Pricing, markets and investments

SPM 9541

December 2010

Aad Correljé

Programme

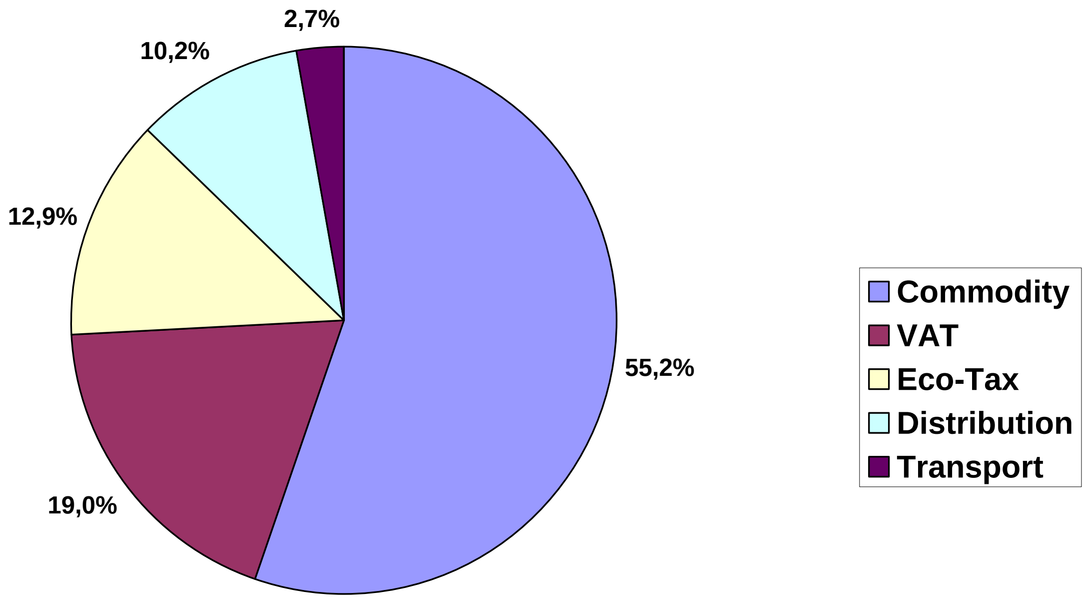
Visions on gas prices

Gasmarkets

Market prices?

Pricing systems

Dutch gas price to domestic households



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Hybrid gas pricing

- Production: Long term term Take or Pay, Destination clause, Net Back contracts
- Transmission: *Cost plus*
- Storage: *Cost plus or….*
- Distribution: *Cost plus or….*
- Retail: Oil parity pricing, market segmentation…

- En *Title Transfer Facility*

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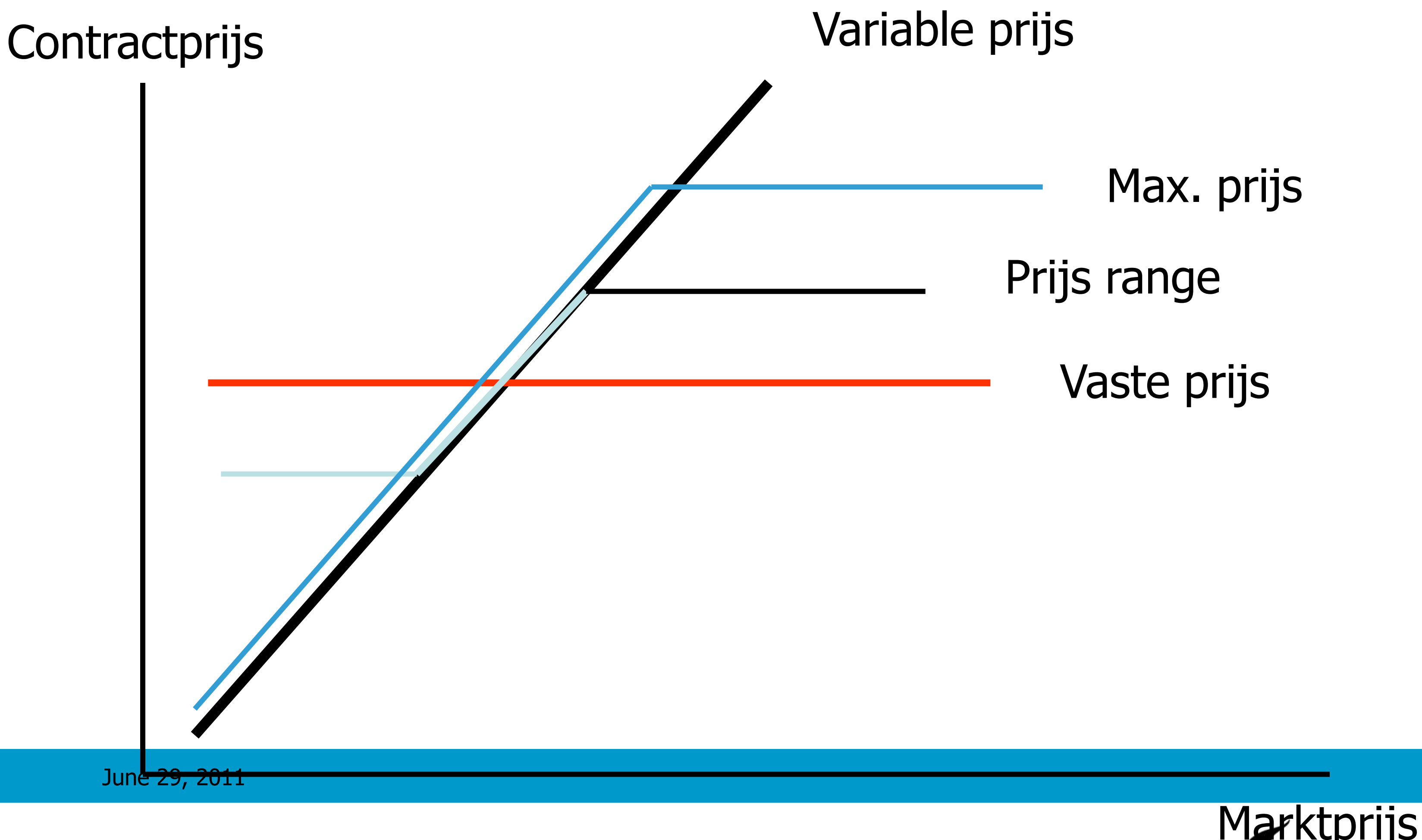
Market places NL

- GOS: bilateral, long term (1 y.), specific oil parity based contract
- TTF: bilateral, short term (1 m.), standard contract, gas-to-gas price
- TTF: APX, short term (1 d.), standard contract, gas-to-gas price
- TTF: Endex, Long term future (1 j.), standard contract, gas-to-gas prijzen

Consumer contracts via traders



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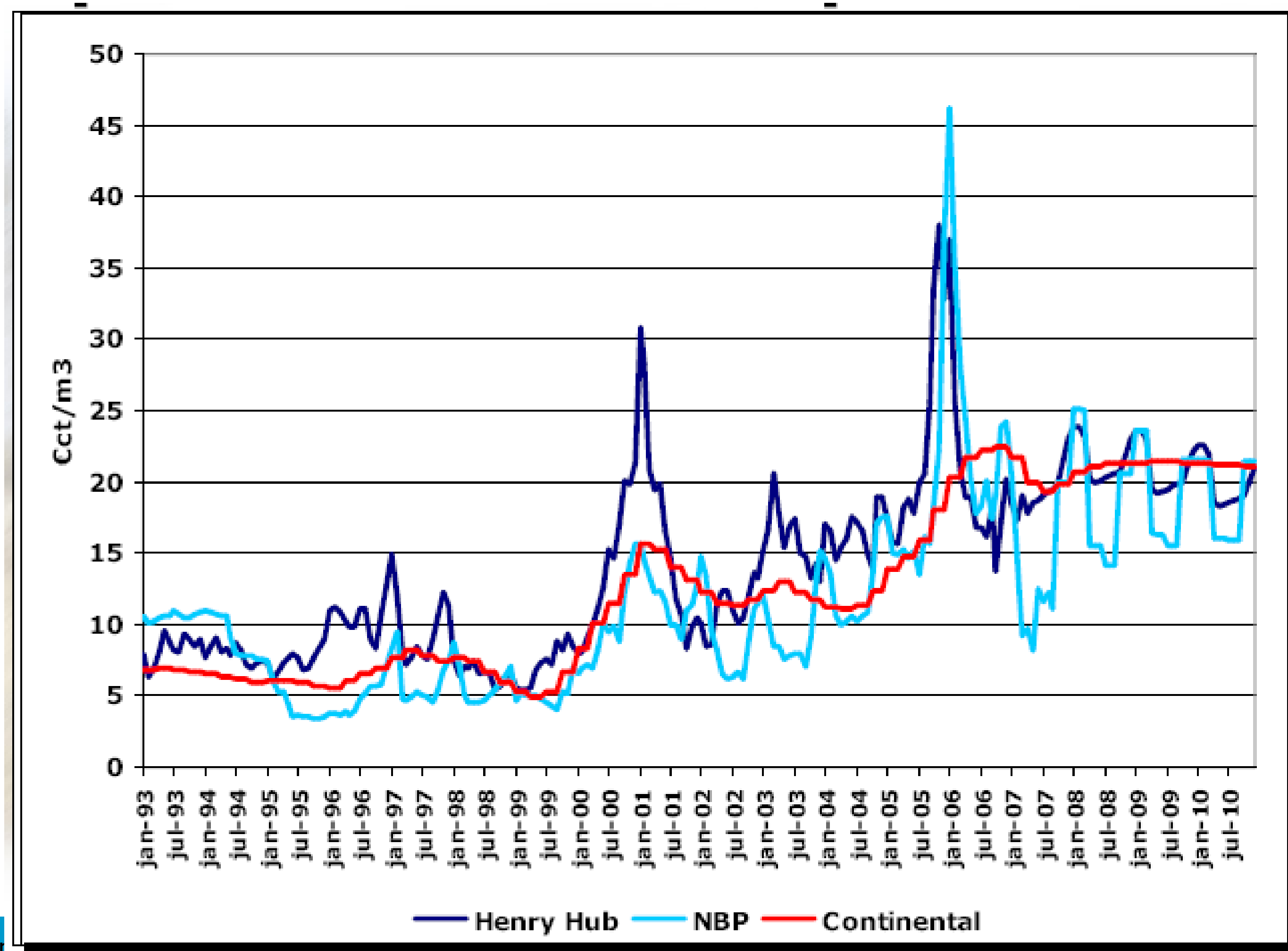
Gas prices since 1993



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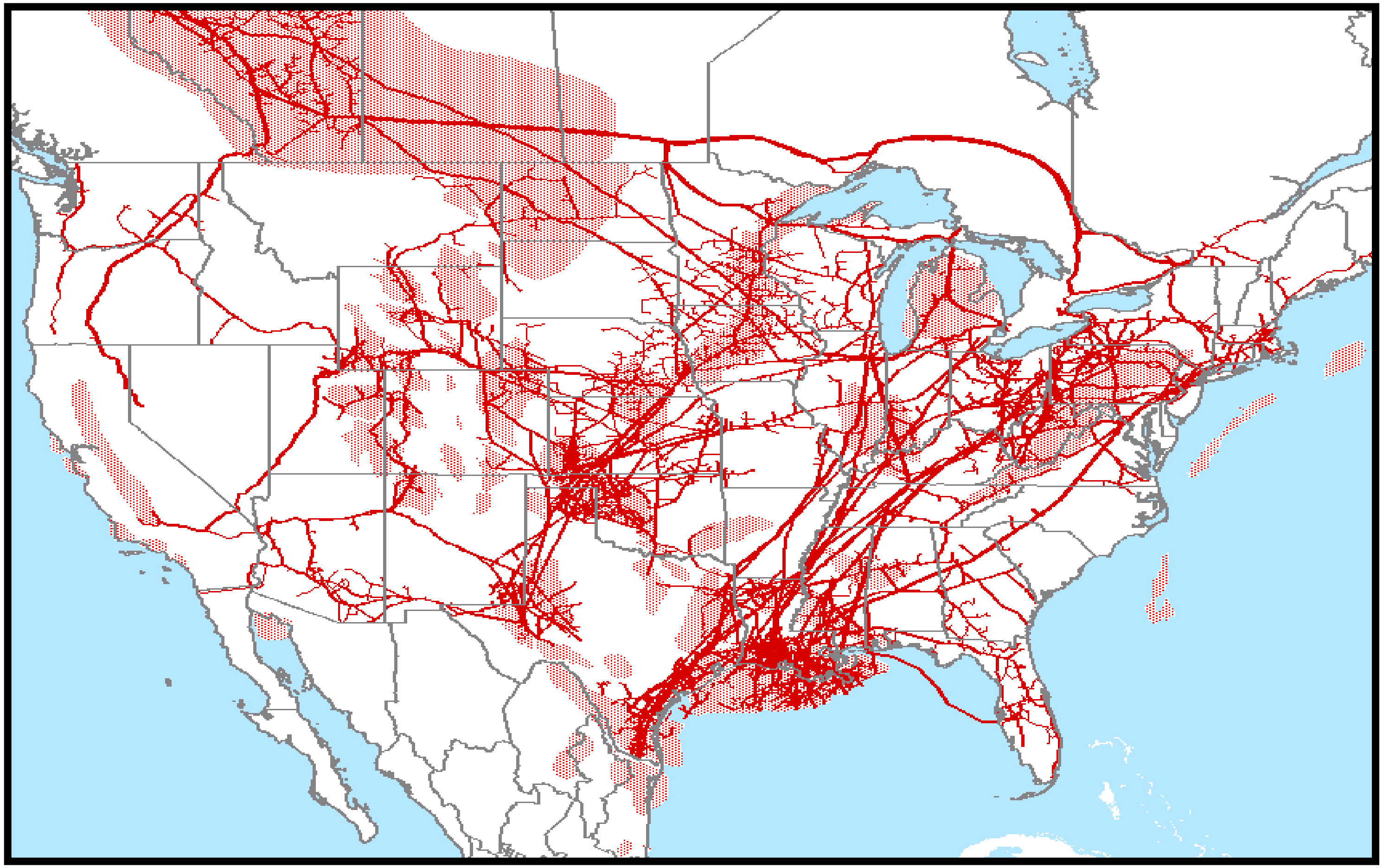
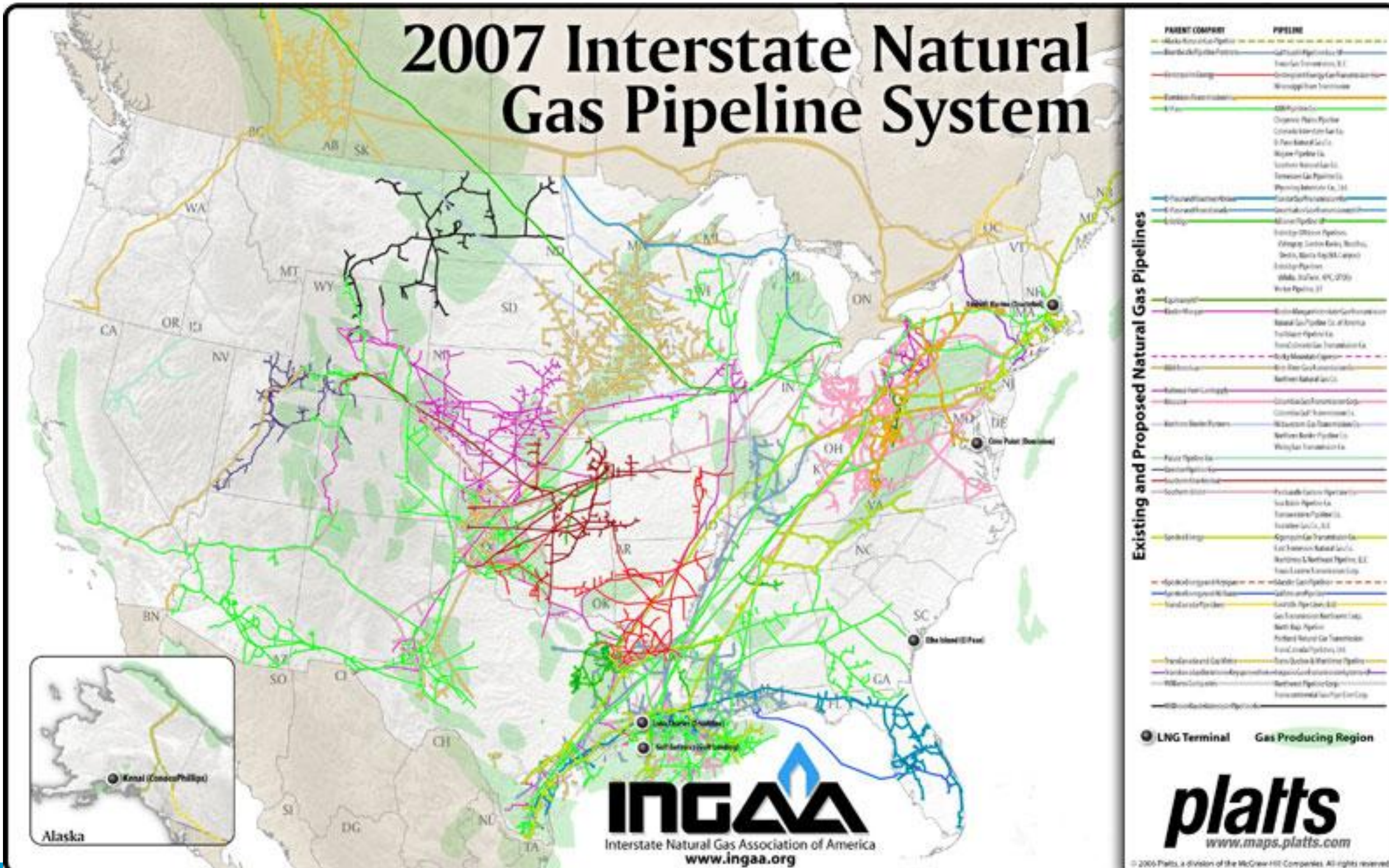
Once there was a country….



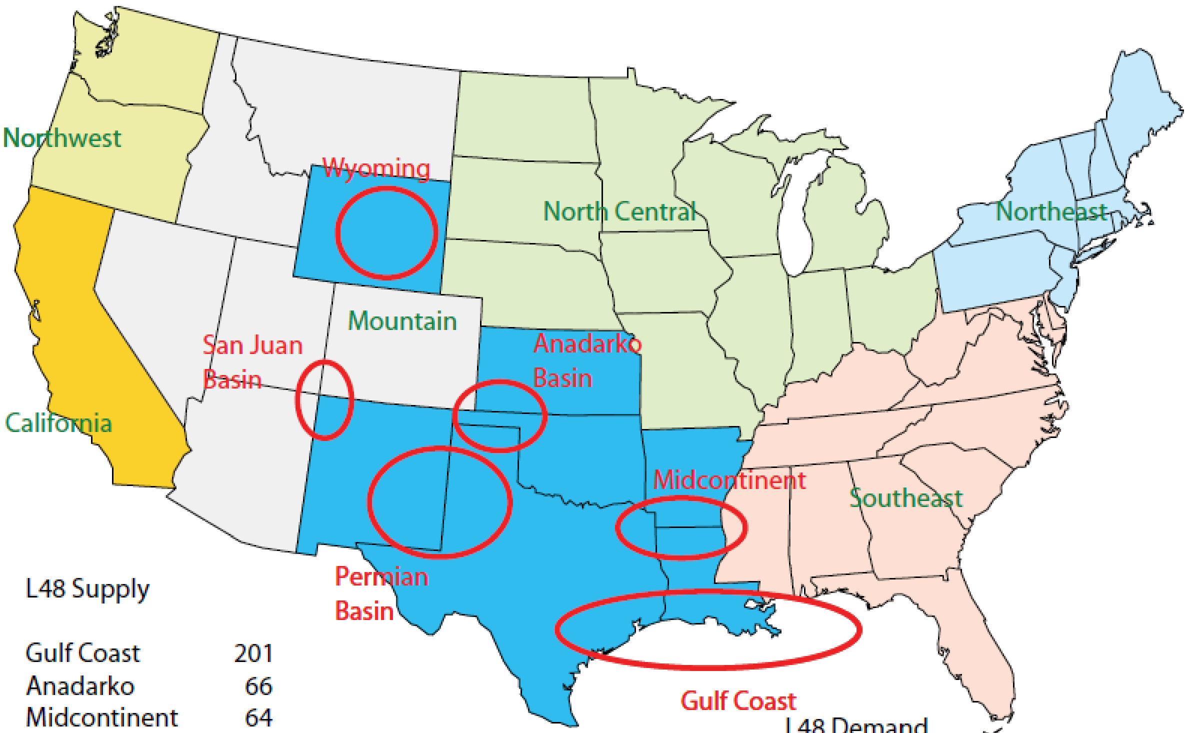
FERC

USA Gas Transport Infrastructure



5-10 major ‘interstate’ Gas Infrastructure Companies

US Supply



L48 Supply

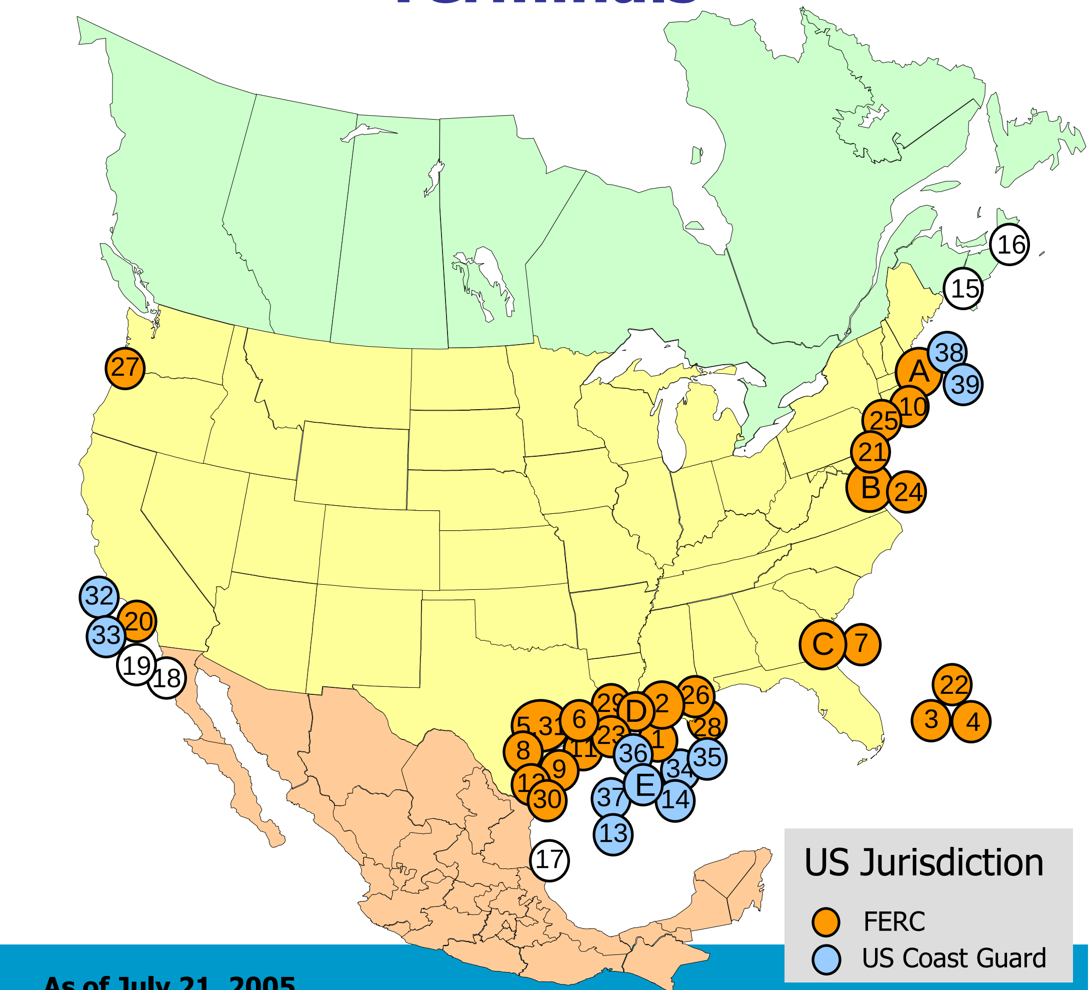
Gulf Coast	201
Anadarko	66
Midcontinent	64
Wyoming	43
Permian	42
San Juan	29
Other L48	85
Imports	96
Total	626

L48 Demand

Northeast	90
Southeast	94
North Central	132
Moutain	37
Northwest	14
California	69
7 State [1]	188
Total	624

[1] Seven Major Producing States

Existing and Proposed North American LNG Terminals



As of July 21, 2005

* US pipeline approved; LNG terminal pending in Bahamas

CONSTRUCTED

A. Everett, MA : 1.035 Bcfd (Tractebel - DOMAC)
B. Cove Point, MD : 1.0 Bcfd (Dominion - Cove Point LNG)
C. Elba Island, GA : 0.68 Bcfd (El Paso - Southern LNG)
D. Lake Charles, LA : 1.0 Bcfd (Southern Union - Trunkline LNG)
E. Gulf of Mexico: 0.5 Bcfd, (Gulf Gateway Energy Bridge - Excelerate Energy)

APPROVED BY FERC

1. Lake Charles, LA: 1.1 Bcfd (Southern Union - Trunkline LNG)
2. Hackberry, LA : 1.5 Bcfd, (Sempra Energy)
3. Bahamas : 0.84 Bcfd, (AES Ocean Express)*
4. Bahamas : 0.83 Bcfd, (Calypso Tractebel)*
5. Freeport, TX : 1.5 Bcfd, (Cheniere/Freeport LNG Dev.)
6. Sabine, LA : 2.6 Bcfd (Cheniere LNG)
7. Elba Island, GA: 0.54 Bcfd (El Paso - Southern LNG)
8. Corpus Christi, TX: 2.6 Bcfd, (Cheniere LNG)
9. Corpus Christi, TX : 1.0 Bcfd (Vista Del Sol - ExxonMobil)
10. Fall River, MA : 0.8 Bcfd, (Weaver's Cove Energy/Hess LNG)
11. Sabine, TX : 1.0 Bcfd (Golden Pass - ExxonMobil)
12. Corpus Christi, TX: 1.0 Bcfd (Ingleside Energy - Occidental Energy Ventures)

APPROVED BY MARAD/COAST GUARD

13. Port Pelican: 1.6 Bcfd, (Chevron Texaco)
14. Louisiana Offshore : 1.0 Bcfd (Gulf Landing - Shell)

CANADIAN APPROVED TERMINALS

15. St. John, NB : 1.0 Bcfd, (Canaport - Irving Oil)
16. Point Tupper, NS 1.0 Bcf/d (Bear Head LNG - Anadarko)

MEXICAN APPROVED TERMINALS

17. Altamira, Tamulipas : 0.7 Bcfd, (Shell/Total/Mitsui)
18. Baja California, MX : 1.0 Bcfd, (Sempra)
19. Baja California - Offshore : 1.4 Bcfd, (Chevron Texaco)

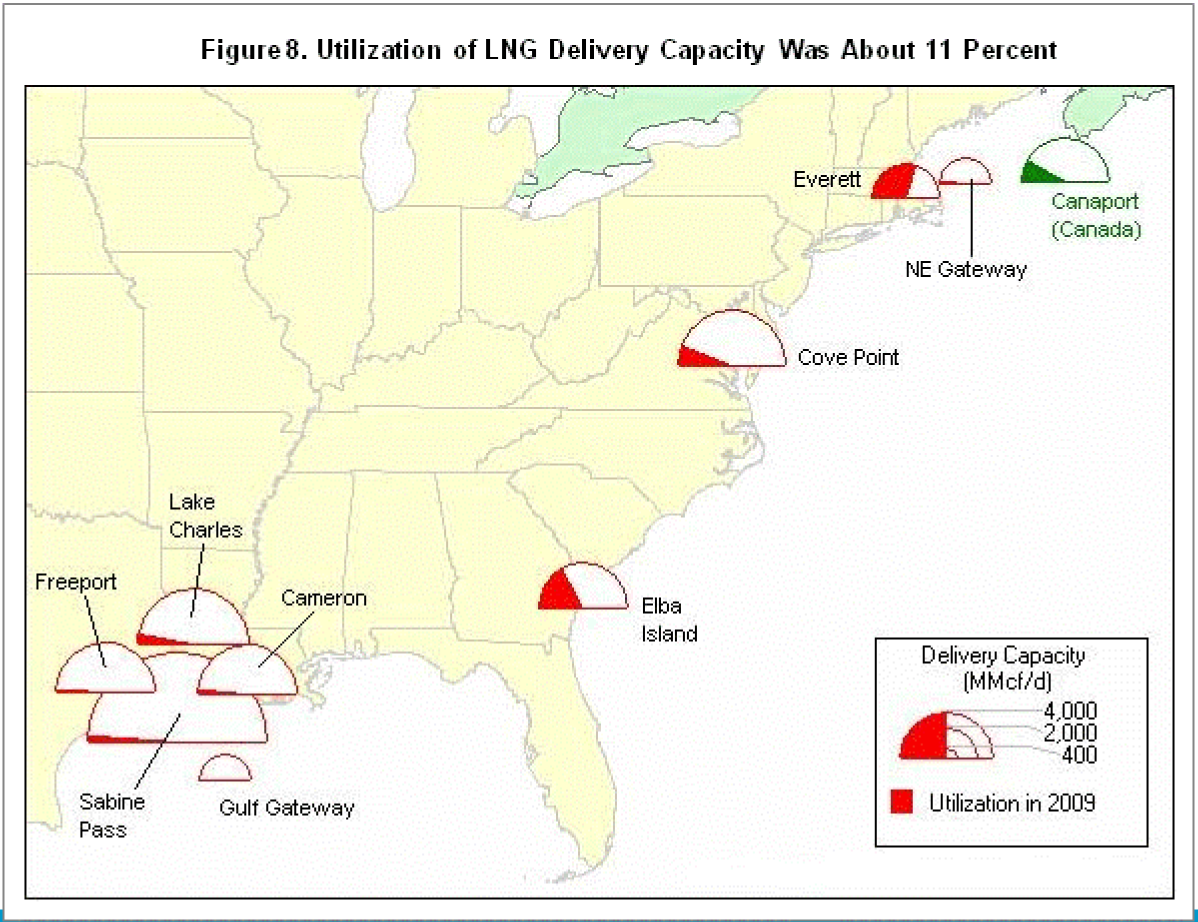
PROPOSED TO FERC

20. Long Beach, CA : 0.7 Bcfd, (Mitsubishi/ConocoPhillips - Sound Energy Solutions
21. Logan Township, NJ : 1.2 Bcfd (Crown Landing LNG - BP)
22. Bahamas : 0.5 Bcfd, (Seafarer - El Paso/FPL)
23. Port Arthur, TX: 1.5 Bcfd (Sempra)
24. Cove Point, MD : 0.8 Bcfd (Dominion)
25. LI Sound, NY: 1.0 Bcfd (Broadwater Energy - TransCanada/Shell)
26. Pascagoula, MS: 1.0 Bcfd (Gulf LNG Energy LLC)
27. Bradwood, OR: 1.0 Bcfd (Northern Star LNG - Northern Star Natural Gas LLC)
28. Pascagoula, MS: 1.3 Bcfd (Casotte Landing - ChevronTexaco)
29. Cameron, LA: 3.3 Bcfd (Creole Trail LNG - Cheniere LNG)
30. Port Lavaca, TX: 1.0 Bcfd (Calhoun LNG - Gulf Coast LNG Partners)
31. Freeport, TX: 2.5 Bcfd, (Cheniere/Freeport LNG Dev. - Expansion)

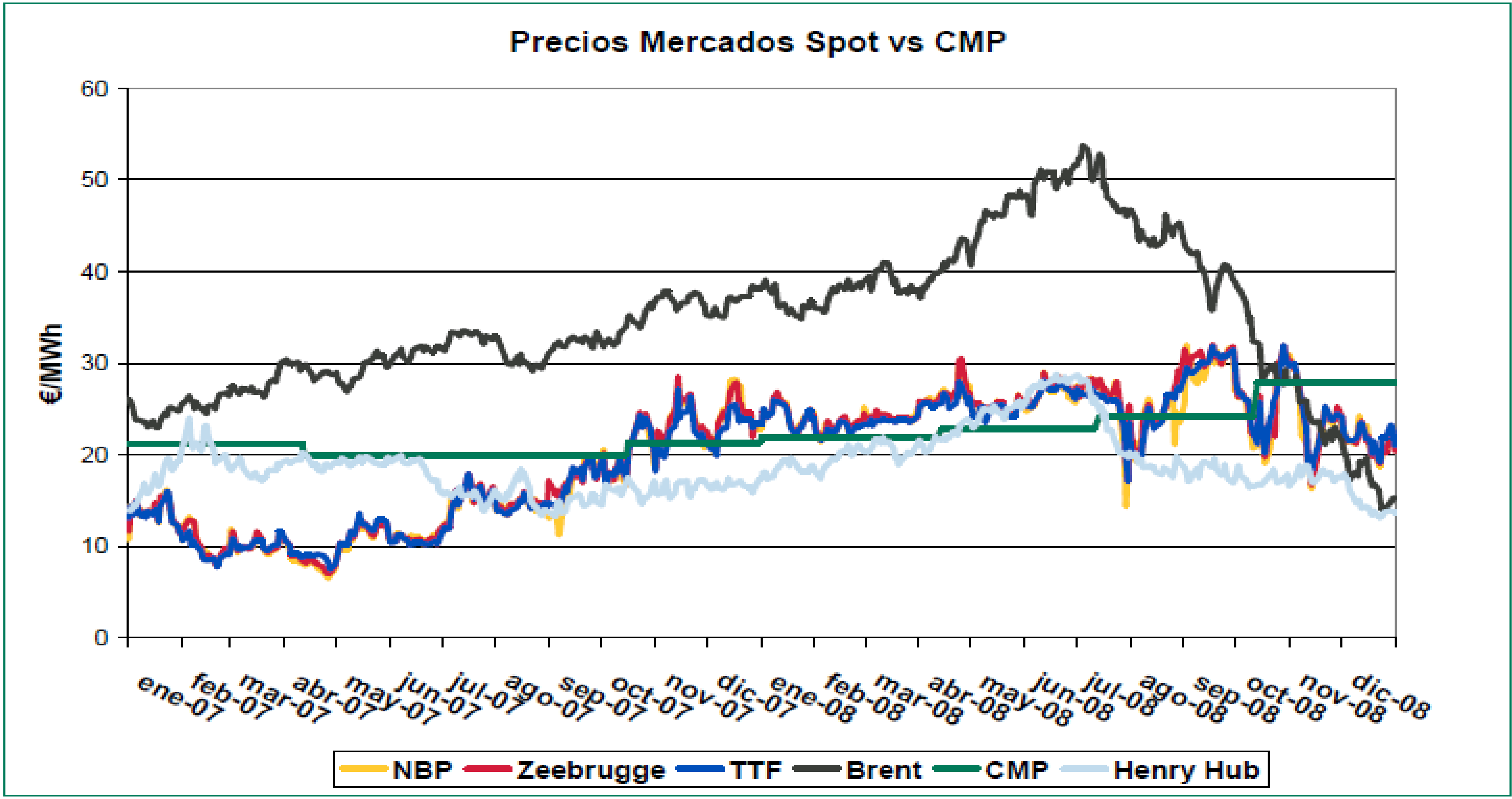
PROPOSED TO MARAD/COAST GUARD

32. California Offshore: 1.5 Bcfd (Cabrillo Port - BHP Billiton)
33. So. California Offshore : 0.5 Bcfd, (Crystal Energy)
34. Louisiana Offshore : 1.0 Bcfd (Main Pass McMoRan Exp.)
35. Gulf of Mexico: 1.0 Bcfd (Compass Port - ConocoPhillips)
36. Gulf of Mexico: 2.8 Bcfd (Pearl Crossing - ExxonMobil)
37. Gulf of Mexico: 1.5 Bcfd (Beacon Port Clean Energy Terminal **-** ConocoPhillips)
38. Offshore Boston, MA: 0.4 Bcfd (Neptune LNG - Tractebel)
39. Offshore Boston, MA: 0.8 Bcfd (Northeast Gateway - Excelerate Energy)

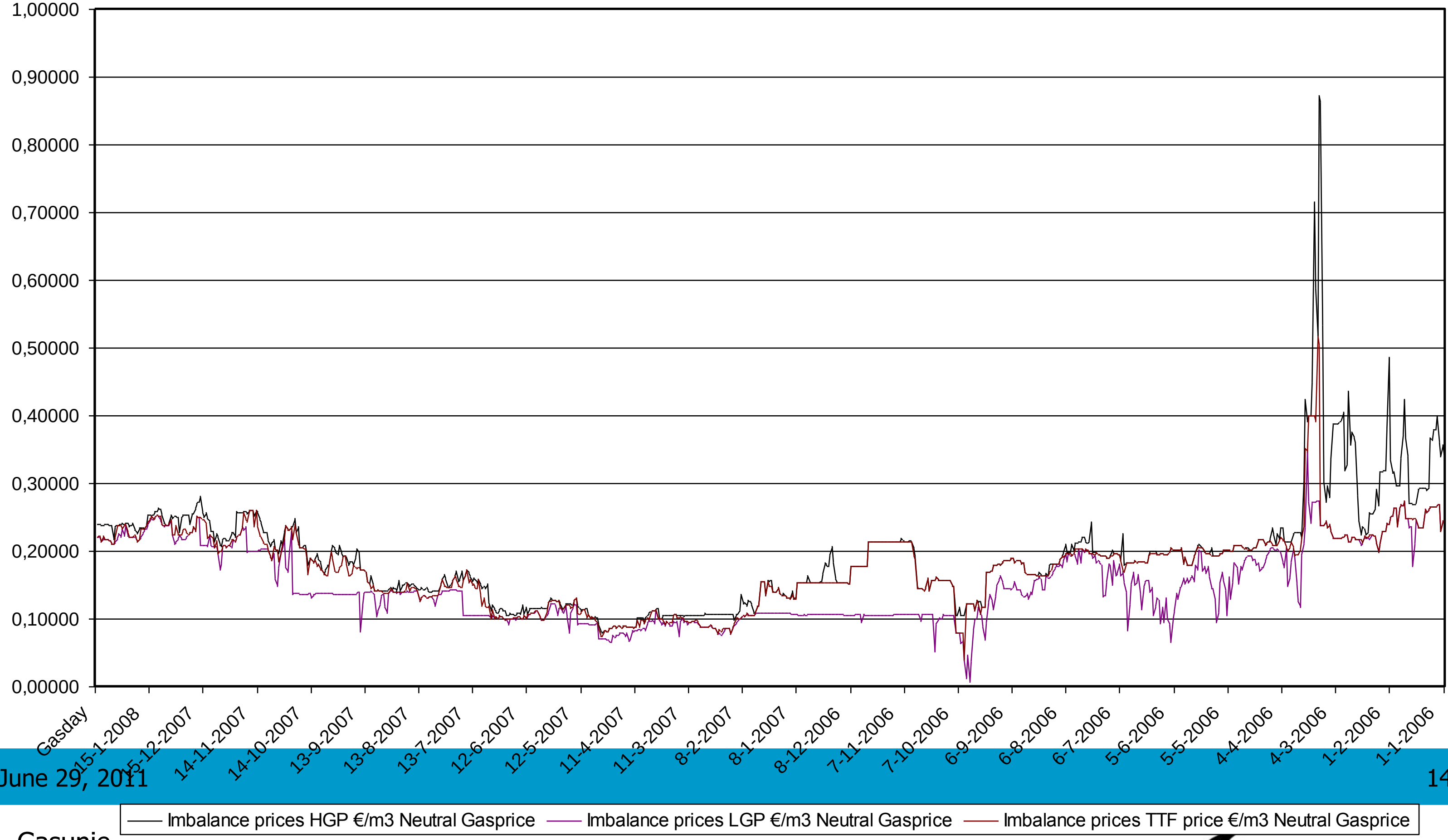
Utilization…



The gas market

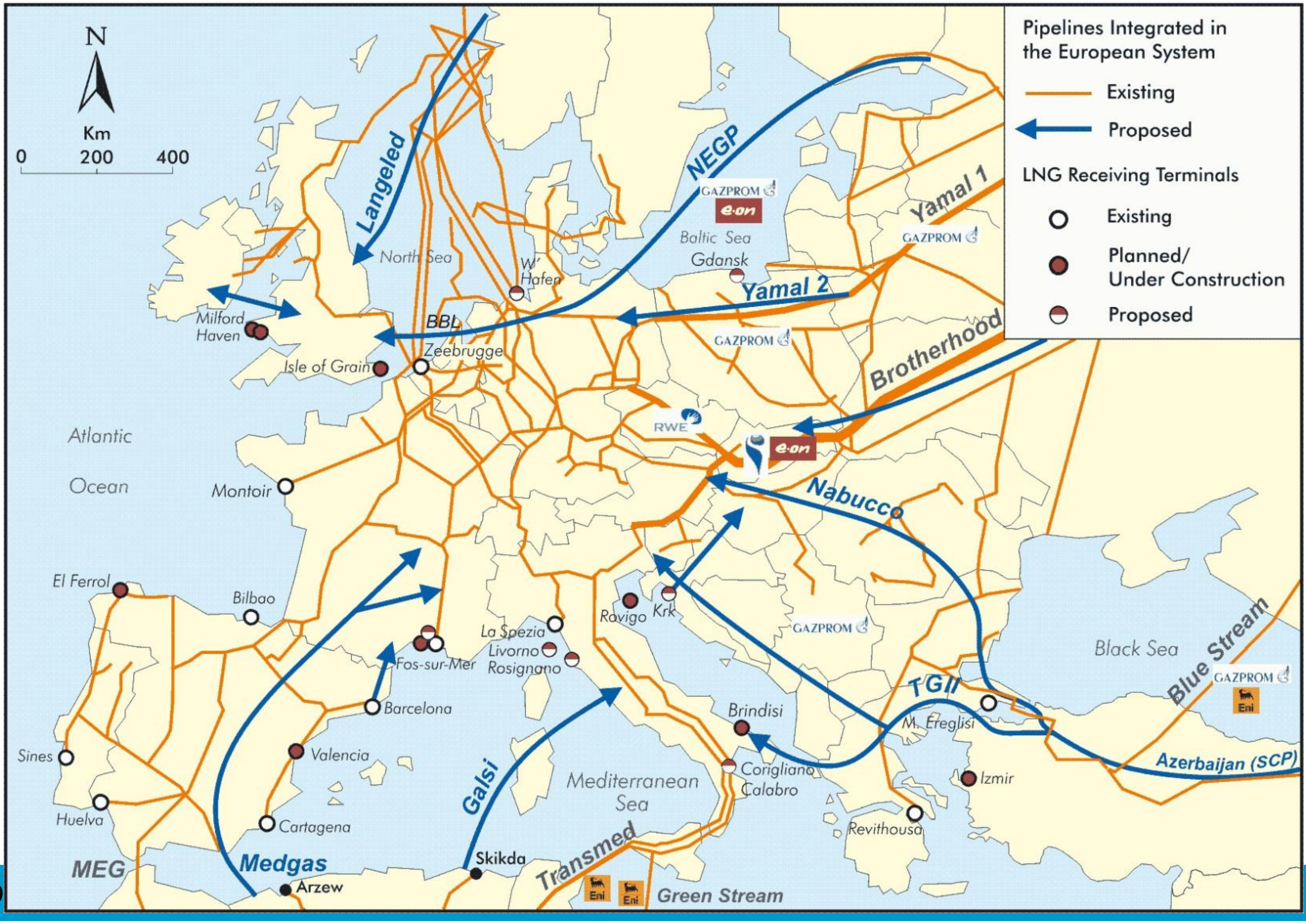


TTF Gasprices



Gasunie

Gas supply



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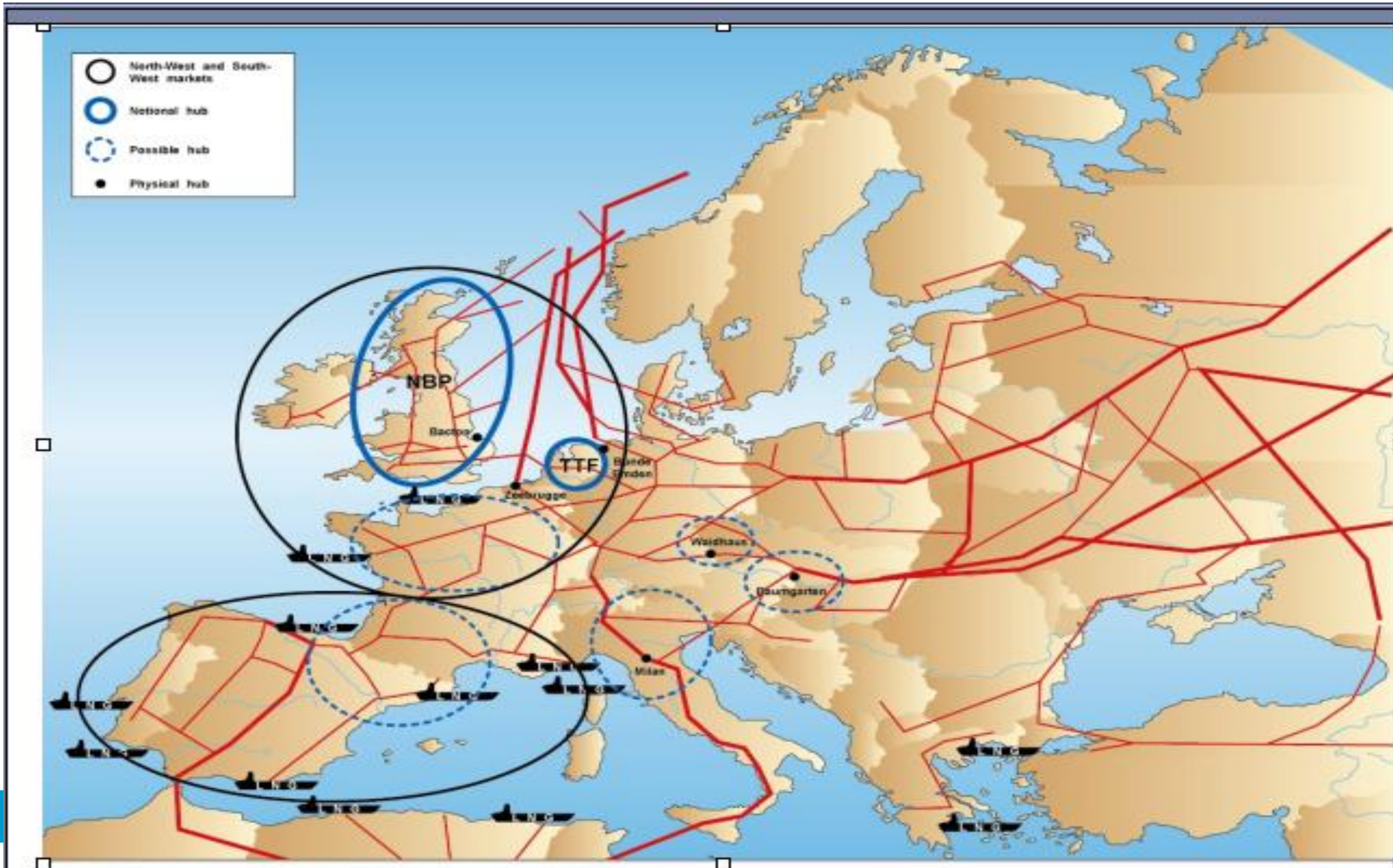
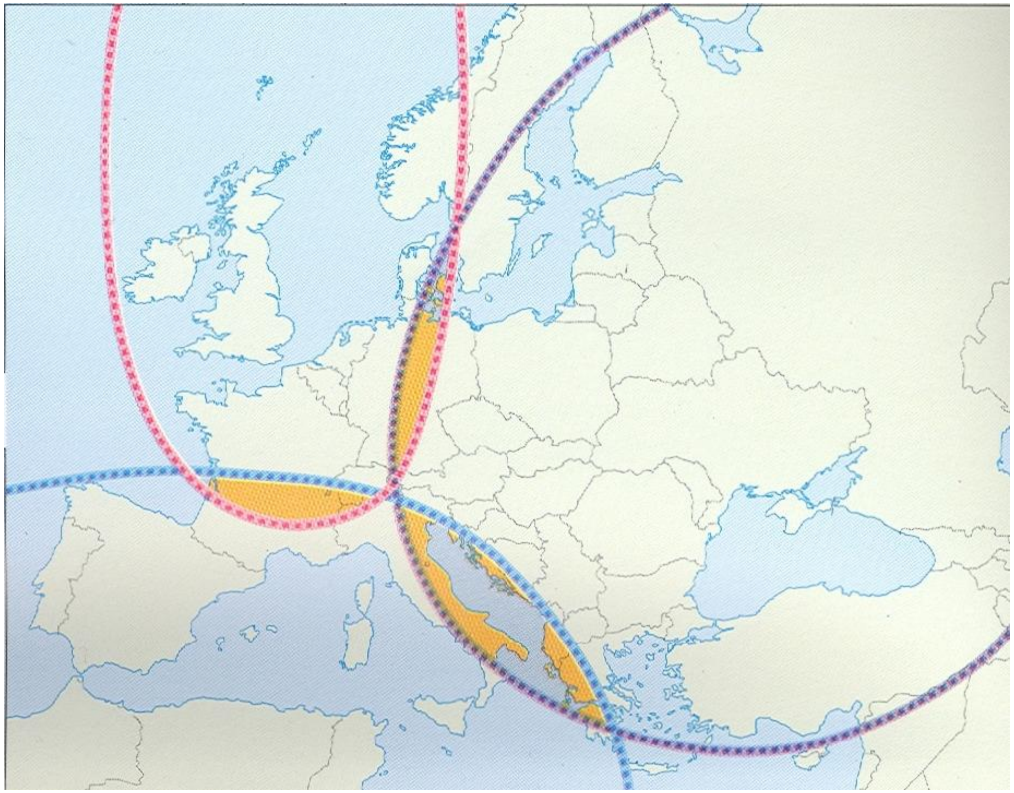
Existing and potential gas hubs in Europe



European Gas Infrastructure Companies

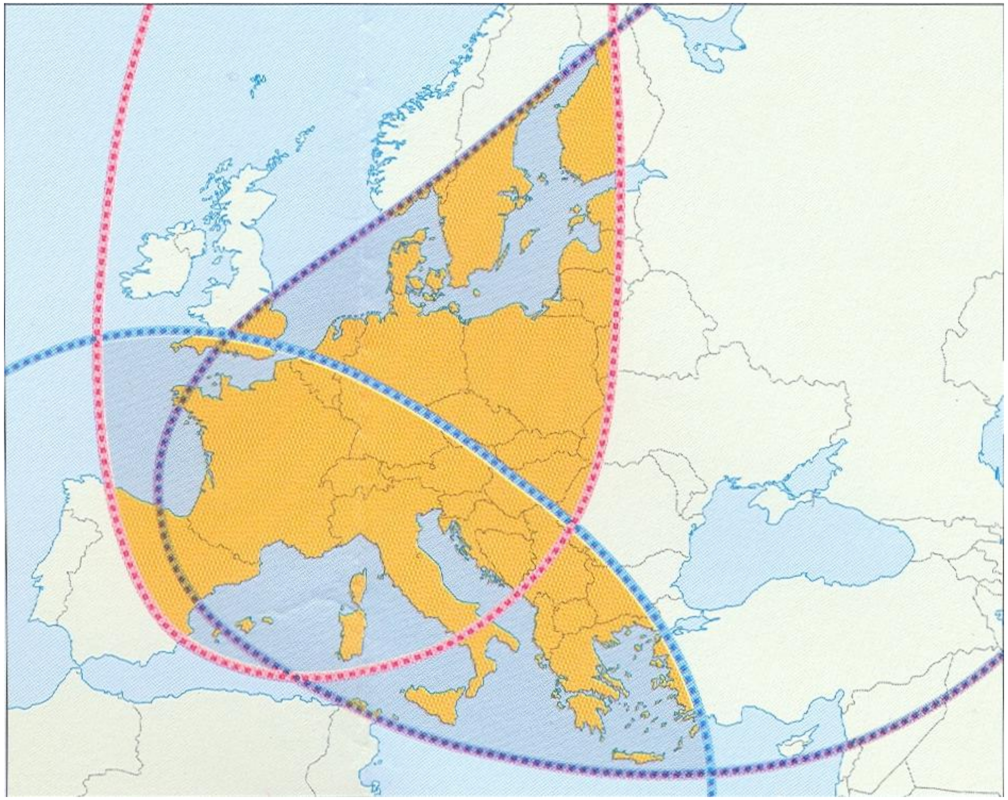
Most transport companies are private and belong to integrated midstream players

Current pattern of supply



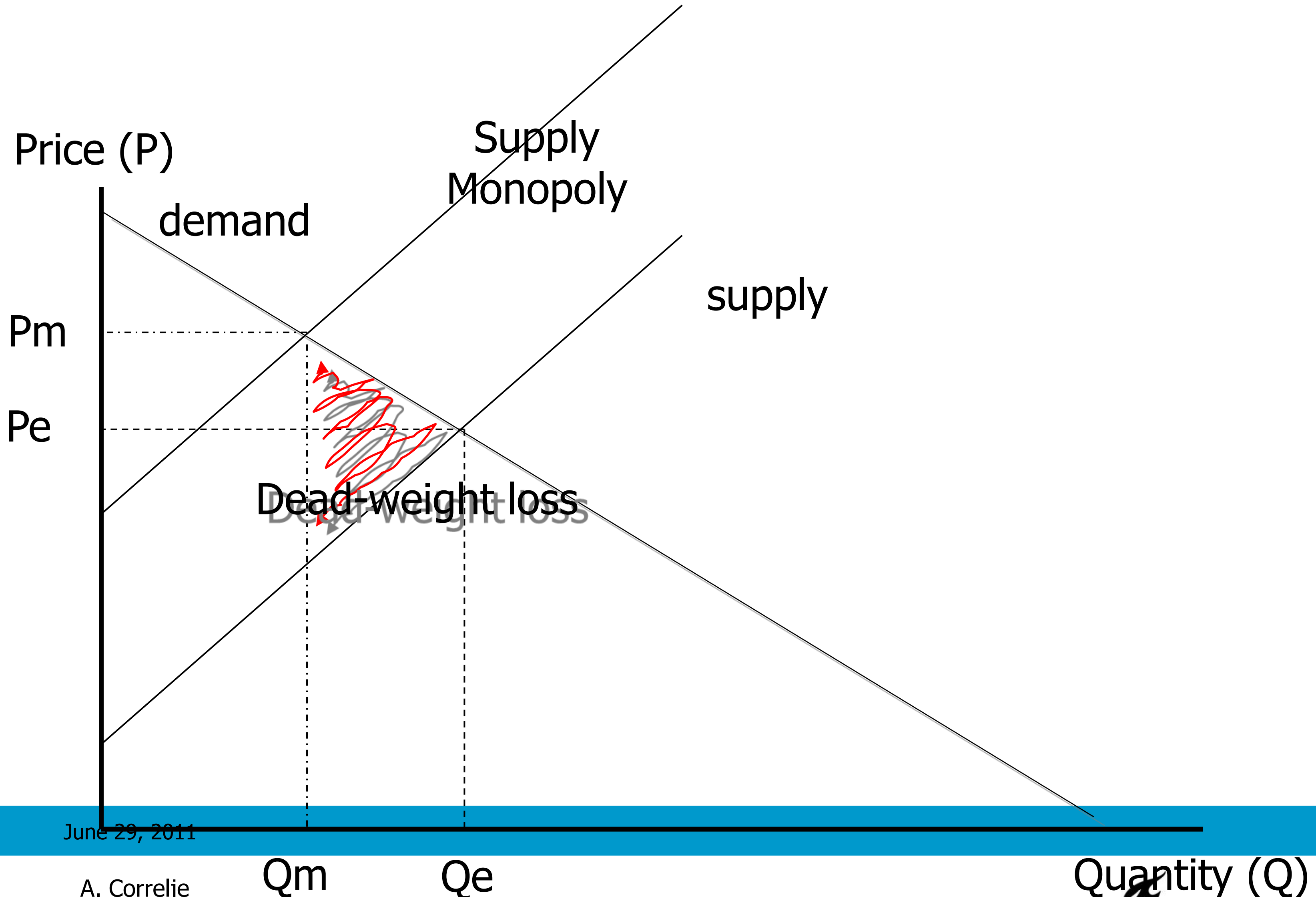
Gasunie, 2000 The European gas market

Future pattern of supply?



Gasunie, 2000 The European gas market

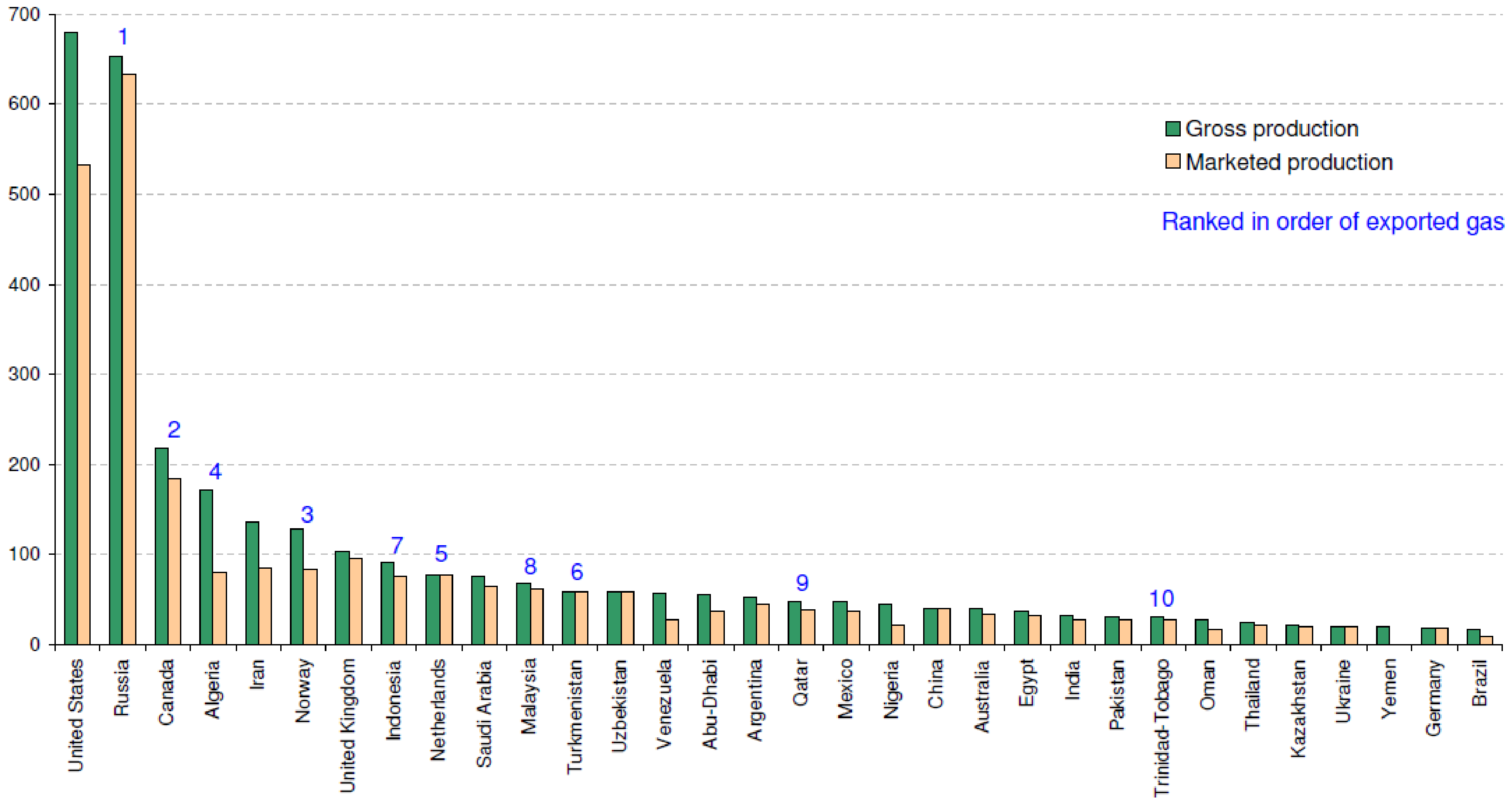
Market power: Reduces welfare



Competitive market?

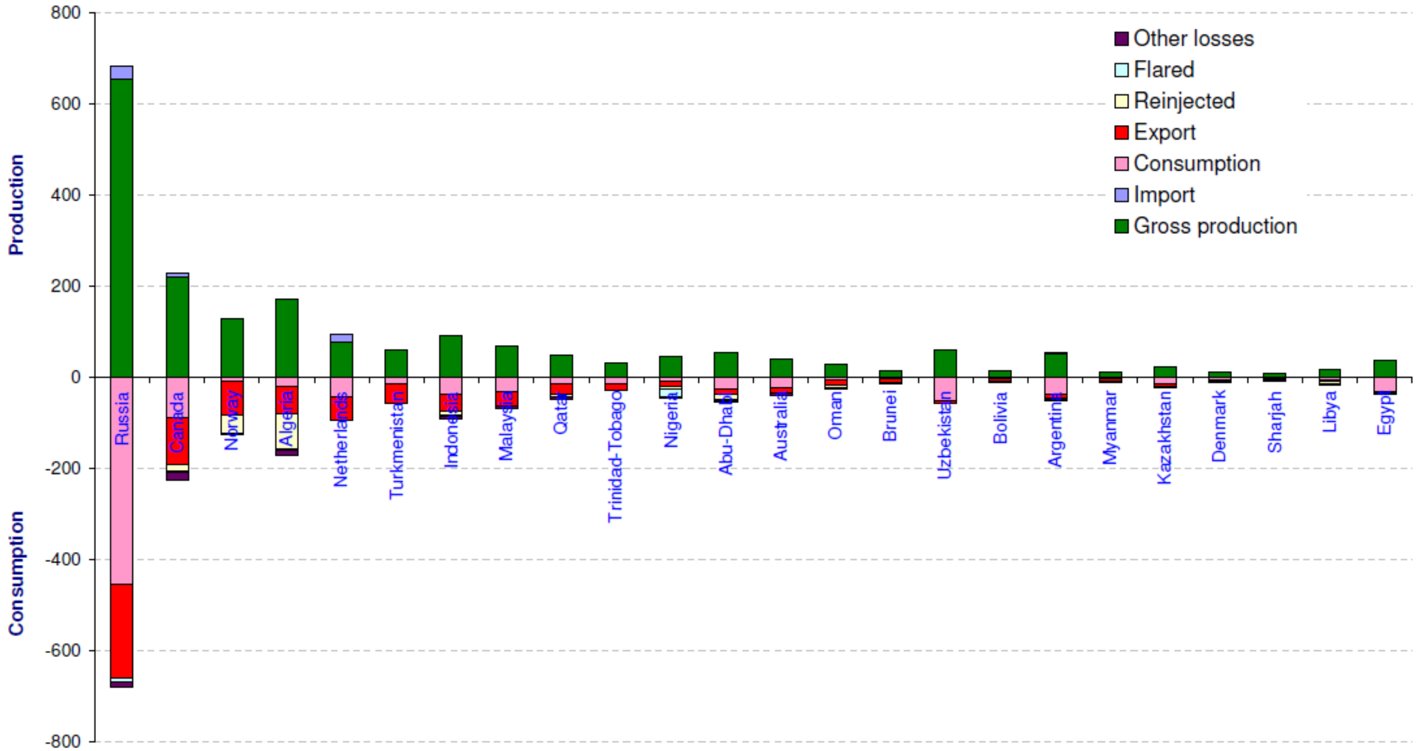
- Many suppliers
- Many consumers
- U-shaped average cost function
- Homogeneous product
- Full information
- No transaction costs
- Free entry and exit

Producers



EDI, 2007

Producers consume a lot

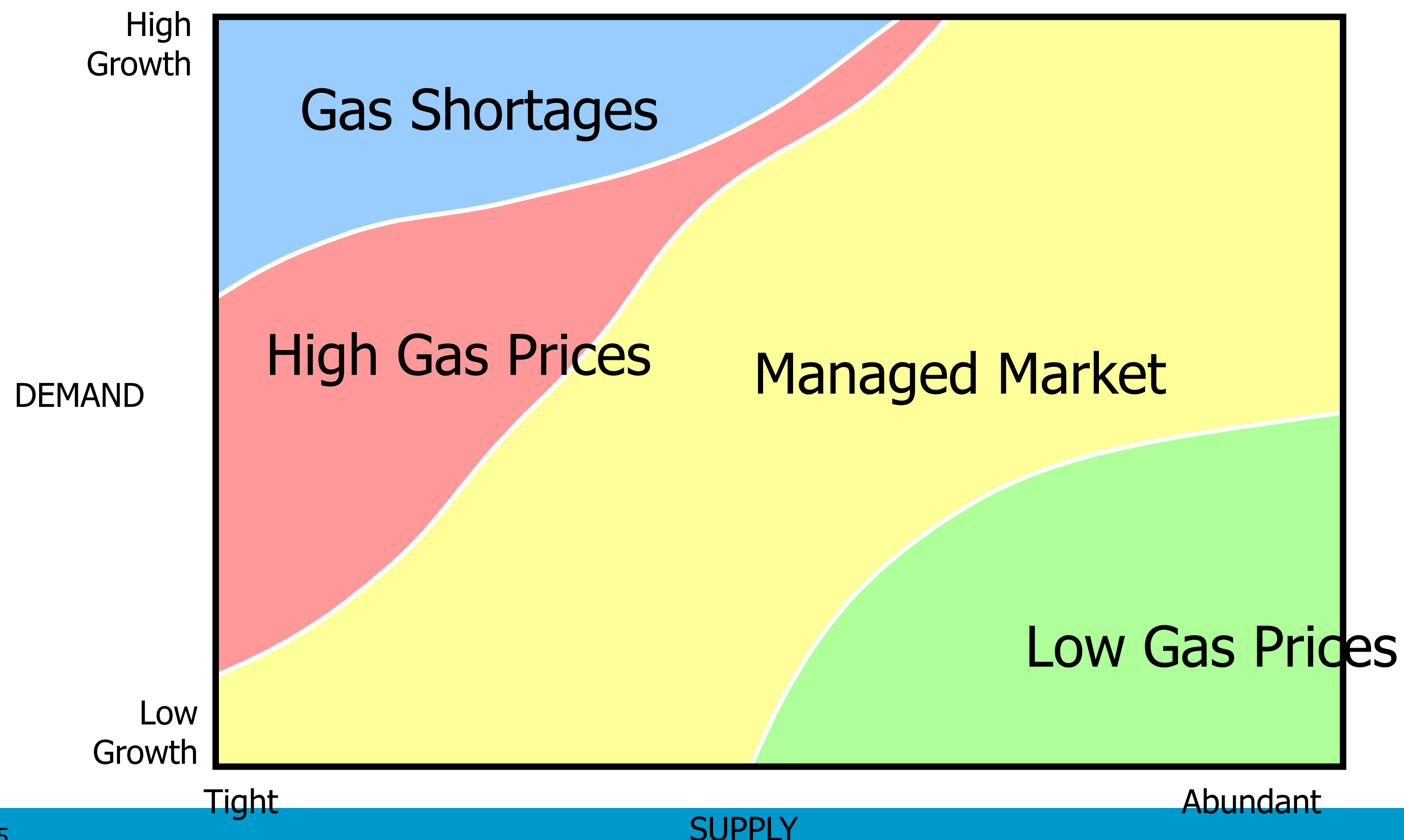


EDI, 2007

Reality

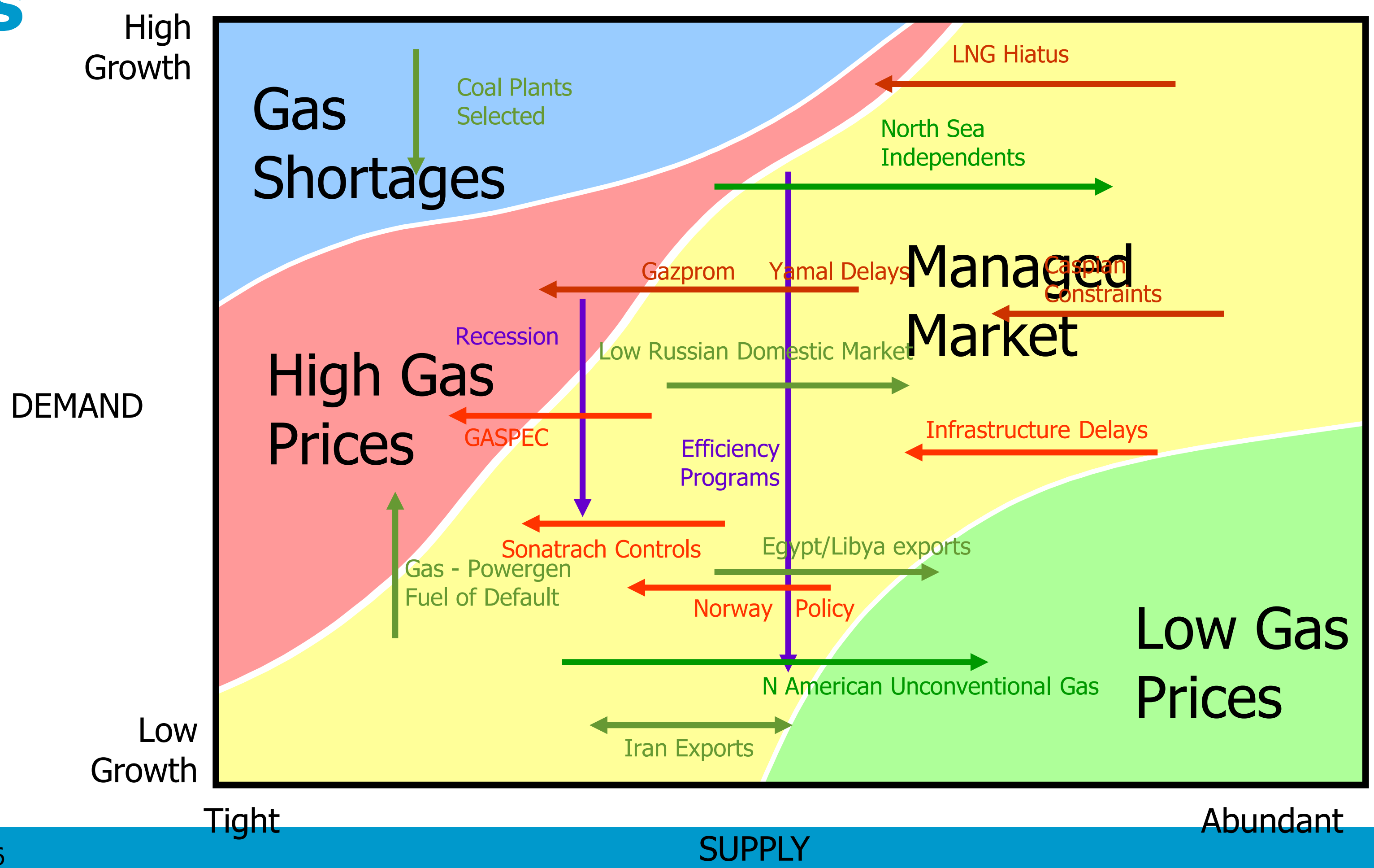
- Complexity
- Uncertainty
- Strategic behaviour

European Gas Supply/Demand Outcomes



MC Kinsey

Pressures that Can Change the Supply/Demand Outcome for European Gas



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6) Gas markets as a globalizing system

- Transit issues become important
- Value chains stretches out over several (different) jurisdictions
- Systems of governance stem from different institutional traditions
- Variation in maturity and spatial characteristics of systems