



Supply-Demand Forecast For Gas Utilities

2009-2019

Report to the West Virginia Legislature
West Virginia Code §24-1-1(d)(3)

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2010 SUPPLY AND DEMAND REPORT FOR
NATURAL GAS UTILITIES IN WEST VIRGINIA

ON BEHALF OF THE STAFF OF THE
PUBLIC SERVICE COMMISSION OF WEST VIRGINIA

JANUARY, 2010



201 Brooks Street. P. O. Box 812, Charleston, WV 25323

EXECUTIVE SUMMARY

The conclusions of this report are provided on page 26. Overall, average annual growth rates of approximately -1.5% (Dominion Hope tariff sales) to 0.2% (Overall transportation volumes) in the demand for natural gas are projected from 2010-2019. With regard to available supplies of natural gas, all three major gas utilities in West Virginia should have adequate access to natural gas supplies to meet the projected demands during the forecast period.

The supply and demand for natural gas is heavily dependent on many factors including changes in the weather and the commodity and transportation markets, especially at the national level.

The sixty-fourth Legislature (1979), directed that the Public Service Commission (Commission) report annually to the Legislature on the status of the supply and demand balance for the next ten years for the gas utilities in West Virginia (W. Va. Code Section 24-1-1(d)(3)). Pursuant to this directive, the Commission's Staff has undertaken collection and presentation of information and data regarding both the supply and demand sides of the gas market. As in last year's report, this 2010 report includes all gas moving on the utilities' systems (meaning throughput, which includes both transportation and tariff sales volumes) as opposed to only tariff sales gas, in order to give a more complete view of the natural gas public utility industry in West Virginia.

This report contains projections of natural gas demand and supply for the next decade made by the three major natural gas utilities operating in the State of West Virginia. The next several years will likely be a period of demand and supply balance for the state natural gas markets. Both national and state natural gas markets continue to be

affected by changes in state and federal regulatory policies. The most recent example is the Energy Policy Act of 2005. The net impact of efforts to "restructure" the electric utility industry is unknown as markets continue to evolve. On the one hand, a competitive electric power market will certainly increase end-use competition; on the other hand, there is continued use of gas-fired turbines for electric generation in the state.

The following is a brief summary of the average annual growth rates of total company natural gas demand for the period 2010-2019 derived from the forecasts of the three major utilities:

<u>Company</u>	<u>Company Projected Average Annual Throughput Growth Rate</u>
Mountaineer Gas Company	0.0 %
Hope Gas, Inc., dba Dominion Hope	-1.5 %
Equitable Gas Company	<u>0.0 %</u>
<u>W. Va. Total</u>	-0.2 % (Rounded)

While Equitable projects the same average annual growth rate as reflected in last year's report, the other companies project lower growth rates, thereby causing a reduction in the overall total demand projection as compared to last year's report. A significant determinant of the level of natural gas demand is winter weather, and the companies assume "normal" or long term historical winter weather patterns. Information indicates that the 2008-2009 winter temperatures were approximately 6.07% colder than the previous 2007-2008 heating season, and were approximately 3.20% warmer than normal based on 30-year averages on a statewide basis.

The gas utilities reviewed for this report were the three major companies which serve West Virginia: Mountaineer Gas Company, Hope Gas, Inc., dba Dominion Hope ("Dominion Hope") and Equitable Gas Company. Although there were nineteen active gas utilities serving the State, these three major companies made approximately

90% of the total volume of residential, commercial and industrial gas deliveries in the State last year. Therefore, an examination of these three utilities will provide an overview of the gas market that is sufficiently complete to draw meaningful inferences while not clouded by voluminous and unnecessary detail.

Prior to the passage of the Natural Gas Policy Act of 1978 (NGPA), the natural gas market was characterized by artificial production shortages resulting from price controls. The NGPA attacked these shortages by setting forth a schedule of price decontrol over time, reducing barriers between interstate and intrastate markets, and providing incentives for gas exploration and production.

As a result of the sharp increase in prices between 1978 and 1983 as regulated prices changed to competitive prices, as well as the implementation of demand-side management programs, consumers in all classes reacted by reducing their consumption of natural gas. In addition, reductions occurred as a result of increased efforts in weatherization of structures, improved appliance and equipment efficiencies, conscious voluntary usage reductions and switches to alternate sources of energy. These changes, brought about by higher prices, will continue to have some influence on present and future natural gas demand, even if prices level off or decrease. Natural gas prices have increased dramatically over the past five years and are extremely volatile. Although current prices are down sharply, market prices were at all-time record highs as recently as June 2008. This, of course, causes confusion among the consuming public as it sees low market prices while their utilities are charging record high rates. This situation has caused and will continue to cause downward pressure on demand for the foreseeable future.

Both the natural gas industry and regulatory agencies such as the Federal Energy Regulatory Commission (FERC) and state commissions, including the Public Service Commission of West Virginia (PSC), have continued to develop policies that allow and encourage the operation of competitive forces. Past developments included

authorizing flexible rates, special marketing programs, negotiated transportation rates, and use of the spot market, as well as the futures market, hedging, derivatives and other financial tools.

I. REGULATORY HISTORY

A brief history of regulatory policies which will continue to have a major impact on the future natural gas market follows:

- (1) FERC Order 500 -- Order 500 continues the transportation policies of Order 436 designed to promote competitive access to spot market gas. However, Order 500 also addressed industry take-or-pay problems through a crediting mechanism as a prerequisite to transportation for producers.
- (2) Natural Gas Decontrol Act of 1989 -- On July 27, 1989, the federal Natural Gas Decontrol Act of 1989 became law. This Act amended the Natural Gas Policy Act of 1978 by removing the remaining price controls on natural gas.
- (3) Clean Air Act Amendments of 1990 - On November 15, 1990, Public Law 101-549 made comprehensive revisions to the Clean Air Act. Title IV of this law addressed acid rain. One method by which sulfur-emitting industries or electricity generation facilities can comply with this law is through fuel switching, as in switching from coal and oil to natural gas. The amendments will also impact the demands for natural gas such as through increased usage of natural gas vehicles.
- (4) FERC Order 636 - On April 8, 1992, the FERC issued what is now called the Restructuring Rule. The main feature of this rule is the requirement that all pipelines end their "merchant" function by ending bundled sales services. This rule was intended to complete the transition at the federal level to a competitive natural gas industry by equalizing the

transportation of gas sold by pipelines and non-pipelines while maintaining the reliability of service.

- (5) FERC Order 636-A - On August 3, 1992, the FERC issued this Order in response to numerous comments received concerning Order 636. Order 636-A largely affirmed the provisions of Order 636, but modifications were made to address the concerns of small customers.
- (6) Energy Policy Act of 1992 - On October 24, 1992, Congress enacted and the President signed the Energy Policy Act. Section 115 of this Act required state regulatory authorities to consider two new standards under PURPA to include the use of integrated resource planning by each gas utility and investments in conservation and demand side management. Further, Section 404 provides incentives for the promotion of alternative-fueled vehicles, including natural gas.
- (7) In 1995, the first investigations into facilitating residential natural gas customer choice in West Virginia were begun. The PSC has implemented "pooling" of interruptible customers by marketers and may eventually enable residential gas customers to enter such "pooling" arrangements at some yet to be determined point during the forecast period. The result would be an increase in the shift of residential tariff sales to "transport-only" sales. Such shifts in sales are now generally limited by economics to the commercial and industrial classes. However, even eligible commercial and industrial customers have not yet utilized the available pooling services.
- (8) Increased regulatory emphasis on the environmental effects of

coal-fired electric generation will likely increase natural gas demand. Recent U.S. EPA rules have placed more stringent limits on nitrous oxide emissions. Further, the United States is discussing international concerns which could lead to increased limitations on carbon dioxide emissions. Both of these changes would impact the coal-fired electric plants in West Virginia and one possible result would be fuel-switching from coal to natural gas. To date, five natural gas fired power plants have been certificated by the PSC which do or may receive gas via a utility facility. Three of these plants have begun operation and the two others may be in operation during the forecast period although their construction appears unlikely at this time. It is difficult to predict the impact these plants will have on gas demand since the three in operation are peaking plants whose time of operation is dependent on weather and is a function of the electricity spot market. There is, of course, the potential that a tremendous increase in demand may be seen in the relatively near future. Estimates of increased demand that would impact this report, (and assuming it is satisfied by state utilities), for the planned baseload plants are as high as 70 Bcf (or 70,000,000 MCF) per year - more than Mountaineer's current total throughput. These plants have the potential of adding more than 4,000 Megawatts of electric generating capacity.

- (9) Just as FERC Order 636 has led to major restructuring of the natural gas industry, similar restructuring has occurred in the electric utility markets (although not in West Virginia). Two

major effects of electric market restructuring on the natural gas market will be increased end-use competition and greater use of natural gas for power generation.

These continuing changes impact any consideration of the future gas supply and demand in the State of West Virginia.

Average growth rates (AGR) are used throughout this report, and caution should be used in interpreting these growth rates since they are heavily dependent upon the starting and ending values.

II. DEMAND ANALYSIS

The demand projection in this report has been developed independent of supply considerations, i.e., the extent of the demand for utility natural gas supplies and delivery in West Virginia has been calculated assuming no supply limitations. This notion is in accord with the State's current and medium-term adequate supply position. These demand projections include utility direct sales to ultimate customers in the residential, commercial and industrial classes, wholesale sales for resale, and transportation-only volumes, with the totals described as "throughput".

Unlike the major electric utilities that operate in West Virginia, the gas utility companies do not use highly sophisticated modeling techniques for forecasting. The reasons for this lack of modeling sophistication are inherent in the nature of the product: natural gas is used primarily for space heating, water heating, cooking and specific commercial and industrial processes. Unlike electrical energy, gas can be stored and withdrawn from storage to satisfy an unexpected and/or peak market demand. Additionally, since the gas transmission

and distribution system is essentially in place, plant construction is not a major concern of gas distribution companies. These companies are more concerned with commodity availability and prices.

The ten-year forecasts presented in this report are based upon similar models and databases used in the January 2009 report. Based on reports filed with the Commission by West Virginia utility companies, the levels of residential, commercial and industrial sales were identified. Of course, the raw 1980-2008 sales and transportation data reflect the effect of weather conditions experienced during that period, the effect of curtailments because of supply deficiencies, if any, and the effect of moratoria on adding new customers.

Residential and commercial uses of gas are generally less discretionary than the industrial load because the stock of gas-using appliances, the space heating units, the water heaters, and cooking units are fixed in the short-term. Therefore, in any given year, a residential and commercial user's gas consumption is frequently a function of the severity of the weather¹. With that in mind, the companies often rely heavily on some variant of a weather adjusted trend line technique to forecast residential and commercial sales.

There is more confidence associated with predictions in the near future, and ten year projections must be viewed with caution.

(A) RESIDENTIAL AND COMMERCIAL DEMAND

The analysis of residential and commercial demand is based upon data obtained from records of three major West Virginia gas utilities. These three

¹Weather is measured by reference to historical and "normal" heating degree days (HDD); heating degree days are a measure of the difference of average daily temperatures below 65 degrees Fahrenheit.

companies represent about 90% of the total utility residential throughput as well as 90% of total utility natural gas throughput in the State of West Virginia. These utilities are, in descending order of throughput volumes:

- (1) Mountaineer Gas Company
- (2) Hope Gas, Inc., dba Dominion Hope
- (3) Equitable Gas Company

(1) MOUNTAINEER GAS COMPANY

Mountaineer does not anticipate any net increase in its demand throughout the forecast period, except through the acquisition of several small utilities. The 2001, 2002, 2003 and 2004 floods in southern West Virginia caused a significant, permanent loss of hundreds of customers. In addition, the prospect of lower natural gas usage per customer due to increasing appliance efficiency and other price-induced conservation are expected to offset some of the increase in new customer demand as well.

Mountaineer's projections for the residential and commercial customer classes can be found in Table 1, page 17. These projections reflect no annual rate of change in the residential and commercial classes from 2010 to 2019.

Mountaineer's forecasts for the period represents no change in the level of demand for tariff sales compared to last year's forecast in each class.

(2) DOMINION HOPE

The forecasting methods used by Dominion Hope are similar to most gas forecasting methods insofar as they disaggregate total residential and commercial sales into baseload and weather sensitive components. In its determination of base load, Dominion Hope uses the July and August average volume. That average volume is multiplied by a factor of 12 to establish an annual base load for the residential and commercial sectors.

With regard to the weather sensitive load, Dominion Hope evaluates climatological data from the City of Parkersburg. This climatological data is then applied across Dominion Hope's service territory.

Upon development of a monthly weather sensitivity factor determined by comparing historical sales to historical heating degree days, Dominion Hope forecasters consult their marketing division to establish an expectation of the customer growth rate in Dominion Hope's service area. This customer growth rate is multiplied by the expected usage under normal weather conditions to develop a projected future usage level. This figure is linearly trended with the explicit recognition that conservation will have a downward influence on projected values.

Dominion Hope's forecasts are shown in Table 2, page 18. These forecasts reflect a -1.6% average annual decline for residential throughput volumes and a -1.7% decline for commercial throughput from 2010 to 2019. The levels of demand forecast for both classes are lower than reflected in last year's report.

(3) EQUITABLE GAS COMPANY

Equitable Gas Company is an interstate gas distributor that serves portions of Pennsylvania and northern West Virginia, with each portion of the system regulated by the state in which it is operated. In 1986, Equitable Gas Company was reorganized and Equitrans, Inc. was formed. Equitable Gas Company now consists of only the distribution facilities in Pennsylvania and West Virginia. Equitrans includes the transmission, storage, and gathering facilities that were formerly part of Equitable Gas Company.

The Company reported data showing an expected approximate 10% increase in residential and an approximate 14.4% increase in commercial demand, compared to its 2009 forecast. The Company has stated that it expects demand and customer count to remain essentially flat for the forecast period.

The forecast for Equitable is shown in Table 3, page 19, and included in the Total Throughput Forecast in Table 4, page 20.

(B) INDUSTRIAL DEMAND

The most volatile component of gas demand is the industrial sector. Major causes of this instability are four-fold. First, national economic conditions have a marked impact on industrial output and, thus, gas demand and the level of long run national economic activity cannot be predicted with complete accuracy. This is aggravated by the fact that major West Virginia industrials are often tied to the automobile and other "consumer durable" goods industries that tend to be more volatile than the economy as a whole. Second, the industrial sector is susceptible to work stoppages and other disruptions that cause gas consumption to oscillate significantly. Third, the industrial

sector has more alternate fuel capability than the residential or commercial sectors; most fuel switching occurs between natural gas, #6 and #2 fuel oil, and propane, and many firms can switch fuels on less than a day's notice. And fourth, large industrial customers can negotiate purchases directly with the gas producer and bypass the local distribution companies.

The incentives for large industrial customers to continue to utilize both utility tariff sales service and transportation remain in place and have strengthened in recent years. FERC Order 636 makes transportation by interstate pipelines mandatory and has been fully implemented by interstate pipelines. The Commission's transportation rules in its General Order Nos. 228, 228.1 and 228.2 facilitates this process within West Virginia for local distribution companies and intrastate pipelines.

The combination of these factors makes the industrial demand forecast the most uncertain and the most susceptible to forecast error of the three customer classes evaluated.

(1) MOUNTAINEER GAS COMPANY

Mountaineer has the largest volume of industrial gas deliveries, with the majority of its service territory encompassing heavily industrialized Kanawha Valley, Ohio Valley and Eastern and Northern Panhandle regions. Mountaineer's primary industrial customers are in the metals, chemicals, glass and rubber industries. Demand from these customers is highly sensitive to changes in general business conditions, and therefore sensitive to price fluctuations in energy as energy becomes an ever-increasing percentage of the costs of making their products.

Due to recent economic declines, Mountaineer has lost significant industrial demand in transported demand and its projections reflect an approximate 40% reduction

for the next ten years as compared to its 2009 projections.

(2) DOMINION HOPE

Dominion Hope, like Mountaineer, forecasts industrial sales by relying heavily on individual customer contact. The major industries in Dominion Hope's service area are chemicals, glass, wood products, power generation, asphalt, and manufacturing. To forecast throughput, Dominion Hope's sales force relies on historical consumption information, projections from large industrial users and information that addresses economic conditions affecting the industries of interest. Dominion Hope's main sales objectives are: (1) to retain existing industrial throughput connected to its system; (2) to increase throughput to existing customers by promoting new, efficient gas technologies; and (3) to add new industrial customers by means of proactive economic development efforts. Dominion Hope's forecast anticipates no growth in industrial sales and a 0.7 % growth rate in industrial transportation demand. However, Hope's projections reflect an 18.3% decrease in industrial throughput compared to its 2009 projections.

(3) EQUITABLE GAS

The industrial sales and transport forecast submitted by Equitable Gas in 2008 is shown on Table 3. The great uncertainty in this class of sales and transport has led the Company to project that a constant amount of industrial throughput will occur over the forecast period.

(C) COMPANY USE AND UNACCOUNTED-FOR GAS

In addition to sales to end-use customers, West Virginia utilities use gas in their own operations, and there is a certain amount of unaccounted-for gas each year. Based on information provided by the companies, the following estimates of what percentage company use and unaccounted-for gas represented of each company's total volumes of natural gas were used:

Mountaineer Gas	6.00%
Dominion Hope	3.93%
Equitable Gas	3.38%

(D) TOTAL WEST VIRGINIA GAS DEMAND

Table No. 4, page 20, contains the summation of the three major gas utilities' projected demand for 2010-2019. In order to approximate unaccounted for and company use gas, this sum was increased by a factor of 1.10 to arrive at an estimate of total West Virginia demand by all of the natural gas utilities operating in this State. Based upon the companies' projections, total West Virginia demand for natural gas is estimated to be 63,217 MMcf in 2010. The total is projected to decrease at an average annual rate of negative 0.2 % (rounded) to 62,161 MMcf in 2019.

This projection results, in part, from an expectation of the continued, but uneven, impact of national economic growth on economic conditions in West Virginia as affecting utility throughput. Another significant determinant of the level of natural gas demand is winter weather, and the Companies assume "normal" or historical long term winter weather patterns over the forecast period despite significant deviations from normal in recent heating seasons.

However, customers of all natural gas utilities in West Virginia are subject

to the extreme volatility of the natural gas market on a year to year basis. When supply prices increase and are passed on to utility customers, there will be downward pressure on consumption. Although Dominion Hope, Mountaineer and Equitable have been under rate moratoria in recent years, all have expired as of the end of 2008. Prevailing market conditions as those moratoria expired resulted in significant increases in rates for all of these utilities.

The shifting of deliveries from tariff sales to “transport-only” has continued in the industrial market, contracted somewhat for the commercial market, and with future “pooling” choices may spread to the residential market. Thus, major industrial expansion may tend to increase utility transport volumes rather than utility tariff sales volumes.

In the near-term, many customers are switching back and forth between tariff purchases and transportation depending on day-to-day or monthly overall costs and availability of gas and/or pipeline capacity. This situation is an indicator of the effects of the extreme volatility currently occurring in the gas commodity markets.

**COMPANY PROJECTIONS
MOUNTAINEER GAS COMPANY**

2010-2019

TARIFF SALES (MMcf)

<u>YEAR</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL</u>	<u>INDUSTRIAL</u>	<u>WHOLESALE</u>	<u>TOTAL TARIFF SALES</u>
2010	15,013	8,106	128	355	23,602
2011	15,013	8,106	128	355	23,602
2012	15,013	8,106	128	355	23,602
2013	15,013	8,106	128	355	23,602
2014	15,013	8,106	128	355	23,602
2015	15,013	8,106	128	355	23,602
2016	15,013	8,106	128	355	23,602
2017	15,013	8,106	128	355	23,602
2018	15,013	8,106	128	355	23,602
2019	15,013	8,106	128	355	23,602
AGR 10-19	0.0%	0.0%	0.0%	0.0%	0.0%

TRANSPORTED GAS (MMcf)

<u>YEAR</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL</u>	<u>INDUSTRIAL</u>	<u>SPECIAL CONTRACTS**</u>	<u>WHOLESALE</u>	<u>TOTAL TRANSPORTS</u>
2010	1	9,366	7,244	0	0	16,611
2011	1	9,366	7,244	0	0	16,611
2012	1	9,366	7,244	0	0	16,611
2013	1	9,366	7,244	0	0	16,611
2014	1	9,366	7,244	0	0	16,611
2015	1	9,366	7,244	0	0	16,611
2016	1	9,366	7,244	0	0	16,611
2017	1	9,366	7,244	0	0	16,611
2018	1	9,366	7,244	0	0	16,611
2019	1	9,366	7,244	0	0	16,611
AGR 10-19	0.0%	0.0%	0.0%	0.0%		0.0%

Mountaineer's reported unaccounted for gas is 6% of system inputs.

** Special Contract volumes have been included in the Industrial Transport Column

TABLE NO. 1

**COMPANY PROJECTIONS
DOMINION HOPE GAS
2010-2019**

TARIFF SALES (MMcf)

<u>YEAR</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL</u>	<u>INDUSTRIAL</u>	<u>WHOLESALE</u>	<u>TOTAL TARIFF SALES</u>
2010	7,713	3,138	165	376	11,392
2011	7,595	3,082	165	376	11,218
2012	7,521	3,044	166	378	11,109
2013	7,357	2,977	165	376	10,875
2014	7,237	2,928	165	376	10,706
2015	7,119	2,880	165	376	10,540
2016	7,044	2,849	166	378	10,437
2017	6,889	2,786	165	376	10,216
2018	6,777	2,741	165	376	10,059
2019	6,667	2,696	165	376	9,904
AGR 10-19	-1.6%	-1.7%	0.0%	0.0%	-1.5%

TRANSPORTED GAS (MMcf)

<u>YEAR</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL</u>	<u>INDUSTRIAL</u>	<u>WHOLESALE</u>	<u>TOTAL TRANSPORTS</u>
2010	0	671	8,381	0	9,052
2011	0	661	8,374	0	9,035
2012	0	654	8,919	0	9,573
2013	0	641	8,898	0	9,539
2014	0	632	8,898	0	9,530
2015	0	622	8,898	0	9,520
2016	0	616	8,082	0	8,698
2017	0	604	8,898	0	9,502
2018	0	595	8,898	0	9,493
2019	0	586	8,898	0	9,484
AGR 10-19	0.0%	-1.5%	0.7%	0.0%	0.5%

* Hope's estimate of unaccounted for gas is 3.93%.

**COMPANY PROJECTIONS
EQUITABLE GAS COMPANY
2010-2019**

TARIFF SALES (MMcf)

<u>YEAR</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL</u>	<u>INDUSTRIAL</u>	<u>WHOLESALE</u>	<u>TOTAL TARIFF SALES</u>
2010	912	334	25	0	1,271
2011	912	334	25	0	1,271
2012	912	334	25	0	1,271
2013	912	334	25	0	1,271
2014	912	334	25	0	1,271
2015	912	334	25	0	1,271
2016	912	334	25	0	1,271
2017	912	334	25	0	1,271
2018	912	334	25	0	1,271
2019	912	334	25	0	1,271
AGR 10-19	0.0%	0.0%	0.0%	0.0%	0.0%

TRANSPORTED GAS (MMcf)

<u>YEAR</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL</u>	<u>INDUSTRIAL</u>	<u>SPECIAL CONTRACTS</u>	<u>WHOLESALE</u>	<u>TOTAL TRANSPORTS</u>
2010	0	262	1,027	0	0	1,289
2011	0	262	1,027	0	0	1,289
2012	0	262	1,027	0	0	1,289
2013	0	262	1,027	0	0	1,289
2014	0	262	1,027	0	0	1,289
2015	0	262	1,027	0	0	1,289
2016	0	262	1,027	0	0	1,289
2017	0	262	1,027	0	0	1,289
2018	0	262	1,027	0	0	1,289
2019	0	262	1,027	0	0	1,289
AGR 10-19	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Equitable's unaccounted for gas is reported as 3.38%.

TABLE NO. 3

**TOTAL COMPANIES' PROJECTIONS
TOTAL GAS THROUGHPUT
2010-2019**

YEAR	MOUNTAINEER GAS COMPANY	HOPE GAS	EQUITABLE GAS COMPANY	TOTAL SALES*	TOTAL TRANSPORT DEMANDS	TOTAL WV THROUGHPUT**
	MMcf	MMcf	MMcf	MMcf	MMcf	MMcf
2010	23,602	11,392	1,271	36,265	26,952	63,217
2011	23,602	11,218	1,271	36,091	26,935	63,026
2012	23,602	11,109	1,271	35,982	27,473	63,455
2013	23,602	10,875	1,271	35,748	27,439	63,187
2014	23,602	10,706	1,271	35,579	27,430	63,009
2015	23,602	10,540	1,271	35,413	27,420	62,833
2016	23,602	10,437	1,271	35,310	26,598	61,908
2017	23,602	10,216	1,271	35,089	27,402	62,491
2018	23,602	10,059	1,271	34,932	27,393	62,325
2019	23,602	9,904	1,271	34,777	27,384	62,161
AGR 10-19	0.0%	-1.5%	0.0%	-0.5%	0.2%	-0.2%

* Total Sales are scaled upward by 1.10 to represent sales to West Virginia gas customers that are made by distributors other than these three major companies.

** Includes total throughput, ie, includes both commodity tariff sales and transportation volumes.

IV. SUPPLY ANALYSIS

The volume of natural gas available to the market depends upon the quantity of recoverable resources and the incentives for producing from that resource base. The natural gas market in the United States, once constrained as a multitude of local and regional markets, has become a national and continental market, if not international, in scope. Therefore, it is not practicable for this Commission to perform the same detailed analysis of the supply side of this market as was done for the demand side.

Historically this industry has been characterized by a shortage-surplus-shortage cycle, and the elimination of the recent surplus situation has caused and will continue to cause concerns regarding subsequent shortages. However, much of this historical cycle was the result of effective price controls, such that the market response to changing circumstances was through quantity supplied rather than price.

The Potential Gas Committee², in its December 2008 report (reports are issued biannually), estimated that the total potential resource of natural gas in the United States is 1836 trillion cubic feet (Tcf), an increase of 515 Tcf from the Committee's 2006 report, for an approximate 92 year supply at today's demand level. This represents an unprecedented increase. Previous years' reports noted a decrease in the potential reserves estimates between 2002 and 2004. The current estimate again includes Alaskan sources and estimated recoverable coalbed methane. The Potential Gas Committee's estimates also include the volume of proven recoverable natural gas reserves contained in the nation's discovered fields. Also, these resource base estimates do not include other reachable supply sources, such as Canadian gas or Mexican gas. Much more information

²The Potential Gas Committee is an organization comprised of personnel from all parts of the natural gas industry. The Committee report can be obtained from the Potential Gas Agency, Colorado School of Mines.

may be obtained from the Committee's website at www.mines.edu/research/pga . A short summary of the report is attached.

The Annual Energy Outlook 2010 of the Energy Information Administration on natural gas reserves and supply and demand estimates presents several different scenarios. All scenarios, however, indicate there will be an ample resource base during the 2010-2019 forecast period. For the first time, the Outlook extends it's analysis through 2035. (As of this writing, the full report has not been published, but should be available in the first quarter of 2010.)

There have been, in recent years, concerns voiced in the industry over an expected (by some participants) supply shortfall at the national level within the next ten years. This projection is subject to many assumptions regarding economic activity, exploration and development efforts, gas fired electric generation growth, overall national energy policies and legislation, etc.. **The focus of this report, however, is on the supply and demand status in West Virginia only.** It should be noted that the state is, and has been for many decades, a net exporter of natural gas and currently exports approximately 80% of its production to other states.

Increased competition in the natural gas market has occurred as a result of efforts by producers and pipelines to sell excess supplies of gas and through the reduction of regulatory restrictions. The efforts by producers and pipelines have included Special Marketing Programs, renegotiated contracts, and the development of a spot and futures market for natural gas. Competition was further enhanced by the Federal Energy Regulatory Commission's Order 636. This Order was intended to further increase the availability of non-discriminatory transportation by interstate pipelines. A major result has been the broadening of the natural gas market such that customers and suppliers in different geographical regions can negotiate directly and move gas as needed through transportation services provided by pipelines. The impact in West Virginia can easily be

seen by examining the shift of industrial and commercial tariff sales to transportation only for two of the three major companies considered in this report.

Order 636 also sought to eliminate any advantage pipelines may have had in performing a "merchant" function for local distribution utilities. The intent was to increase competition on the supply side of the natural gas market.

While the current natural gas market is more competitive, there are still numerous restrictions and rigidities which reduce the ability of prices to react appropriately to excess supply or excess demand. For example, increased opportunities for competition on the supply side of the natural gas market will initially lead to higher spot market prices as a result of excess demand. But there is a regulatory lag until these higher purchased gas prices result in higher retail prices. This imbalance is sustained by the length of the regulatory lag as suppliers raise prices, but customers continue to demand volumes of natural gas based on lower retail prices. Fortunately, a study by the AGA indicates that a short term additional supply potential exists to help bridge the gap between increased quantity demanded and production. These short term supplies could come from uncommitted or shut in wells, Canadian gas, Mexican gas, and liquefied natural gas through the attraction of increased spot market prices.

Thus, the absence of the past excess supply situation may lead to some short term or localized supply problems, but not to the type of shortage situations of the past. The following is a brief review of the sources of supply for the three major companies studied in this report.

Mountaineer has historically purchased approximately 70%- 90% of its supply from the Southwest market with the balance purchased from Appalachian producers. In recent years many Appalachian producers have opted to market their production to end-users on Mountaineer's system.

The forecast supply for Dominion Hope indicates that its sources of supply

include local purchases, Dominion Transmission Corporation, long-term contracts, and spot market purchases from the Appalachian and Southwest markets. Transportation to Dominion Hope's market will be provided by Dominion Transmission, Texas Gas Transmission and Columbia Gas Transmission. In all forecast years, it is believed that Dominion Hope will have an adequate supply of natural gas.

Equitable Gas Company indicates its primary source of supply during the 2010-2019 forecast period will be: approximately 20% from the storage withdrawals/injections (the injection supply consists of Southwest gas purchases made during the injection season), approximately 56% direct purchases of Appalachian natural gas, and 24% transported natural gas on the Equitrans system.

As discussed earlier in the gas supply arrangements of the distribution utilities, the distributor relies heavily on the transmission supplier, and the transmission supplier is in turn reliant on the upstream gas producer. Because of this arrangement, an exact supply number is an unnecessary oversimplification of the multi-tiered total gas acquisition process. West Virginia exports far more of its own locally produced gas than is necessary to meet in-state demand.

Of significant importance is the current flurry of activity with regard to a previously known, but technically inaccessible, gas formation in Appalachia, including much of West Virginia, known as the Marcellus Shale formation. This formation is extremely deep compared to historically produced formation, and, because of the cost of developing that formation, until recently was of little practical interest. However, in the past few years, there has been greater interest by producers in acquiring leases with the intent to drill to and produce from this formation. No substantial data are yet available that illustrate the success of these efforts, but much attention and discussion is focused on this potential gas "boom". Speculation in industry circles is that the Marcellus may be the

largest discovery ever in the region and in West Virginia. If the geologists and others are correct, this would obviously greatly strengthen West Virginia's position as a gas producer and would further support statements made above as to the supply and demand balance in the state.

V. CONCLUSIONS

This report has examined the three major gas utilities responsible for 90% of total West Virginia throughput. As seen earlier in reviewing Table 4, the aggregate forecasts of the companies imply level to slightly decreasing total demand for natural gas in the state of West Virginia. The growth rate implied by the aggregate companies' forecast is negative 0.2%. Available supplies of natural gas are expected to be more than adequate to meet forecasted demands for 2010-2019.

A number of factors are likely to keep this market in disequilibrium. For example:

- (1) The effects of fully implemented FERC Orders 636 and 636A and the Energy Policy Act of 1992 will continue to have an uncertain net impact on supply and demand;
- (2) Increasing environmental regulations affecting coal-fired electric generation will also increase natural gas demand. EPA rules have placed more stringent limits on nitrous oxide emissions. Further, the United States is discussing international concerns which could lead to increased limitations on carbon dioxide emissions;
- (3) Efforts to "restructure" the electric power market toward a more competitive market will mean increased end-use competition and increased sales of gas used for electric power generation.
- (4) Natural gas prices are in part affected by oil prices, and there are continuing attempts by oil producing nations to set production quotas sufficient to raise oil prices which would

result in increased gas demand and prices;

- (5) Further expansion of programs which allow increased natural gas customer choice is being contemplated. This includes future "pooling" of customers by marketers which may eventually enable residential gas customers to shift from tariff sales to "transport-only" on the State's gas utility systems.
- (6) Relatively high natural gas prices and supply uncertainties from 1975 to 1985 induced customers to make decisions and investments such as installing insulation, conversion to electric heat pumps and so forth which will continue to affect their demand for natural gas even if prices decrease;
- (7) Over the past several years, natural gas utilities have experienced sharply rising supply prices for natural gas. As these supply price increases are passed on to utility customers there will be downward pressure on consumption.

APPENDIX

Federal Government:

National Petroleum Council
Balancing Natural Gas Policy (2003)

www.npc.org

Energy Information Administration

www.eia.doe.gov

Producers:

Natural Gas Supply Association
Winter Outlook

www.ngsa.org

Interstate Pipelines:

Interstate Natural Gas Association of America

www.ingaa.org

Local Distribution Companies:

American Gas Association

www.aga.org

Potential Gas Committee reports unprecedented increase in magnitude of U.S. natural gas resource base

GOLDEN, Colo., June 18, 2009 – The Potential Gas Committee (PGC) today released the results of its latest biennial assessment of the nation's natural gas resources, which indicates that the United States possesses a total resource base of 1,836 trillion cubic feet (Tcf). This is the highest resource evaluation in the Committee's 44-year history. Most of the increase from the previous assessment arose from reevaluation of shale-gas plays in the Appalachian basin and in the Mid-Continent, Gulf Coast and Rocky Mountain areas.

"The PGC's year-end 2008 assessment reaffirms the Committee's conviction that abundant, recoverable natural gas resources exist within our borders, both onshore and offshore, in all types of reservoirs," said Dr. John B. Curtis, Professor of Geology and Geological Engineering at the Colorado School of Mines and Director of the Potential Gas Agency there, which provides guidance and technical assistance to the Potential Gas Committee.

Dr. Curtis cautioned, however, that the current assessment assumes neither a time schedule nor a specific market price for the discovery and production of future gas supply. "Estimates of the Potential Gas Committee are 'base-line estimates' in that they attempt to provide a reasonable appraisal of what we consider to be the 'technically recoverable' gas resource potential of the United States," he explained.

The Committee's year-end 2008 assessment of 1,836 Tcf (statistically aggregated mean value) consists of 1,673 Tcf of gas attributable to traditional reservoirs and 163 Tcf in coalbed reservoirs. Compared to year-end 2006, traditional resources increased by nearly 519 Tcf (45%), while coalbed gas resources decreased by 3 Tcf (1.9%), resulting in a net increase in total potential resources of 515 Tcf (39%). (See accompanying Table 1.)

These changes have been assessed in addition to the 41 Tcf of marketed domestic natural gas production recorded during the two-year period since the Committee's previous report.

When the PGC's results are combined with the U.S. Department of Energy's latest available determination of proved gas reserves, 238 Tcf as of year-end 2007, the United States has a total available *future supply* of 2,074 Tcf, an increase of 542 Tcf over the previous evaluation.

As Dr. Curtis observed, "Our knowledge of the geological endowment of technically recoverable gas continues to improve with each assessment. Furthermore, new and

advanced exploration, well drilling and completion technologies are allowing us increasingly better access to domestic gas resources—especially 'unconventional' gas—which, not all that long ago, were considered impractical or uneconomical to pursue.”

“Consequently, our present assessment demonstrates an exceptionally strong and optimistic gas supply picture for the nation.”

Overall, the Gulf Coast, including the Gulf of Mexico continental shelf, slope and deepwater, remains the country's richest resource area, followed by the Rocky Mountain, Atlantic and Mid-Continent regions, which together account for 87% of the 2008 assessed traditional resource. (See accompanying Table 2.) Changes in the assessments from 2006 to 2008 arose primarily from analyses of new geological, drilling, well-test and production data from these same four regions. The largest volumetric and percentage increases resulted from reassessments of active and newly developing shale-gas plays in the Appalachian basin of the Atlantic area, the Arkoma and Fort Worth basins of the Mid-Continent area, several basins of the Gulf Coast area, and the Uinta basin of the Rocky Mountain area.

The growing importance of shale gas is substantiated by the fact that, of the 1,836 Tcf of total potential resources, shale gas accounts for 616 Tcf (33%). The number of plays, the level of production and the magnitude of perceived in-place resources have increased to the point that PGC, for the first time, is publishing a separate tabulation of its ongoing province- and area-level shale-gas assessments.

Also this year, for the first time, PGC is issuing an *Advance Summary* of its assessment results. This document will provide purchasers who preorder the Committee's printed report with all of the national, area- and province-level assessment tabulations and accompanying graphical representations for immediate analysis and critique.

PGC's 2008 report includes detailed area- and province-level resource assessments, summaries of recent E&P activities, and updated editions of its popular value-added features:

PGC and the Ultimately Recoverable Resource—explains in simplified terms, with annotated graphics, the time-dynamic nature of gas resource assessment, the relationship between proved reserves and the PGC's categories of resources, and how these quantities lead to determination of the ultimately recoverable gas resource.

Historical Trends I—Annual trends in crude oil, natural gas and gas liquids production for 1980-2008, together with the basics of 'vintaged' production graphs, production profiles, well and rig statistics, prices, revenues and other useful parameters, as well as forecasts of production trends to 2030.

Accompanying text describes each plotted trend, which is keyed to a graphical folio for the U.S. containing more than 90 charts that are rarely, if at all, seen in print elsewhere. (Similar folios for all producing regions and provinces are

- available on a separate CD-ROM.)
- *Historical Trends II*—Monthly gas production and well-count histories for all Lower 48 States' onshore and offshore provinces, allowing the reader to compare and contrast basins with rising, falling or stable production trends.
- *Historical Trends III*—Gas-well permitting and spudding histories for all producing

- provinces, a measure of overall health of the industry from basin to basin.
Historical Trends IV—"Top-ten" rankings of gas producers and well production trends and performance, arranged by PGC province.
- *North American Perspectives I-II*—overviews of natural gas resources, production and recent E&P activities in Canada and Mexico.
- *Frontier Gas Resources I-IV*—latest domestic and international developments in natural gas hydrates and liquefied natural gas (LNG); deep drilling for natural gas in the U.S.; and U.S. shale gas resources and play characteristics.
- *Comparison of Assessments*—a look at how PGC assesses gas resources and how the Committee's assessment methodology and latest results contrast with those of other organizations.
- *From Reservoir to Burner Tip*—PGC's natural gas "primer," a less technical discussion of how and where natural gas occurs and how it is produced, stored, transported, delivered to and beneficially used by consumers.

In addition to the Advance Summary and full printed report, the PGC will release the third edition of its information-packed CD-ROM product, *PGC Trove 2009*. This disc will include digital versions of the report, both in its entirety and as amply bookmarked individual chapters. The trove will again feature the comprehensive *Folio of Historical Production Trends and Forecast for the United States*, consisting of more than 2,500 historical-trend plots covering the entire U.S., the Lower 48 States, each oil- and gas-producing region and each onshore and offshore producing province. PGC also will premier a suite of spreadsheets that tabulate all of the Committee's published national, area- and province-level assessment results back to 1964.

With these three offerings, the Potential Gas Committee presents a more complete picture of present gas supply and productive capacity of the North American natural gas industry than it has compiled previously.

Details of the Potential Gas Committee's Natural Gas Resource Assessment (as of Dec. 31, 2008)

The Potential Gas Committee (PGC) reports its gas resource assessments biennially in three categories of decreasing certainty—*Probable*, *Possible* and *Speculative*. For each category, a *minimum*, *most likely* and *maximum* volume is assessed for each of 89 geological provinces in the Lower 48 States and Alaska. The *mean* values shown in Table 1 below were calculated by statistical aggregation of the minimum, most likely and maximum traditional values for each resource category. Mean values for total traditional resources and total coalbed gas resources are aggregated separately. This procedure imparts greater statistical validity to the results and allows for more direct comparison of PGC's assessments with those made by other organizations.

Table 1.

Change 2006	(Mean Values, Tcf)	
	Resources Category	2008
	Tcf (%)	
Traditional Gas Resources:		
	Probable resources (current fields).....	441.4 270.1
	Possible resources (new fields).....	736.9 426.4
	Speculative resources (frontier).....	500.7 460.7

	Subtotal Traditional Resources*	1,673.4	1,154.8
+518.6 (44.9%)			
	Coalbed Natural Gas:		
	Probable resources	14.2	15.5
	Possible resources	49.8	50.9
	Speculative resources	98.9	98.9
	Subtotal Coalbed Gas Resources*	163.0	
166.1	-3.1 (1.9%)		
	Total Potential Resources	1,836.4	1,320.9
+515.5 (39.0%)			
	Proved reserves (DOE/EIA)	237.7**	211.1
	U.S. Future Supply	2,074.1	1,532.0
+542.1 (35.4%)			

* Mean values for Probable, Possible and Speculative resources are *not* arithmetically additive in deriving the subtotal. Subtotal mean values *are* additive in deriving Total Potential Resources.

** Latest available figure is for year-end 2007.

Note: Totals are subject to rounding and differences due to statistical aggregation of distributions.

PGC's 89 geological provinces are grouped into seven geographic areas. In similar fashion as above, the minimum, most likely and maximum values for each category of traditional resources in each province within an area are aggregated at the area level to yield mean values for area Probable, Possible and Speculative traditional resources and a separately aggregated area total. Coalbed gas resources are not aggregated at the area level. Table 2 below compares the total mean values for these areas for years-end 2008 and 2006.

Table 2.

(Mean Values, Tcf)

Change

Producing

Area

2008

2006

Tcf (%)

	Gulf Coast (including Gulf of Mexico)	455.2	329.6
+125.6 (38.1%)			
	Rocky Mountain	374.4	233.6
+140.9 (60.3%)			
	Atlantic	353.5	91.7
+261.8 (285%)			
	Mid-Continent	274.9	232.2
+42.7 (18.4%)			
	Alaska	193.8	
193.8	0 (0%)		
	Pacific	51.3	55.5

-4.2 (7.6%)		
North Central.....	24.0	22.0
+2.0 (8.9%)		
Total U.S. Traditional Resources*.....	1,673.4	1,154.8
+518.6 (44.9%)		
Coalbed Natural Gas (all areas combined).....	163.0	
166.1	-3.1 (1.9%)	
Total Potential Resources.....	1,836.4	1,320.9
+515.5 (39.0%)		
Proved reserves (DOE/EIA).....	237.7**	211.1
U.S. Future Gas Supply.....	2,074.1	1,532.0
+542.1 (35.4%)		

* Mean values of total resources for the seven areas are *not* arithmetically additive in deriving Total U.S. Traditional Resources.

** Latest available figure is for year-end 2007.

Note: Totals are subject to rounding and differences due to statistical aggregation of distributions.

How to Obtain the Potential Gas Committee Report

Prepublication orders for the full printed PGC report, *Potential Supply of Natural Gas in the United States (December 31, 2008)* may now be placed with the Potential Gas Agency, Colorado School of Mines, Golden, CO 80401-1887. The cost of the printed report is US\$495 (US\$515 for foreign shipment), if payment accompanies the order. The printed report with the companion CD-ROM will be available for US\$950 (US\$970 for foreign shipment). All purchasers will receive the *Advance Summary* immediately and will automatically be sent the full printed report (or report plus CD-ROM) when the book is expected to become available in late summer.

For additional information about ordering these and previous reports and CDs, please contact Linda D'Epagnier, Program Assistant, at the Potential Gas Agency, telephone 303-273-3886, fax 303-273-3574, or e-mail: ldepagni@mines.edu.

About the Potential Gas Committee

The Potential Gas Committee, an incorporated, nonprofit organization, consists of knowledgeable and highly experienced volunteer members who work in the natural gas exploration, production and transportation industries and in the field and technical services and consulting sectors. The Committee also benefits from the input of respected technical advisors and various observers from federal and state government agencies, academia, and industry and research organizations in both the United States and Canada. Although the PGC functions independently, the Potential Gas Agency at the Colorado School of Mines provides the Committee with guidance, technical assistance, training and administrative support, and assists in member recruitment and outreach. The Potential Gas Agency receives financial support from prominent E&P

and gas pipeline companies and distributors, as well as industry trade and research organizations and unaffiliated individuals.

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Note to Editors:

Selected illustrations from the press conference slide presentation are available for print use. Contact the Potential Gas Agency and specify desired figure number(s) and preferred file format (e.g., tiff, eps).

Fig. 6. Total traditional gas resources in the United States, by resource category, year-end 2008 (mean values, Tcf). Data from Potential Gas Committee (2009). W of the W

Fig. 7. Total coalbed gas resources for the United States, by resource category, year-end 2008 (mean values, Tcf). Data from Potential Gas Committee (2009). W of the W

Fig. 8. Total potential gas resources of the United States, traditional and coalbed, 1988-2008 (mean values, Tcf). Data from Potential Gas Committee (2009).

Fig. 9. Map of PGC assessment areas, annotated with total traditional and coalbed gas resource values for year-end 2008 (mean values, Bcf). Data from Potential Gas Committee (2009).

Fig. 10. Comparison of potential gas resources for the United States, by area, onshore, offshore and coalbed gas, year-end 2008 ("most likely" values, Bcf). Data from Potential Gas Committee (2009).

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