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Open Access to Natural Gas Pipeline Transportation in North America: Lessons for the European Internal Energy Market

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There is increasing global interest in natural gas today because of its perceived value for national and international strategies to cope with environmental concerns. The use of gas is rapidly increasing in many parts of the world, and this global resource offers the potential for a much greater contribution to worldwide energy requirements. Most natural gas pipelines and distribution systems are either publicly owned or, in one way or another, regulated by some level of government. Natural gas production, moreover, is dominated by national petroleum companies or by governmental oversight in most countries.

During the 1980s, however, a movement toward greater reliance upon the marketplace, rather than governmental economic controls, has become a worldwide phenomenon. The most dramatic manifestations, of course, have been the return to market economics in many former Communist countries. Elsewhere, within the Western industrialized nations and the developing countries, privatization of government-owned industries, more open international trade, and the substitution of competition for regulated pricing have become common themes.

The natural gas trade, therefore, has become a focus of the trend

toward deregulation in many places. In the United States, deregulation of wellhead prices for natural gas, the development of a free trade agreement with Canada, and policies to provide open access to interstate pipeline transportation have profoundly altered business institutions and practices in the gas industry. In the course of progress toward an internal energy market for the European Economic Community, open access to long-distance pipeline transportation has also been proposed. In discussions of the European proposals, the North American experience is frequently cited as evidence that open access either will, or will not, lead to more economically efficient gas markets.

The thesis of this paper has three parts:

- 1) The North American gas market is historically, politically, and technically unique and the North American deregulation experience is not directly transferable to the European open access proposals.¹
- 2) The transition in the North American gas markets is still in progress and any conclusions regarding its success (or failure) should be regarded with caution.
- 3) The North American experience, however, has highlighted a set of generic conditions that must be met for the political and economic stability of gas markets. Unlike the specific anecdotal experience of the North American deregulation experiment, those generic conditions might provide criteria for considering the viability of proposals for more open access to the European pipeline system.

Conditions Necessary for a Viable Natural Gas System

The use of natural gas as a fuel is associated with large, long-term capital investments, not only in the equipment that uses the gas, but also in the exploration and development of natural gas resources and the construction of the pipeline or liquefied natural gas (LNG) facilities necessary to transport it. Gas pipeline systems, especially, are geographically limited in their sources of supply and their capability to serve consumers. There is a mutual financial interdependence, therefore, among gas producers, gas consumers, and the transportation systems that serve them.

This interdependence among otherwise independent decision makers requires several conditions to be met in order for a viable

1/ Liberalization in the economic regulation of gas markets has occurred in both the United States and Canada. While the regulatory frameworks (both old and new) in the two countries are different, there are important similarities in their natural gas industries and in the movement towards open access to pipeline service. Furthermore, links between the two systems are increasing. In this light, observations are made in this paper about the whole North American system, although details of Canadian "deregulation" are not treated.

investment climate to be maintained in the natural gas markets. The conditions are summarized in the following five statements: 1) There must be assurance to the users of natural gas that, in the ordinary course of events, the system will respond reliably to the varying demand for gas. This assurance usually takes two different aspects:

- In some “regulatory” or oversight role, government must be assured that critical service to small users and for public purposes (heat, power generation fuel, and similar requirements) will be met in all but disaster scenarios.
- Large scale customers making individual investment decisions must be assured of an acceptable level of financial risk in the probability of routine service interruption, emergency curtailments, or confiscation of supplies.

2) There must be the physical and accounting capability to implement effectively the types of transactions that are permitted. For example, the physical deliveries of gas to the pipelines by producers and from the pipelines to users must conform in quantity, quality, and timing to the terms of contracts among any parties who are permitted to utilize the transportation system. If spot or futures market agreements are permitted, they also must be capable of being implemented. The deliveries made in accordance with all of these transactions must be reasonably verifiable for accounting purposes.

3) There must be some equitable approach for the allocation of scarce resources, such as pipeline capacity and storage during peak demand periods, either by legitimate regulation (rationing) or by pricing (bidding).

4) There must be regulatory review or market signals which will ensure that investments in the development of new supplies will be made in a timely manner to avoid shortfalls.

5) There must be regulatory review or market signals that will encourage timely investment in new transportation and storage capacity in anticipation of emerging or potential demand growth.

All of these conditions were theoretically provided for in the North American gas markets prior to the “deregulation” initiative. In practice, however, a failure of some of the conditions provided the incentive for deregulation. Specifically, the inadequacy of market signals to bring on the development of new supplies was followed by a breakdown in the reliability of service.

*Under the old system
inadequate market signals
were followed by a
breakdown in service
reliability*

The North American Experience

Structure of the Industry

The natural gas industry in the US is frequently described as having three major sectors: production, transmission, and distribution. Even this simple, three-sector model indicates the lack of

organizational or economic integration of the industry. Gas delivered to an ultimate consumer may have been discovered and produced by a corporation which views itself primarily to be an oil company, purchased and sold by an independent broker, transmitted thousands of miles by a pipeline company, regulated by the Federal Energy Regulatory Commission (FERC), and delivered to an entirely separate distribution company which may be privately or municipally owned and regulated by a state or local government.

Another measure of complexity is the number of players in the system. There are 113 interstate pipeline companies, over 1,300 distribution companies, and about 27,000 producers in the US, not to mention the Canadian participants.

The Origin of Regulation

The origins of the gas industry in the US closely paralleled those in Europe. Manufactured or "town" gas companies were created to provide municipal lighting services and were either municipally-owned or regulated by city or state governments. As interstate gas transmission pipelines began to be built in the 1920s to transport natural gas from the oil fields to industrial centers, and as the result of gas utility mergers under holding companies, federal government attention began to focus on the gas industry. The initial impetus for federal regulation was accusations of discriminatory service and pricing. The Public Utility Holding Company Act enacted in 1935 and the Natural Gas Act of 1938 brought federal regulation to the industry. The Natural Gas Act granted authority to the Federal Power Commission (FPC), later reestablished as the Federal Energy Regulatory Commission (FERC), to ensure that the rates charged by interstate pipelines were "just and reasonable." This set the stage for today's regulatory system. The Act was widely supported and passed both Houses of the Congress unanimously.

In 1954, in a landmark decision known as the "Phillips Case," the Court ruled that producers could exact "excessive" prices, ultimately at the expense of the customers of local gas distributors, and that the Natural Gas Act authorized the FPC to regulate wellhead prices such that they too were "just and reasonable."

The FPC, following precedents, regulated the wellhead price of gas sold into the interstate market on a cost-of-production basis. In the intrastate market, on the other hand, the supply of and demand for natural gas continued to determine the price. This "two-tiered" natural gas market operated reasonably effectively for the next 20 years. In other words, the interstate regulated wellhead price remained close to the market value being determined in the intrastate market.

The Roots of "Deregulation"

The roots of gas deregulation were in the disparity between regulated interstate prices and market-determined intrastate prices

The tumultuous events of the 1970s initiated by the Arab oil embargo in 1973, however, destroyed the symmetry between the markets. As prices of competitive petroleum products rose, users of natural gas in the intrastate market were willing and able to bid for gas at prices above that adjudged by the FPC to be "just and reasonable" for the interstate market.

Growing disparity between prices in the two markets encouraged producers to dedicate an increasing share of new gas discoveries to the intrastate market. The relatively low price still experienced by customers in the interstate market, however, stimulated natural gas demand. Interstate pipeline companies found it increasingly difficult to contract for sufficient supplies to satisfy that growing demand.

Finally, during the severe winters of 1976-77 and 1977-78, technical difficulties intensified the tight supply situation. In the interstate markets, users were curtailed and forced to shift to alternative fuels. Moratoria were imposed upon new customer connections and curtailment schedules became important.

The regulatory pricing of gas was deemed to have contributed to a gas shortage by underpricing gas relative to alternative fuels, thus encouraging consumption while limiting incentives for exploration and development of new supplies, particularly from high-cost resources. Consequently, subsequent regulatory initiatives stressed incentive pricing for the more costly sources, such as very deep deposits. Higher prices for gas were considered logical both to reserve what were assumed to be limited resources for high value uses that were presumed to be capable of paying a premium, and to encourage the broader development of high-cost resources.

These theories led to the enactment of the Natural Gas Policy Act of 1978 (NGPA). The intent of the NGPA was to stimulate natural gas exploration and development and let markets balance supply and demand by gradually eliminating wellhead price regulation. The approach was consistent with a more general deregulation policy trend then beginning. The natural gas industry became an arena for a movement toward competitive price setting.

The NGPA successfully stimulated natural gas exploration and development. Interstate pipelines, still responding to the threat of supply shortfalls, quickly seized the opportunity to ensure future reliability by contracting for gas at the higher prices allowed by the NGPA. They further competed for supplies with contract terms that agreed to take or pay for the gas at high rates of production and in substantial volumes, thus accelerating the rates at which producers could realize revenues from their discoveries.

*Producer response outran
the need for gas*

Pipelines sought, in turn, to insure themselves against the risk of investment in future gas supplies by negotiating similar take-or-pay clauses with distributors. Minimum bill provisions required distribution companies to make a minimum monthly payments based upon their anticipated gas requirements regardless of whether they actually took delivery of the gas. Meanwhile, higher energy prices, general conservation policies and specific restrictions on the use of gas prompted by the "energy crisis," and an extended economic recession greatly reduced demand for natural gas.

Almost immediately the producer response outran the need for production. The deliverability surplus, which has continued to this day, was the result. The excess production soon created substantial financial liability for pipelines through the take-or-pay clauses in contracts with producers.

With the decline in oil prices initiated in 1982, the escalating ceiling prices for gas set by the NGPA became noncompetitive with alternative fuels in the price-sensitive industrial and electric utility applications (which have the technical ability to switch readily from gas to heavy fuel oil). Contract conventions and the rigidities embodied in them prevented the price of natural gas from falling. To hold the fuel-switching markets, pipelines were obliged to offer discounted prices, and the FERC allowed such incentive pricing programs to be initiated.

When the gas-to-gas competition arising from excess production capability began to depress the price of new gas at the wellhead, the tensions in the regulated system became untenable. The rigidities of regulated pricing were then deemed to have been the cause of both the shortages of the 70s and the glut of the 80s. In 1984, the FERC embarked upon a series of initiatives intended to increase the market responsiveness of the interstate transportation system.

The Transition to Competition

After several FERC orders, court actions, and innumerable interpretations (see the Appendix), the structure of gas industry regulation has been profoundly changed:

- Minimum bill arrangements between pipelines and distribution companies have been made ineffective by FERC decisions.
- Flexible pricing of gas has become the norm rather than the exception.
- Take-or-pay obligations arising from pipelines' contracts with producers, though as yet not adequately resolved, are seen as an anachronism.
- Pipelines have responded to "severe encouragement" by the FERC to "voluntarily" open access to their transportation

capacity for transactions in which they do not perform the broker function.

The Transportation Situation Today

The gas industry has evolved from an almost completely regulated market, characterized by long-term contracts directly involving pipelines, to one in which as much as 80% of its volume moves freely with pipelines acting as transporters. One of the most notable changes has been the breakdown of traditional marketing relationships. As the gas surplus grew in the early 1980s, and non-traditional (direct) sales began to develop, a new segment of the gas industry, the marketers or brokers, came into being. The marketer has taken over many of the merchant functions traditionally held by the pipeline companies. Meanwhile, the pipeline companies' function has increasingly shifted from that of gas merchant to gas transporter. Today, there are an estimated 300 natural gas marketing service companies that broker, trade, and/or market gas. Also, a number of price reporting services have sprung up to track the market.

Another major change in the gas industry is the emergence of a natural gas futures market. In 1990, the New York Mercantile Exchange (NYMEX) initiated trading of a gas futures contract. Although the gas futures market is still in a formative state, many expect it to become a pricing reference for spot and future cash market transactions. The potential also exists to use this futures market to help manage the uncertainty and price risks that have evolved with the transition to competition.

The transition to competition has also increased volatility in gas prices. As spot purchases of gas began to dominate the market, gas prices became more seasonal. Spot prices have climbed as much as 50% over the course of a winter and fallen back at winter's end. In 1986, both oil and gas prices dropped dramatically. Later, when oil prices recovered substantially, gas prices stayed down, marking the beginning of an era of gas to gas competition. During the oil price spike occasioned by the recent Middle East crisis, gas prices actually fell below those of the previous year.

Since 1982, the utilization of the capacity of the nation's pipeline system has increased dramatically. Throughput has risen from 19.07 Quads in 1984 to 20.65 Quads in 1989. Meanwhile, brokers and marketers, serving as intermediaries among market participants, have assumed a more active role as marketing transactions became increasingly diversified (see Figure 1). Marketers share of total carriage increased from 22% in 1984 to 40% in 1989, while the volumes of gas owned and sold by the pipelines themselves fell accordingly. Marketers share of total gas delivered for market (carriage for market and pipeline sales) increased from

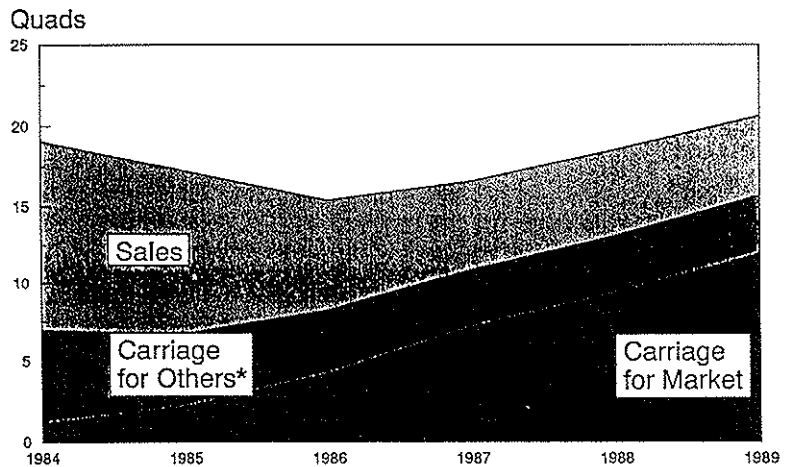


Figure 1: Makeup of Pipeline Throughput

19% in 1984 to 37% in 1989. The greater complexity of the market is also reflected in the increase in the number of transactions, from 8,022 in 1987 to 12,039 in 1989. Much of the increase was in transactions for marketers, which increased from 1,197 in 1987 to 5,211 in 1989.²

The Conditions for Viability Under Open Access

The open access, or deregulation, experience has often been lauded as a success by those who advocated it initially. Significant institutional changes have taken place, with wrenching financial cost to large portions of the pipeline and producer communities but, thus far, without evidence of any critical technical or institutional failure. A brokerage system has been created, open access has been widely adopted by users and shippers, gas prices have declined in the face of brisk gas to gas competition, and an active volatile spot market exists.

The entire experience, however, has taken place during a term when the capability of production has exceeded demand and, except for a few geographic situations (principally New England, California, and Florida), transportation and storage capacity is more than adequate to serve the existing markets.

The experience has, therefore, not been thus far tested to determine whether the new institutions adequately meet all of the conditions necessary for long-term viability. In fact, there already is circumstantial evidence that, at least, the first condition, assurance of reliable service, is not being met.

Deregulation has not yet been tested under conditions of excess demand

^{2/} Data were derived from Interstate Natural Gas Association of America, *Carriage Through 1989*.

Assurance of reliability must be provided both to government, as the guardian of the public interest, and to investors who must evaluate the risk of dependence upon the system. Within the past 12 months, several major studies have been initiated by governmental agencies directly concerned with the gas industry and by the industry itself to evaluate the status of "deliverability," or the competence of the gas system to meet future requirements. These formal initiatives are clear evidence that government does not have the assurance it needs of the prospective reliability of the system.

Doubts concerning the risk of deliverability failures or shortage-induced price spikes are also evident in the investor community. The largest potential growth market for gas, the electric power generation market, is currently confounded by the scepticism of investors in new electric power generating capacity concerning the long-term reliability of gas as a generating fuel option. The inability to develop convenient long-term contracts for gas to serve new investments indicates that both users and suppliers are today unable to evaluate risk adequately to accommodate ordinary business transactions.

Implementation of transactions has become a much more complex challenge. The existing technology and accounting conventions of the pipeline industry are clearly inadequate to deal with this challenge. During a period of severe weather in September 1989, the shortcomings in the implementation of contractual agreements were highlighted. There were allegations that marketers did not supply gas to the pipelines as contracted and that gas was misallocated by the pipelines among users. The industry is, however, aggressively addressing these shortcomings and it seems that they ultimately will be resolved.

No viable approach to the allocation of scarce resources under the new institutional arrangements has yet been created. A mix of experiments for the allocation of storage and peak period pipeline capacity has been considered. Concepts of unbundling services, first-come-first-served equity, brokering of unused capacity by users, and the pricing of unbundled services such as storage are being dealt with in case by case determinations before the FERC, but there has been no test of the results in circumstances of critical need. The ultimate economic efficiency and political acceptability of the allocation approach are still in doubt.

There is considerable debate as well, about the effectiveness of market signals to elicit new supply. Drilling activity by producers in the US has been well below historical levels for several years, but deliverability has remained above current requirements. There is no evidence that increased investment in exploration and development is needed at present, but there also is no evidence that when investment is needed it will increase in a timely fashion. The former supply planning and aggregation function of the

pipeline companies has been left to the operation of the marketplace. As yet, there is no experience to evaluate the viability of this trust.

The market signals to elicit new investment in transportation facilities have been tested, however, and appear to be adequate. In those situations where market opportunities seem to exceed current transportation capacity, notably California, Florida, and New England, pipeline construction projects have been proposed and are being pursued. Overall, investment in minor pipeline system augmentation in recent years also has been high, reflecting recent demand increases. In early 1991, nearly 9000 miles of new pipeline were approved or awaiting regulatory approval. In some instances, the pipeline proposals reflect changes in the character of financial participants, but the timeliness of the initiatives seem to be appropriate.

The European Situation

As in the North American situation, it is difficult to generalize about the institutional arrangements that govern the European gas pipeline system. Recognizing that many variations exist, most European national gas markets are dominated by a large transmission company which acts as both the backbone transporter of gas and also as the merchant who aggregates supply sources and arranges for the supply to match the diverse requirements of customers.

These national pipeline systems, or transmission grids, have varying characters, but each is a very significant national asset and has close links with its national government. More than half of the gas used in European markets, moreover, involves international transfers. Thus import and export oversight by the governments involved is required. Added to these governmental interests in gas transportation are the strong links between many of the major gas producers serving the European markets and the governments of those producers.

The result of these factors is that natural gas markets in Europe are administered by large transporters which provide planning and operating services for the gas system and either directly finance or underwrite the future development of supplies and transportation facilities. These transporters in turn are closely involved in one way or another with their national governments. The close associations with government, either formally or informally, provide the necessary oversight on behalf of public interests of the economic acceptability and technical competence of the transportation service.

These institutional arrangements currently address the conditions necessary for a viable system.

1) Reliability of Service — Customers are assured of reliable

European gas markets are administered by large transporters linked to national governments

service through their contracts with the pipelines or with a distribution company served by the pipeline. The pipeline has planned to provide such service and has arranged for the necessary supplies. The government, if not directly involved in the planning and the contracts, is well aware of the major arrangements that have been made, the obligations incurred by the pipeline, and the plans for meeting them. There is some form of overt or more subtle political accountability on the part of the pipeline for its actions. The arrangements underlying imports of Soviet gas to the West are examples of the involvement of government.

2) Implementation of Transactions — Because the pipeline carries out the merchant function, it has control over the transactions. In the Netherlands, for example, Gasunie has first call on domestic production. It has the knowledge required to balance supply and demand commitments and the ability to limit such commitments as necessary. The pipeline also administers and verifies transactions by being a major party to most of them.

3) Allocation of Resources — The pipeline can allocate capacity, storage, and peak period supplies through the contractual agreements it makes with its customers and with the producers. It will plan to match its obligations to its capabilities. Probably it will have to convince government of this balance in some pre-review of major new commitments, and it will certainly answer to government for major failures. Any complaints about equity are addressed in business negotiations or appealed to the political arena.

4) Development of Supplies — Similarly, the pipelines' own planning will reveal the need to seek new supply sources and the pipelines' initiatives will signal producers to make the investments that are needed. If financial support is necessary, the pipelines are in the position through long-term take-or-pay contracts to underwrite the investments that must be made by producers. Each pipeline's knowledge of its own, relatively exclusive and predictable market minimizes the risk of over- or under-acquisition of supplies or of failure to replace depleted sources or to respond to emerging demand in a timely fashion.

5) Investment in Transportation Facilities — Signals to initiate the construction of new pipeline or LNG capacity emanate from the pipelines' own planning process. Because each pipeline is the exclusive merchant in its service area, or nearly so, new users for gas must bring their interests to the pipeline or the pipeline itself must act as the agent to elicit new uses for gas. Once a reasonable promise of markets has been determined, the pipeline initiates construction of new transmission capacity under its own financing or through cooperative project financing with partners. In the case of LNG, the pipeline arranges, and probably participates in, the project financing for new capacity. Thus, the emergence of new gas requirements or markets is coordinated with develop-

ment of the needed transportation facilities. In nearly every instance of a major addition to the transportation system, government, representing the public interest, will be an active participant in the negotiations.

The Challenge of Open Access

The Council of the European Communities, since its resolution of September 1986, has been pursuing policies for "greater integration, free from barriers to trade, of the internal energy market with a view to improving security of supply, reducing costs and improving economic competitiveness." One aspect of the negotiations toward "completion of the internal market for energy" has been the proposal to "facilitate transit of natural gas between high-pressure transmission grids."

EC proposes more open access to high-pressure gas pipelines

In effect, the intent of the proposal is to introduce the notion that a party wishing to transport gas through one of the major pipeline systems that are identified as high-pressure transmission grids may initiate a proposal to do so.³ Thereafter, rather than simply relying on the kind of bilateral negotiation which would formerly have taken place, such a proposal will enjoy rights to non-discriminatory consideration and protection from "unfair" or "unjustified" restrictions under the Treaty establishing the European Economic Community. Such rights possibly would be interpreted and enforced by "conciliation" through a body chaired by a commission composed of the managers of the participating grids. The proposal, of course, includes references to safeguarding "security of supply and quality of service" in the determination of such rights.

One must assume that the intent of the proposal is to facilitate access to pipeline transportation that at least sometimes could not be readily acquired through bilateral negotiations; otherwise the entire controversy over the proposal and the proposal itself are meaningless. Based upon that assumption, the effect of the policy would be to impose upon the high-pressure transmission grids some transportation arrangements that they would not otherwise accept. Three types of such situations can be postulated:

- 1) A supplier of gas or another merchant (possibly another transmission grid) might demand transportation service to transit a grid for purposes of a transaction entirely external to that grid's service area. In other words, the supplier and buyer wish to appropriate pipeline capacity that has not intentionally been developed to accommodate their transaction.
- 2) A supplier or merchant might demand transportation service to serve a gas user within the service area of the affected grid. In other words, a supplier demands pipeline capacity to consum-

³/ A list of such grids may be found in Commission of European Communities (1990).

mate either a transaction that replaces service to a load which was formerly being served by the affected grid as a merchant, or a transaction that adds a new load within that grid's traditional service area.

3) A current or prospective buyer of gas within a grid's service area might demand transportation service to acquire access to sources of supply that will compete with the affected grid's merchant gas.

These situations are clearly contemplated by the proposal. The latter two are manifestations of greater competition among suppliers and merchants, which is cited as a specific objective of the policy. The first situation might arise as one requirement for such competition to take place where more than one grid is involved in the geographic gas flow.

It is problematic how often one of these situations might result in a truly adversarial arrangement in the European marketplace. Unlike the North American market, there are not thousands of independent producers ready and able to negotiate with any user or merchant to sell gas as a commodity. Most of the existing gas production serving European markets is obligated to long-term arrangements, often with direct governmental involvement and/or import and export constraints.

The large increments of prospective gas supplies that are currently seeking markets, moreover, will require large capital investments if they are to come into the market at all. Large, new increments of North Sea, Soviet, or Algerian gas will depend upon project financing of the major production and transportation infrastructure and probably some expansion of existing internal transmission and distribution capacity to reach new users. Such financial proposals would be unlikely to prosper if they were dependent upon contested and compelled access to transmission grids which are under the control of sovereign nations.

Conclusions

It is likely, therefore, that the European proposal, unlike the North American open access initiative, will more frequently operate only to facilitate negotiations among the actors that are already active in gas markets — the governments, major grids, producers, and large users. It is less likely to induce a large number of independent transactions or the entry into the market of many new merchants. To the extent that it does, however, new institutions will have to be arranged to deal with issues similar to some of those that still confront the North American gas market:

- What will be the responsibility of government to assure future reliable service to domestic gas users who have made their own arrangements with foreign suppliers? How will govern-

ment carry out such responsibilities? How will business decisionmakers evaluate the risk of such arrangements?

- How will the pipeline grids administer the transactions which are arranged by third parties? What will be their responsibility if suppliers do not perform as expected?
- How will competing claims upon available transmission service be "equitably" resolved, and at what level of government?
- Who will plan and arrange for the portfolio of future supplies to sustain the new markets that grow up around an assortment of independent transactions?
- What will be the impact upon investment in major supply ventures and upon the project financing of new LNG and pipeline facilities if the possibility exists that independent merchants will have a claim to the capacity?

As in the North American experience, it is easy to postulate marketplace solutions to these issues which would result in a more competitive and flexible European gas system; perhaps even a more economically efficient one, although that requires considerable faith in the free market. It is also possible to postulate a disastrous failure of system planning and reliability.

Of course, similar issues, modified to fit the political and geographic conditions, were raised concerning the open access initiatives in North America. Thus far, although the adjustments have proven to be extremely costly to many pipelines and producers, no substantial failure of system viability can be cited. Indeed, some of the objectives of open access seem to be evolving. The new institutions, however, remain formative and several of the conditions for long-term viability have not yet been tested.

As in the North American experience, the outcome of an open access initiative in Europe will probably lie between the two extremes. But, even in the North American situation, it is too early to be sure.

Although some significant questions remain unanswered, some objectives of open access are being achieved

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Appendix: Chronology of Interstate Pipeline Regulation

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| 1970s | Gas supply shortages develop in the interstate markets. |
| 1978 | The Natural Gas Policy Act.
Over a six-year period, phased out FERC jurisdiction over well-head prices of interstate natural gas purchased after passage of the legislative ("new" gas) and established inflation-indexed ceiling prices. |
| 1979-81 | Regulated price increases and exemptions spur aggressive producer investment. Deliverability expands rapidly and high-price contracts are written. |
| 1982-91 | Period of gas supply surpluses—"Gas Bubble"—high cost gas loses markets to oil. |
| 1983-91 | Pipelines develop serious take-or-pay problems. |
| 1983 | Special marketing programs (SMPs).
Designed to hold markets where customers had ability to fuel switch. Pipelines and producers obtained FERC approval to form SMPs. In return for increased sales, producers agreed to discount prices and provide take-or-pay relief to pipelines. |
| 1984-85 | SMPs rejected as discriminatory. |
| 1984 | FERC Order 380.
Attempt to open up the pipelines to third-party transportation. Relieved the LDCs from any contractual obligation to the pipelines for minimum bills for system supply they elected not to take. Pipeline take and revenue guarantees to producers remained in effect. Pipelines' obligation to provide gas supply for their customers was no longer matched by an obligation for the customers to pay for the cost of having this supply available. |
| 1984-91 | Pipelines resist any changes that increase their take-or-pay exposure. |
| 1985-91 | Issues of capacity, rates, and unbundling grow. |

- 1985 FERC Order 436.
Encourages non-discriminatory open access on pipelines for third parties. Order 436 provided that pipelines could seek a blanket certificate for self-implementing transportation. This Order also gave pipeline customers the option to convert sales service to firm transportation. Order 436 was later remanded to FERC for failure to deal adequately with the take-or-pay problem.
- 1987 FERC Order 500.
Required producers to provide take-or-pay credits for pipeline transportation and added a mechanism for pipelines to recover take-or-pay buyout and buydown costs. Provided a provision for a gas inventory charge intended to compensate pipelines for standing ready to supply gas to sales customers.
- 1989 FERC Order 500-H.
Issued as final rule.
- 1989 FERC issues Notice of Proposed Rulemaking on capacity brokering and policy statement on rate design.
- 1991 FERC Order 528-A, Take-or-Pay Passthrough.
The rule imposes a 50% cap on volumetric surcharges for past take-or-pay costs increasing the cap to 75% for non-take-or-pay changes. For new volumetric charges pipelines would be forced to "true up" expenses on a yearly basis. The rule also seeks to protect small customers by allowing pipelines to shift up to 50% of their share to larger customers. The Order also "encourages" parties to design mileage-sensitive volumetric surcharges.
- Remaining problems and issues are expected to be dealt with on a case by case basis.
- 7/31/91 FERC issues Notice of Proposed Rulemaking "Mega-NOPR" in FERC Docket RM 91-11, *In Re Pipeline Service Obligations and Revisions to Regulations Governing Self-Implementing Transportation Under Part 284 of the Commission's Regulations*. This NOPR proposes major changes in the way that open-access transportation pipelines perform their merchant and transportation functions. The NOPR addresses the issues of transportation rate design, unbundling of services, and pipeline service obligations.