

# THE IMPACTS OF FERC ORDER 636 ON COAL MINE GAS PROJECT DEVELOPMENT

## Introduction

This paper explores new opportunities for coal mine gas<sup>1</sup> use resulting from the passage of the Federal Energy Regulatory Commission's (FERC's) Order 636 in 1992. This regulation changed the natural gas industry from a regulated industry to one that is market-based. The fundamental change promulgated by Order 636 is that the gas market is now competitive, with the result that market conditions change rapidly.

Prior to FERC Order 636, pipeline companies purchased natural gas that they transported. The price at which pipelines sold gas to consumers generally included the bundling of transportation costs and costs of other component services, such as marketing. In the post-Order 636 period, interstate natural gas pipelines must provide transportation services unbundled from sales services. This provision has had a profound impact on the buying and selling of natural gas, encouraging the development and use of market centers or hubs where several pipeline systems interconnect, and where gas buyers and sellers can make or take gas deliveries. These market centers have created greater competition between gas suppliers, distributors, marketers, and buyers, thus increasing purchasing and selling opportunities. Along with the diversity in available markets comes diversity in the types of agreements that are constructed between these groups. An important benefit to producers is that, in cooperation with any one of many marketing groups, they can now target a specific market, tailoring the contract to best suit the mine's gas production characteristics.

## Optimizing the Sale of Coal Mine Gas

The price that coal mine gas producers will receive for their gas depends on gas quality and reliability of production, the location of the gas relative to competing supplies, transportation constraints, and the extent to which the mine operator or producer can create value through the addition of related services and bundling, such as storage. Mines wishing to optimize their gas sales should take one or more of the following approaches:

- *Assume the role of producer, or partner with a gas producer to develop and market coal mine gas.* Because coal mine operators are not in the gas business, they may find it advantageous to allow a natural gas producer to develop the methane for sale and take the risk. Gas producers have expertise in areas such as transportation and marketing, and can assume these responsibilities for the mine. The mine owner could receive a royalty for all gas developed and sold. The major issues involved with these types of arrangements involve coordinating gas with coal production and safety considerations. The mine and producer can address these issues by working together to design a methane development program that optimizes mine productivity and safety.
- *Actively produce and market coal mine gas as a commodity.* In cases where a mine already has the infrastructure in place to sell the gas, it may be more advantageous for the mine to sell the gas directly to marketers or local distributing companies (LDCs) rather than simply

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<sup>1</sup> The term "coal mine methane" refers to gas that is released from coal or surrounding rock strata during the process of coal mining. In addition to methane, this gas may contain other hydrocarbon gases or constituents such as carbon dioxide, nitrogen, or oxygen. Because some readers could construe "coal mine methane" to mean pure methane, this paper will instead use the term "coal mine gas".

accept a royalty payment. The manpower required to market gas and ensure timely flow, deliverability, and contract monitoring in the post-Order 636 environment has increased, but for some mines the rewards may support these additional staffing requirements.

- *Market gas consistent with production characteristics.* Coal mine methane degasification wells have production characteristics that differ from conventional natural gas wells. For example, because in-seam and gob wells are designed primarily to drain a mine of methane for safety reasons, the operator cannot halt gas flow simply because demand for the gas has diminished. Methane production rates can also vary within different areas of the coal seam that is undergoing mining. Thanks to the flexibility in contracts that is characteristic of the post-Order 636 environment, mine operators may be in a much better position to sell gas production consistent with their operational requirements. In other words, variability in gas production from coal mines due to the variability in mine operations need no longer hinder the marketability of the gas, because the mine and the marketer can negotiate their contract with the understanding that the amount and heating value of the gas that the mine supplies will be variable.
- *Acquire pipeline capacity.* This strategy is most suitable for larger producers and could be accomplished by acquiring capacity directly from the pipeline or indirectly through the secondary market. Having the ability to deliver gas to a major hub would provide greater opportunities for sales at current market prices. The ability to bundle gas with capacity to deliver to larger markets will allow producers to enjoy higher revenues.
- *Provide a variety of gas-related services.* Some coal mines may have the opportunity to provide a "total Btu" type of service that would provide coal and gas, and in some cases, electricity to the consumer. This will be most profitable to the operator in cases where coal mine gas production is well located relative to gas and electricity markets, in terms of both proximity and available capacity. High-deliverability gas storage, a characteristic of abandoned mine storage facilities, is another service that some mines could offer. This would allow rapid injection and withdrawal of gas, which commands a premium in the market. The proximity to market areas would allow users to receive higher seasonal gas prices. In addition, the mine could take advantage of the storage facility to store its own gas.
- *Bundle coal mine gas with environmental benefits.* The biggest environmental benefits of substituting coal with coal mine gas are a reduction in SO<sub>2</sub>, NO<sub>x</sub>, and greenhouse gas emissions. Today, only SO<sub>2</sub> reductions have a set market value; however, in the future it is projected that NO<sub>x</sub> and greenhouse gas emissions will also have a tangible value and be traded as a commodity. Bundling coal mine gas sales with these emissions reduction credits will add value to most coal mine gas projects, enhancing their marketability.

It is clear that while the opportunities available to coal mine gas producers are great, there are risks associated with developing those markets that could bring the greatest return. For all of these strategies, producers should employ creativity in contracting to achieve flexibility in accommodating market driven pricing. Contracts can include special terms and delivery assurances that best satisfy the needs of the mine.

## **Parties Involved in Bringing Gas From Producers to Consumers**

A variety of opportunities can exist for sale, transportation, and delivery of gas produced from coal mining properties. Following is a description of the parties that may be involved in the process of bringing gas from the producer to the consumer.

**Producer:** Responsible for exploring, drilling, and operating the gas wells. The bulk of gas sale revenues goes to the producer, who bears the expense and risk of drilling and marketing the production.

**Marketer:** One of the aspects of Order 636 that provides opportunities for coal mine gas producers and suppliers is that it allows for the aggregation of gas supplies from a variety of sources. The marketer is the middleman, or merchant, who aggregates the gas. Marketers repackage the gas with transportation and pricing terms for resale to LDCs or end-users. Marketers may also provide services to producers including financing, hedging, gathering, processing and other related support services.

**Pipeline Company:** Provides natural gas transportation services under predetermined tariffs (general operating rules and rates kept on file at FERC) and individual transportation agreements. The individual contract agreement to transport the gas will be between the shipper and the pipeline. The shipper can be any of the parties described above.

**Local Distribution Company (LDC):** LDCs are the primary retailers of natural gas. They receive gas from the interstate pipelines through their city gates, step down the pressure, and deliver gas to customers on their distribution systems.

**Consumer/End-user:** The ultimate user of natural gas, as contrasted to one who sells gas, or purchases natural gas for resale, such as a marketer or LDC. Large gas consumers can directly purchase coal mine gas from the producer. This would be appropriate for cases where a facility with high gas demands (such as an institution, industrial or utility boiler, glass factory, or steel mill) is located near a gassy mine.

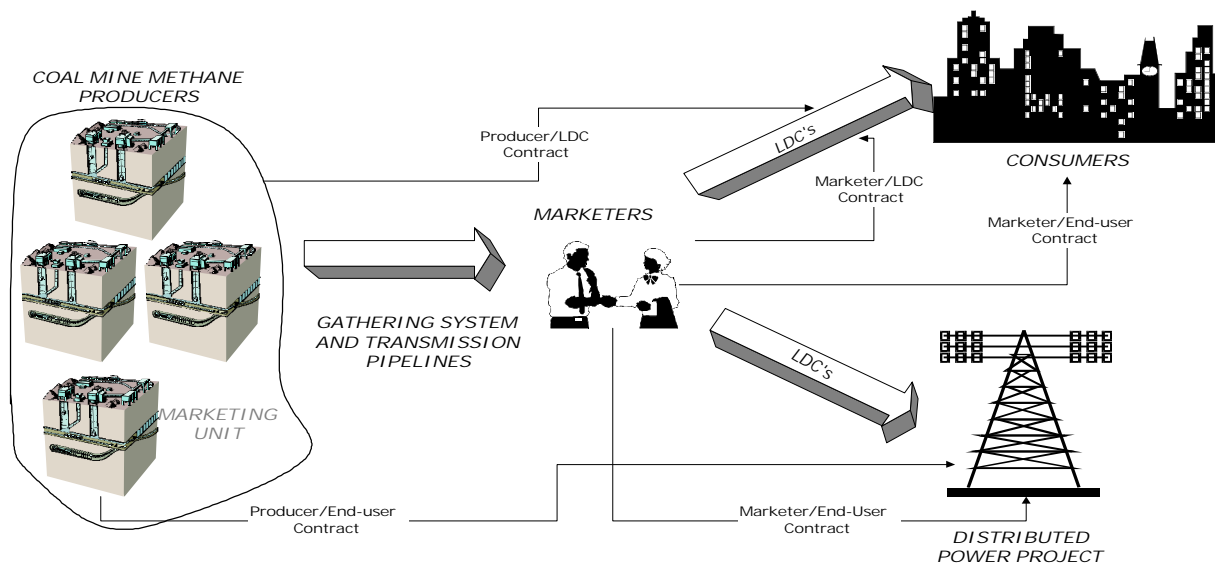
## **Gas Sales Contracts**

Changes in the natural gas industry, augmented by FERC Order 636, are creating new opportunities for coal mine gas producers. The number of mines with gas recovery and use projects has increased from 10 in 1994 to at least 17 in 1997. In 1996, U.S. mines recovered an estimated 49 bcf of gas for use. These projects range in size and type, and exemplify most of the different types of contract combinations discussed below and shown in Figure 1.

One of the key reasons that Order 636 has created new opportunities for coal mine gas sales is that it allows flexibility in contracting. It virtually guarantees that a producer can sell its gas as long as there is a market. The key to profitability in this endeavor is the type of contract that the various parties involved can negotiate. Following are several examples of the various contracted transactions between parties. Figure 1 illustrates these relationships.

- **Producer/Marketer:** A coal mine or production company drains the gas in conjunction with mining and sells the drained gas to a marketer. The marketer is responsible for all costs and arrangements of getting the gas to the end-user.

- Producer/LDC: A coal mine sells the drained gas directly to a LDC. The LDC is then responsible for getting the gas to the end-user.
- Producer/End-user: A coal mine identifies a particular customer for its gas, and enters into a direct contract with the end-user, or consumer. In most cases, the end-user is then responsible for insuring that the gas is delivered, paying all transportation costs.
- Marketer/LDC: This is an arrangement whereby the marketer purchases gas from one or more mines, or production companies, and then sells to the LDC. It is possible for two or more mines to act as one “marketing unit” to attain the economies of scale needed to compete with large energy marketers. The marketing unit could then contract directly with LDCs.
- Marketer/End-user: This arrangement is similar to the Marketer/LDC arrangement, except that the marketer would sell gas directly to an end-user. In the simplest case, such as the sale of gas to an independent power producer (IPP), the gas would be transported directly from the producer to the end-user without accessing an LDC. In the case of gas sales to a typical consumer (i.e., for residential or commercial gas use), the end-user would be responsible for paying the tariffs associated with transportation and distribution (pipeline and LDC tariffs).



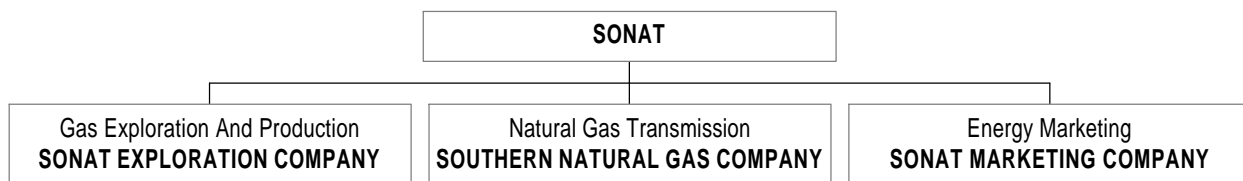
**Figure 1: Types of Coal Mine Gas Sales Contracts**

### Current Opportunities for Coal Mine Gas Producers

There are four primary consequences of Order 636 that are beneficial to the coal mine gas industry: 1) expanded markets; 2) the ability to accommodate fluctuations in gas quantity and quality; 3) expanded transportation access; and 4) a greater role for gas storage. Following is a discussion of each of these factors.

*Expanded Markets.* Producers now have numerous potential markets and opportunities to sell gas. Most gassy coal mines are located near major gas consuming markets, and with the ability to sell gas through marketers or directly to LDCs or end-users, coal mine gas producers can now easily access these markets. SONAT's activities in the Black Warrior Basin of Alabama

illustrate how this company is involved in producer/marketer, marketer/LDC, and marketer/end-user arrangements and contracts. Figure 2 depicts The Southern Natural Gas Company's (SONAT's) organization, which comprises gas production, transmission, and marketing companies. SONAT Exploration, acting as a producer, drains methane from Drummond Coal's Shoal Creek Mine and sells the gas to a market, in this case, SONAT Marketing. SONAT Marketing, utilizing the intrastate pipeline system, transports the gas to a variety of markets, one of which is an LDC.



**Figure 2: SONAT's Gas Production, Transmission, and Marketing Companies**

Another example of a producer/marketer arrangement is U.S. Steel Mining's Pinnacle No. 50 Mine in West Virginia. The Pinnacle No. 50 Mine sells its gas to a marketing company, which makes all transportation and final sales arrangements. In contrast, a project that drains gas from coal mines in Illinois provides an example of a producer/end-user arrangement. Pulse Energy Systems has been draining methane from abandoned coal mines located in the eastern margin of the Illinois Basin since 1979. The gas is transported to an end-user that uses the gas to generate electricity for sale to a public utility.

*Accommodating Fluctuations in Gas Quantity and Quality.* The variable production characteristics of coal mine gas wells have traditionally presented difficulties in the context of the natural gas and pipeline industries. With conventional gas wells, gas flow may be curtailed at the discretion of the operator. Coal mines, however, must continue to drain gas whenever the mine is operating, with the exception of drainage wells drilled in advance of mining. Conversely, gas production from gob wells decreases during mining of relatively non-gassy areas, or during a longwall move.

In the post-Order 636 environment, fluctuations in gas production and heating value are no longer a major obstacle to coal mine gas sales. The mine can sell its gas to a marketer, who has other sources of gas with which to supply an end-user during times when the quantity or quality of gas the mine produces may be low. The mine and the marketer negotiate their contract with the understanding that the volume and heating value of the gas that the mine supplies will be variable. Alternatively, the heating value of the gas can be raised to pipeline standards by blending it with higher heating value gas (see section on Blending under "Opportunities for Further Expanding Coal Mine Gas Project Development" below).

Hedging is another opportunity available to coal mine gas producers with the passage of Order 636. Hedging helps guard against the problems associated with fluctuating production, and reduces exposure to risk by shifting risk to those willing to accept it in exchange for profit opportunity. Hedging with gas futures contracts<sup>2</sup> eliminates the risks to the producer associated with fluctuating coal mine gas production, but at the same time limits the opportunity for future profits should prices or production move favorably. Should coal mine gas production fall below a negotiated contract amount, the operator would have the option of purchasing gas futures at a

<sup>2</sup> Futures contracts are firm commitments to take delivery of a specified quantity and quality of gas during a specific time in the future at a pre-determined price.

price equal to or lower than the contract price. This insures delivery of the contract amount without forcing the operator to pay any penalties or purchase gas on the spot market to fulfill the contract, at a price that may be greater than the contract price. The reader is directed to “A Guide to Energy Hedging”, published by the New York Mercantile Exchange, for a more thorough discussion of hedging and futures.

*Transportation Access.* With restructuring of the natural gas industry, an open access pipeline network has evolved that allows more entities to become involved in gas supply purchasing. Innovative developments in the transportation sector have led to an increase in demand for new services such as storage capacity and its derivative services, such as balancing.

Balancing is defined as equalizing the volumes of gas withdrawn from a pipeline system with the volumes of gas injected into the pipeline. A producer must notify the pipeline/marketer of the amount of gas that they project to produce on a daily, or more commonly, a monthly basis. This is termed a nomination. At the end of each period, the actual amount produced is compared with the nominated amount, and if the produced amount varies from the nominated amount, with some pre-set tolerances allowed, then the nomination amount must be revised for the following period. The operator can sell only the nominated amount at pre-arranged prices without paying a penalty. This task may at first sound prohibitive from an administrative standpoint, but once the mine better understands its methane production characteristics, forecasting daily or monthly production should be fairly straightforward. The mine may also elect to change the way it produces gas, in order to make balancing easier.

Transportation access is no longer a barrier to reaching secondary markets, however, the cost of connecting to existing systems and/or increasing the capacity of this system will be a factor in mine-specific situations. A generally accepted rule-of-thumb value for pipeline capital costs varies from \$10,000 to \$20,000 per inch diameter of the pipe per mile installed, depending on the complexity of the system.

*Gas Storage.* Gas storage has become an important commodity for the natural gas industry since the implementation of Order 636. Storage facilities store gas for use during periods of high demand. The two most important features of a storage facility are capacity and deliverability. Deliverability refers to the ease with which gas can be removed from the storage facility. Before FERC 636, storage was limited mainly to: 1) depleted petroleum reservoirs or aquifers with high capacity, yet low deliverability, or 2) large surface facilities with higher deliverability, but lower capacity. Such facilities were located near large market areas to meet peak demand.

The result of unbundling gas storage and the gas markets from pipeline services is that the value of gas storage is driven only by the price of gas, and the relative value of storage in the gas supply chain. Further, the creation of spot markets resulting from changes related to FERC 636 makes small, high deliverability storage facilities attractive. Storage facilities in salt mines, which have high deliverability due to their large amount of void space, are being rapidly developed. However, salt mines have low capacity. Coal mines, like salt mines, could exhibit high deliverability because of the large amount of void space. Unlike salt mines, however, coal mines also have additional large capacity due to the adsorptive nature of the remaining coal. The EPA has prepared a report entitled *Technical and Economic Assessment of Coalbed Methane Storage in Abandoned Mine Workings* which is currently in peer review. This report discusses the advantages of using abandoned mines for gas storage as well as the technical issues related to storing gas in abandoned workings, and presents the results of economic analyses conducted for a conceptual facility.

With the seasonal demand for gas, and the high costs of pipeline capacity, gas storage is at a premium. The potential use of nearby abandoned coal mines for storage is an additional option for mine operators that both increases the marketability for coal mine gas and provides a valuable service to the gas market.

### **Key Factors Determining Coal Mine Gas Marketability**

There are certain factors that determine the marketability of coal mine gas. They are:

- *The availability of an infrastructure that would allow immediate penetration into the existing market.* Often, there is an existing conventional oil and gas infrastructure in close proximity to a coal mining district, meaning that the coal mine gas producer would not have to transport drained gas long distances before tapping into an existing pipeline system. Therefore, capital costs attributed to transportation could potentially be minimal.
- *The competitiveness of coal mine gas with conventional natural gas.* For several reasons, it is possible that coal mine gas production would be sold at a reduced price. The primary reason is that the heating value of coal mine gas may be lower than conventional natural gas, since a percentage of the gas produced by the mine will be gob gas. Gob gas may contain significant percentages of air. Natural gas prices are based on heating value, rather than volume. Coal mine gas may fail to meet pipeline specifications due to the presence of excessive quantities of non-hydrocarbon gases (CO<sub>2</sub>, nitrogen, and oxygen) and/or other contaminants, causing the marketer to discount the purchase price. The inconsistent delivery characteristics of coal mine gas is another factor that may require the mine to sell gas at a reduced price.
- *The possibility of a local market that can take gas of almost any quality, as long as it is combustible.* In many cases, there are often industrial customers nearby that could use gas of varying quality, such as in an industrial coal-fired boiler. One or more boilers could be converted to co-fire with coal mine gas. In cases where boilers are already co-firing with natural gas, they could substitute coal mine gas for the natural gas.

### **Opportunities for Further Expanding Coal Mine Gas Project Development**

As described above, many different potential opportunities exist for coal mine gas projects. A mine can simply sell the gas it drains to a marketer. Or, a group of mines can form a marketing unit, selling their gas to several marketers or end-users, maximizing deliverability and profitability. Similarly, a marketing group can purchase gas from several coal mine gas projects and sell the gas to LDCs, other markets, and even to several end-users. Order 636 has created many new opportunities for gas marketing, and allows companies to be producers, marketers, and LDCs at different times, depending on the specific contractual arrangements or changes in production or end user consumption.

Key issues that will determine coal mine gas project feasibility are:

- 1) whether the recovered gas can meet pipeline quality standards;
- 2) if unable to meet pipeline standards, whether upgrading is economical; and
- 3) if the gas ultimately meets pipeline standards, whether the costs of production, processing, compression, transportation, and enrichment, if necessary, are competitive with other gas sources.

One factor unique to coal mine gas is that operators must determine which costs attributed to gas drainage wells are viewed as sunken costs associated with coal mining, and which are

viewed as incremental costs charged against methane production. This in turn affects the economic constraints under which a gas supply contract may be negotiated.

There are numerous coal mine gas sales or use options available to the mine, depending on the quality and quantity of produced gas available as a result of mining operations. The options vary depending on how involved the mine wants to be in the gas production operations. A brief overview of the most likely options follows.

*Enrichment of gob gas.* If the produced gas does not meet pipeline quality standards, then additional enrichment costs must be considered. There are several different methods of gas enrichment, including pressure swing adsorption (PSA), cryogenics, selective adsorption, and spiking or blending. The problem is that gob gas can contain several gas contaminants, and most enrichment processes are designed to separate only one contaminant at a time. Gob gas enrichment has made great progress however, and a full-scale gob gas enrichment project is now undergoing startup in Pennsylvania. This project is integrated in that it removes several contaminants (carbon dioxide, oxygen, and nitrogen) from the gas.

*On-Site Use.* If enrichment costs are such that the project becomes uneconomic, then a direct market or end-user must be identified for the lower quality gas. The most logical example would be use of the gas on-site. An example of on-site use is Consol's Buchanan Mine, which uses a small percentage of its recovered methane in a thermal coal dryer. Another option would be the heating of mine buildings and hot water.

Another opportunity for on-site use is in power generation. Excess power generated on-site could then be bundled with coal and/or gas and marketed as a "Btu" package (see "Bundling of Gas and Power" section below). There are several options available for power generation using coal mine gas, including IC engines (which have been commercially proven at several mines) and gas turbines. An added advantage of using coal mine gas to fuel IC engines and gas turbines is that the mine ventilation air can be used as combustion air, increasing the overall output of the engines. This technology has been proven at the Appin Power Plant, New South Wales, Australia. Fuel cells may represent a future coal mine power generation option; the U.S. Department of Energy is planning a demonstration project using coal mine gas in fuel cells.

*Formation of a Coal Mine Marketing Group.* Although FERC Order 636 does not specifically affect on-site use projects, the post-Order 636 environment is ideal for undertaking this type of project on a larger scale. Several mines could join together and form a marketing unit, or a mine gas producers association. The combined production from more than one mine would be more easily marketable, without having to sell the gas at a reduced price as discussed earlier, as the combined production from would be less variable in terms of quantity and quality, enhancing its marketability. This marketing unit or association would then be able to form long-term alliances with either end-users or one or more marketing companies. One advantage of this type of long-term alliance is that they could then market the gas to one or more consumers, locking in a floor sales price for their gas that would be profitable to the mines. Any gas produced in excess of that sold through long-term contracts could be sold by hedging the gas on the spot market, maximizing additional profits to the coal mine gas producer or marketing group.

Another option is for mines to supply all of their low heating value gas to one or more end-users. Potential end-users include independent power producers (see discussion under "Bundling" below), or local industries that do not require pipeline quality gas (such as co-firing in a nearby industrial coal-fired boiler). Members of a marketing group could also sell their low-heating value gas to the member mine that has the greatest fuel requirements.



A mine marketing group could also team with a smaller oil and gas operator. The operator would have to develop the gas resource in conjunction with mining operations; however, this would enable the mines to focus on the business of mining and selling coal, while the operator would be responsible for the production and sale of the gas. Advantages of this type of partnership are that the operator could already know the most profitable options for selling gas in today's market, and might already have alliances with certain marketers or end-users. The recent partnership of Consol and MCN Energy Group exemplifies a variation on this type of team. MCN purchases coal mine gas production from several of Consol's mines and transports the gas via an existing integrated natural gas transportation/distribution system to the midwest market, where gas is sold for a premium.

*Blending Of Lower Heating Value Gas with High Heating Value Gas.* Another option available to a coal mine gas marketing group is to identify a large capacity pipeline that would be able to take the lower-heating value coal mine gas, blending it with high heating value gas already in the system, or with gas drained from pre-mine drainage boreholes. This scenario would work only if the ratio of the lower heating value gas to the pipeline gas is very small and the resultant product still meets pipeline specifications. This would have a minimal effect on the gas quality in the system, while enabling the lower-quality gas to become saleable on the market. If the marketing unit were able to perform its own blending, resulting in gas that meets pipeline standards, then it would receive market price for the gas. If the marketing unit could not provide gas that meets pipeline standards, then it would receive a price for the gas that is less than the market price, as discussed earlier. However, the close proximity of the individual mines could still result in a profit to the unit if the production met the end-users needs.

*Bundling of Gas and Power.* With the imminent implementation of FERC Order 888, which is the catalyst for electric power restructuring, electricity and gas supply will compete head-to-head for market shares. Alternatively, the development of companies structured to supply energy, regardless of its form, could become the next major revolutionary event in the energy supply market. Already, there are marketing groups that offer "total Btu packages", meaning that they can offer services that would meet all of a consumer's energy needs, whether it be gas, heating oil or electricity, as well as energy management services. One example of this type of company is The Eastern Group, based out of Virginia, which specializes in providing *Total Energy Solutions*<sup>™</sup>. They have combined their strengths as a supplier of natural gas (including coal mine gas), electric power, and alternate fuels with knowledge-based energy management services, such as risk management strategies and energy conservation programs. Many pipeline and marketing companies are merging with independent power producers in order to achieve larger market penetration.

*Marketing of Greenhouse Gas Offset Credits.* If domestic and international emissions trading becomes a reality, bundling of these credits into the economics of most coal mine gas projects make them very attractive to potential investors. The value of these credits alone can attract many larger energy companies that are in the market for offset credits, and otherwise might be attracted to coal mine gas projects.

*Marketing of Environmental Benefits.* Credits associated with SO<sub>2</sub> emissions allowances and avoided penalties from NO<sub>x</sub> emissions are now becoming an integral component of the economics of energy projects. Substituting coal mine methane for coal in industrial boilers and kilns in most cases reduces the SO<sub>2</sub> and NO<sub>x</sub> emissions, adding value to projects. Other economic benefits include reduced opacity, improved ash quality, and improved boiler rating.

*Gas Storage in Abandoned Mines.* One other option is gas storage in abandoned mines. Today, only one abandoned coal mine, the Leyden Mine in Colorado, is used for gas storage. underground abandoned coal mine workings are excellent storage sites under suitable geologic and hydrologic conditions. Because they have a large amount of void space, abandoned coal mines have the high deliverability of abandoned salt mines, with the added advantage of high gas capacity due to the unique adsorptive characteristics of the unmined coal.

Analysts predict that gas storage capacity in the US will increase by at least 20 percent by the year 2000 over pre-FERC 636 levels. The continued development of high deliverability gas storage in the US makes methane recovery from mining more attractive. Methane from coal mining can be stored for sale on a spot market, or stored by contract for peak shaving by a consumer. The option of cost-competitive storage affords a potential methane recovery program the benefits of inventorying recovered gas so that the market advantages are realized.

For active mines that own or have access to abandoned underground coal mine workings, this may provide an alternative to leasing or incurring the costs of storage space. Because many abandoned mines have large potential capacity, they could store coal mine gas as well as conventional natural gas for sale at peak demand times, a strategy which today enables gas producers to significantly increase profits in today's marketplace.

### **How To Identify Marketing Opportunities**

Prior to the implementation of FERC 636, if an operator desired to sell gas production, it had only to contact the local pipeline company and negotiate a contract. Today, because of the complexity of the market, identifying the most appropriate gas marketing arrangement for the coal mine can be more difficult. As most coal mines do not have experience in marketing gas, a recommended first step is to contact the local pipeline companies to determine what marketing companies are operating in the area. Since most of the gassy coal mines are in relatively close proximity to conventional oil and gas fields, the mine could also contact one or more of the local producers of conventional natural gas or coalbed methane. At the same time, the mine can contact a local or regional oil and gas association (Appendix A). These associations cannot recommend specific marketing groups, but would be able to put the mine in touch with one or more of their members (such as a gas producer) that may offer advice. In addition, some oil and gas associations offer an association directory for sale, which the mine could purchase.

### **Summary**

It is clear that Order 636 has created many opportunities for the coal mine gas producer. Companies interested in selling coal mine gas should research all potential marketing options in order to choose the approach that best suits the mine and/or operator's specific situation and needs. The ultimate success of a coal mine methane project will depend on the ability of the operator to best utilize the options available in today's market, in order to secure the most favorable pricing terms and conditions.

Coal mine gas producers have numerous potential markets and opportunities to sell gas, or use it on-site. Among the uses for coal mine gas are:

- Injection into pipelines (the gas may first require enrichment or blending) for a wide variety of end uses;
- Direct on-site use of methane, for coal drying, space or hot water heating;
- On-site power generation, with possible off-site sale of excess electricity.

There are many options for marketing coal mine gas, and various approaches that can increase gas sales. These include:

- Formation of a coal mine gas marketing group to pool gas resources for sale;
- Bundling of coal mine gas with electricity, fuel oil, and/or energy management services to provide consumers with a “total Btu” package;
- Marketing of greenhouse gas offset credits and/or other environmental benefits;
- Using abandoned coal mines to store coal mine gas for sale during peak demand.

## **APPENDIX A**

### **LIST OF OIL & GAS ASSOCIATIONS**

Coalbed Methane Association of Alabama  
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