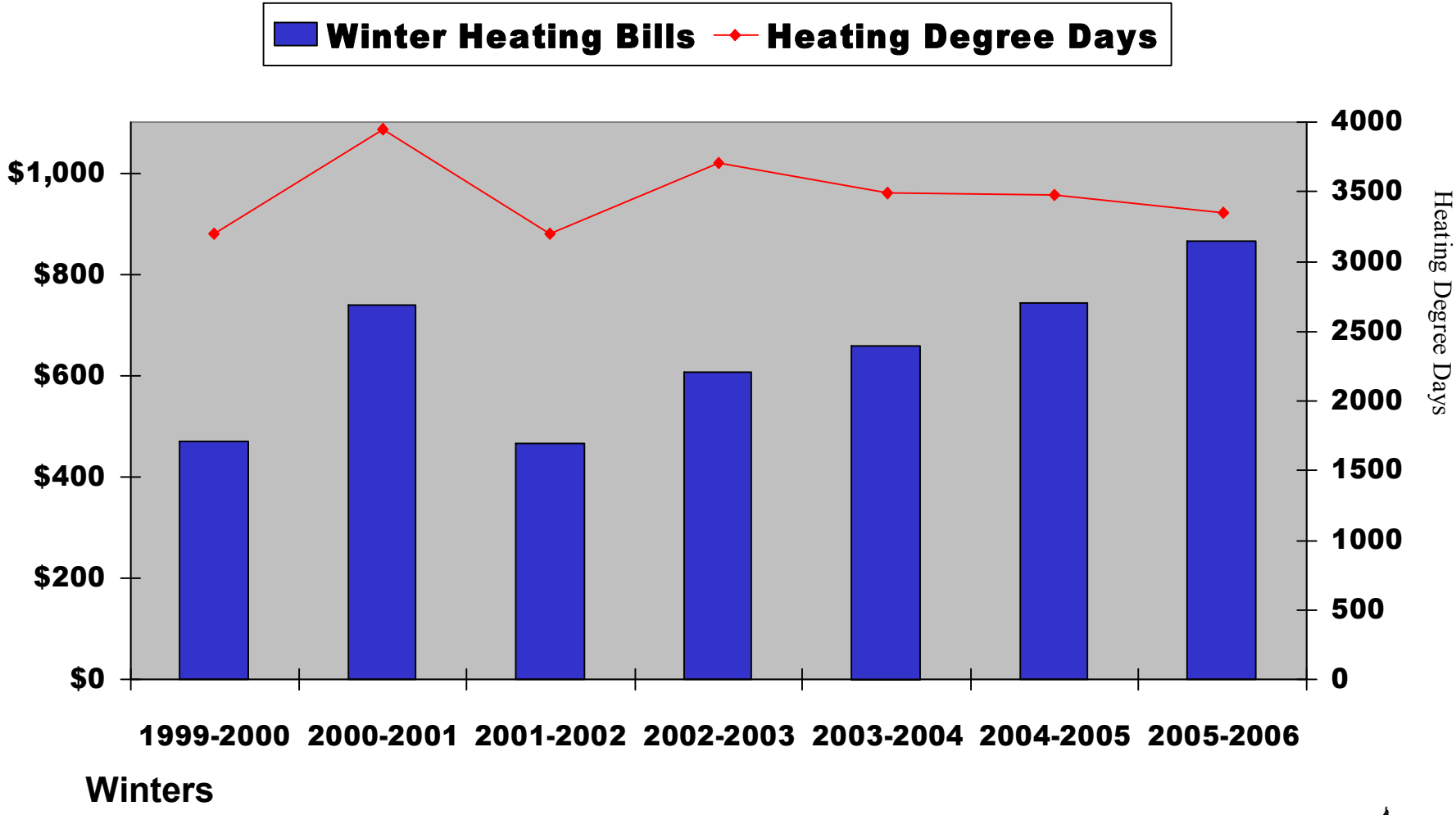
NATURAL GAS HOME HEATING COSTS COMPARED TO HEATING DEGREE DAYS



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Heating Cost Source: Energy Information Administration

CONCLUSIONS

- Natural gas can be a major part of solution
  - Not a silver bullet
  - Coupled with other contributors – conservation, efficiency, IGCC, nuclear, cleaner cars
- Potential won't be realized without supply/price resolution
  - Lack of public support
  - Lack of political support
  - Lack of industry support
- Reducing environmental and other roadblocks can produce environmental benefits

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THANK YOU!

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