VIII. Policy Options To Encourage Shale Gas Production

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Policy options available to encourage production of gas from the Brown shale fall into four generic categories. These categories are:

. price incentives,

- tax policies,
- research and development funding, and
- information collection and d insemination.

Price Policies

Brown shale natural gas resource development is sensitive to price. The price of Brown shale gas sold in interstate commerce is currently restricted by Federal Power Commission (FPC) ceiling price regulation. There are three basic price strategies with respect to shale gas which could be pursued. These are:

- exempt shale gas from FPC price control or establish higher prices for gas from the Brown shale;
- deregulate the wellhead price of all new natural gas supplies; or
- take no action,

A policy which permits higher prices or exempts Brown shale gas from FPC control would be analogous to a proposed policy to permit a free-market price for oil produced with enhanced recovery methods. The qualification for gas from Brown shale might be based on (1) geologic identification of the Brown shale as the source of gas, (2) regional specification, (3) production rate limitations, or some combination of these factors.

Brown shale gas production is often commingled with production from other geologic zones. Therefore, a precise identification of gas production from the Brown shale could be extremely difficult.

Because similar appearing gas-productive shales extend throughout many portions of the United States in addition to the Appalachian Basin, a regional specification restricted to the Appalachian Plateaus might omit substantial shale gas resource potential. Production rate limitations for eligibility for exemption from price regulation might be more manageable, and also would apply to gas production from tight formations in other parts of the country. Definition and administration of a multitiered pricing system for gas from the Brown shale probably would become arbitrary, complex, and cumbersome.

Deregulation of the wellhead price of all new gas supplies would include prospective additions to the U.S. natural gas supply from the Brown shale of the Appalachian Basin. Such a strategy would create price incentives in the range ($2.00 to $3.00 per Mcf) on which the analyses presented in this report are based. Such price incentives might provide the stimulus necessary for an extensive testing of the economic feasibility of Brown shale gas production. An expansion in drilling efforts could result in approximately 1.0 Tcf per year of gas from the Brown shale of the Appalachian Basin.

For Congress to take no action on prices would mean that existing prices would be the only incentive to encourage gas production from Brown shale. Current maximum interstate gas prices encourage gas production from only the high-quality Brown shale areas. Therefore, continuation of present gas-pricing policy could result in foregoing substantial additions to the U.S. natural gas supply which may be available from the Brown shale of the Appalachian Basin.

Tax Policies

The tax policies available to Congress to encourage Brown shale gas production include:

- restoration of the general percentage depletion allowances;
- definition of Brown shale gas production as enhanced recovery so as to maintain the depletion allowance for small producers;
- retention of expensing of intangible drilling costs as a tax option; and
- creation of an investment tax credit for the Brown shale.

The analysis reported here indicates that a 10-percent investment tax credit has little effect on shale gas production. Areas of lower resource quality did not become economically feasible for shale gas production when a 10-percent investment tax credit was incorporated into the analysis. However, the addition of a 22-percent depletion allowance increased the after-tax net-present value of shale wells and made shot-treated wells economically feasible in shales of lower quality. Basically, a 22-percent depletion allowance has about the same positive effect on the economics of shale gas production as a $.50 per Mcf increase in the wellhead price of shale gas.

Research and Development

There are several areas in which research and development with special relevance to the Brown shale of the Appalachian Basin might be fruitfully pursued. These include:

. defining resource characteristics;

- development of drilling techniques and equipment; and
- improvement of stimulation techniques.

Even though about 10,000 wells produce gas from the Brown shale of the Appalachian Basin, few quantitative data are available to characterize adequately the resource potential of the 163,000-square-mile Appalachian Plateaus. Until the Brown shale resource is adequately characterized, specific targets for technology development are not possible. A systematic, coordinated inventory of the Brown shale should be one of the first steps in determining the gas potential of the Brown shale sequence.

The most common techniques used to characterize the Brown shale are those developed for traditional oil and gas reservoirs. Development of special drilling techniques and equipment specifically for use in the Brown shale could expedite the development of its gas potential. Because of the importance of well stimulation in the production of gas from the Brown shale, improvement in the effectiveness and reduction in cost of stimulation techniques could make gas production more economically attractive. Price incentives can be expected to induce some private activity in these research and development areas. However, because much drilling, well stimulation, and production will be done by operators who do not control large shares of Brown shale resources, it is unlikely that those operators will invest large amounts in aggressive research and development programs. Therefore, it appears prudent to commit public funds for research and development activity directed specifically toward improvements in shale drilling and stimulation technology.

Information Collection and Dissemination

Although the Devonian shale is a geologic sequence distributed over a wide geographic area, only a small portion of it, the Brown shale, appears to have potential as a commercial source of gas. If the gas potential of the Brown shale is exploited, a large number of independent operators are likely to be drilling a large number of wells in many different locations on the Appalachian Plateaus. Under these conditions, particularly in the early years of the development effort, it might be desirable to provide public funding for the collection, coordination, and dissemination of information and analyses detailing the results of actual operating experiences. This activity should be undertaken by a creditable public group so that the results are available to the public and private sectors alike, The information collection and dissemination efforts might include public funding for conferences where research and development results and improved drilling and stimulation technologies are reported. If the Brown shale has a potential to produce 1.0 Tcf of gas per year, and economic incentives are provided, it is likely that private enterprise will assume necessary research and development efforts within a comparatively short period of time.

Conclusion

There are a number of policy options available which could encourage production of gas from the Brown shale of the Appalachian Basin. A significant and substantial policy option is to permit free market prices for gas from Brown shale sequences. Restoration of the 22-percent depletion allowance would have the same effect as increasing the wellhead price of shale gas by $.50 per Mcf. Research and development programs which characterize the Brown shale resource, decrease the cost of drilling and stimulation of wells, and increase the gas production from wells could increase the economic attractiveness of producing gas from the Brown shale of the Appalachian Basin.