

**RESTRUCTURING LOCAL DISTRIBUTION SERVICES:
POSSIBILITIES AND LIMITATIONS**

Daniel J. Duann
Senior Institute Economist

THE NATIONAL REGULATORY RESEARCH INSTITUTE
The Ohio State University
1080 Carmack Road
Columbus, Ohio 43210

August 1994

This report was prepared by The National Regulatory Research Institute (NRRI) with funding provided by participating member commissions of the National Association of Regulatory Utility Commissioners (NARUC). The views and opinions of the author do not necessarily state or reflect the views, opinions, or policies of the NRRI, the NARUC, or NARUC member commissions.

EXECUTIVE SUMMARY

The restructuring of local distribution services is now the focus of the natural gas industry. It is viewed by some as the last major step in the "reconstitution" of the natural gas industry and a critical element in realizing the full benefits of regulatory and market reforms that already have taken place in the wellhead and interstate markets. It could also be the most important regulatory initiative for most end-use customers because they are affected directly by the costs and reliability of distribution services. Several factors contribute to the current emphasis on distribution service restructuring. They include the unbundling and restructuring of upstream markets, a realization of the limitations of supply-side options (such as gas procurement oversight), and the increased diversity and volatility of gas demand facing local distribution companies (LDCs).

Local distribution service is not one but a series of activities that start with commodity gas procurement and extend to transportation, load balancing, storage, and metering and billing of services provided. There are also considerable differences in the economies of scale and scope associated with these various activities. Thus, a mixture of different supply arrangements (such as a competitive market or a monopoly) is required for the most efficient delivery of local distribution services. A distinction must be made between the supply of commodity gas and the provision of a bundled distribution service. This distinction and identification of the best supply arrangements for various distribution service components are the most critical factors in developing appropriate restructuring policies.

Most regulatory initiatives are designed to meet a set of specific goals. The restructuring of distribution service is no exception. For most state public utility commissions (PUCs), the criteria for service restructuring should include pursuing the economies of scale and scope in gas distribution, differentiating and matching gas service reliability and quality with customer requirements, and controlling costs associated with the search, negotiation, and contracting of gas services.

The restructuring of local distribution services is also constrained by certain unique characteristics of a local distribution market. These constraints include the presence of a large number of core (captive) customers, the possibility of drastic and undue cost shifting to captive customers, the limited degree of potential competition under existing infrastructure, and the substantial requirements of new regulation and PUC resources for implementing restructuring. In light of these constraints, the extent of unbundling and the reliance on competition are likely to be more restrained in the local distribution market than those in the interstate market.

Three basic approaches can be applied to the restructuring of local distribution services: the total unbundling approach, the franchised monopoly approach, and the "mixed" approach. Under the total unbundling approach, the LDC essentially becomes a common carrier for gas within its service territory. It will provide transportation service to all parties who demand it under prices and terms set by a state PUC. The LDC can sell commodity gas at an unregulated price, but it will no longer be allowed to sell bundled services to any end-use customers. Under the franchised-monopoly approach, widely in use at the present time, the LDC will maintain its status as a monopoly supplier for bundled gas services for almost all of its customers within its service territory. Transportation-only service and bypass are allowed but only for a small number of customers in very limited circumstances.

The Federal Energy Regulatory Commission (FERC) adopted the total unbundling approach in the restructuring of pipeline services. This is a good starting point for the development of the mixed approach for restructuring local distribution services. Under the mixed approach, local distribution services are restructured in the same way pipeline services are restructured except in two areas. The LDC will substantially unbundle all distribution services and make transportation-only and related services available to noncore customers. However, the LDC will continue to provide a bundled service to captive residential and small commercial customers. The initial allocation and pricing of intrastate transportation capacity will still be subject to state PUC regulation, and the LDC will retain tight control over the access and operation of intrastate transportation capacity. A secondary market may be created only if there is a

high probability of incurring excess transportation capacity and no entity (except the LDC) in the local distribution market possesses significant market power in buying and selling intrastate transportation capacity.

There are a number of critical issues in the restructuring of local distribution services. They include the extent of service unbundling, the division of core and noncore markets, the elimination of inherent service obligation to noncore customers, and the specification of comparable access conditions for intrastate transportation capacity. Guidelines to these issues can be developed based on the likely conditions facing a typical LDC. The focus here is on providing a paradigm for the development of restructuring proposals, and not on establishing specific policies. Obviously, the restructuring of local distribution service is a long and evolving process, and certain policies suggested here may be modified as the state PUCs and LDCs gain more experience in their restructuring efforts.

At the present time, the state PUCs have generally adopted a wait-and-see attitude toward the restructuring of local distribution services. This cautious approach is not totally unexpected and may be prudent in light of the unique requirements of the local distribution market, the complexity of the issues involved, and the very limited experience the gas industry has gained from the restructuring of pipeline services. Nevertheless, state PUCs should start considering some restructuring issues that have not been extensively analyzed in the past, namely the division of core and noncore markets, the offering of unregulated commodity gas service to noncaptive customers, and the reassessment of the LDC's obligation to serve various customers. As for the restructuring of the local transportation markets, the basic principle of comparable access to LDC-owned transportation capacity that has been adopted in a number of states should continue. But the more complex issues, such as the disposition of secondary capacity and access to upstream transportation capacity by end-use customers, may be dealt with later when the operation and effects of a more competitive interstate transportation market can be assessed more accurately.

TABLE OF CONTENTS

		Page
	FOREWORD	ix
	ACKNOWLEDGEMENTS	xi
 CHAPTER		
1	Introduction	1
	Local Distribution Service Restructuring and Its Significance	2
	Methodology and Assumptions	7
	Organization of the Report	11
2	The Critical Role of LDCs in the Future Gas Industry	13
	Transformation of the Natural Gas Industry	15
	New Market Environment for LDCs	19
	An Overview of LDC Supply and Demand Options	21
	Comparisons of Markets	24
3	Alternatives, Criteria, and Constraints of Distribution Service Restructuring	29
	The Changing Nature of Local Distribution Service	29
	Three Basic Restructuring Approaches	31
	Criteria of Distribution Service Restructuring	38
	Constraints of Distribution Service Restructuring	42
4	Critical Issues of Distribution Service Restructuring	45
	Extent of Service Unbundling	45
	Division of the Market	49
	Modification of Service Obligations	52
	Access and Disposition of Intrastate Transportation Capacity	56

TABLE OF CONTENTS--Continued

	Page
5 Some Current State PUC Initiatives	61
Basic Considerations in Developing State PUC Initiatives	62
Examples of State Service Restructuring Initiatives	64
6 Conclusions	71

FOREWORD

In recent years regulation has worked its way through the restructuring of pipeline transmission services led by various federal actions. Now attention has turned to a counterpart--but not a mirror--restructuring of local distribution services. This study presents some of the pros and cons of doing so and examines the similarities and differences between the interstate case and the LDC case. Some guidelines for state PSC regulation in entering this evolving process are presented.

Douglas N. Jones
Director
Columbus, Ohio
September 1, 1994

ACKNOWLEDGEMENTS

I wish to express my sincere thanks to Douglas Jones, Kenneth Costello, Edwin Rosenberg, and John Borrows of the NRRI, Christopher Klein and Michel Hiser of the NRRI's Research Advisory Committee, and Michael Kidd of the Michigan Public Service Commission for providing valuable comments that have improved the report. However, the author alone is responsible for any remaining errors.

The able assistance provided by Belle Chen of the NRRI in researching relevant state regulatory activities is very much appreciated. I would also like to thank Francine Sevel for editing this report.

CHAPTER 1

INTRODUCTION

As FERC Order 636 has been fully implemented, the focus of the natural gas industry has shifted from the unbundling of pipeline services to the restructuring of local distribution services. This is a natural development, and distribution service restructuring has been viewed by some as the last major step in the "reconstitution" of the natural gas industry.¹ It may also turn out to be the most significant regulatory initiative to the average gas users because they are affected directly by the cost and reliability of distribution services. This restructuring requires the LDC to transform itself from a franchised monopoly providing a uniform bundled service into a "competitive" enterprise delivering distinct unbundled services. It also presents a great opportunity, and many complex tasks, to the state PUCs in expanding the role of competition in the local distribution market.² A clear and unbiased delineation of the possibilities, criteria, and constraints of distribution service restructuring is the objective of this study.

As the new structure of the gas industry emerges, the LDCs are afforded many new supply options and service responsibilities. They have indeed become the "critical link" in the provision of reliable and economic gas services when interstate pipelines are no longer performing any merchant function or retaining any inherent obligation to serve their customers. It is also arguable that the full benefits of the regulatory reforms already undertaken in gas production and interstate transportation will not be realized

¹ The steps of the "reconstitution" include deregulation of the wellhead market, elimination of federal restraints on the retail sales market, application of a "common-carrier" type of regulation to interstate pipelines, modification of gas distribution regulation, and resolution of several critical implementation issues. See Richard J. Pierce, Jr., "Reconstituting the Natural Gas Industry from Wellhead to Burnertip," *Energy Law Journal* 9 (1988): 1-57.

² See Charles G. Stalon, "Rethinking Critical Connections: Utility Obligations and Utility Monopoly Power," presentation at *Third Annual NARUC-DOE Conference on Natural Gas Use*, Nashville, Tennessee, February 13-16, 1994.

and passed through to end-use customers without a corresponding restructuring at the distribution level.

The restructuring of local distribution services is a complex and lengthy process as two drastically different government policies (continuing regulation and promoting competition) need to be accommodated, many conflicting interests reconciled, and certain long-standing regulatory and legal precedents reversed.³ The key task facing the LDCs and state PUCs is to achieve a balance among the competing goals of fostering market competition, preventing erosion of customer base, and protecting core customers from undue cost shifting and service interruptions. In other words, the chosen restructuring approach must be able to match the form of government intervention, if any, with the demand and supply characteristics of the local distribution market, to balance the LDC's service obligation with the compensation for assuming such a responsibility, and to synchronize the freedom of taking on more risk with the opportunity to earn a higher return or reduce costs.

Local Distribution Service Restructuring and Its Significance

The restructuring of local distribution service is not a new issue. A number of LDCs, under the sanction of state PUCs, initiated some forms of service restructuring in their respective markets in the early 1980s when the FERC first promulgated regulations encouraging interstate pipelines to provide open-access transportation services. These responses of state PUCs and LDCs were mostly modeled after the FERC initiatives. They centered on the establishment of intrastate transportation programs, specification of conditions for customer bypass, institution of gas procurement oversight mechanisms,

³ Ibid. Examples of these precedents include the LDC's obligation to serve any and all customers who demand gas services, the setting of prices based on prudently incurred costs of providing services, and the prohibition of competing suppliers within an LDC's service territory.

and recovery of transition costs.⁴ The unbundling and restructuring of local distribution services did not command strong interest because most gas industry participants still regarded a franchised monopoly as the most efficient entity in supplying a bundled gas service within a fixed territory.⁵

At the same time, the prevailing gas market conditions did not provide LDCs with strong incentives for service unbundling and innovation. After all, the LDCs were assured of full cost recovery from their customers and there were no advantages in more aggressively marketing gas services that could better match the customers' requirements. There were some concerns about bypass by large industrial customers. But most LDCs' strategies in preventing bypass relied on the offering of price discounts, the provision of transportation-only services, and the assembly of more flexible supply portfolios. Also, federal regulation of interstate pipelines was still in a state of flux and the supplier-customer relationship between pipelines and LDCs was far from settled. This uncertainty further reduced the desirability of distribution services restructuring as the LDCs needed to ascertain their own supply options before they could offer alternative services to their customers.

Restructuring at Upstream Markets

This passive attitude concerning distribution service restructuring was altered significantly by the more recent federal regulatory initiatives, in particular the

⁴ See Robert E. Burns et al., *State Gas Transportation Policies: An Evaluation of Approaches* (Columbus, OH: The National Regulatory Research Institute, 1989); and David B. Hatcher and Arlon R. Tussing, *State Regulatory Challenges for the Natural Gas Industry in the 1990s and Beyond* (Columbus, OH: The National Regulatory Research Institute, 1992).

⁵ From time to time, there were advocates for some form of deregulation of local distribution markets but they seemed to be in the minority. See, for example, Arlon R. Tussing, "Open Network Regulation of the Natural-Gas Industry in California," in *Seventh California Natural-Gas Transportation Conference*, San Francisco, California, November 16, 1989.

elimination of pipeline bundled services and the requirement of comparable transportation services contained in FERC Order 636.⁶ The LDCs and state PUCs perceived an added urgency in restructuring local distribution services. The unbundling and restructuring at upstream markets has significant implications for the operation of the LDCs. Specifically, the LDCs can no longer rely upon interstate pipelines to provide commodity gas. Nor can they rely on the FERC to determine the costs of pipeline-supplied services and merely pass the costs on to end-use customers. More importantly, as more and more customers are gaining the ability and willingness to switch to other gas suppliers, there is no longer any assurance that an LDC can fully recover its prudently incurred costs without causing a significant increase in the prices of gas services to its core customers.⁷ An LDC with a gas supply portfolio or a menu of services that fails to closely match the demand characteristics of its customers is likely to have a lot of unsold gas.

Shifting of Coping Strategies

A shift in the coping strategies available to the LDCs is another impetus for the restructuring of local distribution services. Clearly, there is a limit to what can be accomplished by simply adjusting an LDC's supply portfolio and transportation arrangements. For example, the allocation of costs associated with maintaining gas supplies and facilities for transportation-only and bypass customers is an issue created by

⁶ There are numerous provisions in FERC Order 636 regarding the definition and conditions of comparable access. Essentially, comparable access means all shippers (transportation customers), whether they are purchasing commodity gas from the pipeline or its affiliates or not, should be subject to the same restrictions in using the interstate transportation network.

⁷ Apparently, under current cost-based regulation, an LDC can recover all prudently incurred costs from its customers. But as more and more noncore customers are switching to alternative suppliers, the costs will be increasingly allocated on the remaining and smaller customer base (mostly core customers). Then the unit cost of gas service is likely to increase substantially.

the imbalance between a supplier's service obligation and its customers' obligation in taking the service. This issue cannot be resolved by just increasing the efforts on gas procurement oversight or any other supply-side options. New gas services that either contain no inherent obligation-to-serve or impose some reservation or exit fees have to be considered. It is apparent that the proclamation of total pipeline service unbundling and an unambiguous requirement on comparable interstate transportation access, as mandated in FERC Order 636, have made the LDCs less hesitant to consider and adopt demand-related options such as the restructuring of distribution services.

Emergence of a Balanced Market

The need for distribution service restructuring is further enhanced by the changes in the overall gas market supply and demand condition. As the supply and demand for natural gas moves into a more balanced posture, in contrast with the "gas bubble" condition prevailing in most of the 1980s, the reliability and costs of gas services become a real concern to many customers.⁸ This concern has heightened the significance of the considerable differences in the customers' evaluation of service reliability and quality, and their demand for these service elements. Because of the substantial differences in the valuation of gas services, unbundling and restructuring may be one of the more effective, or perhaps the only, way in capturing this difference in customer valuation. For example, some customers may feel buying gas directly is too risky when the availability of cheap spot gas is greatly diminished, and they decide to turn to the bundled gas service provided by the LDCs. For other customers, the higher cost of gas (mainly due to a tighter market) and the wide availability of comparable transportation

⁸ The most recent long-term energy forecasts prepared by the U.S. Department of Energy indicates that natural gas consumption will rise from 18.7 trillion cubic feet (Tcf) in 1990 to 24.1 Tcf in 2010, and domestic production is expected to reach 20.4 Tcf in 2007 and decline slightly to 20.2 Tcf in 2010. Natural gas imports will increase from 1.5 Tcf to 3.9 Tcf in the same period. See Energy Information Administration, *Annual Energy Outlook 1994* (Washington, D.C.: Energy Information Administration, 1994): 30-4.

services may lead them to increase their direct gas purchases to reduce costs. It is difficult to predict the net impact of a tighter gas market on the demand for unbundled distribution services. But it is clear that the diversity and volatility of gas demand facing the LDCs will increase with the emergence of a more balanced gas market. This, in turn, will heighten the risks and costs for not providing new service options that can better meet customer needs. To complete successfully in a restructured gas market, an LDC should definitely consider the restructuring of local distribution services, in addition to the many supply-side options.

As the gas industry shifts its focus to the restructuring of local distribution services, the state PUCs are also assuming a more prominent role.⁹ Some state PUCs are continuing their efforts in reforming intrastate gas transportation programs to assure comparable access to the LDC's transportation facilities by all end-use customers. Others are engaging in the more innovative approaches, such as authorizing new competitive gas services to noncore customers or deregulating gas services to certain customer groups.¹⁰

Compared to the FERC's efforts in restructuring the pipeline industry, state PUCs have some advantages and disadvantages. On the one hand, the experience gained in the restructuring of interstate and wellhead markets and the results derived from previous state regulatory reforms can provide useful insights to the state PUCs' restructuring efforts. On the other hand, a local distribution market tends to be more diversified than the interstate market in terms of customer composition and demand for gas services. A single regulatory framework, such as total unbundling or deregulation, may not be valid in setting the service terms of all local distribution services. A "mixed"

⁹ A brief review of the many regulatory options available to the state PUCs in response to FERC Order 636 can be found in Daniel J. Duann, *The FERC Restructuring Rule: Implications for Local Distribution Companies and State Public Utility Commissions* (Columbus, OH: The National Regulatory Research Institute, 1993).

¹⁰ For example, New Jersey has largely unbundled and deregulated gas distribution services to industrial and commercial customers. More detailed discussions on recent state distribution services restructuring initiatives can be found in Chapter 5.

approach, though more complex and difficult to implement, seems best and presently has received the most support regarding the restructuring of local distribution services.¹¹

Methodology and Assumptions

There are essentially three approaches (alternatives) regarding the restructuring of local distribution services.¹² They are the total unbundling (common carrier) approach, the franchised monopoly approach, and the mixed approach. Three comparable approaches have been proposed and debated in the natural gas industry for the restructuring of pipeline services.¹³ In the end, and for its own jurisdiction, the FERC adopted the most drastic approach, total unbundling.

A Two-Pronged Process

Under the total unbundling approach, a state PUC unbundles all services provided by the LDC, deregulates the sale of commodity gas, and makes intrastate transportation capacity available to all potential suppliers and users under PUC-approved rates and conditions. If the current franchised-monopoly approach is maintained, the state PUC will preserve the monopoly status of the LDC and allow transportation-only service or bypass for a small number of customers with very strict conditions. The third alternative, a mixed approach, substantially unbundles all distribution services but still allows the LDC to provide bundled services to core customers.

¹¹ See, for example, Pierce, "Intrastate Natural Gas Regulation," Stalon, "Rethinking Critical Connections," and Tussing, "Open Network Regulation."

¹² A fourth restructuring approach is the complete deregulation of both gas distribution (transportation) and gas sales (commodity) in the local distribution market. Because there is little chance that this approach will be implemented in the foreseeable future given the institutional and technological features of gas distribution, it will not be discussed in this study.

¹³ See Pierce, "Reconstituting the Natural Gas Industry."

The first task in distribution service restructuring is to identify a basic regulatory approach that best matches the technical and economic reality of the local distribution market. Once a valid regulatory approach is identified, the related issues of market division and service unbundling can be resolved within a unified framework. A two-pronged process is used in the development of such a regulatory approach. On the one hand, the supply and demand characteristics of the interstate market (before the promulgation of FERC Order 636) and the current local distribution market are compared to identify the areas where the FERC's total unbundling approach may not be applicable. On the other hand, the changes in the local distribution market from the past to the present are recognized so that certain aspects of the franchised monopoly approach prevailing in the regulation of LDCs can be modified accordingly. Then a mixed approach is developed based on a comparison of the modified total unbundling approach and the revised franchised monopoly approach.

Criteria and Assumptions

Exactly how are the critical elements of a mixed approach decided? Most regulatory initiatives were designed to meet a set of specific goals. For example, in promulgating Order 636, the FERC set its main goals to ensure all shippers had meaningful access to the national transportation grid so that willing gas buyers and sellers could meet in a competitive market to make the most efficient deals possible, and to ensure all end-use customers could continue to have an adequate supply of gas at a reasonable price.¹⁴ The provisions eventually adopted in the Order reflected the FERC's judgement on how these objectives could be best achieved. Similarly, a specific set of criteria for the restructuring of local distribution services can be developed.

Since each individual state PUC may have its own specific set of criteria in restructuring local distribution services, only the more general ones are identified here. They include the pursuit of economies of scale and scope in gas distribution, the differentiation and match of service reliability and quality with customers' requirements, and the control of costs of searching, negotiating, and contracting gas services. Not

¹⁴ See Duann, *The FERC Restructuring Rule*.

unexpectedly, there can be some conflicts among these goals, and very few, if any, restructuring proposals can achieve these criteria simultaneously or to the same degree. Some trade-off among these objectives is unavoidable. For example, a total unbundling approach may be best in meeting the customers' diverse need for gas service quality and reliability, but it may reduce some economies of scale and scope associated with the provision of bundled services to small customers.

Distribution service restructuring is also subject to certain constraints in its implementation. These constraints reflect the unique characteristics of the local distribution market. They include the presence of a large number of core customers and the responsibility of serving them reliably, the possibility of undue cost shifting from noncore to core customers, and the substantial requirements in new regulation and PUC resources in implementing restructuring. In short, a restructuring proposal will be considered more desirable if it can do the following: (1) maximize the economic efficiency of the local distribution market without drastically increasing the cost burden on core customers; (2) provide more variety in gas services that can better meet the needs of customers; and (3) be implemented with relatively few regulatory changes or new legislation.

In addition to the criteria and constraints specified above, conditions regarding the future gas market and its regulation also need to be elaborated to provide a clear context for the development of policies. Three assumptions are made in this study. First, the implementation of current regulatory reforms, in particular FERC Order 636, will continue unabated. This is a critical assumption since the very necessity of initiating local service restructuring hinges upon the restructuring that has already taken place in the production and interstate sectors. In other words, the advantages and disadvantages of a particular restructuring proposal can be assessed only in the well-defined context of a "competitive" natural gas industry, which is the intended result of prior and current federal and state regulatory reforms.

Second, a largely balanced gas market in the future is assumed. With this assumption, an LDC's decisions on the procurement of commodity gas, interstate transportation services, and other unbundled pipeline services will have appreciable effects on the cost and reliability of gas services provided for its end-use customers. As

mentioned, the importance of distribution service restructuring will be further enhanced under this particular market condition.

Third, no drastic technology and institutional innovations in gas distribution are expected in the near future. The purpose of this assumption is to validate the constraints and restrictions of the local distribution market assumed in the analysis. For example, if gas distribution technology advances to the point that an underground pipeline is no longer the only economically viable way of delivering gas to end-use customers, then there may be no captive customers and, consequently, no need for continued government regulation of firms serving these customers.¹⁵

Some Perspectives

The restructuring of local distribution services is a complex subject with a large number of issues to be resolved. Some perspectives on the scope of the inquiry are helpful. First, this study focuses on the issues of market division and service unbundling. The issues of pricing unbundled services or the allocation of substantial common costs among various unbundled distribution services are not explicitly addressed here.¹⁶ There is also no discussion on the imposition of new regulatory constraints (such as the set-up of subsidiaries) associated with the LDC's participation in unregulated activities. In other words, the proper pricing of different gas services to different groups of customers is assumed once the distribution services are unbundled. This does not mean that pricing of unbundled services is easy or of little importance. To the contrary, in many instances, the effectiveness of a particular unbundling and restructuring proposal

¹⁵ The need for an underground transportation pipeline network, which is immobile, highly specialized, and with considerable economies of scale in construction and operation, is the single most critical factor for the imposition of government regulation of gas companies (either as a common carrier or as a public utility). See Congressional Research Service and National Regulatory Research Institute, *Natural Gas Regulatory Study* (Columbus, OH: The National Regulatory Research Institute, 1982); and Pierce, "Reconstituting the Natural Gas Industry."

¹⁶ A forthcoming NRRI report will address extensively the issues of pricing and cost shifting among customer groups associated with the unbundling and restructuring of distribution services.

depends largely on the formulation of appropriate price signals and the allocation of common costs. In most instances, service unbundling will lead to cost shifting that may increase the prices of gas services to certain customers, especially if they have been subsidized by other customers in the past. Furthermore, the allocation of common costs was argued to be one of the most difficult aspect of distribution service restructuring, and the traditional embedded-cost pricing was viewed as generally inadequate or unsustainable for pricing unbundled services because it could distort the incentives of gas market participants.¹⁷

Secondly, the restructuring proposal is developed strictly from the viewpoint of a state PUC that intends to maximize social welfare (or broadly-defined economic efficiency) rather than that of an LDC that strives at maximizing its own profit. For example, it is assumed that the local distribution market is not divided to increase the sales and profits of the LDC (though this may happen if the LDC can adapt and respond quickly). Instead, it is assumed that the local distribution market is divided to increase the diversity of gas services that can better match the needs of its customers. This, in turn, will increase the economic efficiency of the local distribution market.

Finally, the suggested policy guidelines may not necessarily meet the needs of a particular state PUC or LDC and some individual adjustments must be made in applying them. The proposed policy guidelines are directed toward a typical LDC, which serves a diversified group of residential, commercial, and industrial customers; and has an intrastate transportation network tightly integrated with the interstate pipeline system. In short, this study seeks to provide a framework or a paradigm for the development of restructuring proposals. Its application will necessarily vary with individual LDCs.

Organization of the Report

This study consists of five chapters. Chapter 2 describes the shifts in the relationship between pipelines, LDCs, and end-use customers. An overview of the

¹⁷ See Pierce, "Intrastate Natural Gas Regulation."; and Frank C. Graves and Paul R. Carpenter, "Unbundling, Pricing, and Comparability of Service on Natural Gas Pipeline Networks," mimeo., 1991.

changes in the market environment as well as the demand and supply options facing a typical LDC is included. For those who are quite familiar with recent changes in the market structure and government regulation of the natural gas industry, this chapter may be skipped. The basic approaches, criteria, and constraints of distribution service restructuring are identified in Chapter 3. Chapter 4 discusses the critical issues of restructuring (such as unbundling of services, division of core and noncore market, and revision of service obligations). A review of some state restructuring initiatives that are currently being considered or implemented is contained in Chapter 5. This is a highly selective review based strictly on the availability of data and is not intended as a comprehensive analysis of current state restructuring efforts. Some concluding thoughts are provided in Chapter 6.

CHAPTER 2

THE CRITICAL ROLE OF LDCs IN THE FUTURE GAS INDUSTRY

Over the last fifteen years, the natural gas industry has gone through a fundamental transformation. There were extensive discussions about the causes, effects, and implications of this transformation.¹ This transformation culminated in the promulgation of Orders 636, 636-A, and 636-B (the Order) by the FERC in 1992. By the end of 1993, the FERC had largely finished its work after reviewing and approving the compliance plans of all pipelines subject to the Order. Because only a short period of time has passed since its implementation, it is difficult to assess the full impact of the Order. Furthermore, the Order is currently being reviewed by the U.S. Court of Appeals for the District of Columbia (D.C. Circuit Court) and some substantive changes are possible.²

In spite of these concerns, the Order, in combination with previous regulatory reforms, has already led to profound changes in the production and interstate

¹ A detailed discussion of the regulatory changes instituted in the last fifteen years can be found in J. Stephen Henderson et al., *Natural Gas Producer-Distributor Contracts: State Regulatory Issues and Approaches* (Columbus, OH: The National Regulatory Research Institute, 1988); and Robert E. Burns et al., *State Gas Transportation Policies: An Evaluation of Approaches* (Columbus, OH: The National Regulatory Research Institute, 1989). An extensive description of the history and evolution of the natural gas market and government regulation over the last sixty years is available in Richard J. Pierce, Jr., "Reconstituting the Natural Gas Industry from Wellhead to Burnertip," *Energy Law Journal* 9 (1988): 1-57.

² Currently, there is no indication as to when the D.C. Circuit Court will rule on this matter. A summary of the rationales, major provisions, current pipeline implementation, and prospect of judicial review of FERC Order 636 can be found in Daniel J. Duann, *The FERC Restructuring Rule: Implications for Local Distribution Companies and State Public Utility Commissions* (Columbus, OH: The National Regulatory Research Institute, 1993).

transportation of gas that will be very difficult to reverse. The consensus at the present time is that the gas market has adapted well to the new regulatory environment, and new transaction relationships will be well established before the D.C. Circuit Court can finish its review of the Order. Consequently, the gas market participants should plan their own actions based on the premise that the new regulatory and market environment is here to stay. As observed by the current FERC Chair, the gas industry should focus on what is going to happen next, rather than trying to reverse the trend toward more competition.³

The restructuring of the interstate market, as initiated by the FERC has, in turn, redefined the role of LDCs in providing gas services to end-use customers. As the pipelines are no longer supplying bundled gas services, the LDCs will assume direct and complete responsibility in assembling their own supply portfolios and arranging transportation and storage. With comparable and open-access transportation services available to many customers, the LDCs need to compete with other providers in supplying a variety of unbundled services to the many industrial and commercial customers who have the ability to switch to other suppliers. The local distribution market has become highly diversified with some segments exhibiting characteristics of intensive competition, which should be deregulated, and other segments featuring monopolistic relationships, which still require state regulation. Inherently there are tensions when two distinct forms of government "intervention" are applied to a single entity. However, determining the proper mix of the two intervention mechanisms is exactly the crux of the restructuring of local distribution services.⁴

³ See Elizabeth Anne Moler, "There Is No Going Back," *Fortnightly* (October 15, 1993), 51-3, for an overview of the FERC's perspective on the major issues facing the gas industry and federal regulation in the future.

⁴ Richard J. Pierce, Jr., "Intrastate Natural Gas Regulation: An Alternative Perspective," *Yale Journal on Regulation* 9 (1992): 407-16.

Transformation of the Natural Gas Industry

Up to now, the regulatory and market reforms in the natural gas industry were led by the FERC and centered around the assurance of comparable access to interstate transportation pipelines. The establishment of open-access transportation services and the unbundling of pipeline services have been a long and arduous process for many gas market participants. Numerous rules and regulations were promulgated, reviewed, and modified. But, in its entirety, the FERC regulatory reforms can best be described as the replacement of the "public utility" paradigm embodied in the Natural Gas Act of 1935 by a "common carrier" paradigm under which a pipeline will only provide unbundled transportation services under cost-based regulation. The pipeline will no longer retain any service obligation to its customers other than those specified in contracts.

In contrast, under the "public utility" paradigm, a pipeline is protected from competition in both the transportation and sales of gas, and the initiation and abandonment of services and facilities must be approved in advance by the FERC. Also, sales for resale, interstate transportation, and the facilities used for such sales and transportation are subject to FERC regulation, and the rates for such services must be just, reasonable, and not unduly discriminatory.⁵

Regulatory reforms at the state level were largely a reaction to the federal initiatives and mirrored many of the changes espoused by the FERC. The development of the intrastate transportation programs is an example of the significant influence of federal regulation on state regulation. Other state responses include the prudence review of gas procurement, spot-price-based incentive regulation, revision of gas curtailment priority, and flexible pricing for bypass-capable customers.⁶

⁵ An extensive discussion on the concepts of due and undue price discrimination for utility services and their economic efficiency and social equity consequences can be found in J. Stephen Henderson and Robert E. Burns, *An Economic and Legal Analysis of Undue Price Discrimination* (Columbus, OH: The National Regulatory Research Institute, 1989.)

⁶ See Duann, *The FERC Restructuring Rule*.

Three Prominent Trends

Three trends were most prominent in the transformation of the gas industry. First, rigid sequential relationships between various gas market sectors (wellhead, interstate, and local distribution) were replaced by more flexible multiple-and-concurrent relationships among many buyers and sellers. There was a drastic increase in the amount of commodity gas purchased directly by the LDCs and end-use customers.⁷ Although the changes in the buying and selling of transportation services were more complicated, the traditional one-way sequential relationships between pipelines and LDCs, as well as between LDCs and end-users, have definitely ended. Various means for allocating customer-owned transportation capacity, such as capacity brokering and buy-sell programs, were established with different degrees of success. In Order 636, the FERC formally established a centralized secondary market for interstate transportation capacity. Consequently, two interstate transportation markets are in use at the present time. A primary market that deals with the initial allocation of pipeline-owned transportation capacity is regulated by the FERC under embedded-cost regulation. A secondary market that reallocates excess transportation capacity owned by pipeline customers is largely unregulated with two exceptions: interstate pipelines serve as the customers' exclusive agents; and market prices can not exceed the regulated prices set by the FERC.

The second trend was the replacement of a single bundled gas service with several unbundled services, such as commodity gas, transportation, load balancing, storage, and

⁷ The latest survey of the Interstate Natural Gas Association of America shows that for the first half of 1993, 86 percent of interstate natural gas deliveries to markets were moved under carriage (transportation-for-others) agreements. A detailed analysis of the extent, rationales, and limitations of direct purchases by LDCs can be found in Daniel J. Duann, "Direct Gas Purchases by Local Distribution Companies: Supply Reliability and Cost Implications," *The Journal of Energy and Development* 14 (Fall 1989): 61-93.

metering and billing. There was also a significant increase in the number of market intermediaries that could facilitate the transaction of these unbundled services.⁸ For example, a recent General Accounting Office (GAO) report indicated that gas marketers sold about 51 percent of gas supplies purchased by LDCs and end-use customers in 1992.⁹

The third trend was the proliferation of new gas transaction mechanisms and a shift from long-term, fixed-price contracts to short-term, flexible-price contracts. New financial-oriented transaction tools were also created to mitigate the price and quantity risks associated with the physical delivery of gas. Spot contracts, futures contracts, and options on futures contracts were increasingly used by many gas purchasers.¹⁰ Long-term supply contracts would still be used in the future, and possibly quite often, but they are not likely to regain the dominant position in gas transactions they once enjoyed. There were contrasting views about the viability and significance of long-term contracts in the future. Some argued that most problems of using long-term contracts were caused by the temporary demand and supply imbalance of the gas market in the early 1980s. Long-term contracts could still provide considerable benefits to the transaction parties and society as a whole that other forms of contracting could not achieve.¹¹ Others

⁸ See Daniel J. Duann et al., *Direct Gas Purchases by Gas Distribution Companies: Supply Reliability and Cost Implications* (Columbus, OH: The National Regulatory Research Institute, 1989) for a detailed discussion on the emergence of market intermediaries.

⁹ "Local Distribution Company Post-Restructuring Issues Are Identified in GAO Report Appendices," *Foster Natural Gas Report* (November 18, 1993): 20-2.

¹⁰ An extensive discussion on the various forms of gas purchase contracts and the economic rationales in shifting from long-term contracts to short-term arrangements can be found in Duann et al., *Direct Gas Purchases*.

¹¹ See, for example, Richard J. Pierce, "Reconsidering the Roles of Regulation and Competition in the Natural Gas Industry," *Harvard Law Review* 97 (1983): 345-85.

disagreed and indicated that in the new gas market long-term contracts could not provide any advantages over spot contracts and would be used less frequently.¹²

LDCs As the Critical Link

In the restructured gas industry, the traditional three-market structure (wellhead, citygate, and local distribution) is replaced by a four-market structure (commodity gas, interstate transportation, core distribution, and noncore distribution). Though some of these markets are still evolving, certain basic features of these market segments can be discerned.¹³ Specifically, the commodity gas market, which has been quite competitive up to now, may become more so. The future development of the interstate transportation market is more complicated and less predictable. But it is expected that the primary transportation market will still be subject to cost-based regulation by the FERC while the eventual degree of competition in the largely unregulated secondary market is yet to be determined. The types of transportation-related service will increase and the number of buyers and sellers may also increase as conditions of transportation services are made more equitable among all shippers. Provided that state PUCs take an active role in restructuring local distribution services, the noncore distribution market will be expanded further as more currently captive customers find it advantageous to arrange their own commodity gas and transportation services. As for the core distribution market, its size will be further reduced even though the basic regulatory and market structures will remain mostly unchanged.

The end result of all these drastic changes is the establishment of LDC as the most influential entity in determining the cost and reliability of gas services. The primary regulatory forum has also shifted from the FERC to state PUCs. This does not

¹² See, for example, Robert J. Michaels, "When Captive Customers Bear the Risk," *Fortnightly* (November 15, 1993): 15-8.

¹³ See Duann, *The FERC Restructuring Rule* for more detailed discussions on the possible changes of the natural gas market structures in the future.

mean that the pipeline industry has completed its restructuring or that there will be no new federal regulatory issues to be explored. A host of issues, such as the effectiveness of electronic bulletin boards, the use of better metering and control equipment and real-time communication in controlling gas flow, and regulations concerning new construction of pipelines and storage facilities, are still to be addressed by the gas industry and the FERC.¹⁴ Nevertheless, there is little doubt that the LDC has indeed become the critical link in the gas delivery system and LDCs and state PUCs will be key players in the future gas industry. Not surprisingly, a recent GAO report concluded that "the regulatory practices of state and local authorities could play a pivotal role in determining how much risk LDCs can take to maximize the potential benefits of Order No. 636."¹⁵

New Market Environment for LDCs

Against the backdrop of a profound transformation in the gas industry and its regulation, an overview of the critical changes in the market environment under which the LDCs are operating can be provided. There were close interactions between the transformations of the upstream markets and the local distribution markets. In a few instances, the changes in the local distribution market preceded the changes in the interstate and wellhead markets.¹⁶ But in most instances, the restructuring of the interstate and wellhead markets tended to come before the reform in the local market.

¹⁴ See Moler, "There Is No Going Back."

¹⁵ U.S. General Accounting Office, *Costs, Benefits, and Concerns Related to FERC's Order 636*, GAO/RCED-94-11 (Washington, D.C.: U.S. General Accounting Office, 1993).

¹⁶ For example, unbundled transportation services were started within the producing states of Texas, Oklahoma, and Louisiana and expanded to other parts of the country. It clearly preceded the formulation of interstate transportation programs by the FERC in the early 1980s. See Energy Information Administration, *Growth in Unbundled Natural Gas Transportation Services: 1982-1987* (Washington, D.C.: Energy Information Administration, 1989).

The unbundling of distribution services will follow the same trend and exhibit many features similar to those of the unbundling of pipeline services.

It should be noted that actual market conditions and regulatory policies are typically more complex than the characterization here. They always contain some specific qualification requirements and exceptions. Thus, the following characterization only describes the general conditions that a typical LDC is likely to encounter. No detailed explanations of the origin, rationales, and implications for these characteristics are provided.¹⁷ It is also important to know that there are significant variations among these identified characteristics in terms of their extent of implementation. Some of them are clearly well-established (such as the deregulation of the wellhead market), and others are evolving with the final forms still to be determined. Similarly, not every regulatory and market reform will have the same impact on the operation of the LDCs. The eight gas market characteristics identified below represent the more important ones:

- (1) the wellhead price of gas is deregulated and the requirement of reserve dedication eliminated;
- (2) the interstate sale of commodity gas is deregulated;
- (3) the interstate pipelines are no longer allowed to provide bundled gas services to their customers;
- (4) the interstate transportation of gas is regulated by the FERC in price and service terms, and all pipeline customers have comparable access to transportation capacity if it is available;

¹⁷ For more detailed discussions on the market environment facing LDCs, see *Regulation and Competition in Natural Gas Markets*, A Policy Statement by the Council on Economic Regulation, December 31, 1987; Richard J. Pierce Jr., *Regulation and Competition in Natural Gas Distribution*, A Report from the Council on Economic Regulation, July 1990; Suedeem G. Kelly, "Intrastate Natural Gas Regulation: Finding Order in the Chaos," *Yale Journal on Regulation* 9 (1992): 355-406; and David B. Hatcher and Arlon R. Tussing, *State Regulatory Challenges for the Natural Gas Industry in the 1990s and Beyond* (Columbus, OH: The National Regulatory Research Institute, 1992).

- (5) a new straight-fixed variable rate design for transportation service is adopted, shifting costs from the large stable-load customers or those with less need for firm transportation service to those customers with small and weather-sensitive load or high demand for firm transportation service;
- (6) a secondary market, based primarily on competitive bidding, for excess transportation capacity rights owned by pipeline customers is created to facilitate the reallocation of transportation service to the customers who value it most;
- (7) the FERC continues to allow pipelines to bypass the LDCs in order to provide direct service to end users previously served by the LDCs;
- (8) large transition costs have been incurred as a result of pipeline restructuring and in most circumstances these costs are passed through entirely to pipeline customers such as the LDCs.

An Overview of LDC Supply and Demand Options

Because of these new market and regulatory realities, an LDC is facing many new challenges. These challenges include the allocation of newly-incurred transition costs, the operational issues (in particular the increased possibilities of supply and transportation interruption) associated with service restructuring, the possible conflicting requirements imposed by state PUCs, the elimination of some FERC pipeline rate review mechanisms, and the overhauling of transportation services and curtailment procedures.¹⁸ These are all important issues. But this section will only highlight the changes in the supply and demand options that may significantly impact the restructuring of local distribution services. Interestingly, under the new market environment, the LDC

¹⁸ See Stephen L. Huntoon, "636 to the Burnertip?" *Fortnightly* (July 1, 1994): 22-5, and "Local Distribution Company Post-Restructuring Issues," *Foster Natural Gas Report*.

has to act as a "rebundler" in assembling its many supply-side options while at the same time acting as an "unbundler" for services provided to end-use customers.

Changes in Supply Options

On the supply side, the LDC will have (1) more freedom in assembling its own gas supply portfolio, (2) exposure to more risk and reward, and (3) an increased need for expertise in contracting for gas services. Specifically, the LDC can no longer depend on the bundled gas delivered by interstate pipelines. It has to use and mix four main supply options (commodity gas, interstate transportation, market and supply areas storage, and some risk-management instruments such as gas futures and options) to derive an optimal gas supply portfolio.¹⁹ In doing so, an LDC can enjoy a greater amount of flexibility in arranging gas supplies and managing the cost and risk associated with these supplies. The relationships between these four supply options are complex and constantly changing, reflecting the demand and supply conditions prevailing at any particular time. For example, interstate transportation service and market-area storage service are complementary to each other during the off-peak season but they can substitute for each other during the peak period.

In addition, with more freedom in arranging their own gas supply portfolios, the LDCs will also face a significant increase in the responsibility and potential risk and reward associated with direct gas procurement. The potential risk and reward are derived from both the gas market itself (such as whether the LDC has sufficient gas to meet the demand of its customers) and the state regulatory actions taken after a review of the LDC's decisions (such as disallowance of gas costs exceeding the prevailing spot gas price).

¹⁹ In most instances, the buying and selling of gas futures and options do not involve the physical delivery of gas. Nevertheless, buyers of gas futures and options can take possession of gas if necessary and the use of futures and options can significantly affect the use of the other three supply options. Consequently, they are all considered and evaluated as viable supply options to the LDC.

Furthermore, in order to meet the increase in its responsibility, risk, and reward, an LDC needs to develop more expertise in drafting, negotiating, and administering contracts with its suppliers, transporters, and customers. This is particularly true as gas services are unbundled and gas transactions are increasingly defined by contract terms rather than by any inherent obligation-to-serve that characterized gas transactions in the past. Obviously, an LDC can hire a market intermediary to perform these tasks. But this can create other problems, such as how to align the LDC's interests with those of the hired market intermediaries. The ability of some end users to assess the reliability and credibility of market intermediaries has been cited as a concern with direct gas purchases.²⁰

Changes in Demand Options

On the demand side, the LDC will be facing, instead of an undifferentiated group of customers, a diverse group of customers with substantially different requirements for service reliability and quality. As many customers gain the ability to switch to other providers, the LDC will assume three distinct roles: (1) the sole provider of bundled service to core customers; (2) one of the many possible suppliers of commodity gas to noncore customers; and (3) the main provider of transportation-only service to noncore customers. In contrast, its traditional role was to provide bundled services to all customers.

Assuming that state PUCs take the initiative in restructuring local distribution services, the LDCs will have some added flexibility in offering new and unbundled services to those customers who do not need traditional bundled service and can afford the increased risk associated with the new services. An LDC may also be given the freedom to set its own prices and service conditions for some of the services provided. In exchange for the freedom of pricing some new services, the LDC will no longer be

²⁰ Pierce, "Intrastate Natural Gas Regulation."

assured full cost recovery, at least for the unregulated services provided to noncore customers.

Though an LDC may have more flexibility in pricing its services, its discretion in allocating costs to various groups of customers may actually decrease due to the wide availability of alternative suppliers and the subsequently intense competition for noncore customers among all providers. Because noncore customers can bypass the LDC and switch to an alternative supplier, the LDC may not be able to continue the past practice of "subsidizing" one group of customers (generally residential and small business customers with weather-sensitive loads) by charging a higher rate than it otherwise would be under embedded-cost pricing to another group of customers (mostly large industrial plants with stable loads). Consequently, assuming other things held constant, the cross subsidy may not lower the costs of service to core customers as intended by the LDC and state PUC, but will increase instead.²¹

Comparisons of Markets

Current and Past Local Distribution Markets

As discussed before, the key task of restructuring distribution services is to match market characteristics with a particular form of government intervention so that competition is allowed in those market segments where it is viable and government regulation is maintained where competition is not viable. The preceding section has summarized the changes in the supply and demand options facing the LDCs in the restructured gas market. The most critical difference between the current and past local distribution markets is the presence of alternative gas suppliers to a large number of

²¹ Ibid.

end-use customers. These end-use customers may no longer have to purchase bundled gas services from the LDC because they can either use the LDC's facilities for transportation or bypass the LDC completely. Competing suppliers to the LDC are created not by the presence of duplicating distribution facilities but by the availability of comparable access to interstate and intrastate transportation facilities. In addition to an increase in customer bypass, the presence of potential competitors is also reflected in the prevalent use of discount pricing (or contract pricing) in maintaining the LDC's customer base. The prevalence of bypass and contract pricing clearly indicates the need to examine the efficacy of continuing to offer one bundled service to all customers under embedded-cost regulation.

Interstate Market and Current Local Distribution Market

Since many similarities exist between the conditions prevailing in the current local distribution market and the interstate market before the promulgation of FERC Order 636, it is natural to apply the regulatory principles espoused by the FERC in restructuring the interstate market to the local distribution market. In other words, to unbundle all distribution services and to regulate the LDC as a common gas carrier. However, two significant differences between the interstate market and the local distribution market complicate the application of the total unbundling approach.

One critical difference is the presence of a large number of core customers (primarily residential and small commercial customers) who do not have, or choose not to use, alternative suppliers. In the interstate market, a pipeline may also serve a small number of customers (such as small municipal gas distributors) who depend entirely on the pipeline to provide commodity gas and transportation services. But these so-called "full requirement" customers usually have the ability or incentive to find alternative suppliers either by themselves or through some market intermediaries if they are forced

to do so. In contrast, in most cases the core customers of an LDC do not have the ability or economic incentive to find alternative gas suppliers.²²

Several factors contribute to the inability and unwillingness of core customers to find alternative suppliers. The first is the limited knowledge and experience a typical core customer has in arranging the many complex tasks required in delivering gas from citygate to burnertip. The second is the small amount, and weather-sensitive nature, of an individual core customer's demand for gas services. Because the amount of gas consumed by a typical core customer is usually quite small, the benefits of purchasing unbundled services directly is somewhat restricted and may not offset the costs incurred in doing so. The core customers' highly seasonal (and sometimes volatile) demand for gas services also makes the task of direct purchase more difficult for an inexperienced end user.

The third factor is the high degree of dependence on gas by the residential customers. Specifically, the percentages of various forms of energy consumed by a typical residential customer in the U.S. in the 1990s are as follows: natural gas (50 percent), petroleum (14 percent), coal (0.7 percent), and electricity (35 percent)²³ Because of the dominant role of gas in providing energy, any interruption of gas supply will have serious implications for an average residential customer. Thus, the residential customers usually put a high premium on the reliability and quality of gas services. The residential customers will be very hesitant to give up the bundled services (with an

²² It has been argued that even residential and small commercial customers may not be truly core customers because they are able to aggregate their loads in order to buy gas and arrange transportation services at favorable terms. But this seems to be a viewpoint not widely accepted up to now. See Hatcher and Tussing, *State Regulatory Challenges*. Also, some customers, even though they have the ability to get gas from alternative providers, may choose to be served as core customers.

²³ See Energy Information Administration, *State Energy Data Report* (Washington, D.C.: Energy Information Administration, 1992). These figures exclude the energy losses incurred in the generation of electricity.

inherent obligation-to-serve) provided by the LDCs even though the relationship between service reliability and the provider's obligation-to-serve is still subject to debate.

Another critical difference between the interstate and local distribution markets is the degree of competition that potentially can be achieved for gas services under the existing gas delivery infrastructure. Though both the interstate and local distribution markets can not be characterized as the classical "competitive" markets, it is generally recognized that the physical distribution of gas (or the intrastate transportation) in the local gas market is inherently less competitive than the interstate transportation of gas. Specifically, the extensive interstate transportation network that was originally constructed to connect interstate pipelines with a large number of gas supply sources would lead to a network connecting the pipelines with many customers. This close interconnection between suppliers and customers would lead to more competition among interstate pipelines.²⁴

This is apparently not the case in the local distribution market. There have been very few needs in the past for connecting an LDC to alternative suppliers. Thus, the current physical configuration of the intrastate pipeline network in a particular distribution market does not connect the end users with many alternative suppliers and is less conducive to intensive competition. This should not imply that a tightly interconnected transportation network, or the physical connection of end-use customers to two or more suppliers, is required for more competition in a local distribution market. Actually, it has been suggested that the existence of downstream market centers and LDC-owned storage facilities could make the local distribution market quite competitive and robust.²⁵ Nevertheless, the physical configuration of the intrastate transportation network, compared to that of interstate transportation, does pose a higher constraint in using competitive forces as the main instrument for unbundling and restructuring distribution services.

²⁴ Hatcher and Tussing, *State Regulatory Challenges*.

²⁵ Charles Stalon, "Rethinking Critical Connections: Utility Obligations and Utility Monopoly Power," presentation at *Third Annual National Association of Regulatory Utility Commissioners-U.S. Department of Energy Conference on Natural Gas Use*, Nashville, Tennessee, February 13-16, 1994.

CHAPTER 3

ALTERNATIVES, CRITERIA, AND CONSTRAINTS OF DISTRIBUTION SERVICE RESTRUCTURING

Local distribution service is not one but a series of activities. It starts with the procurement of commodity gas, and extends to transportation, load balancing, injection and withdrawal from storage fields, and metering and billing of services provided. Put another way, the job of an LDC is not completed until the gas is delivered to the end users at a particular location at a particular time. A clear distinction must be made between commodity gas and a delivered gas service, and this distinction is the foundation of the development of appropriate restructuring policies.

The Changing Nature of Local Distribution Service

There are considerable differences in the economies of scale and scope associated with the various elements of local distribution service.¹ Specifically, the procurement of commodity gas usually does not exhibit significant economies of scale or scope and is best done through a competitive market. On the other hand, intrastate gas transportation (physical distribution of gas) typically has strong economies of scale and scope and is best supplied by a franchised monopoly. Other activities, such as storage and load balancing, may exhibit certain scale and scope economies, but it is not clear

¹ In the case of gas service, economies of scale refer to the efficiency gains or cost savings that can be achieved when gas is produced or delivered by one large gas company instead of several smaller firms. Economies of scope refer to the efficiency gains and cost savings that can be realized when the various related gas services are provided by a single gas company instead of by several different firms with each providing a distinct service. An overview of the economies of scale and scope for the various elements of local distribution services can be found in Charles Stalon, "Rethinking Critical Connections: Utility Obligations and Utility Monopoly Power," presentation at *Third Annual NARUC-DOE Conference on Natural Gas Use*, Nashville, Tennessee, February 13-16, 1994.

whether the extent of economies of scale and scope can justify the choice of a monopoly supplier or a competitive market to provide these services. This mixture of different supply arrangements may be the most important feature of the future local distribution market. It is also worth noting that the economies of scale and scope that can be exploited by a large LDC may not be readily available to a small LDC. Thus, some exceptions to the restructuring proposals suggested here may need to be made for small LDCs.

Another feature of local distribution service is "the use of multiple, immobile, idiosyncratic assets, including production and gathering facilities, high-pressure pipelines, storage fields, and low-pressure distribution lines."² Because these facilities have very few alternative uses, an explicit or implicit assurance of the continuing utilization of these facilities and the recovery of costs associated with them is essential in preserving the economic viability of the LDCs. Moreover, this assurance of continuing utilization provides the financial incentives for the LDCs to make essential future investments to serve the current and future core customers who have no alternative suppliers.

Due to the significant economies of scale and scope and the requirement of mutual commitments between buyers and sellers, local distribution services in the past were supplied by a franchised monopoly at conditions and prices set by the state PUC. This franchised-monopoly approach seemed reasonable and efficient as long as the upstream markets were also tightly regulated and the LDC was not exposed to competition from alternative suppliers. As discussed above, federal and state regulatory reforms in the last fifteen years have changed many of the rationales for a continued application of the franchised-monopoly approach in the local distribution market. Specifically, all upstream markets (except the primary interstate transportation market) are deregulated, pipeline services are unbundled, and open and comparable access to transportation capacity is widely available. Thus, because it is difficult to continue insulating the LDC from competition from other providers, the franchised-monopoly

² Richard J. Pierce, Jr., "Intrastate Natural Gas Regulation: An Alternative Perspective," *Yale Journal on Regulation* 9 (1992): 407-16.

approach needs to be revised to incorporate and accommodate certain features of a competitive market.

The mixture of regulation and competition has created unique requirements and considerations regarding the restructuring of the local distribution market. Two factors, making the distinction between the supply of commodity gas and the provision of a bundled local distribution service and identifying the appropriate transaction mechanisms in supplying these services, have been identified as most critical in the development of an appropriate regulatory approach for restructuring local distribution service.³

Three Basic Restructuring Approaches

The Total Unbundling Approach

There are three basic approaches regarding the restructuring of local distribution services. They are the total unbundling approach, the franchised-monopoly approach, and a "mixed" approach. Under the total unbundling approach, the state PUC unbundles all services provided by the LDCs, deregulates all sales of commodity gas, and makes intrastate transportation capacity available to all potential suppliers and customers under PUC-approved rates and conditions. The LDC will become a common carrier within its service territory providing distribution (transportation) service under PUC-set prices and conditions to all suppliers and customers who demand it. The LDC can sell commodity gas at an unregulated price to all customers, but this activity must be strictly separated from its gas transportation activity. Similar to the unbundling of pipeline services, two kinds of efficiency gains, an increase in gas demand as a result of greater service diversity and an improvement in LDC efficiency as a result of competition from other

³ Ibid., and David B. Hatcher and Arlon R. Tussing, *State Regulatory Challenges for the Natural Gas Industry in the 1990s and Beyond* (Columbus, OH: The National Regulatory Research Institute, 1992.)

providers, may be achieved by the total unbundling of local distribution services.⁴ However, as indicated before, there are some critical differences between the local distribution market and the interstate market. Some modifications to the total unbundling approach must be made if it is to be applied in most local distribution markets.

The Monopoly-Franchise Approach

A second approach is to maintain the LDC's franchised monopoly status and allow transportation-only service and bypass for a small number of customers (mainly large industrial customers with dual-fuel capability) in very specific circumstances. This is the current condition in many local distribution markets. This approach may be appropriate if the local distribution market can be isolated from other parts of the interstate transportation network and there is very low probability of competition from other providers. Under this circumstance, there are no differences among the LDC's different groups of customers in term of their technical capability and economic incentive to buy gas from entities other than the LDC.

However, as competition has become a way of life in most local distribution markets, few, if any, local distribution companies can be completely isolated from the competitive forces prevailing in other sectors of the gas industry. Specifically, both the possibility of direct connection to an interstate pipeline and the intensive interregional competition for industry and jobs can eliminate or reduce an end-use customer's dependence on the LDC. Absent the use of flexible pricing and intrastate pipeline-sitting authority, the state PUC would have limited ability to prevent customer bypass and enforce an exclusive service territory for the LDC. Instead of insulating the LDCs from competition by other providers, this franchised monopoly approach may actually erode the LDC's customer base because many customers may choose to bypass the LDC

⁴ Stephen L. Huntoon, "636 to the Burnertip?" *Fortnightly* (July 1, 1994): 22-5.

system completely. This would happen if they are not allowed to have open and comparable access to the LDC's transportation facilities.

The Mixed Approach

The mixed approach essentially unbundles all local distribution services but still maintains a bundled service for a large number of core customers. Under the mixed approach, the LDC is given some flexibility in adjusting the conditions and prices of services. Presumably, it will be better equipped to compete with other providers, and more importantly, many end-use customers will be better served and offered more choices, even if not all customers will be facing a lower cost of gas service.⁵

The market comparisons made in the preceding chapter provide a starting point for the development of a mixed approach in restructuring local distribution services. Because most local distribution markets are potentially less competitive than the interstate market and have many core customers, the total unbundling approach used by the FERC in restructuring the interstate market should be modified in at least two aspects: (1) allowing the LDC to offer both bundled and unbundled services; and (2) revising the policy mandating establishment of a centralized secondary transportation market within the service territory of the LDC.

Coexistence of Bundled and Unbundled Services

The requirement of mandatory unbundling of gas services contained in FERC Order 636 should be relaxed when applied to the restructuring of local distribution services. Because many core customers are reluctant to engage in direct gas purchases, the LDCs should be allowed to continue to provide bundled services to these customers.

⁵ It is generally recognized that some cost shifting from industrial to residential customers seems unavoidable if the local distribution services are to be unbundled and restructured. See Suede G. Kelly, "Intrastate Natural Gas Regulation: Finding Order in the Chaos," *Yale Journal on Regulation* 9 (1992): 335-406.

However, under certain conditions these core customers may be allowed to purchase gas services from marketers and other third-party entities that can reassemble the several distinct unbundled elements of gas service.

According to the FERC, the continued provision of bundled services by interstate pipelines will lead to preferential treatment for pipelines' sales customers and create significant distortions that prevent all buyers and sellers from having open and comparable access to the interstate transportation network.⁶ The FERC also views the potential benefits of allowing pipelines to continue providing bundled services as less than substantial, and, in some instances, the benefits may be even less than the costs incurred in setting up the required complex procedures for overseeing the supply of bundled and unbundled service by a single entity. In short, the FERC concludes that the regulatory certainty and simplicity created by an outright prohibition on offering bundled services definitely outweighs the benefits of continuing to offer bundled services to a few small customers.

It is doubtful that the same arguments can be made in the local distribution market where a large number of core customers do require and benefit from the bundled distribution services provided by the LDCs. If the LDC is prevented from offering any bundled distribution services, the core customers need to purchase gas services directly. These customers mostly do not have the inclination, knowledge, or experience to conduct the many tasks required for direct gas purchases. Instead, they are likely to continue to depend on someone else to "rebundle" the unbundled services. Then the question becomes who is a better "rebundler," an LDC or a third-party marketer? Although there seems to be no conclusive evidence to suggest that one entity is clearly more efficient than the other, it can be argued that an LDC may have some inherent advantages in serving core customers due to its extensive experience of serving them in the past and its familiarity with the operation of the local gas distribution network.

⁶ See Daniel J. Duann, *The FERC Restructuring Rule: Implications for Local Distribution Companies and State Public Utility Commissions* (Columbus, OH: The National Regulatory Research Institute, 1993).

Another reason for not prohibiting the LDC from providing bundled service is the real possibility of service curtailment to core customers and the assignment of responsibility (or blame) for such curtailments. It may be argued that all customers, including the core customers, should be given the opportunity to make their own decisions and to assume responsibility for the consequences associated with their decisions. But it is a political reality that state PUCs will never fully relieve the LDC of the responsibility for ensuring reliable gas service to core customers.⁷ Consequently, a prohibition on the LDC from supplying bundled gas service would result in an imbalance in risk and reward to the LDC and some core customers. This imbalance in risk and reward might lead to behaviors that could eventually reduce economic efficiency in the local distribution market.

One concern about allowing the LDC to continue providing bundled services is whether this will unfairly prevent customers and third-party rebundlers from getting comparable access to the LDC's transportation facilities. Incomparable access and preferential treatment are real possibilities but in most instances they can be resolved by explicitly specifying comparable transportation access conditions and more strict state oversight. The continued provision of bundled distribution service in a particular local distribution market depends on the comparison of benefits and costs incurred. But, in any event, there is no need to proclaim an outright prohibition against bundled distribution services.

Need and Conditions for A Secondary Transportation Market

One key feature of FERC Order 636 is the establishment of a centralized secondary market to dispose of unneeded transportation capacity that was already contracted by pipeline customers. By establishing a secondary interstate transportation capacity market, the FERC uses a dual-market approach to make the interstate transportation market more competitive. The initial allocation of pipeline transportation

⁷ Huntoon, "636 to the Burnertip?"

capacity is still regulated by the FERC while a secondary "competitive" market is established to reassign capacity to those who value it most. The price in the secondary market is determined by market demand and supply. The secondary market is not a truly competitive market as some restrictions are imposed. Specifically, the market price cannot exceed the regulated price set by the FERC. Also, all transactions must go through the pipeline's electronic bulletin board, which essentially designates the pipeline as the customer's exclusive agent. Furthermore, all existing state capacity reallocation programs are terminated. There are several valid reasons for these restrictions; nevertheless, they prevent the full exercise of market power in this particular market.⁸ Also, with less than one year of operation, it is probably too early to conclude whether the secondary market is competitive or whether it can reach the intended goal of rationally allocating the interstate transportation capacity.

As for the local distribution market, the need for and benefits of a secondary market to reallocate intrastate transportation capacity have not been demonstrated. The initial allocation of intrastate transportation capacity is still subject to state regulation. Then, similar to the interstate market, the objective of a secondary intrastate transportation market is to provide a flexible means for allocating the excess capacity to those parties who value it the most. This is a desirable goal, but the validity of the mechanism for achieving it is tempered by the physical infrastructure of the local distribution network. In other words, because many end-use customers are connected by a single line to the LDC, the magnitude of excess intrastate transportation capacity created by shifting demand and supply conditions is relatively small when compared to that in the interstate market. Furthermore, the value of excess intrastate transportation capacity may also be very small since a customer would find it difficult to use the specific line segment of another customer.

⁸ See Duann, *The FERC Restructuring Rule*. The FERC indicated that permitting a secondary market to operate without strict regulatory oversight might create a few monopoly resellers who could exercise considerable market power on the secondary market. It was also suggested that without strict oversight the pipelines might use the secondary market to evade cost-of-service regulation.

Given the more restrained need and value for reallocating intrastate transportation capacity, two opposite approaches may be considered by state PUCs. One is to choose not to establish a secondary market. By doing so, all intrastate transportation capacity that is unused and unneeded is sold back to the LDCs at PUC-set rates. An end user will have no marketable right to the transportation capacity it already contracted for on the local distribution system. In the absence of a reallocation mechanism, the goal of allocating capacity to those who value it most can only be achieved through the initial pricing of the transportation capacity. In other words, the LDC needs to derive an optimal rate structure so that no excess transportation capacity is created. This is a less-than-realistic expectation, given the constant changes in gas demand and supply and the typically imperfect projections most end users make regarding their future demand for gas services.

This does not necessarily mean that the need for and benefits of reallocating a limited amount of intrastate transportation capacity justify the creation of a centralized secondary market. The absence of a secondary transportation market is a valid approach as long as it can be demonstrated that the possibility of incurring substantial excess transportation capacity is low or that the costs incurred in setting up and monitoring a secondary market for intrastate transportation capacity are high in the particular distribution market. Furthermore, a case-by-case approach or some existing capacity reallocation mechanisms such as buy-sell transactions and capacity brokering may be more suitable than a centralized secondary market, and they should be allowed.

Another policy option is to establish a centralized secondary transportation market with minimal, or no, restrictions imposed. This is a valid approach provided that no end-use customer is likely to exercise considerable market power by accumulating a large amount of excess intrastate transportation capacity. Originally, the FERC imposes conditions on the secondary transportation market mainly to prevent the LDC from using the secondary market to evade cost-of-service revenue restrictions or to prevent end-users from distorting the price and quantity of transportation service. If neither of these conditions is likely to prevail in the local distribution market, and there is a high

possibility of incurring a large amount of excess transportation capacity, the establishment of a truly competitive secondary market may be a desirable choice.

The mixed approach is clearly the most preferred regulatory approach in the restructuring of local distribution services. A large number of implementation issues is still to be decided and they will be discussed further in Chapter 4. Here, only a summary of the key elements of the mixed approach is provided. They are: (1) traditional distribution service would be unbundled as gas commodity, intrastate transportation, storage, load balancing, and other services to noncaptive customers; (2) most of these services (except transportation) would be deregulated; (3) LDCs would be allowed to continue providing bundled service to captive customers under state regulation; (4) the initial allocation of intrastate transportation service would be regulated by state PUCs with stringent and comparable access conditions; and (5) a competitive secondary market for transportation capacity with minimum restrictions may be created if certain conditions are met.

Criteria of Distribution Service Restructuring

All economic regulations, including public utility regulation, are imposed to improve the economic efficiency of a particular market or industry, and vigorous market competition is usually viewed as a close proxy for economic efficiency. Thus, to promote competition to the extent compatible with market demand and supply characteristics has been the main objective of many different types of economic regulation. This objective should also be applied to the restructuring of local distribution services. The attainment of economic efficiency, in this particular case, means that distribution service restructuring should facilitate, or at least not inhibit, market competition. In other words, gas should be produced by the lowest-cost producers, transported by the lowest-cost transporters, and consumed by the users who value it the most. The occurrence of uneconomic bypass is an example of economic inefficiency. The prevention of uneconomic bypass has been identified as one of the primary goals of distribution service

restructuring.⁹ Economic efficiency can be further delineated into the pursuit of economies of scale and scope in gas procurement and distribution, the differentiation and matching of customer demand with services provided, and the minimization of transaction costs in buying and selling gas.

Achieving Economies of Scale and Scope

The pursuit of economies of scale and scope associated with the several distinct activities of supplying and transporting natural gas is the most important criterion in restructuring distribution services. Actually, the basic rationale for creating a franchised monopoly to supply local gas distribution service is to realize the significant economies of scale and scope inherently associated with the many activities of gas distribution. Since distribution service restructuring typically entails the unbundling of services and the supply of these services by more than one supplier, some economies of scale and scope may be lost. For some distribution activities, the loss in the economies of scale and scope may be small while the benefits of increased competition are large. Then these services should be unbundled. The procurement of commodity gas is one such activity. On the other hand, the benefits of increased competition for certain distribution activities as a result of service unbundling may not offset the losses in the economies of scale and scope. The physical distribution of gas is one such activity.

Matching Service Reliability and Quality with Customer Demand

The differentiation of gas service reliability and quality to better match the different requirements of end-use customers is another goal of service restructuring. It is difficult to generalize the impact of restructuring on the reliability and quality of local

⁹ See Kelly, "Intrastate Natural Gas Regulation."

distribution services. However, in the interstate market, there is no evidence to indicate any deterioration of service quality as a result of direct gas purchases by customers.¹⁰ To the contrary, it has been suggested that direct gas purchases might actually provide more flexibility and incentives for gas production which eventually could lead to an improvement in gas service reliability.¹¹

The situation in the local distribution market may not be exactly the same as the interstate market given the presence of many core customers who rely heavily on gas as an energy source and have no access to alternative suppliers. To some of these core customers, the unbundling of distribution services can potentially pose a threat to the reliability of distribution services. However, the emphasis of distribution service restructuring is not to reach the highest level of service reliability and quality but to satisfy the different needs of a diverse group of customers. Specifically, those core customers who value service reliability can continue to receive reliable service while noncore customers who have access to alternative suppliers or other energy resources can choose to receive less reliable but also less costly service. In other words, it is entirely possible that distribution service restructuring may reduce the service reliability and quality for certain customers and this reduction is exactly what these customers want. In this case, the reduction in service reliability and quality would be a desirable result of service restructuring, and it should not be used as an argument against restructuring.

¹⁰ For example, it was generally agreed that during the extremely cold weather of January 1994 interstate pipeline facilities and operations performed very well, and there was only one instance of limited curtailment of firm transportation. See Interstate Natural Gas Association of America, *Interstate Natural Gas Pipeline Performance During the Cold Snap of January 1994*, Report 94-1 (Washington, D.C.: INGAA, March 1994).

¹¹ Daniel J. Duann, "Direct Gas Purchases by Local Distribution Companies: Supply Reliability and Cost Implications," *The Journal of Energy and Development* 14 (Fall 1989): 61-93.

Minimizing Transaction Costs

The third aspect of economic efficiency is to minimize the transaction costs associated with the search, negotiation, and execution of gas procurement and transportation contracts. The consideration of transaction costs has been cited as the key factor in deciding whether goods and services are best exchanged through internal organizations (that is vertical integration) or through a market.¹² Transaction costs was also cited as the main reason for the prevalent use of long-term gas contracts with various take-or-pay provisions in the past.¹³

Clearly, unbundling of gas services and replacement of long-term contracts by short-term contracts will increase the required tasks and the total number of gas transactions for the end-use customers and the LDC. The end-use customer may need to add staff and equipment to assume administrative responsibility for purchasing gas from several suppliers, to manage transportation contracts with one or more LDCs and pipeline companies, and to oversee the use of storage facilities, load imbalance, capacity release, and other supply options. It is difficult to assess the magnitudes of these transaction costs. One assessment about the additional costs (including transaction costs) incurred as a result of the restructuring of interstate pipeline services indicated that purchasing separately unbundled service might increase the unit cost of gas service to LDCs by about 40 to 60 percent.¹⁴ There is no estimate of the added transaction costs of distribution service restructuring. It can be expected that the increase in transaction

¹² See Oliver E. Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications* (New York: The Free Press, 1975) for a comprehensive analysis on the role of transaction costs in the choice of optimal forms of economic exchange.

¹³ See, for example, John H. Mulherin, "The Natural Gas Industry's Response To Transaction Costs," *Public Utilities Fortnightly* (July 25, 1985): 38-40.

¹⁴ U.S. General Accounting Office, *Costs, Benefits, and Concerns Related to FERC's Order 636*, GAO/RCED-94-11 (Washington, D.C.: U.S. General Accounting Office, 1993).

costs will vary significantly among the LDCs. Any assessment of the benefits of distribution service restructuring must be adjusted by these added costs.

Constraints of Distribution Service Restructuring

Certain characteristics of the local distribution market can limit the extent of service restructuring. The existence of a large number of core customers and the existing physical infrastructure that limits potential competition are the two most important constraints.¹⁵ Two additional constraints for distribution service restructuring are discussed here. They are the cost allocation among customer groups and the additional public and private resources required in implementing distribution service restructuring.

Cost Allocation Among Customer Groups

The reallocation of costs among different groups of customers may severely constrain the applicability of various restructuring proposals. Current restructuring of pipeline services has already produced substantial cost shifting among various customer groups. Distribution service restructuring is likely to either magnify the degree of cost shifting or create a new set of cost shifting issues.¹⁶ Even though many of these cost shifts are justified as corrections of cross subsidies already in place, they nonetheless present real difficulties that could make distribution service restructuring politically unacceptable.

Interestingly, one of the arguments for restructuring local distribution services was to moderate the cost shifting that may eventually occur in the local distribution market

¹⁵ See Chapter 2 for more detailed discussion about these two critical differences between the local distribution market and the interstate market.

¹⁶ See U.S. General Accounting Office, *Costs, Benefits, and Concerns Related to FERC's Order 636* for estimates of total costs shifted from interruptible to firm services customers as a result of the implementation of FERC Order 636.

without service restructuring.¹⁷ It is suggested that shifting costs from noncore to core customers might come from either the intended restructuring proposed by the LDCs and state PUCs or the unintended bypass initiated by some noncore customers. In most instances, the cost burden to the core customers will be higher in the case of complete bypass since the bypassing customers do not contribute to the fixed costs of the local gas delivery system. If unbundled transportation service is made available, noncore customers may choose to use the LDC's facilities to transport gas and contribute to part of the fixed costs. This is an important distinction as the assessment of cost shifting caused by distribution service restructuring must be made in terms of not only comparing what will happen under restructuring with the status quo but also by comparing what will happen if no restructuring occurs.

Resource Requirements for Implementation

It was discussed earlier that service unbundling may incur additional transaction costs as the end-use customers need to contract with several different entities to reassemble a delivered gas service. The resource requirements here, however, refer to the additional staffs and time needed by the state PUCs and LDCs in implementing service restructuring. Given the variations from state to state in terms of the extent of prior regulatory reforms and the prevailing market demand and supply conditions, the resource requirement for implementing service restructuring may also vary considerably. However, there are some generic resource requirement issues associated with most restructuring proposals. They include the needs for new PUC regulations, possible new legislation, and additional resources and commitments from the LDCs and state PUCs. Current PUC regulation may not adequately address many issues related to service restructuring. In addition, distribution service restructuring entails some difficult conceptual issues which have not been fully resolved. These conceptual issues include the fair allocation of common costs among various unbundled services, and the

¹⁷ See, for example, Kelly, "Intrastate Natural Gas Regulation."

measurement of available transportation capacity, storage capacity, and other new services to be provided in a tightly connected network. The feasibility of implementing local service restructuring is a real concern. For example, at least one state chose to prohibit LDCs from selling unbundled commodity gas to end users or from forming any new marketing affiliates because the cost of implementation was viewed as too high.¹⁸

¹⁸ Ibid.

CHAPTER 4

CRITICAL ISSUES OF DISTRIBUTION SERVICE RESTRUCTURING

Even though a basic regulatory approach, the mixed approach, was selected for the restructuring of distribution services, a broad range of issues still needs to be resolved in developing the specifics of the mixed approach. All these issues are closely related and the adoption of one policy for a particular issue may necessitate the adoption of a specific policy for another issue. For example, the decision on the unbundling of services will require an appropriate division of the local distribution market into core and noncore markets and the establishment of comparable transportation access for noncore customers. In addition, the service obligation to noncore customers may also have to be modified to achieve a balance in risk and reward for LDCs and end users.

Extent of Service Unbundling

The first, and probably the most fundamental issue, facing state PUCs and LDCs is to determine to what extent and how distribution services should be separated and supplied by various entities. Many different and complex activities are required in delivering gas from the wellhead to the burnertip, or in the case of local distribution service, from the citygate to the burnertip. Under existing technologies, the main categories of gas distribution services include commodity gas procurement, gas transportation from citygate to burnertip, gas dispatching, coordination and balancing of gas flow, injection and withdrawal from storage fields, and metering, billing, and bookkeeping of services provided. In the past, all these were performed by an LDC under conditions and prices set by the state PUCs. At the present time, some of these activities will continue to be provided by the LDC and others will be supplied separately by the LDC and other entities.

Though most gas industry analysts agree that some kind of unbundling of distribution services is indispensable to improve the efficiency in the local distribution

market, there are still considerable debates about the extent of unbundling. Some suggested total unbundling for all services except for some very small core customers, as most problems associated with total unbundling can be resolved by the institution of standby service fees and proper allocation of common costs.¹ Others argued that the benefits of unbundling might be overstated, especially considering the transaction costs associated with purchasing unbundled services, the required adjustments of service obligation, and the difficulties of pricing unbundled services.²

Economies of Scale and Scope As Deciding Factors

In deciding which of the several distinct distribution activities can and should be supplied by entities other than the LDCs, the primary consideration is economic efficiency. Specifically, the state PUCs and LDCs need to assess whether the separation of these activities will unnecessarily reduce the economies of scale associated with the various activities when the same amounts of gas services are produced by more than one business entity. They could also evaluate the changes in the economies of scope associated with the joint production of several related activities as these related services are now provided by several different entities.

Unbundling may also hinge upon the diversity of customer demand. Because customers have different needs for distribution services, the provision of a wide variety of unbundled services will increase the likelihood that the various combinations of these distinct services can better meet the many different requirements of end-use customers. By providing a better match of gas services supplied with gas services demanded, the costs of distribution service to some end-use customers may be reduced. At the same

¹ Suedeen G. Kelly, "Intrastate Natural Gas Regulation: Finding Order in the Chaos," *Yale Journal on Regulation* 9 (1992): 355-406.

² See Richard J. Pierce, Jr., "Intrastate Natural Gas Regulation: An Alternative Perspective," *Yale Journal on Regulation* 9 (1992): 407-16; and Stephen L. Huntoon, "636 to the Burnertip?" *Fortnightly* (July 1, 1994): 22-5.

time, the costs of supplying these services by the LDC may also decrease, and the demand for certain gas services will increase.

The frequency and costs of gas transactions associated with unbundling is another factor of economic efficiency. Clearly, unbundling will increase the total number of transactions that need to be entered and executed by many end-use customers. But some transactions for unbundled services may be less complex and easier to execute than those for bundled services. The transaction cost consideration is an especially important one for small customers as the benefits of unbundling may not offset the additional transaction costs incurred.³

In the interstate market, the FERC mandated the unbundling of all pipeline services. It specifically separated gas procurement and transportation services and expanded the definition of transportation service to include load balancing and storage even though these services might still be priced separately.⁴ In many aspects, the economies of scale and scope of local distribution services are similar to those of pipeline services. Actually, the advantages of continuing service bundling are probably stronger in the local distribution market than in the interstate market.

The economies of scale and scope associated with the various distribution activities of a typical average-sized LDC are summarized here. For most gas distribution systems, there is a limited amount of economies of scale and practically no economies of scope in gas procurement.⁵ As for the construction and operation of storage fields, there may be some economies of scale because the unit costs of construction and operation usually decrease with the size of the storage fields. There may be some

³ Pierce, "Intrastate Natural Gas Regulation."

⁴ See Daniel J. Duann, *The FERC Restructuring Rule: Implications for Local Distribution Companies and State Public Utility Commissions* (Columbus, OH: The National Regulatory Research Institute, 1993).

⁵ It should be emphasized that the characterization here is based more on observation and less on rigorous empirical analysis. Actually, there are very few, if any, empirical studies on the economies of scale and scope associated with the provision of local gas distribution services.

substantial economic advantages in combining the billing and load balancing services with other services and using one firm to provide all these services. There are considerable economies of scale and scope in terms of the construction of gas distribution facilities. The physical distribution and dispatch of gas probably exhibit the strongest degree of economies of scale and scope. They are best provided by one business entity, the LDC.

Some Guidelines for Service Unbundling

Based on these observations, some guidelines for the unbundling of local distribution services can be established. First, except for core customers, the gas procurement (commodity gas) service should be separated from other services and deregulated. In other words, all noncore customers should be allowed to purchase commodity gas from any providers they choose (including LDCs). Second, the storage service can be unbundled and deregulated if a large number of storage fields are owned and operated by several entities other than the LDC.⁶ In the case where the LDC can exert market power over the local storage market, storage capacity may need to be regulated in a fashion similar to that for intrastate transportation capacity.

Third, metering and bookkeeping services can be, but there is no need to require them to be, unbundled from other services. The LDC can continue to provide metering and bookkeeping services for all customers under cost-based regulation. Other entities can compete with the LDC for such services with no restriction imposed. This policy is based upon the belief that an LDC already has some inherent advantages in providing these services and if a third party can provide these services at a lower cost, it should be

⁶ Underground caverns and aquifers are the most common and economical forms of gas storage. Consequently, the availability of gas storage is determined largely by the geological characteristics of a particular region. There are great variations in terms of gas storage availability and cost among local distribution markets. More detailed discussions on the competitive implications of gas storage can be found in Daniel J. Duann et al., *Gas Storage: Strategy, Regulation, and Some Competitive Implications* (Columbus, OH: The National Regulatory Research Institute, 1990).

allowed to do so. Fourth, policies similar to those for metering and bookkeeping services can be adopted for load balancing and dispatching services where the economies of scale and scope may even be stronger than in metering and bookkeeping. However, as load balancing and dispatching services are essential to the reliability of the operation of the local distribution network, more stringent conditions can be imposed upon third-parties that are engaged in supplying these services.⁷ Alternatively, the definition of intrastate transportation can be expanded to include load balancing and dispatching, and these services would be subject to state regulation.

Lastly, intrastate transportation service should be unbundled and regulated under cost-based regulation in most instances. Cost-based regulation is necessary because no active and competitive market for intrastate transportation service has been developed yet. However, some flexibility should be provided, and actually it has been the case in a number of states, for the pricing of intrastate transportation service. For example, Michigan allowed the use of "market-based" rates for intrastate transportation service provided to certain customers. It should be noted that these so-called market-based rates were not actually derived from a competitive marketplace. Instead, they were imputed by the state PUC based on the best alternatives (such as bypass, reallocation to another jurisdiction, or building their own connection lines) available to these transportation customers. More stringent conditions may also be imposed on the LDCs to ensure that all parties have open and comparable access to the transportation network. These conditions will be discussed further in a later section.

Division of the Market

The second issue of restructuring is the division of the market based on certain characteristics of end-use customers. Service unbundling deals mainly with the

⁷ Many state PUCs have the responsibility of overseeing pipeline safety, and the emergence of alternative suppliers owning and operating transmission and distribution facilities will definitely be a concern to the states. But the development of appropriate state policies regarding pipeline safety is beyond the scope of this report.

separation of various interrelated services so that the optimal forms of market transaction or government intervention can be developed in supplying these services. In contrast, the division of the market is concerned primarily with matching gas services with customers' requirements. It deals with the issue of distribution service unbundling from the customer demand perspective.⁸ Two goals are served in the division of a local distribution market. One is to identify the characteristics of customer demand so that services that can better meet the customers' requirements are provided. This will increase the demand for gas services, which in turn can increase the overall economic efficiency of the local distribution market. Another goal is to divide the market into segments so that proper forms of government intervention can be applied, especially to restrain the exercise of market power where competition is not viable and to allow competition to occur in those segments where competition is viable.

Access to Alternative Suppliers As the Deciding Factor

There are many ways of dividing a local distribution market. For purposes of service differentiation and promoting competition, the best way is to distinguish the market by the customers' ability to find and use alternative suppliers. As distribution service is unbundled, there may be alternative suppliers for different elements of distribution services. The discussion here refers only to the alternative suppliers of commodity gas. Clearly, under existing technology, there is no alternative supplier for the physical distribution of gas within an LDC's service territory. Alternative suppliers for other services such as billing and storage may exist, but the supply of commodity gas is the most competitive aspect of distribution services. Consequently, a core customer is defined as the one who can not find, or is unwilling to use, alternative suppliers of

⁸ Clearly, this is a crude distinction between service unbundling and market division. As described, service unbundling is also influenced by customer characteristics, division of the market, and the characteristics of gas supply sources and transportation.

commodity gas. A noncore customer is defined as the one who has access to and choose to use alternative gas suppliers.

The sales of commodity gas by the LDC to noncore customers should be deregulated since the LDC does have many viable competitors. But, commodity gas sales (bundled with transportation and other services) for core customers should continue to be regulated by state PUCs. In other words, noncore customers would be allowed to purchase unbundled commodity gas directly from the LDC or other entities, but they would still use the LDC's transportation facilities. The critical factor for the successful implementation of this policy is that the LDC will no longer be required to retain any obligation to provide commodity gas to noncore customers. If the LDC is required to provide backup gas supply to noncore customers, it must be properly compensated. Otherwise, an imbalance in service and take obligations between buyers and sellers will be created.

Commodity gas service to core customers is a more complicated issue as the composition of core customers may change from time to time. A core customer may decide to use alternative gas suppliers if market conditions permit such use. Some utilities do allow these so-called "core" customers to purchase gas directly from other entities under specific conditions. These conditions include the experience and knowledge of the customers to fully understand the risks and rewards associated with direct purchases and the "real" ability to undertake the risks associated with direct purchase.⁹ The reason for imposing these requirements is that LDCs usually cannot abandon their core customers in the case of supply interruption even when the core customers voluntarily choose to purchase gas directly and are fully aware of the risk involved. There are no valid technical or economic reasons for insulating these so-called "core" customers from the risk of direct purchase. However, the political reality remains that the state PUCs will be very hesitant to relieve the LDC of its obligation to serve all

⁹ Fred Hassan, "Core and Non-Core Direct Purchase Policy Issues: The Ontario Experience," presentation at *Third Annual NARUC-DOE Conference on Natural Gas Use*, Nashville, Tennessee, February 13-16, 1994.

core customers. Consequently, some requirements on the potential suppliers to certain "core" customers are imposed to reduce the possibility of supply interruption.

The concept of market division based on the ability of the customers to find alternative suppliers is quite simple. But there are several practical difficulties associated with the identification of core customers. Over the long run and in a broader sense, there may be no core customers for any LDC. Eventually every customer may be able to switch to an alternative fuel or move out of the LDC's service territory. On the other hand, at any particular instant, almost all customers are captive customers to the LDC since few customers can instantly switch to alternative suppliers or fuels. Consequently, a particular time period needs to be specified in determining whether a customer is a core customer or not. Also, even for a group of homogeneous customers with similar gas utilization characteristics, the knowledge of and ability to find alternative suppliers among them may vary considerably. A previously captive customer can decide to install a dual-fuel boiler and thus may no longer be classified as a captive customer.

There are other difficulties associated with the proper division of the local distribution market. They include the assignment of common costs and intangible benefits to core customers and the assurance of arms-length transactions between the regulated LDC serving core customers and the unregulated subsidiary serving noncore customers.

Modification of Service Obligations

The concept of an obligation-to-serve originated not as a way to enhance service reliability but as an economic means for assuring mutual commitment and reducing risks associated with opportunistic behaviors in gas transactions.¹⁰ The modification of service obligations required in the restructuring of local distribution services should be approached similarly. In other words, the modification of service obligations should not

¹⁰ See John H. Mulherin, *Vertical Integration and Long-Term Contracts in the Natural Gas Industry*, Ph.D. dissertation, University of California at Los Angeles, 1984.

be viewed as a tool to enhance or reduce service reliability of unbundled services. Rather, it should be used primarily to balance the risk and reward of gas transactions between an LDC and its customers in a more competitive marketplace. A proper balance of risk and reward is required in preventing significant distortions to the incentive of buying and selling various unbundled distribution services. A service restructuring without proper specification of service obligations will allow consumers to purchase unbundled gas service and be protected from risks attendant to that decision by shifting those risks to LDCs. This imbalance in risk and reward could produce disastrous results.¹¹

As the customers of the LDC can be differentiated, so, too, the LDC's responsibility or obligation to its customers can be made different. By doing so, a well-defined set of responsibilities that will not only restrain the use of the LDC's monopoly power in transportation but also limit the opportunistic behaviors of end-use customers is created.

Obligation to Core Customers

Regarding the LDC's obligation to core customers who choose to buy commodity gas solely from the LDC, there is really no fundamental change required after distribution service restructuring. The LDC is still obligated to provide a bundled service or stand ready to serve those customers who have no alternative suppliers. In return, the LDC is assured full recovery of those costs incurred prudently in serving these customers. The service obligation to certain "core" customers who purchase a part of their commodity gas from alternative suppliers is a more difficult issue. It can be argued that, given their stated ability and desire to use alternative suppliers, these customers should be classified as noncore and be treated accordingly. However, some of these customers may not fully comprehend the requirements and risks involved in purchasing commodity gas from alternative suppliers. They also may not be able to adequately deal with the

¹¹ Pierce, "Intrastate Natural Gas Regulation."

effects of gas service interruptions and curtailments. Accordingly, the LDC may still be required to retain its obligation to serve these customers above and beyond the amount of commodity gas they purchase. This requirement is justified if the LDC is allowed to charge a reservation fee as a compensation for retaining such an obligation or providing standby service.

Obligation to Noncore Customers

The traditional regulatory compact that exists between the LDC and its customers clearly did not envision a situation where some customers can and choose to purchase gas from entities other than the LDC. In general, as these noncore customers do have alternative suppliers and are not required to purchase from the LDC, there is no valid reason to require the LDC to continue maintain its service obligation to those customers. Under this circumstance, the obligations of both buyers and sellers are best set in contract rather than through regulation.

Typically, in a competitive market, the seller has no inherent obligation of providing service to the buyers except those specified in the contract. The same principle can be applied to the sale of commodity gas. But it should be noted that the relaxation of the obligation to serve does not mean that the LDC can not provide commodity gas to the end-users. Rather, it can continue to serve the customers as long as it chooses to do so. But, the LDC does not need to prepare and plan the procurement of gas supplies on behalf of its noncore customers.

Few general rules regarding the service obligation to the noncore customers have been developed. Three factors seemed to be the most important ones.¹² One is the size of the customer. It was suggested that small customers "might be permitted much greater freedom to leave and return than large ones, since the LDC can gain some

¹² Charles G. Stalon, "Rethinking Critical Connections: Utility Obligations and Utility Monopoly Power," presentation at *Third Annual NARUC-DOE Conference on Natural Gas Use*, Nashville, Tennessee, February 13-16, 1994.

predictive stability out of the law of large numbers for small customers."¹³ Another factor is the LDC's own gas supply, transportation, and storage portfolios. A large LDC with very flexible supply, pricing arrangements, and extensive transportation and storage facilities may choose to allow all customers to leave and return to the system on short notice. On the other hand, an LDC that lacks extensive excess storage and transportation capacity and uses mainly long-term supply contracts with fixed prices may not have the "flexibility" or "slack" to allow frequent leaving and returning to the system by the noncore customers. A third factor is the state PUC's policies toward maintaining price stability and regulatory simplicity for all customers, core or noncore. If the state PUC puts a premium on these two factors, it tends to discourage the frequent shifting of suppliers by end-use customers.

In summary, in view of the LDC's traditional role as a public utility providing bundled service to all customers, it is questionable whether the LDC's obligation to provide commodity gas can be eliminated completely. A number of practical issues arise. They include whether the LDCs should be a supplier of last resort, and whether, and under what conditions (such as how much notice must the customers give, should there be minimum term for return to service, and how the fees for returning to service are calculated), the noncore customers should be allowed to go back to the LDC system.¹⁴

As for the LDC's obligation in providing unbundled transportation services to noncore customers, it is clear that, if capacity is available, the LDC should continue to provide open and comparable unbundled transportation service to all customers who demand it. The availability of comparable transportation service is actually a precondition for relaxing the service obligation for commodity gas. Without comparable access, the noncore customers may not have access to alternative gas suppliers and may

¹³ Ibid.

¹⁴ Hassan, "Core and Non-Core Direct Purchase Policy Issues."

not receive sufficient amount of gas given that the LDC's service obligation for commodity gas has been reduced or eliminated.

It is less clear whether the LDC should be required to prepare and plan for the expansion of transportation facilities in anticipation of future gas demand by noncore customers. On the one hand, it appears that, since the noncore customers are not committed to using the LDC's transportation facilities in the future, there is no valid reason to require the LDC to plan for expanding its transportation facilities to serve these customers. On the other hand, it can be argued that, in terms of intrastate transportation services, the LDC is still a monopoly supplier within its own service territory. Most noncore customers do not have viable alternatives to the transportation services provided by the LDC. It may also be uneconomical to require the noncore customers to build their own transportation facilities to meet their future demand.

One possible way in resolving this dilemma is to further divide noncore customers into firm and interruptible transportation customers. Because the firm transportation customers can be viewed as implicitly committed to use the LDC's transportation facilities (at least for the contracted amount and time period) in the future, the LDC may need to plan the expansion of transportation facilities to meet the increase in capacity demand by these customers. Regarding the LDC's obligation to interruptible transportation customers, since these customers are not committed to use the LDC's transportation facilities and the LDC is not required to provide firm capacity, the service obligation may be eliminated or relaxed considerably.

Access and Disposition of Intrastate Transportation Capacity

Of the various restructuring proposals proposed for local distribution services, one common feature is the continuing regulation of intrastate transportation services by state PUCs. There may be some differences in the way intrastate transportation services are regulated and priced, but there is no proposal suggesting a complete deregulation of intrastate transportation services, at least for the initial allocation of firm transportation capacity. This is not surprising since the physical distribution and dispatch of gas

continue to exhibit considerable economies of scale and scope. Therefore, these activities are deemed as best provided by a monopoly supplier.

A broad range of issues are involved in the development and modification of an intrastate transportation program that can facilitate and accommodate distribution service restructuring. They include the expansion of the definition of transportation service, the priority in allocating and curtailing transportation capacity, the pricing of transportation services, the limitations and penalties in using transportation services, the access to LDC-contracted upstream capacity, and the rights, if any, of an LDC's customers to dispose of transportation capacity already contracted but not used. The state PUCs have experience in dealing with some of these issues, and several legal strategies and economic criteria have been identified in resolving them.¹⁵

LDC's Control of Intrastate Transportation Facilities

Previous discussions indicated that the intrastate transportation market is inherently less competitive than the interstate transportation market due to the differences in the physical infrastructures of gas transportation. At a local distribution market, most end-use customers are connected to only one supplier. Also, the service territories of different LDCs are well defined and exclusive. Within each service territory, there are very few alternative (duplicating) transportation routes connected to a particular customer. In contrast, the service territory of an interstate pipeline is not clearly defined and may overlap with the service areas of another pipeline. Furthermore, the extended tasks of searching and contracting for transportation services may be too much for many end-use customers. It is less certain whether they will be active participants in buying and selling intrastate transportation capacity. All these indicate that the intrastate transportation market will be less competitive than the interstate

¹⁵ A more detailed discussion can be found in Robert E. Burns et al., *State Gas Transportation Policies: An Evaluation of Approaches* (Columbus, OH: The National Regulatory Research Institute, 1989).

transportation market, and the LDC will continue to hold considerable market power in the buying and selling of transportation capacity within its service territory. Consequently, great care must be exercised in instituting any market-based mechanisms to replace existing government regulation.

Some Complicating Factors

With the implementation of FERC Order 636, several complicating factors have emerged and they need to be considered in the development and revision of state transportation programs. One of the complicating factors is the interaction between the LDC's utilization of pipeline transportation facilities and its customers' use of intrastate transportation facilities. For example, if the end-use customers are given considerable flexibility on receipt and delivery points and load imbalance tolerances, it may severely strain the LDC's transportation system. The LDC may also incur significant load imbalance penalties and other liabilities to the interstate pipelines. These costs may not necessarily be borne by those end-use customers who cause them.

Another complicating factor is the expansion of the definition of transportation service to include other auxiliary services such as access and pricing to market-area storage facilities owned by an LDC. Since market-area storage can be viewed both as a substitute and a complement service for transportation, there is some debate as to whether it should be offered to all end-use customers or reserved only for core customers.

A third complicating factor is the calculation and division of transportation capacity to core and noncore customers. The calculation of available transportation capacity in a tightly interconnected transportation network itself is a difficult task.¹⁶ It is further complicated by the need to preserve a portion of the available capacity for serving the core customers and for system operation and reliability purpose. But exactly

¹⁶ See Frank C. Graves and Paul R. Carpenter, "Unbundling, Pricing, and Comparability of Service on Natural Gas Pipeline Networks," mimeo., 1991.

how much is required to reliably serve the captive customers? Depending on the rate design mechanisms chosen, the LDC and the noncore customers may have incentives to misrepresent their "true" requirement for transportation capacity. In contrast, in the interstate market, there is no division of core and noncore market and consequently all transportation capacity is available to the customers of interstate pipelines.

It is difficult, within the scope of this study, to formulate detailed policies about the access and disposition of intrastate transportation capacity. Some general guidelines are provided here. Furthermore, since the eventual degrees of competition that can be achieved in the interstate as well as the local distribution market are still to be determined, a more deliberate approach in resolving the many issues related to intrastate transportation is justified.

Access and Disposition of LDC-Owned Transportation Facilities

In general, the end-use customers should be provided access to the LDC's transportation facilities comparable to that bundled with the sale of commodity gas to core customers if transportation capacity is available. But as indicated above, there are several complicating factors that can limit the application of this general principle. Specifically, the amount of transportation capacity available to noncore customers is difficult to determine, and the use of intrastate transportation services by noncore customers may create undue burden and additional costs to the LDC. Then there is the question of access to transportation capacity by certain "curtailment-proof" customers (customers dealing with the maintenance of public health, safety, and welfare). These customers are curtailment-proof not for any technical and economic reasons but are protected as a matter of political and social necessity and with some public-interest justifications. In any case, since they are curtailment-proof, these customers have strong incentives to purchase low-cost transmission services (such as interruptible transportation services) without concern for the actual risks associated with such services.

The need for and benefits of establishing a secondary capacity market to dispose of the excess transportation capacity already contracted by end-use customers do not

seem to be significant for most local distribution markets. Thus, unless there is strong evidence that the initial allocation of transportation capacity is wholly inadequate and an active and reasonably competitive market for transportation capacity within a particular local distribution market can be created, the end-use customers should be required to sell back the excess capacity to the LDC at PUC-set rates. This is not a totally new policy suggestion. At the present time, many LDCs are already implicitly using this transportation capacity release mechanism. Under current embedded-cost regulation, the LDC can sell the excess capacity to interruptible transportation customers in the off-peak period, and the revenues derived from these interruptible customers are used to reduce the revenue required from firm customers. This is a *de facto* transfer of excess capacity from peak customers to nonpeak customers through the LDC at "prices" set by the state PUCs.

Access and Disposition of Upstream Transportation Capacity

Under FERC Order 636, the LDC, as a customer of the interstate pipeline, is granted access and a marketable right to upstream transportation capacity already contracted for by the connecting pipeline. A similar situation faces the end-use customers. Some arguments can be made that all end-use customers (core and noncore customers) should be granted access and have marketable rights to the upstream transportation capacity already contracted for by the LDC. After all, this transportation capacity is paid for by the end-use customers, and some end-use customers may need access to complete their gas purchases from alternative suppliers.

A policy similar to that adopted for the access and disposition of LDC-owned transportation facilities can be used here. The end-use customers in general should be granted access to upstream transportation capacity. But the constraints placed on the access to intrastate transportation should be maintained. Actually, the access conditions to upstreamed transportation capacity may need to be made more stringent because the LDC typically has less control of these facilities and is subject to more receipt and delivery restrictions and load imbalance penalties.

CHAPTER 5

SOME CURRENT STATE PUC INITIATIVES

The state PUCs are pivotal players in the transformation of the natural gas industry and they have initiated a broad range of reforms at the local distribution level. They have been slow, however, in developing policies and strategies toward the unbundling and restructuring of distribution services. A few states have issued new regulations and some have pursued informal discussions and workshops in designing the most effective policies and strategies. But, a large number of state PUCs are adopting a wait-and-see attitude before the full impacts of the FERC regulatory reforms are settled.¹ This is not surprising and may eventually turn out to be a prudent decision. After all, the total unbundling of pipeline services to LDCs and other customers has been implemented for only a year. Many complex issues are still being identified and debated. For most state PUCs and LDCs, the main task at hand is the allocation and pass through of transition costs resulting from the restructuring of pipeline services. If the experience of previous regulatory reforms in the natural gas industry can be used as a guidance, the emergence of a more clear and complete picture of distribution service restructuring is at least several years away.

Furthermore, the state PUCs, in spite of their more passive attitude toward service restructuring, are quite active in developing other responding strategies to FERC Order 636. These strategies include the establishment of new oversight and prudence standards to cover the greatly expanded supply and transportation options available to the LDCs, the encouragement of the use of capacity release mechanisms and electronic

¹ See "Survey of States Uncovers No Radical Effort to Reform LDC Regulations This Winter," *Foster Natural Gas Report* (February 10, 1994): 12-20. The preliminary analysis of a June 1994 survey of state PUCs by the National Regulatory Research Institute indicated a similar finding.

bulletin boards for better supply and transportation management, and several cost mitigation options.²

In addition, state PUCs are also in the process of complying with requirements for gas utility regulation contained in the Energy Policy Act of 1992 (EPAAct). These include, in particular, the treatment of incentives for integrated resource planning (IRP) and demand-side management (DSM) investments. Though these requirements may not be directly related to the restructuring of local distribution service, they certainly divert some state resources that otherwise could be used in formulating distribution service restructuring initiatives. More importantly, some states may perceive a need to adopt a deliberate and cautious approach in resolving all these issues (service restructuring, IRP, and DSM) comprehensively. In some instances, this undoubtedly delays the development of restructuring initiatives.

Nevertheless, it is useful for the state PUCs and LDCs to start considering some issues specifically related to the unbundling and restructuring of local distribution services. The following discussion is a snapshot of the state responses up to now, and it may provide some reference points for state PUCs that are attempting to develop their own restructuring policies.

Basic Considerations in Developing State PUC Initiatives

The development of distribution service restructuring initiatives is an interesting case of public policy formulation. It is a policy issue of sharp contrasts. On the one hand, the decision on whether to go forward with service restructuring, though clearly within the domain of state PUCs, is less a deliberate policy choice and more a natural progression of the transformation of the gas industry. In other words, the state PUCs and LDCs really have no choice in continuing to maintain the LDC's status of a franchised monopoly in light of the tremendous regulatory changes that have already

² "NGSA Issues Checklist to Help PUCs Implement Order No. 636," *Foster Natural Gas Report* (December 30, 1993): 4.

occurred at the federal level and the irreversible transformation of the wellhead and interstate markets.

On the other hand, as mentioned before, the implementation of distribution service restructuring does not follow the patterns of previous reforms of the wellhead and interstate (mainly commodity gas) markets by relying largely on competitive forces to produce efficient results. Instead, a mixture of deregulation and continuing regulation should be chosen as the basic restructuring approach, and active policy evaluation and formulation are required on the part of state PUCs. This may be a less elegant approach and it will probably need many policy "fine-tunings," but it may turn out to be the only valid approach given the unique characteristics of the local distribution market.

In developing a specific service restructuring proposal for an LDC under its jurisdiction, the state PUC needs to define a framework consisting of a set of basic directions and approaches. In accomplishing this, several fundamental questions need to be asked by state PUCs. The answers depend on the specific gas demand and supply conditions facing the LDCs and the extent of market reforms (such as gas purchase oversight and allocation of transition costs) that was already in progress. The key questions are as follows:

- (1) Should the PUC adopt an active approach in deciding what kind of services (bundled and unbundled) the LDCs can or cannot provide?
- (2) Should the PUC limit the choice of end-use customers in deciding what kind of services they can have?
- (3) Can any gas service be provided through competitive markets rather than through PUC regulation; if so, should any limitations be imposed on the market transactions?
- (4) What are the more important criteria (such as the ability to use alternative fuels and suppliers, the need for reliable service, the amount of gas required and the degree of fluctuation, and the knowledge and experience of contracting with alternative suppliers and transporters) in classifying customers and defining services provided to these customers?

Examples of State Service Restructuring Initiatives

As stated before, this review is highly selective and based primarily on the availability of data. The information presented here is not derived from a single survey or an extensive search of legal or regulatory databases. It was developed mostly through review of available commission documents, trade publications, and staff contacts. Interested readers should contact the respective commissions directly for detailed information about the most recent development of distribution service restructuring in a particular state.³ It should also be emphasized that this review covers only the more recent (after the promulgation of FERC Order 636) service restructuring initiatives. In response to previous federal regulatory reforms, some states have already initiated various intrastate transportation programs, purchased gas adjustment procedures, and gas supply oversight mechanisms prior to the promulgation of FERC Order 636. However, most of these initiatives did not deal directly with the unbundling and restructuring of distribution service, and they are not discussed here.

Michigan

On October 28, 1993, the Michigan Public Service Commission modified the transportation rates for Michigan Consolidated Gas Company to recognize the differences between large and small volume transportation customers (*No. U-10149 and*

³ In June 1994, at the request of the NARUC Staff Subcommittee on Gas, the National Regulatory Research Institute conducted a mail survey of state PUCs on their regulatory initiatives in response to FERC Order 636 and the Energy Policy Act of 1992. However, the results of the survey were not available when this report was completed.

U-10150).⁴ It also provided for a market-based storage rate for storage in excess of that provided in the basic transportation tariff and a seasonal limitation on storage injections and withdrawals.

The Michigan Consolidated Gas Company was also authorized to implement a two-year trial hedging program in connection with their future gas cost recovery proceedings (*No. U-10385*). The purpose of this program is to gain experience and gather information to determine if hedging, or other financial risk management tools, should be used to manage energy costs. The issues of service curtailment and the possible diversion of third party gas by an LDC is currently being considered (*No. U-10603*).

New Jersey

On November 10, 1993, the New Jersey Board of Regulatory Commissioners issued a set of guidelines to promote competition for local distribution services.⁵ These guidelines were developed in response to the federal regulatory changes resulting from FERC Order 636. They probably represent the most direct and comprehensive state initiatives that deal exclusively with the restructuring of local distribution services up to now.

At the present time, these guidelines are applied only to gas services provided for commercial, industrial, and electrical generation customers. An LDC may request an exemption from complying with one or more of the guidelines provided that it can

⁴ Since 1988, two types of transportation tariffs were in use in Michigan. One is cost-based with optional services to meet the transportation customer's needs. Another is a market-based rate for end users willing to take a more substantial business risk to achieve greater benefits. Both tariffs also include a bundled storage service of 10 percent of the end users annual contract quantity and an optional service for long-term back-up supplies.

⁵ See "Order 636 Restructuring," *Fortnightly* (February 1, 1994): 47; and "New Jersey Board of Regulatory Commissions Adopts New Guidelines to Promote Competitive Natural Gas Services in New Jersey," *Foster Natural Gas Report* (December 16, 1993): 24.

present substantial documentation that specific aspects of the guidelines are impractical to implement. There are three main topics covered in the guidelines.

Unbundling of Distribution Services

The LDCs are required to provide a broad range of unbundled services that include (1) firm and interruptible transportation services to all end users on a nondiscriminatory basis; (2) a storage and balancing service which is priced separately from transportation service and can vary with service conditions and seasons; and (3) a separately priced standby service for transportation customers that have had interstate transportation capacity or commodity gas curtailed. The LDC, which may also choose to provide other unbundled services, is allowed to provide a bundled sales service to all customers who desire it.

Revision of Transportation Programs

Under these guidelines, the LDCs are required to eliminate any minimum volume restrictions and alternative fuel requirements for all transportation customers. The LDCs should also permit aggregation that is operationally and administratively feasible so that intrastate transportation services are more widely available and viable for small customers. The guidelines also specify conditions and fees for accepting the transportation customers who may decide to return to the LDC system for a bundled service.

Regarding the access to upstream (interstate pipeline) transportation capacity, the LDC should design a mechanism for notifying end-use customers of available upstream capacity. In order to assure system reliability and service to core customers, the LDC is allowed to set certain conditions such as creditworthiness standards, bidding criteria, and recall rights for accessing upstream transportation capacity. The design of specific upstream capacity release programs should be aimed at providing the greatest

contribution to fixed capacity costs while maintaining service reliability to core customers.

Revision of Curtailment Plan

The LDCs are directed to update their curtailment plans. Transportation-only customers should not be arbitrarily interrupted, and a *pro rata* cutback arrangement and other ways of interrupting only customers in constrained areas should be considered. The LDCs are also encouraged to arrange for emergency and peak period use of customer-owned gas under prescribed conditions and fees.

New York

On October 28, 1993, the New York Public Service Commission initiated a proceeding to examine the standards that should be considered in reviewing LDC supply portfolios and the use of risk management tools such as gas futures in the supply portfolios (*No. 93-G-0932*).⁶ This proceeding is expected to be concluded during 1994. This proceeding is a response to the various marketing proposals presented by New York LDCs that are seeking to expand service portfolios and broker surplus upstream transportation capacity.

The specific commission policies have not yet been set, but some of the issues identified in the proceeding can be pointed out to indicate possible policy directions. These issues include whether LDCs should be allowed to discontinue bundled sales services to noncore customers, whether cost-of-service regulation should continue for noncore customers, and whether LDCs should be allowed to arrange for specific supplies dedicated to specific customers (streaming). This proceeding also intends to determine whether the LDCs should be allowed to unbundle storage and other services, or serve as marketers by themselves or through unregulated subsidiaries.

⁶ See "Survey of States," *Foster Natural Gas Report*.

Ohio

In 1993, the Ohio Public Utilities Commission initiated an informal open roundtable process to develop some consensus on actions and guidance for LDCs to respond to the gas industry changes under FERC Order 636.⁷ This process is on-going. A staff recommendation was issued on October 21, 1993. Regarding the restructuring of distribution service, the staff recommended that the LDCs would retain upstream capacity and commodity planning and acquisition responsibility for core customers. Furthermore, the staff suggested that the LDCs should be relieved of a firm obligation to provide commodity gas in the case of a failure in the transportation of gas. The LDCs would be subject only to a best-effort obligation in providing such a service. The staff also recommended that some reviews be conducted in the future regarding the performance of the LDCs' capacity release programs.

In November 1993, the Commission issued interim revisions to its gas transportation and emergency guidelines (*Nos. 93-1636-GA-UNC, 85-800-GA-COI, 93-1930-GA-ORD, and 91-1992-GA-ORD*).⁸ In these guidelines, the so-called "human needs and public welfare" transportation customers are required to purchase backup supply service from the LDCs. It was also stipulated that, in the event of a supply shortage, the LDCs may reduce volumes, subject to certain restrictions, to prevent curtailments to the specially-designated customers.

Pennsylvania

In August 1993, the Pennsylvania Public Utility Commission issued a proposed rule that would mandate LDCs to offer intrastate transportation service in a manner that minimized the possibility of an LDC incurring penalties for violations of interstate

⁷ Ibid.

⁸ "Order 636 Restructuring," *Fortnightly*.

pipeline tariffs by failing to balance injections and withdrawals (*No. L-00930084*).⁹ It also proposed changes that would reduce the ability of transportation customers or gas producers to take advantage of gas price changes at the expense of LDCs or other customers.

Regarding the requirements on load balancing, all transportation customers have to balance injections and withdrawals within 30 days. Larger transporters (100,000 million cubic feet, or more, per day) may be required to balance no more frequently than daily while other transportation customers need balance no more frequently than weekly. Seasonal transportation rates would be authorized and administrative costs directly associated with transportation may be collected. Furthermore, Priority 1 transportation customers who decline to purchase standby service must demonstrate alternative fuel capacity for their entire Priority 1 load and may not demand to rejoin the system as a standby customers without a year's written notice.

In another proceeding, the Commission has allowed an LDC to reduce its allowable transportation imbalance from 15 to 5 percent and institute charges for balancing and banking services provided for its customers (*No. R-922169 et al.*).¹⁰ The Commission rejected the LDC's request for separately charging customers for remote meter-reading devices.

Wisconsin

On October 28, 1993, the Wisconsin Public Service Commission issued an emergency interim order permitting the state's LDCs to restructure their own tariffs in

⁹ "Pennsylvania PUC Adopts Guidelines for Treatment of Order 636 Transition Costs Flowed to LDCs and Proceeds with Development of Intrastate Natural Gas Transportation Rules in Post-636 Era," *Foster Natural Gas Report* (November 4, 1993): 20-2.

¹⁰ See "Gas Distributor Updates Transportation Program," *Fortnightly* (May 15, 1993): 53-4.

response to the changes brought about by FERC Order 636 (*No.05-GI-105*).¹¹ Specifically, the LDCs may allow their transportation customers to contract directly with interstate pipelines to manage receipt imbalance, offer pooling of daily imbalances, and limit balancing penalties to the applicable tariffed pipeline overrun rates. The LDCs may also replace annual backup service offerings with other short-notice, best-efforts sales services.

¹¹ "Order 636 Restructuring," *Fortnightly*.

CHAPTER 6

CONCLUSIONS

The restructuring of local distribution service is and will remain the focus of the natural gas industry in the foreseeable future. In order to preserve and enhance their role in providing distribution services, the LDCs, along with state PUCs, will have no choice but to unbundle services, segment markets, revise service obligations, and establish comparable conditions on the access to intrastate transportation capacity by end-use customers. Distribution service restructuring will not necessarily lead to cost reduction for all end-use customers, but it does offer customers more choices of service with different reliability and quality that can better match their particular requirements.

The experience gained in the unbundling and restructuring of upstream markets has provided useful insights about distribution service restructuring. The total unbundling approach adopted by the FERC in restructuring pipeline services is a good starting point. However, the unique characteristics of the local distribution market, in particular the presence of a large group of captive customers and the limited degree of potential competition under existing distribution infrastructure, impose specific requirements on the restructuring of distribution services. For most LDCs, the extent of service unbundling and reliance on competition will be much more restrained in comparison with that of restructuring at the interstate market. Specifically, the LDC will continue to provide bundled services to residential and small commercial customers who do not have access to alternative providers. Intrastate transportation service will continue to be regulated by state PUCs. The LDC will also maintain tight control over the disposition of excess transportation capacity and operation of the intrastate transportation network.

The restructuring of local distribution service is a complex and lengthy process because drastically different forms of government intervention need to be accommodated, many conflicting interests reconciled, and certain long-standing regulatory and legal precedents reversed. There is no need, and it is also probably

unlikely, for the state PUCs and the LDCs to resolve all restructuring issues at once or within a short period of time. A long and demanding learning process is unavoidable and may even be desirable as many issues at either the interstate or the local distribution markets can only be resolved based on actual market experiences over an extended period of time.

Consequently, the PUCs and LDCs need to concentrate their immediate efforts primarily on certain issues that have not been thoroughly considered in the past, mainly the deregulation of commodity gas sales to noncore customers and the revision of service obligations to different customer groups. In doing so, market forces would determine prices and allocate services where competition is viable, and a proper balance of risk and reward is maintained so that there will be no substantial distortions of economic incentives to gas buyers and sellers.

The access to and disposition of intrastate transportation capacity are more complex issues even though the states have already dealt with them for a number of years. Because the LDC's transportation facilities are tightly interconnected with the interstate transportation network, certain complicating factors have emerged due to substantial reforms at the interstate level. They include the interactions between the LDC's utilization of interstate transportation facilities and the end-use customers' use of intrastate transportation facilities, the calculation and allocation of transportation capacity reserved for serving core and noncore customers, and the expansion of the definition of transportation service to include other auxiliary services. For most local distribution markets, there is no need to establish a centralized secondary transportation market, and end-use customers should sell back unneeded transportation capacity to the LDC at conditions and rates set by the PUCs. If some restrictions and precautions can be imposed to eliminate or reduce the negative impact on the operation and reliability of the LDC transportation system, there is no valid reason to prevent end-use customers from having access to upstream transportation capacity.

In summary, the decision to go forward with distribution service restructuring is less a deliberate policy choice by state PUCs and more a natural extension of the unbundling and restructuring at the wellhead and interstate markets. But, on the other

hand, the design of specific unbundling and restructuring policies for distribution services will require active policy formulation by state PUCs rather than a sole reliance on market forces that has been the hallmark of restructuring of interstate and wellhead markets. In any event, the restructuring at the local distribution market will not be an easy task, and active PUC regulation is likely to continue for an extended period of time.

