

Seeking Competition and Supply Security in Natural Gas: The US Experience and European Challenge



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How Markets WorkSM

Supply Security in Gas?



- Many buyers and sellers (none with market share individually or collectively sufficient profitably to affect prices).
- Reliable exchanges for the purchase and sale of the commodity.
- Flexible transport system to overcome natural disasters, accidents or other supply problems.
- Incentives to supply gas and to invest in transport to satisfy future demand.

The Contractualized US Gas Market:



- The use of the network is freely competitive with a robust secondary market in capacity rights, for hundreds of major sellers and buyers.
- New capacity is independent and competitively constructed.
- Pipeline users are protected from price gouging or denial of availability by traditional FERC cost-based regulation.
- Rate cases—once hugely contentious—are now largely perfunctory.
- Long term gas commodity contracts—once typical—have evaporated.
- The pipeline market has shown great robustness to bad weather and environmental disasters, clearing the transport market through the price mechanism in each case.

It's the Pipelines!



- Asset Specificity: Pipelines themselves have utterly no value on their own—they are part of a larger, tightly interconnected supply chain that transports fuel from production wells and gathering systems to distributors and others
 - This results in a high risk of hold-up, requiring a meticulous form of long-term contract to motivate investor-supplied capital.
 - Without this contract, the only choices are to:
 - Vertically integrate into production and/or end-use
 - Regulate the pipe as a large-scale public utility monopoly,
 - Government built and operated gas pipelines.

For Pipelines, it's the Institutions!

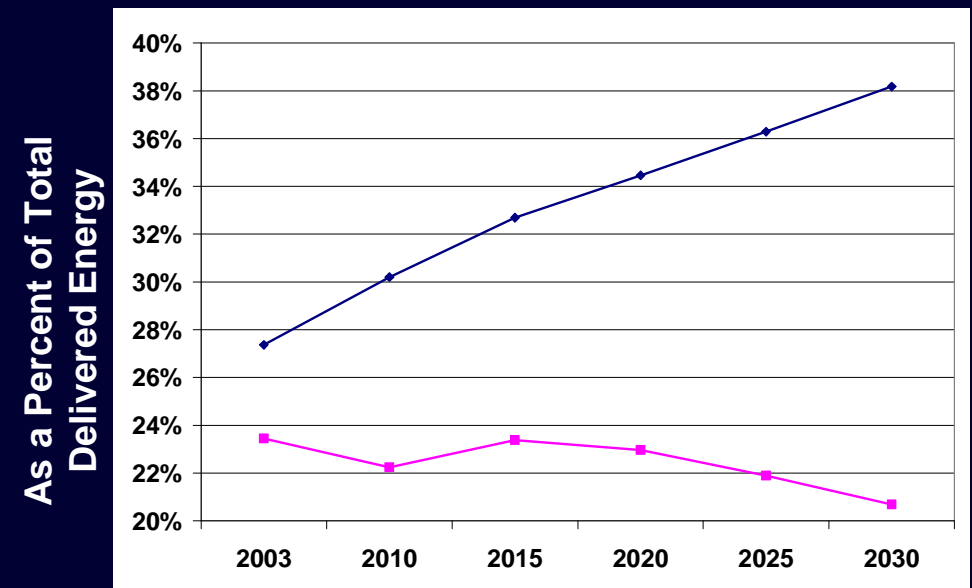
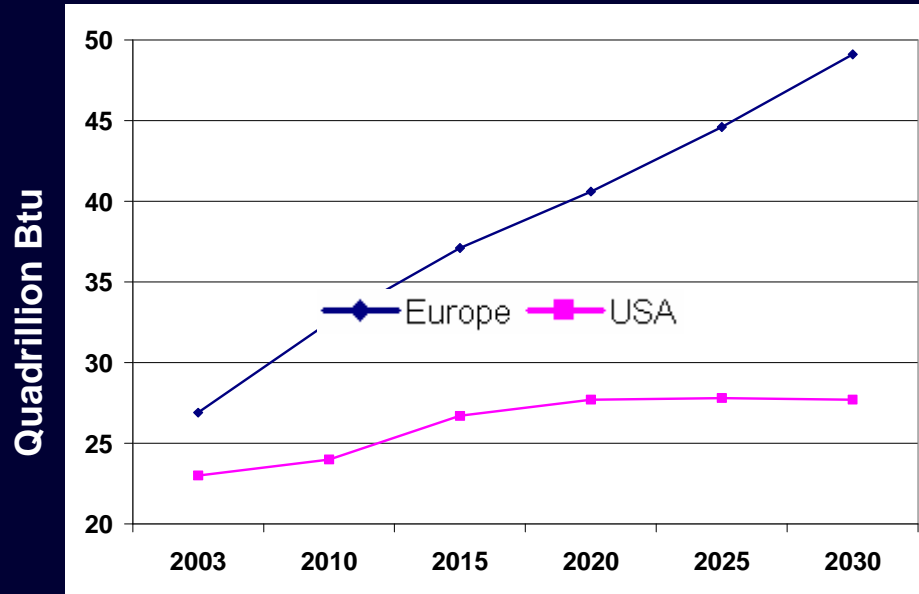


- But you know what the funniest thing about <gas pipelines in> Europe is?
- What?
- It's the little differences. A lotta the same <institutions> we got here, they got there, but there they're a little different.
 - Pulp Fiction (1994)

The US and European Gas Markets



Natural Gas Consumption, 2003 - 2030



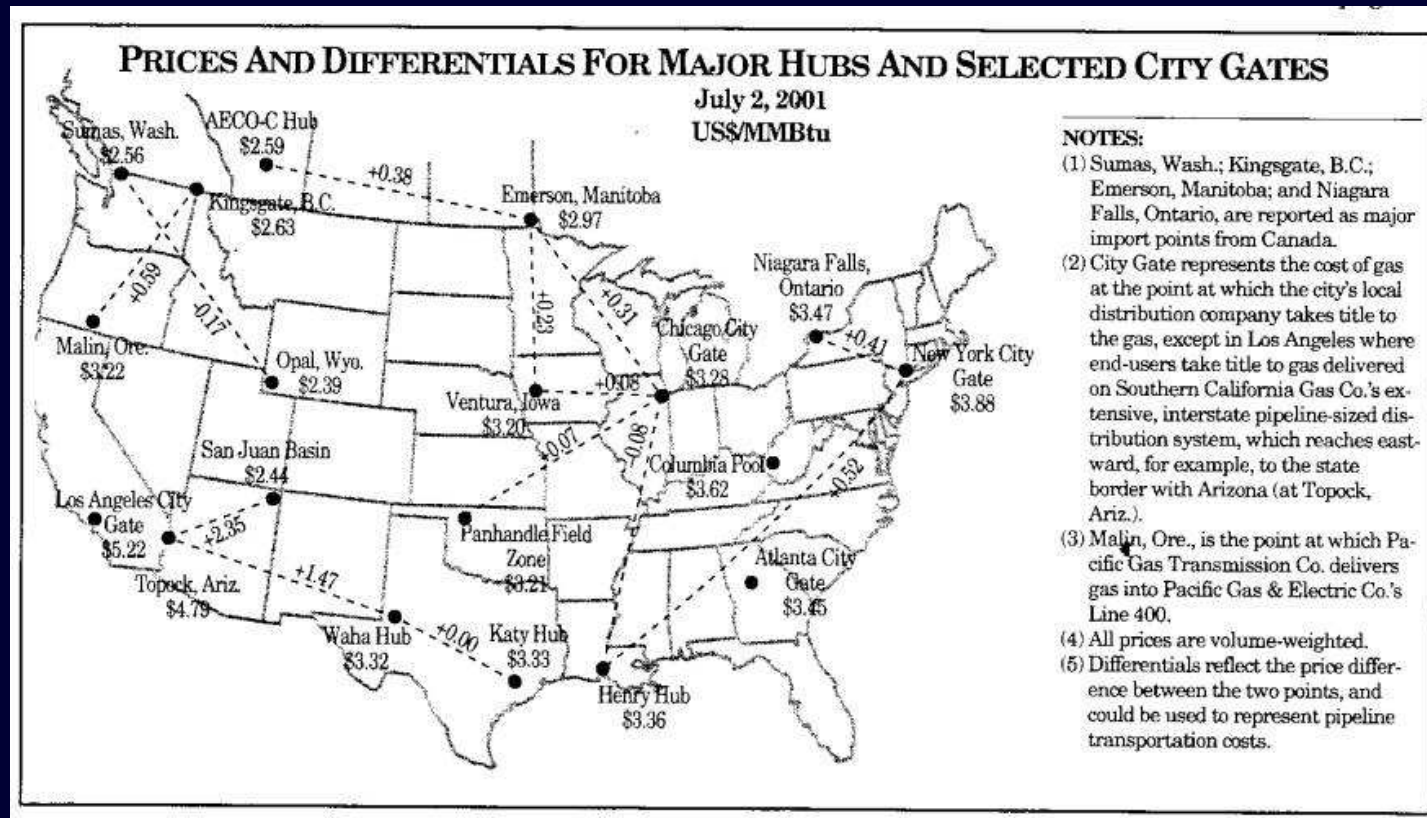
Growth of the American Network



- The unregulated, vertically integrated era (1889-1937)
 - Gas pipelines existed generally as entities integrated either with gas producers or gas distributors.
- The era of delivered gas (1938-1983)
 - Vertically-separate gas pipeline companies sold delivered gas to distributors purchased under long-term contracts in the gas fields.
- The era of contract-based gas pipeline transport (1985-present)
 - By 2000, after 15 years of development, an unregulated market for gas pipeline capacity exists in its own right.

Current Status of the US Network: Price Differentials

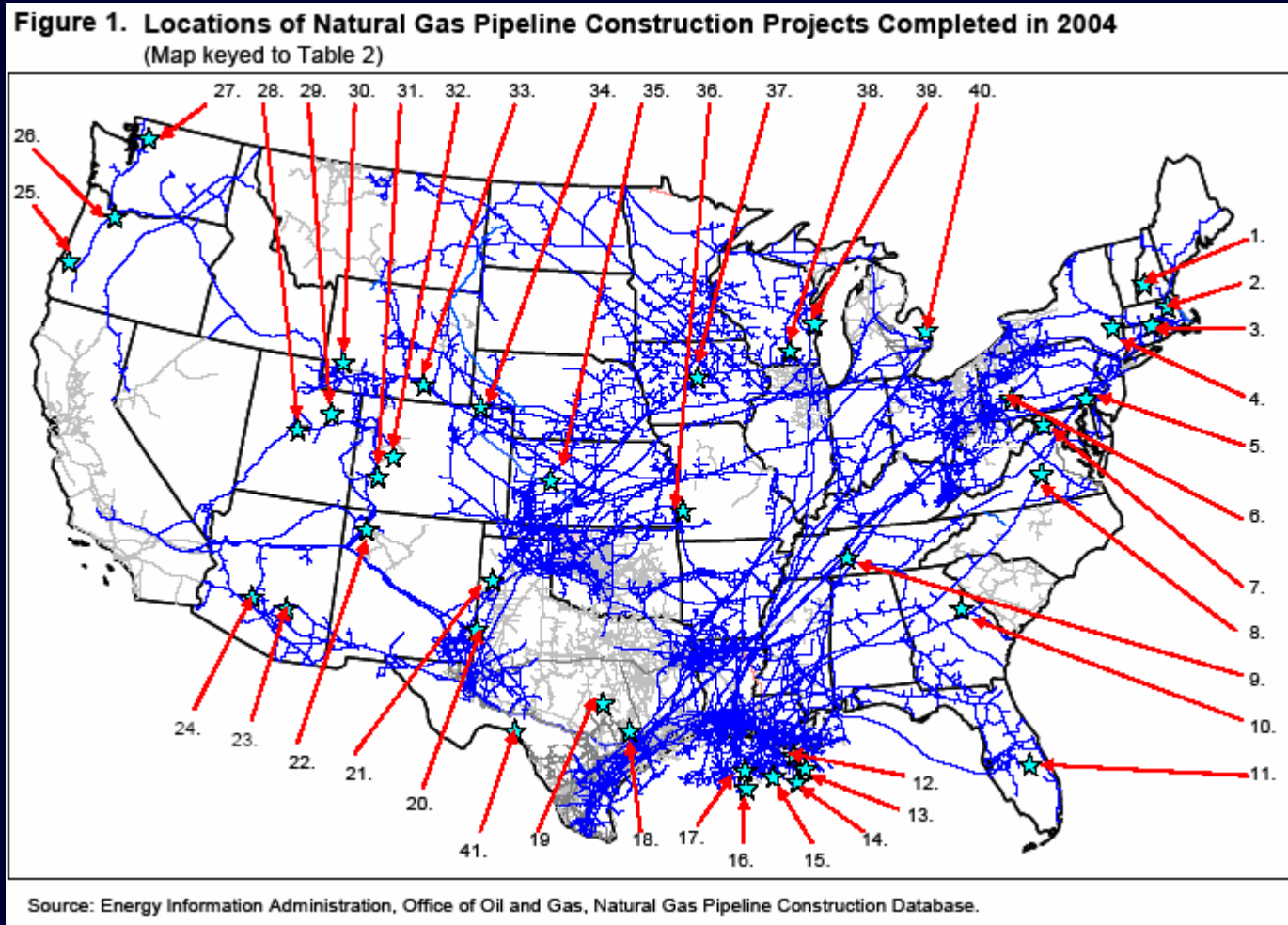
- The US gas network displays a freely competitive gas market typified by vigorous spot trading and differential pricing at many hubs.



Current Status of the US Network: Infrastructure Investment



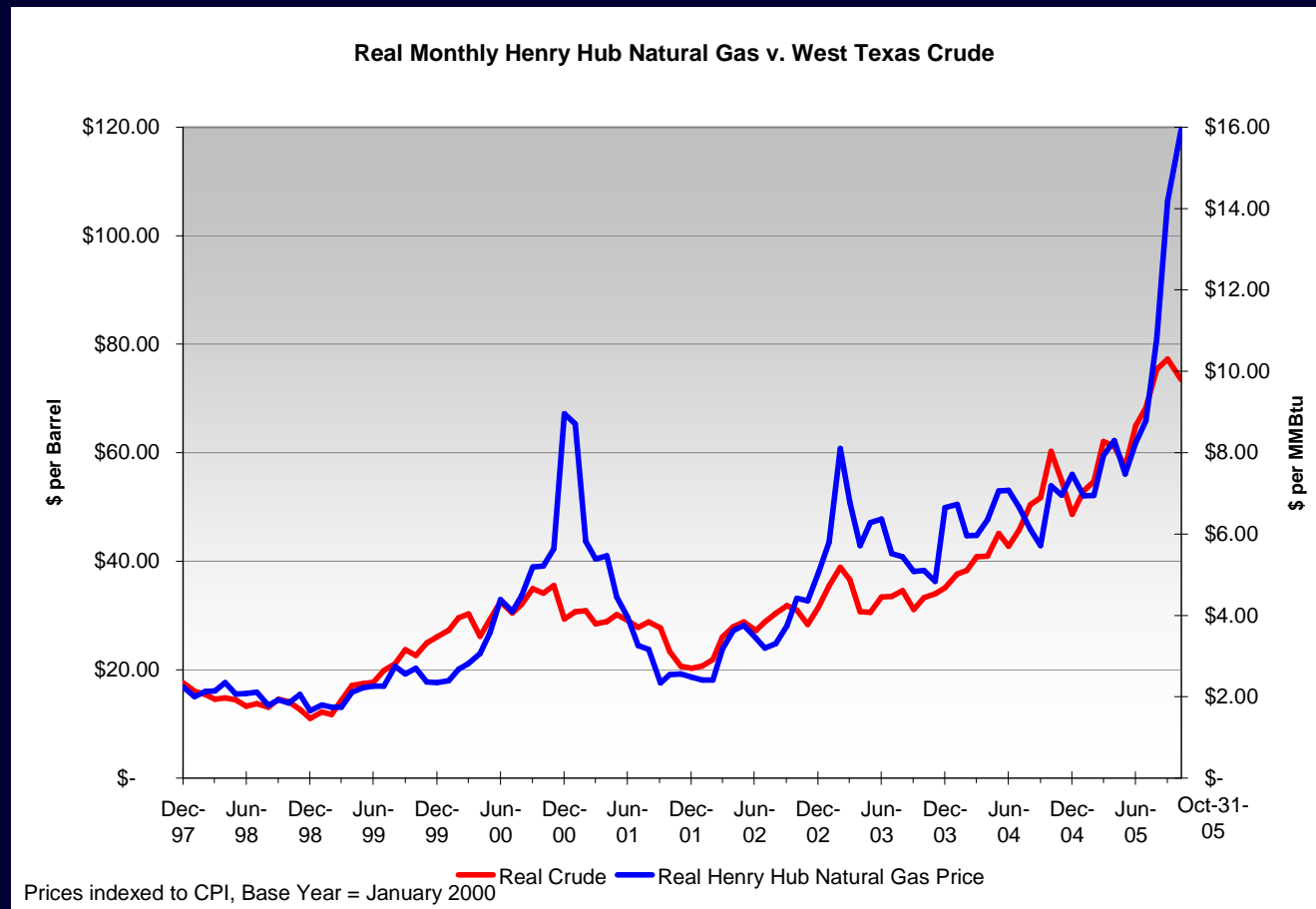
- Investment in the interstate US gas network, licensed by the FERC, has become a relatively straightforward and efficient process.



Current Status of the US Network: Oil and Gas Price Independence



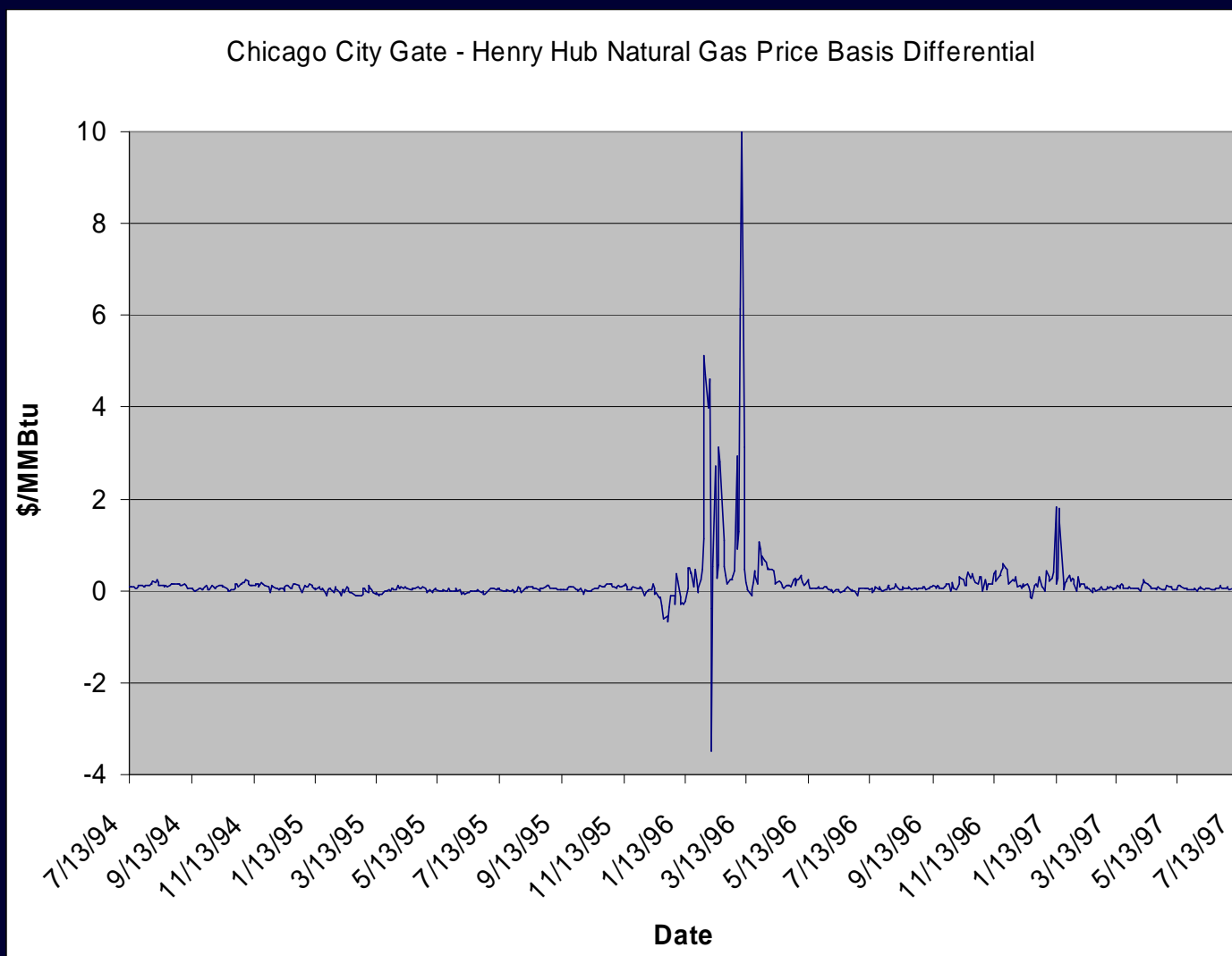
- Gas and oil trade on independent exchanges.
- There are generally no gas contracts indexed to oil.



US Gas Market Learns from Stress



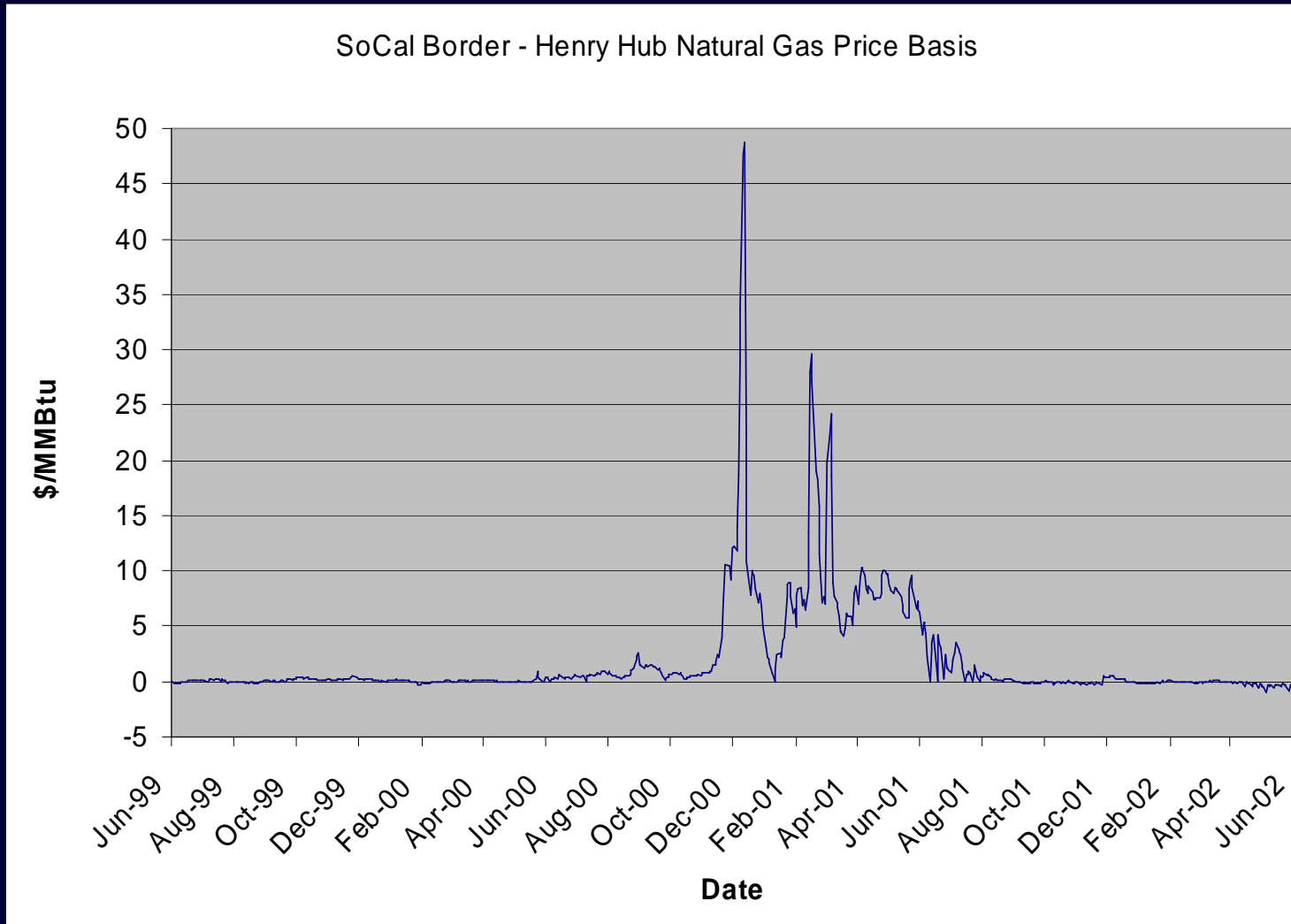
Chicago Cold Snap of Winter 1995-6



US Gas Market Learns from Stress



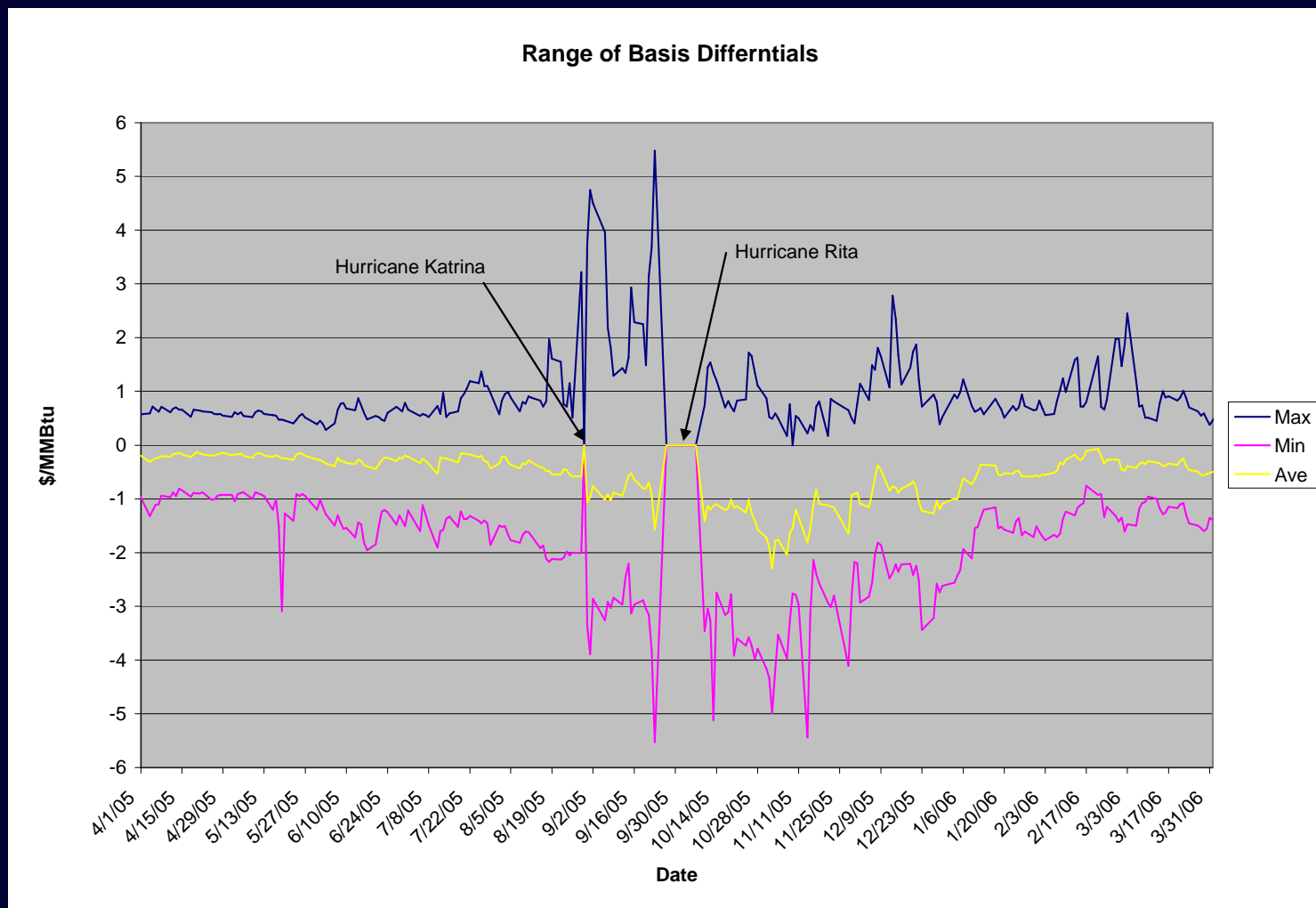
California Energy Crisis of 2000-2001



US Gas Market Learns from Stress



The Hurricane Season of 2005

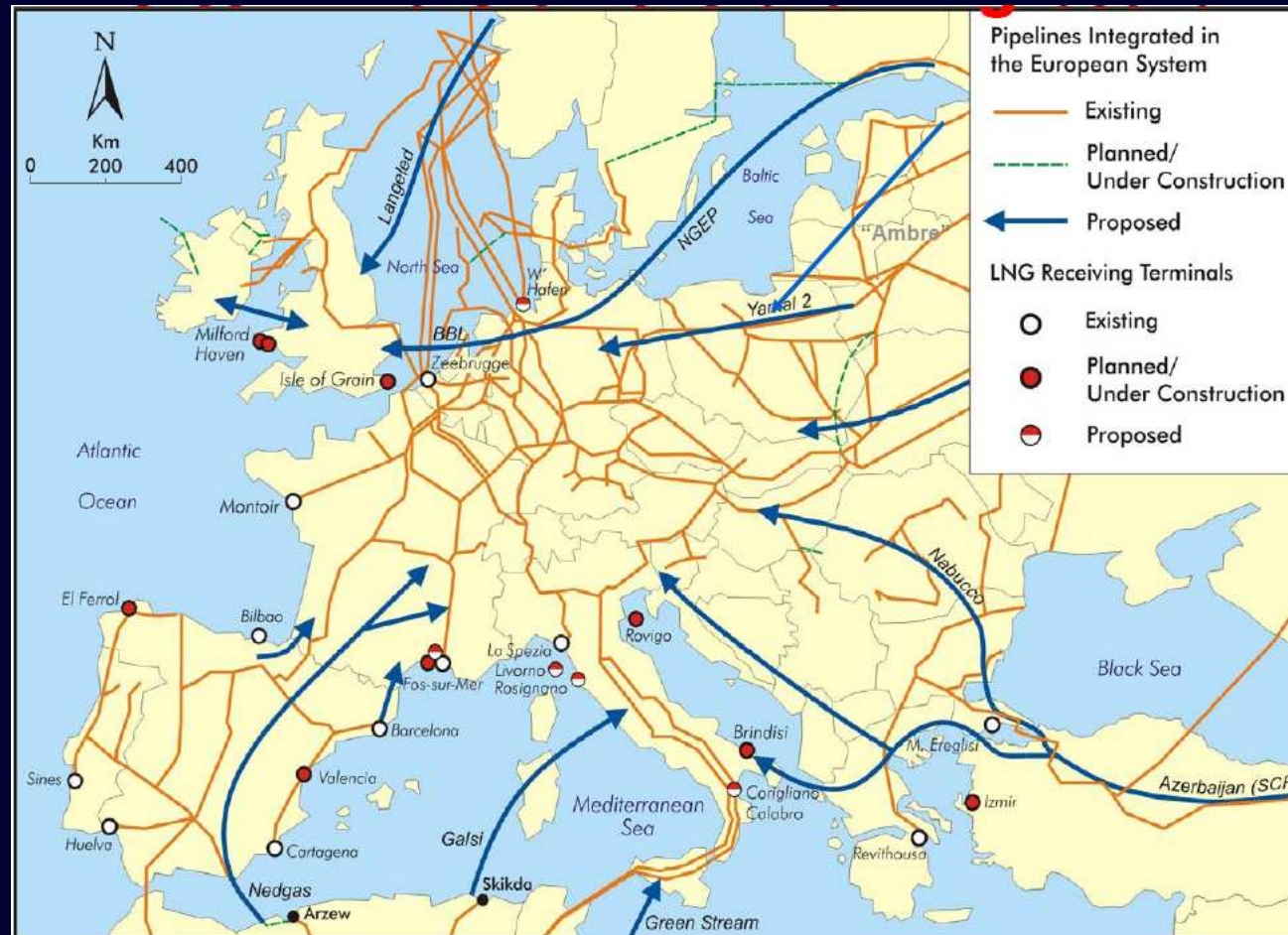


What do these events show?



- These events illustrate how the flexible, well-informed and contractualized US gas pipeline market facilitates supply security.
- In each of the three cases above, the market responded to an exogenous shock to supply and/or demand, the spot price moved according to the local supply and demand for natural gas, and the market was able to clear.
- In order for this to occur, adequate pipeline capacity must be available as well as able to respond to changing market conditions.

Gas Pipelines in Europe



Gas Pipelines in Europe



Name (Ownership)	Length (Km)	Principal Origin	Principal Destination	Diameter (Inches)	Date of Operation
Transgas (RWE)	3,763	Russia	Europe	32,36,48	1968
Transitgas Pipeline (Transitgas AG)	291	Netherlands and Germany	Italy	10, 12, 16	1972
Trans Austria Gas Pipeline (ENI and OMV)	380	Slovak-Austrian Border	Austrian-Italian	34, 36	1974
Trans Europa Naturgas Pipeline (1)	968	German-Netherlands border	German-Swiss	35, 37	1974
Norpipe (Gassco)	440	North Sea	Germany	36	1977
Vesterled (Gassco)	361	North Sea	UK	32	1978
Megal (Ruhrigas and Gaz de France)	1070	Russia	Germany, France	36, 48	1980
Trans-Mediterranean Pipeline (2)	2475	Algeria	Italy	48, 42, 26, 20	1983
STEGAL (Wingas)	320	Czech Republic	Germany	31	1992
MIDAL (Wingas)	702	North Sea	Germany	31, 35, 39	1993
Zeepipe (Gassled Partners)	814	North Sea	Belgium	40	1993
Rehden-Hamburg gas pipeline (3)	132	Rehden	Hamburg	31	1994
NOGAT Pipeline System (4)	257	Dutch continental shelf	The Netherlands	24-36	1994
Netra (5)	341	Coast of the North Sea	Eastern Germany	48	Mid 1990's
Europipe I (Gassco)	670	North Sea	Germany	40	1995
HAG Pipeline (OMV)	45	Austria	Hungary	28	1996
Maghreb-Europe Gas Pipeline (6)	1450	Algeria	Spain, Portugal,	48, 8, 22	1996
JAGAL (Wingas)	111	Yamal-Europe pipeline	Wingas grid	47,55	1997
Yamal-Europe natural gas pipeline (7)	4196	Russia	Germany	56	1997
Interconnector (8)	235	UK	Belgium	40	1998
Wedal (Wingas)	320	MIDAL Pipeline	Belgium	31	1998
Franpipe (9)	840	North Sea	France	42	1998
Europipe II (Gassco)	658	Norway	Germany	42	1999
Green Stream (10)	520	Lybia	Italy	32	2004
Blue Stream (Gazprom and ENI)	1213	Russia	Turkey	55	2005
Iran-Armenia Natural Gas Pipeline	140	Iran	Armania	27	2006
BBL Pipeline (11)	235	Netherlands	UK	36	2006
South Caucasus Pipeline (12)	690	Caspian Sea	Turkey	42	2006
Turkey-Greece pipeline (BOTAS and DEPA)	296	Turkey	Greece	36	Expected 2007
South Wales Gas Pipeline (National Grid UK)	316	Milford Haven	Pembrokeshire	48	Expected 2007
Langed pipeline (13)	1200	Norway	UK	42, 44	Expected 2007
Nabucco Pipeline (14)	3300	Turkey	Austria	56	Expected 2008
Baltic Gas Interconnector (15)	200	Germany	Sweedden (through	28-32	Expected 2009
Medgaz (16)	747	Algeria	Spain	24-48	Expected 2009
Balticconnector (17)	80-120	Finland	Estonia		Expected 2010
Nord Stream (Gazprom, BASF and E.ON)	1113	Russia	Germany	48-56	Expected 2012

Seven Institutional Foundations for US Pipeline Markets



1. Private Carriers, Without TPA Obligations
2. Gas Pipelines Divorced from Distributors
3. Gas Pipelines Subject to a Single Regulatory Authority
4. Pipeline Property and the Regulation/Administration of Rates
5. Structural Separation for US Gas Pipelines (the “Commodities Clause”)
6. Provision of Information on Pipeline Transport
7. Crystallizing Property Rights in Gas Pipeline Capacity: Regulating Rents

1: Private Carriers, Without TPA Obligations – US Experience



- From the first gas pipelines, all US pipelines been financed by investor-owners under the assumption that each pipeline individually would pay for itself.
- Therefore, no piece of legislation, or new regulation, was ever introduced for any pipelines in America without having to deal with the interests of those investor-owners.
- A TPA provider holds itself ready to serve the general public to the limit of the facilities that the carrier is prepared to offer.
- The private carrier transports only a narrowly defined clientele—it discriminates in favor of those with contracts, affording a secondary service to those without.

1: Private Carriers, Without TPA Obligations – US (cont.)

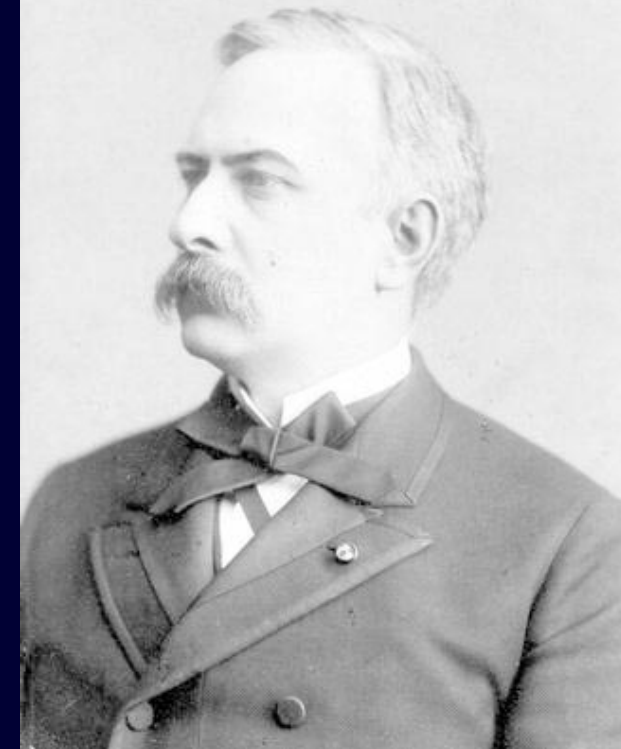


- “[N]obody is interested in that [gas pipeline] enterprise, except only the people who are building the line with the idea of bringing the gas to Cincinnati, to do a great public service, If it should go out, after they have raised the money to build the line, that any man can take possession of it to bring gas there for his own purposes, and that the line is to be under the charge of the Interstate Commerce Commission, I think it will be the end of the enterprise.”

– Senator Joseph Foraker of Ohio, 1906.

- This exclusion ensured a 32-year reprieve from regulation for the gas pipeline industry and avoided the mess of ICC regulation that snared US oil pipelines.

Senator Joseph Foraker: Hero of modern US gas pipeline markets



1: Private Carriers, Without TPA Obligations – Europe Experience



- Europe starts from the requirement of third party access for all of the national networks.
 - “Member states shall ensure the implementation of a system of third party access to the transmission and distribution system” (Article 18.1, preliminary paragraph 22)
- But the entire European gas pipeline network is not bound by TPA rules.
 - A distinction exists for the large international supply pipelines (called “interconnectors”) that transport gas from producing countries that do have long-term contracts.

2: Gas Pipelines Divorced from Distributors - US



- Historical Context: Congress dealt with the abusive market behavior of the holding companies by passing the Public Utility Holding Company Act (1935).
 - PUHCA gave the Securities and Exchange Commission powerful jurisdiction over public utilities.
 - Very severe law:
 - Many holding companies were dissolved or reorganized.
 - Unified, technically related systems replaced conglomerate financial arrangements.
 - Investment banker control of electric and gas industries was eliminated or modified and the engineers became more important.

2: Gas Pipelines Divorced from Distributors - Europe



- Europe has never had the chance to confront the problems of investor-owned, unregulated and vertically-integrated utility holding companies.
 - Thus, its policies regarding the tie between pipeline companies and gas distributors are thus rather milder.
 - The Second Gas Directive deals with vertically integrated gas companies as follows:
 - “These rules shall not create an obligation to separate the ownership of assets of the transmission system from the vertically integrated undertaking.” (Article 9)

3: Gas Pipelines Subject to a Single Regulatory Authority



- FERC regulates pipelines through licensing and pricing regulation
 - This authority was established in the Natural Gas Act of 1938, which was the result of contentious battles between two powerful constituencies, the pipelines and an alliance of Midwestern city governments.
- The US has many regulatory agencies (state & federal), but there is a clear dividing line between them.
- Such a division in regulatory responsibility does not exist within the EU. The 2003 Second Directive States:
 - “Member States shall designate one or more competent bodies with the function of regulatory authorities.” (Article 25.)

4: Pipeline Property and the Regulation/Administration of Rates - US



- In the US, Supreme Court decisions define the legal limitations on regulators' ability to take action on charges that may damage the value of utility investors' property.
 - The best known case is that of *Federal Power Commission v. Hope Natural Gas (1944)*, in which the Supreme Court set a standard for determining “just and reasonable” returns.
- Also critical in defining the value of a utility investors property is the Administrative Procedures Act of 1946.
 - Meticulous procedures to be followed by all regulatory commissions that would assure Constitutional due process.
 - The Administrative Procedures Act imparted greater fairness, predictability, and transparency than had been the case previously.

4: Pipeline Property and the Regulation/Administration of Rates - Europe



- In Europe, the administration of regulated rates is a more recent, and less exacting and consistent affair.
 - The Second Gas Directive calls for “published tariffs, applicable to all eligible customers.” (Article 18, Section 1)
 - It does not further describe the ratemaking formula nor rules on the level of permissible revenues.
- Compared to the restrictive rules on what can constitute an element of regulated pipelines tariffs in the US, the rules for gas pipelines in Europe, as a regional pipeline market, are not so well defined.

5: Structural Separation (the “Commodities Clause”) - US



- Institution change was an accidental side effect of the struggle to deregulate gas prices.
 - Partial gas deregulatory policies corrupted the economic signals sent to pipeline companies
 - The FERC found that open access was not enough to foster competitive gas markets if pipelines owned the gas that they shipped.
- In 1992, that the FERC required that pipelines transfer title to their own gas supplies by the time the gas entered the main trunk pipelines.
 - All of the gas in their trunk lines was owned by others, and no gas supplier could claim an operational advantage over any other (as the pipelines had been able to do previously).
 - In essence, the FERC imposed the railroad-inspired “commodities clause.”

5: Structural Separation (the “Commodities Clause”) - Europe



- In Europe, there almost no discussion on the competitive problems that may arise when pipeline network owners ship their own gas.
- The lack of structural separation creates problems, as the DG Competition Report pointed out:
 - The Commission has also gathered indications that one TSO grants its affiliated supply company substantive rebates for the transportation fees as compared to non-affiliated network users.” (DG Competition Report on Energy Sector Inquiry, 10 January 2007, p. 58 (paragraph 155).
- There are a number of cases of discriminatory behavior cited in the DG report, all seemingly stemming from the lack either of ownership separation or the lack of separation between transport and gas sales.

6: Provision of Information on Pipeline Transport - US



- In 2000 the FERC acknowledged that some shippers thought that its information reporting requirement may cause some burdens, and also that it may “give shippers knowledge of their competitors general marketing strategy,”
- But the FERC was more than swayed by the need for the market to be fully informed to operate efficiently and to uncover undue discrimination or market manipulation when it would appear.
- For the FERC, there are no “trade secrets” in the use of regulated gas pipeline capacity—it is an open book.

6: Provision of Information on Pipeline Transport - Europe



- In contrast, the Second Gas Directive says the following:
 - Without prejudice to Article 16 or any other legal duty to disclose information, each transmission, storage and/or LNG system operator shall preserve the confidentiality of commercially sensitive information obtained in the course of carrying out its business, and shall prevent information about its own activities which may be commercially advantageous from being disclosed in a discriminatory manner. (Second Gas Directive, Article 10.1)

7: Crystallizing Property Rights in Gas Pipeline Capacity



- In 2000, the FERC implemented the following five changes into its regulations:
 1. Removal of the price cap on secondary pipeline capacity sales.
 2. Requiring pipeline companies to “segment” capacity for own use or release.
 3. Limiting imbalance management and penalty provisions.
 4. Consolidating and enforcing pipeline reporting requirements to improve price transparency and more effective monitoring.

- The Commission’s changes settled the ability of contract shippers to trade and profit from marketing their capacity.

Final Thoughts



- It is not a ridiculous overstatement to call the regulation of American gas pipelines the Stradivarius of inland transport regulation schemes pertaining to pipelines. That regulation underwrites the security of supply in gas.
- This is greatly in contrast to the similarly vast American oil pipeline network, which is a broken-down country fiddle by comparison.
- The US experience points to the critical nature of institutions that are new or untested in Europe.

- What would be required to implement contractualization in Europe?
 - The contractualization route would require the definition and distribution of property rights and a raising of meticulous accounting regulations currently foreign to Europe.
 - It would require the synchronization of pipeline capacity across national borders within Europe and a single regulatory jurisdiction for the major trunk gas pipeline companies that requires vastly enhanced market information requirements.
 - It would also perhaps require the structural separation of pipeline companies (critical in the US, virtually impossible to foresee in Europe) and the imposition of the “commodities clause.”
- To say that this is a challenging administrative, legal and political job would be a crass understatement.

NERA

Economic Consulting

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