

AN  
AMERICAN NATURAL GAS GATHERING ASSOCIATION  
FOR A STRONGER NATURAL GAS INDUSTRY

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Scope of Study: This study examines the history and current state of the domestic natural gas industry and couples it with an exploration of the needs of an essential but little recognized link in the industry chain - the gas gatherer. A case is made for the formation of a gas gathering association aimed at solving problems associated with gas gathering which also includes larger, industrywide problems. Considering the purpose and benefits of trade associations, a gathering organization is outlined including committees and divisions and their respective functions and purposes.

Findings and Conclusions: The domestic natural gas industry has the potential to become more efficient and effective. However, to do so, it must first address and resolve many problems. Natural gas gatherers, straddled between gas producers and gas pipelines, have many problems specific to gathering and also have a strong economic interest in seeing the industry's problems resolved. A natural gas gathering association has the potential to address and resolve problems specific to gas gathering as well as larger industry problems.

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## Introduction

Anyone involved with today's domestic natural gas industry would probably choose to describe its present condition as chaotic and confusing. Anyone familiar with the industry's past knows how and why it has come to this.

Recent major events affecting the industry include partial deregulation of wellhead gas prices, quasi-deregulation of gas pipelines, a precipitous decline in gas prices as well as a loss of demand due to conservation, fuel switching and a flat economy. Few industries have had to deal with as much change and uncertainty over such a short period of time. Unfortunately, for the industry -and for those who use natural gas - there is no end in sight. Controversies arising from old issues relating to available gas supplies and deliverability, "old gas" price decontrol, "take or pay" contracts, open access pipeline transportation and pipeline affiliated gas brokering are still far from resolved. In addition, more recent issues involving the role of Canadian gas supplies in the U.S. market, open access to local distribution companies, take or pay crediting and pipeline capacity brokering, until resolved, will keep the industry in it's current anemic state for the foreseeable future. The industry must work to solve its problems.

If a stronger natural gas industry is to become a reality, then each of the various industry segments must assure that it functions in a way that adds value to the industry by providing social and economic value to the nation. Furthermore, the value of it's service must be well understood by those empowered with the authority to cause change. This includes federal and state regulators and their staffs, politicians involved with energy issues, and in a broader industry sense, the industrial, commercial and residential gas consumer. Historically, independent and major gas producers, pipeline companies, local distribution companies have all had individual representation through various organizations and associations. Even the gas consumer has ostensibly been represented through both state and federal regulatory agencies. However, one link in the natural gas chain from producer to consumer is not represented through an organized association - the natural gas gatherer. Perhaps because of it's origins this essential business has never been represented as a distinctive part of the industry. Unfortunately, today's natural gas gatherer is directly affected both by the industry's problems as well as problems more specific to gas gathering such as the need for system design, operating, gas contracting and accounting standards as well as the absence of industry recognized and certified training and education for operating personnel. Given its location in the natural gas chain and considering the

dynamics of what makes gas gathering economically viable, this industry segment, unified through an association, has the potential to better itself and the industry.

This study begins by describing the history of the natural gas industry including a discussion of its current state and problems. Following the industry overview, the focus narrows to a single industry segment - natural gas gathering. Gas gathering operations are described physically along with a briefing on the types of contractual arrangements entered into between gatherers, producers and residue gas purchasers. Finally, specific problems that gatherers currently face are discussed and a case for the formation of a gas gathering association is developed. This is followed by an outline of the purposes and benefits deriving from a trade association of natural gas gatherers. A tentative organization is proposed including committees and divisions and their respective functions and purposes. The study concludes by asserting that the formation of a gas gathering association would be beneficial by providing the means through which gas gathering and other participants could work together to resolve issues and accelerate the rationalization process needed to produce an effective industry responsive to the needs of all participants from gas producer to ultimate consumer.

## Industry Background

The commercial production of natural gas in the United States dates back to 1859 when oil was discovered near Titusville, Pennsylvania. Six years later in 1865, the first natural gas distribution company was established to distribute natural gas in Fredonia, New York. Since the marginal cost of producing associated gas (gas produced along with crude oil) was so low, there was a compelling incentive to develop a means of transporting the gas to potential markets.[1]

Gas was first used as a means of lighting for city streets, and prior to the availability of natural gas, manufactured gas (gas made from coal) was used. In 1816 the first gas distribution company was formed to light the streets of Baltimore. By 1859, about 300 gas distribution companies were in business in this country.[2] Even after the discovery of natural gas, manufactured gas was more economical for lighting mainly because the cost of transporting natural gas from source to use was too expensive. Eventually however, manufactured gas was displaced by electric lighting. Although it continued to be used for cooking and water heating, the manufactured gas industry stagnated. Even though natural gas was first discovered in the northeast, it was the later discovery of oil (and associated gas) in the southwestern United States coupled with advances in pipeline technology which



led to the development of a nationwide natural gas industry. Clark and Clark [3] discuss these two events which prevented the death of the gas distribution industry by displacing manufactured gas as the fuel distributed by gas utilities. The first event, the discovery at the turn of the century of huge gas reserves in Texas, Louisiana and Oklahoma, most of which was associated gas, provided an abundant source of cheap fuel. Although gas consumption grew rapidly, its use was limited to an area within a few hundred miles of the gas fields.[4] The second event occurring at about the same time, was the development of electric welding and high tensile steels which allowed natural gas to be transported long distances at reduced cost. This made possible the large interstate pipelines that could connect the gas fields with the preexisting markets in the urban areas of the Midwest and East Coast. By 1931 a natural gas pipeline connected the gas fields of Texas with the market in Chicago, previously served by manufactured gas. As the area served by interstate pipelines expanded, natural gas gradually displaced manufactured gas. Lower priced natural gas not only displaced manufactured gas for cooking and water heating; when it was available it largely displaced coal and fuel oil for space heating.[5]

With the continued development of the giant gas fields of the Southwest, new distribution companies sprang up throughout the country, and long distance pipelines were constructed which linked

gas producers and consumers. This combination of natural gas producers, long distance pipelines and local distribution companies formed the functional core of the natural gas industry in the United States. With every new field discovery and with each mile of new pipeline the industry expanded. So too did the Nations' dependency on natural gas.

As discussed, the oldest participants in the modern natural gas industry were the gas distributors which originally handled manufactured gas through distribution systems laid under city streets. Considering the uses of gas, and the available means of transportation, it is not surprising that gas distribution companies were treated as public utilities. Since public rights of way were torn up to lay pipes, municipal licensing was required. In many early cases, gas distribution companies had competed. Under the theory that gas distribution was a "natural monopoly", licensing soon eliminated competition. The pattern developed of licensing only one gas distribution company for each city.[6] This combination of monopolistic concerns, increasing industry size and growing national dependence set the stage for, and largely determined, the economic and regulatory conditions under which the long distance natural gas pipeline segment of the industry would develop.

In its incipiency, the natural gas industry was in large part vertically integrated. Some gas distributors integrated

backwards, engaging in transportation and production. In other cases, gas producers forward integrated, building pipelines to connect with existing gas distribution companies, or created their own gas distribution companies. In many cases pipelines were constructed through joint ventures. In the early 1930s, eleven vertically integrated holding companies owned more than half of the gas production and more than three-quarters of the gas pipeline mileage. Because of the high degree of vertical integration, gas pipeline companies owned, for the most part, the gas they transported.[7] This practice of the gas transporters eventually came to an end after vertical integration was brought to an end by fiat (as distribution companies were spun off in consequence of the Public Utility Holding Company Act, and as pipeline companies sold off producing properties to limit the scope of business operations subject to price regulation under the Natural Gas Act).[8] With the decline of vertical integration, pipeline companies became merchant middlemen -- buying from unaffiliated producers and selling to unaffiliated distribution companies. They differed, however, from normal merchants in that their prices were regulated. They did not enjoy the profit potential nor incur the risks that most merchants face. In form, nevertheless, they were merchants, purchasing from producers and selling to distributors.[9]

The transition, in the 1930s, to the interstate natural gas

system did not occur smoothly.[10] Available evidence suggests that prior to enactment of the Public Utility Act of 1935, gas production and transportation in some areas was controlled and major holding companies sought to preclude the competition threatened by the new pipelines controlled by independent producers.[11] The struggles for control of the emerging interstate gas industry were compounded by financial difficulties endemic during the Great Depression, which reduced the demands for all forms of energy.[12] With the overall decline in demand for energy products, the prices charged to industrial users of gas had to fall for the product to remain competitive with alternative fuels. Continued industrial sales were important to pipeline companies because such sales allowed the fixed overhead costs of the gas transportation system to be spread over a wider base. In consequence, however, prices to residential consumers were often two to five times higher than prices to industrial consumers.[13] The decline in overall demand also led to the failure of a number of local distribution companies. The ensuing political outrage was directed largely at the public utility holding companies that had acquired controlling interests in gas distribution companies.[14]

Congress reacted to the perceived abuses by directing the Federal Trade Commission (FTC) to undertake an investigation of public utility holding companies.[15] In 1935 the FTC completed its investigation and issued a report which listed a number of

"specific evils existing in the natural gas industry".[16] The "evils" related to a variety of perceived problems: waste in production; unregulated monopoly control in certain areas; discrimination by pipelines in buying and selling gas; ineffective use of capital due to excessive competition between pipelines; excessive profits in many natural gas sales between affiliated companies effected to frustrate state regulation; and financial and promotional problems arising from holding company activities. The FTC Report contained three fundamental recommendations: forced breakup of some holding company activities; state production controls; and federal public utility regulation of interstate pipelines.[17]

In response to the FTC Report, legislation was promptly introduced [18] --the proposed Public Utility Act of 1935. The Act provided for the breakup of the holding companies and essentially set the stage for continued government regulation of the interstate natural gas pipelines.

Although federal regulation of natural gas pipelines had been strongly contested in 1935, three years later the Natural Gas Act was enacted with virtually no opposition. The compromise then reached was acceptable to pipeline companies, consumer interests, state regulatory agencies, and the Federal Power Commission.[19] The industry could see a number of advantages in federal regulation: containment of "destructive" competition, creation of

the stable market conditions necessary to attract financing for long-distance pipelines, an almost guaranteed profit margin, and the promise of federal assistance in overriding roadblocks thrown up by the states. In return for these real and anticipated advantages, the industry willingly submitted to public control.[20] But the publically espoused basis for the Natural Gas Act was the need to regulate a natural monopoly, as stated by the Chairman of the House Commerce Committee: The only justification for regulating these utilities is that they do have, in effect, a monopoly. In the absence of that monopoly it might be better to have no regulation so we could depend on competition taking care of the needs of the consumer.[21]

The Natural Gas Act, like most economic regulatory legislation of the New Deal, granted a high degree of discretion to the regulator. Lacking any alternative statutory guidance, the FPC adopted the conventional pattern, following the traditional form of public utility rate regulation. Under this style of regulation, no attempt was made to set prices on the basis of supply and demand. Rather, pipeline companies were allowed to earn a "fair" return on the "fair value"[22] of their prudently acquired assets dedicated to "public service"[23]-- their "rate base."

In the early years of its existence, the FPC controlled the prices that pipelines charged to distribution companies--but not

the prices that producers charged to pipeline companies. [24] Ultimately however, pressure from gas consuming interests resulted in the famous "Phillips decision" in 1954, whereby the Supreme Court ruled that the FPC had the right to set wellhead prices for natural gas in interstate commerce.

Acting under this unexpected direction given by the Supreme Court, the FPC began setting wellhead prices for natural gas. Once again the FPC attempted to use utility rate regulation principles, seeking to base prices on cost, plus a reasonable rate of return on investment.[25] The FPC initially attempted to set prices for each individual well.[26] When this process bogged down hopelessly, the FPC moved to area rate regulation, under which gas prices were set for an entire area, based on average production costs in that area.[27] Before long, the effects of setting prices on the basis of original cost, as opposed to supply and demand, generated prices that were too low and resulted in an underallocation of capital to natural gas development projects.

An inevitable divergence developed between the interstate and intrastate gas markets. Gas produced and used within the confines of a single state was not subject to FPC price regulation. The prices for intrastate gas reflected competitive conditions, and intrastate gas was more rationally and economically allocated. By 1970, the price for intrastate gas advanced beyond the average interstate price. With the price for interstate gas held

artificially low during the 1970s, the supply of interstate gas available at government determined prices did not begin to meet the demand at the dictated prices. Accordingly, a non-price mechanism had to be used to allocate available gas. Allocation by queue was the norm. Many customers who wanted to hook up to gas were not allowed to do so. They, during all these years, had to pay discriminatorily higher prices for alternative fuels to meet their heating needs.[28]

Eventually, in 1974 the FPC in an effort to avoid the inevitable, shifted to national rate setting for natural gas with prices less clearly linked to costs of production.[29] Unfortunately this change, although perhaps less inefficient, was still unable to discover the appropriate competitive price for gas. The inevitable result, a gas shortage brought on by the severe winter of 1976-1977, culminated in gas curtailments affecting factories, commercial buildings and schools across the country.

The breakdown of the gas regulatory system prompted a flurry of activity in Congress. Numerous legislative proposals were offered. The legislative battle lines were firmly drawn and the battle was hard fought. Producers insisted that wellhead price controls had not worked and that wellhead price regulation should be ended. Large gas consumers, addicted to artificially low prices for natural gas, were not willing to let prices rise if an



alternative means could be found to alleviate the most acute shortages. Other smaller consumers appeared to be oblivious to the injury that their government had long inflicted upon them.[30]

This controversy, coupled with the notion held by the Carter administration that we were running out of gas so that competitive prices would do little to bring forth new supplies, resulted in further comprehensive energy legislation. According to a booklet prepared by Price Waterhouse & Co: The "Natural Gas Policy Act of 1978" (NGPA) signed by President Carter on November 9, 1978 is a comprehensive and substantiative revision of our national policy concerning natural gas pricing and regulation. The Act covers wellhead pricing, incremental pricing, additional authorities and requirements, and curtailment policies. A major provision of the Act is a gradual move toward price deregulation of newly-discovered natural gas in 1985 with specified price increases for all categories of natural gas in the interim. Further, intrastate gas is put under federal price controls for the first time.[31]

The Act effectively eliminated the intrastate free market by extending price regulation to intrastate gas. The act also established some twenty categories of gas with various prices, and also created "incremental pricing" which made gas more expensive for industrial consumers. Another piece of legislation, The Fuel Use Act, was used to allocate and limit gas use and was particularlyly burdensom on boiler users especially the electric

utilities.

Regulation has meant quite a bit for the industry. Natural gas regulation has meant that producers have not been able to sell to the highest bidder; pipeline companies have not been free to decide whether to build a pipeline or curtail service; distribution companies have not been free to market gas as they choose; some consumers have not been able to use natural gas.[32]

Ten years after the enactment of the NGPA it is clear that the perception of a nation about to run out of gas was a gross misconception. The simple fact is that today there is a surplus of natural gas which began in about mid-1981. Pricing under NGPA brought on new sources of gas that would have been uneconomic under a free market system and for which pipeline companies offered inordinately high prices. With the Fuel Use Act holding the line on incremental markets for newly available gas supplies, the so-called "gas bubble" developed. Eventually gas distributors and in turn gas pipeline companies abrogated those gas purchase contracts obligating them to high prices for a set amount of gas.

This unilateral action put many energy companies into bankruptcy.

Although the industry today is not making national headlines like those of the late 70s, there is little doubt that its current state is equally as chaotic. The industry today faces the following major problems:

- chronic gas surpluses caused by past regulatory pricing

practices coupled with the fear of possible shortages in the future;

- unresolved problems associated with pipeline abrogation of "take or pay" contracts with gas producers entered into at a time when pipeline companies were concerned about lack of gas supplies;
- lack of open access to transmission pipelines and distribution systems;
- remaining price controls on some natural gas supplies;
- fear of discriminatory practices by pipeline companies and their marketing affiliates;
- fear of a U.S.-Canada trade agreement providing Canadian gas preferential treatment in U.S. markets.

These major problems along with a host of smaller issues must be resolved if the industry is to become market oriented from the wellhead to the burner tip. The industry must move to free itself from inefficient practices and regulations and move toward efficient and market sensitive operations. As will be discussed in the following chapters, the country's gas gatherers have every incentive to see these problems resolved.

## Natural Gas Gathering Operations

Natural gas gathering operations have been going on since the discovery of natural gas. Gathering is the first essential step following production in the long journey and delivery of natural gas to consumers. In the beginning, gathering was done only to the extent of local demand; most wellhead gas was flared and wasted. Eventually, gas gathering operations expanded when producers led by Phillips Petroleum Company recognized that certain hydrocarbon components of wellhead gas, primarily propane, could be separated, liquified and used for other purposes. Ultimately however, it was the construction of the major gas transmission systems linking the producing areas of the southwestern U.S. with the consuming regions which increased the demand for methane (the principal component of wellhead natural gas) and furthered the need for gas gathering systems.

These early variations on the value of wellhead natural gas either for local use, or for the value of its liquifiable components, or for its use to satisfy a distant demand, provide an insight into the variety of backgrounds and perspectives of those companies involved in gas gathering and may also explain why a natural gas gathering association has never been brought into existence. Intrastate pipelines, along with the so-called gas

processors and interstate pipeline companies with their differing business perspectives, all had gathering operations. In more recent times, and in recognition of the per se value of gas gathering, companies have been formed for no reason other than to provide gas gathering services. Appendix B is a partial list of companies with gas gathering operations. A quick survey shows the array of gas producers, pipeline companies, gas and electric utility companies, as well as a host of other companies involved in the business.

As opposed to any single business perspective, this paper defines natural gas gathering, generically and simply, as the total of all physical operations necessary to make raw natural gas produced at the wellhead available for delivery into a gas transmission pipeline system. The operations required to satisfy the above definition include some or all of the following: wellhead volume and calorific measurement, gathering, compression, dehydration, purification, liquids extraction (both to meet pipeline specifications and for added economic value) and finally, the delivery of residue (commodity) gas to a transmission pipeline.

Physically, most gas gathering systems can be described as a random pattern of underground pipelines connecting individual gas producing wells to larger pipelines which carry the gathered gas to a central point for cleanup and delivery into a gas

transmission system. A gathering system might be visualized as the root system of a tree as it stretches out in all directions drawing in moisture (wellhead natural gas) toward the base of the tree (central point). The analogy can of course, be further developed by likening the trunk of the tree to the major transmission pipeline systems and thinking of the trees branches as representing local distribution systems which deliver the gas to industrial, commercial and residential consumers.

The place where production operations end and gathering operations begin is at the point of measurement. Generally, at each point where it enters the gathering system, the gas is measured continuously, usually by orifice or turbine meters, to determine the volume being delivered. In the early days, gas measurement and accounting were done on a volumetric basis in terms of MCF's. One MCF of gas equals a volume of one-thousand cubic feet measured at atmospheric temperature (usually 60 degrees farenheight) and pressure (usually at or near 14.65 pounds per square inch absolute). Eventually gas measurement shifted from a volumetric to a thermal basis. Rather than measuring only the volume of gas, thermal based measurement includes the calorific content, measured in BTU's (British Thermal Units), per volumetric unit of gas delivered. Today, most measurement also takes into account the actual gas composition. Raw natural gas is composed largely of light hydrocarbons, mainly methane with varying

amounts of ethane, propane, butanes, pentanes and trace amounts of heavier hydrocarbons. It can also include water vapor, nitrogen, oxygen, carbon dioxide, hydrogen sulfide and other trace substances. Raw gas composition can have a significant impact on gathering system design and also determines what other facilities will be required to handle the gas.

Natural gas may be produced initially at either high or low pressure depending on the reservoir characteristics from which it originates. Low pressure gas usually needs to be compressed in order to "push" it through the system for delivery at the central collection point. Compressor stations located throughout the system provide the needed boost. Eventually even the naturally occurring high pressure gas will decline in pressure and will need to be compressed into the system.

Once the gas is delivered to the central point it usually undergoes some combination of dehydration, conditioning, liquefiable hydrocarbon extraction, fractionation, sulfur recovery, and recompression for pipeline delivery. Occasionally some of these functions may take place in the gathering area itself, however, in the absence of some functional constraint, it is usually more economic to perform these operations at a single location. At this location, known commonly (and somewhat provincially) as a processing plant, the gas is separated into its various products.

There is no such thing as a typical system. The actual size, shape and number of wells producing into a system depends on many variables including the areal extent of the gas production and the development rate over time, the economic producing life of individual wells and the number of gatherers in an area. Over time, newly developed wells are added as older wells are disconnected. Gathering systems can range in size from small, covering a few square miles and carrying less than a million cubic feet of gas per day from a few (or perhaps many) wells, to larger systems composed of thousands of miles of pipe covering thousands of square miles and carrying hundreds of million cubic feet of gas per day from thousands of wells. Gathering systems may operate for decades or, in some cases, a system may only last a few years. Viability over time depends on all of the aforementioned variables.

Geographically, natural gas production and gathering operations occur throughout the United States. Appendix C shows Texas, Louisiana, Kansas, Oklahoma and New Mexico to be the most prolific gas gathering states and indicates substantial gathering activities in fifteen other states. Besides those states listed in Appendix C, almost all other states have some natural gas gathering operations.

Although not a physical part of gas gathering, the contractual relationship which delineates the rights and



obligations between the producer and gatherer and in turn between the gatherer and one or more residue gas purchasers is an essential and mandatory part of gathering operations. Before gas can be connected to a system for gathering, the gas producer and the gatherer must first agree on the contractual terms and conditions under which gas will be delivered into the system. Probably the most common arrangement is in the form of a purchase contract. A variety of purchase contract concepts exist which can be based on many factors such as wellhead volume and gas composition, fuel consumption, actual residue and natural gas liquids production at the processing facility and the prices received for gas and liquids. Another form of arrangement in common use is the gathering agreement where the gatherer simply charges a fee for gathering and other services. Other types of arrangements include gas processing agreements (which may or may not include gathering) and gas exchange agreements which are not too commonly found in gathering operations. Wellhead contracts also include provisions covering acreage and reserves commitments, gas delivery and quality specifications, measurement specifications, billing and settlement terms, renegotiation terms and force majeure conditions. Historically, wellhead contracts have been long term and as such many have been operative through changing regulatory, technological and economic periods. Contract interpretation, administration, and settlement

under such changing conditions has been difficult at best. As will be discussed in the following section, the existence of a gas gathering association working to establish various operating and contractual standards during these difficult times would have done much to assist producers and gatherers in finding solutions to common problems. Similarly, residue gas sales contracts have changed drastically. Until about five years ago, the contracts being offered were simple in that pipelines would purchase all available residue gas at maximum lawful prices under long term "take or pay" contracts. Unfortunately, as discussed earlier, the regulated pricing structure put in place by the NGPA resulted in accelerated gas discoveries and development of new supplies at a time when energy conservation and a flat economy were softening the demand for gas. The resulting abrogation of contracts with producers and gatherers is still not resolved. In any event, today's residue gas contracts are predominantly short term and may involve many purchasers at a single supply point or may require the gatherer to secure transportation through various pipelines to get the gas to the ultimate consumer. Unlike the past, the gatherer now has an economic incentive in seeing that both pipelines and distribution companies are cost effective and non-discriminatory. Again, unlike the past, gatherers must also seek to become effective gas marketers which not only includes finding preferable end users, but also means developing pipeline

transportation flexibility at the lowest possible cost. In summary, natural gas gathering has always been a complex business both in terms of operations as well as contractually with gas producers. Furthermore, recent industry changes have now made residue gas disposition a much more complicated task and has caused the gatherer to become much more aware, involved and dependent on "downstream" activities. Given its historic complexity, coupled with the impact of more recent industry changes it is difficult to see why a gas gathering association does not already exist. Gas gatherers need an association that will satisfy two major needs. First, those needs specific to gas gathering such as the development of system design, operating and measurement standards, gas contracting and accounting standards and operator training and certification facilities. Second, as gatherers are now directly affected by what is happening to other industry segments they need a common voice aimed at influencing those individuals and entities which can impact the future. The formation of such an association today could play an essential role in solving many of the problems of the entire industry.

## Purpose of the American Gas Gathering Association

A trade organization is defined as: A nonprofit, cooperative, voluntarily-joined organization of business competitors designed to assist its members and its industry in dealing with mutual business problems in several of the following areas: accounting practices, business ethics, commercial and industrial research, standardization, statistics, trade promotion, and relations with Government, employees and the general public.[33] Simply put, trade organizations are interested in the well-being of their industry.

In concert with the definition of a trade organization (and assuming that industry health is maximized when the needs of all participants, from producer to end user, are being met), the purpose of The American Gas Gathering Association is to foster the well-being of the natural gas industry by focusing on and resolving problems and issues in a way that promotes efficient natural gas production and consumption to the mutual benefit of gas producers, consumers and the nation.

More specifically, gas gatherers need an association capable of dealing with two separate sets of problems, i.e., those specific to gas gathering activities and those associated more broadly with the industry.

First, regarding needs specific to gas gathering activities, in recalling the early days of gas gathering and the diverse backgrounds and perspectives of the participants involved, it is easy to see why, in the absence of a gas gathering association, there is little standardization or certification. Only in the area of natural gas processing, which focuses primarily on natural gas liquids extraction operations, has there been a concerted program aimed at standardization of measurement and operations, technological exchange and research and development. Natural gas gatherers need an organization focusing on the full range needs which will bring greater operating and contractual efficiency. What is needed is an organization capable of developing system design, operating and measurement standards, gas contracting and accounting standards, as well as an industry-recognized operator training and certification program aimed at efficient and safe operations.

Second, dramatic changes in the industry have affected, and will continue to impact the gas gatherer from now on. Gatherers need a common voice which can influence the economic, regulatory and political decision makers at all levels. Problems associated with gas supply and demand uncertainties, lack of open access to transmission pipelines and distribution systems, unresolved "take or pay" issues, fear of discriminatory practices by pipeline companies and their marketing affiliates and concern over the

possibility of a U.S.-Canada trade agreement providing Canadian gas preferential treatment in domestic markets are all issues which need to be resolved if a stronger industry is to become a reality.

As discussed earlier, gas gatherers have a strong economic motivation to provide a balanced approach to resolving these problems for several reasons:

First, the gatherer wants gas developed and produced continuously. There is an especially strong motivation to see gas developed and produced continuously in the area where it gathers gas. New gas supplies must be connected to the system to replace produced reserves in order to extend economic viability. Gathering systems die when new gas is no longer available and unlike major pipelines and distribution systems, a gathering system is married to one specific production area and does not have the luxury of choosing among alternative gas supplies during periods of declining gas production and development.

Second, gatherers want energy consumers to use natural gas. This is accomplished by pushing for an efficient and effective industry which promotes conservation of capital and operating expenses in all phases of natural gas development, production, gathering, conditioning, transportation and distribution. Conservation of capital and operating costs by industry participants makes the industry more efficient and promotes

the use of natural gas as opposed to other alternatives.

Third, gatherers want an economic system which determines value based on supply and demand forces and which allocates supply based on price. A non-regulated, price discovery system provides the right kind of incentives and balance necessary for the continuous and orderly production and consumption of natural gas.

Fourth, most gas gatherers are not regulated by the Federal Energy Regulatory Commission (FERC) and are for the most part not directly involved in (although directly affected by) problems stemming from or inspired by the regulators. Unfortunately, current issues such as take or pay and pipeline open access have diverted some participants from focusing on the necessary work required to build a better industry.

Finally, unlike all other major segments of the industry, the gatherers are without a representative organization. Given the complexity of the business, the number of unresolved problems, the large number of participants, the tens of billions of dollars expended, and the number of years companies have been gathering natural gas, an association is needed.

It would be especially beneficial if an existing organization could be used to address gatherers needs. Unfortunately, the major associations involved in the industry as shown in Appendix A are too segmented, specialized, and in some cases biased in favor of a single industry segment to be effective. Likewise, single

organizations acting alone would also be ineffective. Gatherers problems are specific and complex and will require input and commitment from a large number of gathering companies if standards are going to be adopted. As for the larger industry issues, state and federal regulatory agencies are more prone to respond to a consensus originating with a representative association as opposed to the desire of a single organization.



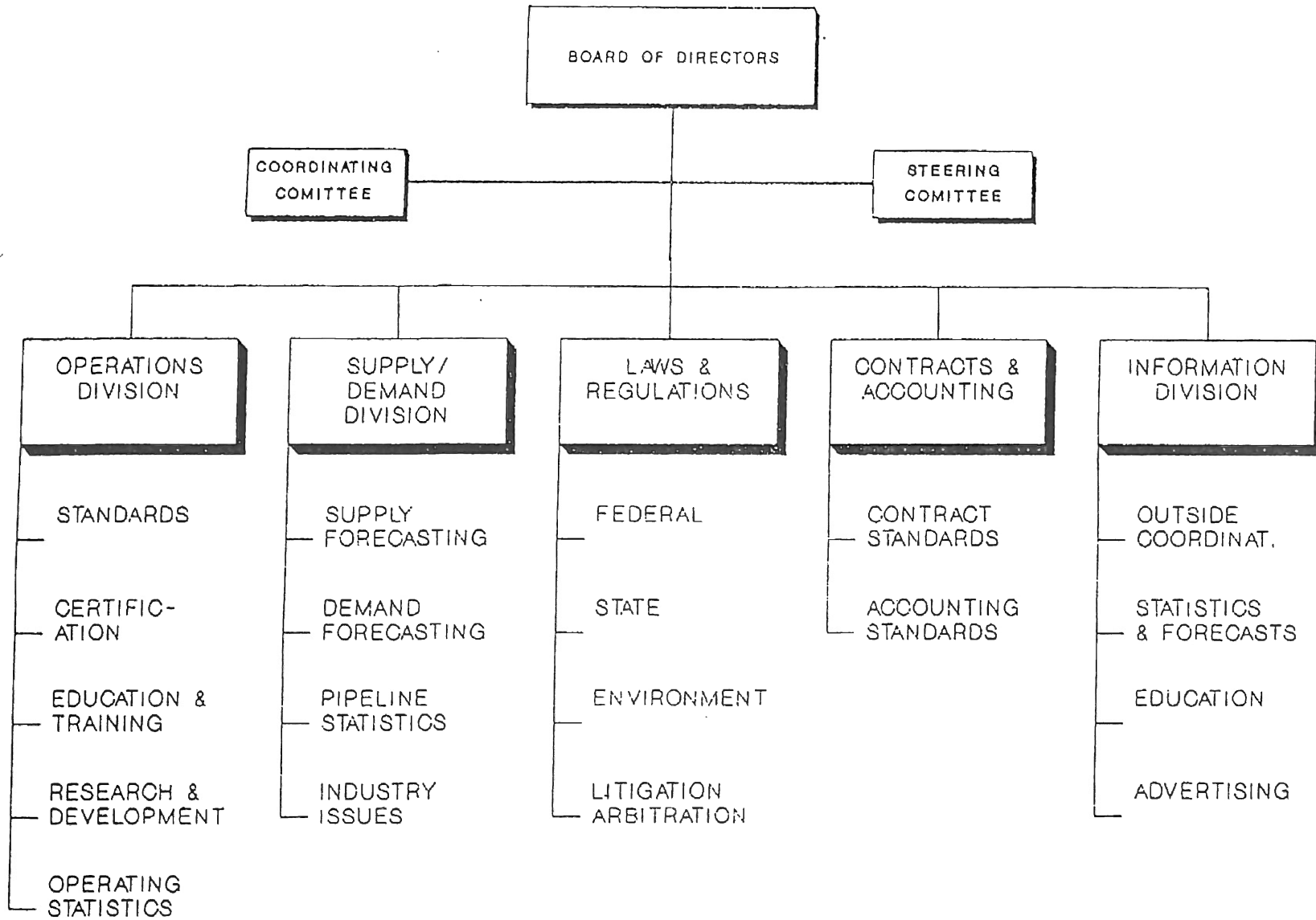
## Association Organization

The primary purpose of this paper is to present a case, based on overall value, for the formation of a gas gathering association. There is no intent to elaborate on all of the detail required to effectively establish a functioning association. However, it is appropriate to broadly sketch an outline for a possible organizational structure and to discuss how each of the committees and divisions functions to satisfy the needs of the gas gathering industry and ultimately of the entire industry from producer to end user.

As the organization chart on the following page shows, the American Gas Gathering Association could be structured to include a board of directors, steering and coordinating committees, and five functional divisions.

Principal staff members would consist of a president, executive vice president, vice president and five division directors. The president also serves as chairman of the board of directors. The executive vice president is a board member and also serves as chairman of the coordinating committee. The vice president is a board member and serves as chairman of the steering committee. Each of the division directors also serves as a board member.

# AMERICAN GAS GATHERING ASSOCIATION



The general membership is composed of employees of member corporations. Officers are elected by the general membership. Division directors are elected by division members only. Membership on a committee should be for a minimum of one year and a maximum of three years. Division directors serve for a two year period and officers for one year. Permanent professional administrative assistance would also be required. Funds needed to run the organization would come from annual dues of member corporations.

A unique feature of the Association would be its policy of having outside representation on two of the divisions, namely the Supply/Demand and Laws and Regulations Divisions. Other organizations would be requested to elect individuals from within their ranks to a one (or possibly two) year membership in the Association.

The specific activities of each division are covered in the next section.

## Association Activities

As the organization chart on the preceding page indicates, the Association is broken up into five divisions representing the major functional areas impacting the gas gathering segment of the natural gas industry. All Association activities are conducted within the divisions with the Steering Committee emphasizing the need to focus on industry issues and the Coordinating Committee maintaining cohesiveness and providing consistency across the divisions and over time.

### The Operations Division

Broadly viewed, the Operations Division will focus on standardization and certification, education and training, research and development and operating statistics. One of the larger divisions, the Operations Division will focus on all aspects of gathering systems operation including gas and liquids measurement, conditioning and processing, facilities design and maintenance and gathering systems mapping.

In the area of standardization and certification, the focus would be on operating and design standards aimed at safe and efficient operations. This would include things such as: low and high pressure gathering and compression system design, measurement

hardware standards, separation facilities design and layout, and standardized measurement and sampling techniques.

Education and training activities would include the development of programs to train systems personnel in the area of field and plant operations including, equipment operations and maintenance and gas and liquids measurement and sampling techniques.

Research and development efforts would emphasize the development, dissemination and exchange of information and technology aimed at enhancing system safety and effectiveness while reducing operating and construction costs. Recent technological advances in such areas as system design, separation techniques and measurement equipment, to name a few, need a forum where the merits of each can be discussed, analyzed, evaluated and reported on.

The development of a system designed to perform uniform mapping of gas gathering systems is another important area of responsibility falling to the operating division (perhaps with the assistance of a company such as Dun and Bradstreet which has extensive data and expertise in this area). Many individual companies do not have adequate gathering system maps, and the industry - especially gas producers - would be well served if such maps were available.

Finally, the Operating Division would provide the industry

information on relevant data and statistics on natural gas gathering activities and operations. Information on things such as gas reserves and production by state and region, gathering line mileage, field and residue compression horsepower, dehydration, conditioning and processing facilities, etc., and all of the various meaningful data manipulations and interpretations would be made available.

#### The Supply/Demand Division

The principal purpose of the Supply/Demand Division is to advance the entire natural gas industry through the joint efforts of all industry segments. This Division would have substantial representation from producer, pipeline and end user organizations. It would function as the interface between these interdependent groups while providing a forum aimed at focusing on relevant concerns and perspectives. In the interest of developing a common foundation the Division would be actively engaged in discussion and debate, gathering and disseminating statistics and recommending advertising (handled by the Information Division).

As its name indicates, the Supply/Demand Division would concern itself with developing a consensus on such issues as: (1), current and prospectively available natural gas supplies and their geographic location, current gas deliverability, development rates

for proven undeveloped as well as non-conventional supplies; (2), production area pipeline access, system capacity, routes, rates, reliability, merchant function, local distribution pipeline and direct end user access and pipeline regulatory status; and (3), current and future demand for natural gas, demand by geographic area, possible demand erosion due to fuel switching as well as the potential for increasing gas consumption resulting from technological advances. Information and statistics on all of these items would be made available to the entire industry.

Because of the mix of participants and the current state of the industry, this division will no doubt experience considerable growing pains. The ability to succeed here will depend on strong leadership and cooperation coupled with an overriding commitment to the betterment of the nation and the industry.

#### Laws and Regulations Division

With a history rich in state and federal involvement in all industry segments, an active Laws and Regulations Division is absolutely essential to furthering the interests of the natural gas industry. Assessing the impact of various existing and proposed state and federal laws and regulations on producers, gatherers, pipelines, distribution companies and end users would be the primary role of the Division. It would attempt to work with

and influence such agencies as the Federal Energy Regulatory Commission, various state corporation commissions, the Environmental Protection Agency and the Department of Interior.

To the extent that such activities are socially and economically beneficial, the Division would lobby and pursue cooperative programs with the government. The development of a general code of business ethics would also fall to this Division.

Finally, the Division would assemble background information provided voluntarily by individuals willing to serve as advisors, consultants, expert witnesses or on arbitration panels. With the current level of general controversy covering rulemaking proposals, along with specific litigation and arbitration cases throughout the industry, this could go a long way toward the swift resolution of many issues.

#### Contracts and Accounting Division

This Division would concern itself exclusively with developing natural gas contracting and accounting standards. Contractual terms covering such things as gas measurement (including volume, heating value and composition), error limitations, gas quality specifications, billing, payments, force majeure, etc. could be standardized for the conditions under which natural gas is taken.

For instance, standard contractual terms would vary



considerably for a small quantity of raw wellhead gas delivered into a gathering system as compared with the delivery of large volumes of conditioned gas into a major transmission system. Gas gathering operations usually bounded by many individual wellhead contracts covering relatively small quantities of gas, which quantities are ultimately aggregated into a large quantity of pipeline quality gas disposed of under a small number of contracts, need to push for contractual and accounting standardization for both types of contracts.

In addition, as discussed earlier, recent regulatory changes covering the role of gas transmission pipelines have caused gatherers to become more end user oriented. Traditionally, gatherers sold residue gas to pipeline companies acting as merchanters at the point where the gas was aggregated. In cases where conditioning and processing are needed, this point is commonly referred to as the "plant tailgate". In today's competitive environment a gatherer must focus on tailgate flexibility including expanding pipeline outlets and engaging in direct sales to gas consumers. End user arrangements are more complicated in that they also require either the supplier or end user to have transportation contracts in place with the pipeline carrier. Thus, a gatherer today must be fluent in the entire range of contracts from producer to consumer and is in the unique position of pressing for effective and beneficial contractual standards.

### The Information Division

The purpose of the Information Division is to serve as the conduit through which information from the Association flows. The Division would be concerned with disseminating statistics and forecasts, coordinating information with other associations, and public and industry education and advertising.

Statistics and forecasts would be primarily those developed by the Operations and the Supply/Demand Divisions. In addition to disseminating information, the Division would also solicit information from industry segments, regulatory and political entities, as well as the general public in order to better target the kind of information needed to assure consistency between fact and perception. Coordinated and used with information from other sources, this information would provide decision makers (private or public) the kind of data needed to make effective corporate, regulatory and legislative decisions. The industry today suffering as it does from an array of regulatory, political and economic ills, must recognize the need to provide a counterbalance to these forces in the form of information and dialogue.

## Conclusions

This paper examined the past and current chaotic state of the domestic natural gas industry and coupled that examination with an exploration of an essential part of the business - natural gas gathering. Straddled physically and contractually between natural gas producers and pipeline companies, the "gathering function" has historically garnered little recognition. A case is made for the formation of a gas gathering association aimed at solving problems associated specifically with gas gathering as well as the larger problems associated with the industry. The need for a gas gathering association is made apparent when viewed in terms of its historic complexity coupled with the impact of more recent industry changes. Gas gatherers need an association that will satisfy two major needs. First, those needs specific to gas gathering such as the development of system design, operating and measurement standards, gas contracting and accounting standards and operator training and certification programs. Second, as gatherers are now directly affected by what is happening with other industry segments they need a common voice aimed at influencing those individuals and entities which can impact the future. The author firmly believes that if this association is ever established, it will add real value to gathering companies, the industry and the nation.

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APPENDIX A

NATURAL GAS INDUSTRY ASSOCIATIONS AND ORGANIZATIONS\*

AGA	AMERICAN GAS ASSOCIATION
API	AMERICAN PETROLEUM INSTITUTE
GPA	GAS PROCESSORS ASSOCIATION
IGT	INSTITUTE OF GAS TECHNOLOGY
INGAA	INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA
IPAA	INDEPENDENT PRODUCERS ASSOCIATION OF AMERICA
NTEA	NATIONAL TRANSPORTATION AND EXCHANGE ASSOCIATION

\* These are national associations. There are also hundreds of smaller regional associations.

APPENDIX B

COMPANIES ENGAGED IN NATURAL GAS GATHERING

ADOBE RESOURCES	AMOCO
ANADARKO PRODUCTION	ANR GATHERING
ARCO	ANCHOR GASOLINE
ARKLA ENERGY	ASSOCIATED NAT. GAS
BEARD OIL	BERTHOUD GAS
BHP PETROLEUM	BLACK HAWK GASOLINE
BRECKENRIDGE GASOLINE	BRIGHTON GAS PROCESSORS
BRUIN PETROLEUM	CABIN CREEK GAS
CABOT CORP.	CELAUIS ENERGY
CENEX	CERRITO LAND
CHAMPLIN PETROLEUM	CHEVRON U.S.A.
CITIES SERVICE	CLAIBORNE GASOLINE
CNG PRODUCING	COASTAL OIL & GAS
COLUMBIA GAS TRANS.	CONOCO
CONSOLIDATED GAS TRANS.	COORS ENERGY
CSX OIL & GAS	DAMSON GAS PROCESSING
DAVIS GAS PROCESSING	DEPT. OF ENERGY
DEISENROTH GAS PROD.	DIAMOND SHAMROCK
DOUBLE U OIL	EAGLE PETROLEUM
EL PASO NATURAL GAS	ENDEVCO NATURAL GAS
ENOGEX PRODUCTION	ENRON GAS PROCESSING

ENSEARCH PROCESSING	EXXON U.S.A.
FARMLAND INDUSTRIES	FLYING J
FMP OPERATING	FORT CHADBOURNE
GARY ENERGY	GERLANE PETROLEUM
GAS GATHERING SYSTEMS	GREELEY GAS
GULF ENERGY	HOUSTON OIL & MINERALS
HUNT OIL	INEXCO OIL
KENTUCKY HYDROCARBON	KERR MCGEE
KN ENERGY	KOCH HYDROCARBON
LADD PETROLEUM	LAKEVILLE GAS
LOUISIANA LAND & EXP.	LOVELAND GAS PROCESSING
MAPCO	MARATHON OIL
MCMORAN OIL & GAS	MESA LIMITED PARTNERSHIP
MICHIGAN CONS. GAS	MID AMERICA GAS
MINERALS INC.	MITCHELL ENERGY
MOBIL OIL	MOUNTAIN FUEL
NATURAL GAS PIPELINE	NGL PROCESSING
NORTHERN NATURAL GAS	NORTHWEST PIPELINE
OKLAHOMA GAS PIPELINE	PARADE CO.
PEOPLES NATURAL GAS	PERMIAN CORP.
PERRY GAS	PENZOIL PRODUCING
PETRO HUNT	PETROLANE
PHILLIPS 66 NAT. GAS	PLACID OIL

PLANET ENGINEERS	PORTAL DRILLING
PRONTO GAS PRODUCTS	RALSTON PROCESSING
RESOURCES EXT. & PROC.	ROCKY MTN. NATURAL GAS
SANTA FE ENERGY	SEAGULL ENERGY
SHELL	SID RICHARDSON
SOUTHERN NATURAL GAS	SOUTHWEST FOREST GAS GATH.
SPG EXPLORATION	STANDARD OIL
SUN EXPL. & PROD.	SUNTERRA GAS PROCESSING
TENNECO	TEXACO
TEXAS OIL & GAS	TRUE OIL
UNION TEXAS PETROLEUM	UNITED TEXAS TRANS.
UNOCAL	UPHAM OIL & GAS
VALERO HYDROCARBONS	VESSELS GAS PROCESSING
WARREN PETROLEUM	WESTERN GAS PROCESSORS
WEXPRO	WIL GAS CO.

APPENDIX C

GAS GATHERING AND PROCESSING LOCATIONS BY STATE

State	No. of Systems	Gas Throughput* MMcfd
Alabama	5	136
Alaska	3	44
Arkansas	5	487
California	36	683
Colorado	43	468
Florida	2	689
Kansas	26	3545
Kentucky	2	66
Louisiana	86	10178
Michigan	27	1601
Mississippi	5	355
Montana	7	29
Nebraska	2	2
New Mexico	30	1879
North Dakota	11	250
Oklahoma	109	2792
Texas	357	11574
Utah	11	236
West Virginia	7	322
Wyoming	36	979

\* As of January 1, 1987. Information furnished by the Oil and Gas Journal.

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