

## COST-OF-SERVICE GAS

### Cost-of-Service (COS) Modeling Factors

For three decades, the customers of Questar Gas have benefitted from natural gas produced pursuant to the Wexpro Agreement.<sup>1</sup> The Wexpro Agreement, signed in 1981, defines the relationship between Wexpro Company (Wexpro) and Questar Gas. Under this relationship, Wexpro manages and develops natural gas reserves within a limited and previously established group of properties. Production from these reserves is delivered to Questar Gas at cost-of-service, which historically, on average, has been lower-priced than market-based sources. The Wexpro Agreement contractually defines risk sharing among the parties. Wexpro is allowed to earn a return on its investment in commercial wells, but must bear the cost of dry holes.

The Division is entitled to monitor performance under the Wexpro Agreement. To facilitate that process, Wexpro provides routine reports to the Division. Further facilitating the review of performance, according to the Wexpro Agreement, is the establishment of two monitoring entities: 1) an independent certified public accounting firm (Accounting Monitor), and 2) an independent hydrocarbon industry consulting firm (Hydrocarbon Monitor). The Accounting Monitor and Hydrocarbon Monitor are selected by the Division and the Staff of the Wyoming Commission. The fees associated with both monitors are paid by Wexpro.

Since its inception in 1981, natural gas supplies provided pursuant to the Wexpro Agreement have ranged between approximately one third and one half of the total annual supplies required to meet the needs of the customers of Questar Gas. During 2010, cost-of-service supplies produced by Wexpro comprised approximately 50.2 billion cubic feet.<sup>2</sup> As development drilling continues to occur, Wexpro anticipates that there will be many more years of production from these sources, due in part to technological improvements in drilling and production methods. During 2010, new cost-of-service production from Wexpro drilling programs replaced production declines of existing cost-of-service sources.

From 2008 to 2009, the total costs remitted by Questar Gas through the monthly Wexpro invoice declined. Following this decline, Wexpro invoice costs increased from 2009 to 2010 by approximately 9.3 percent. The size and success of recent Wexpro drilling programs coupled with the anticipated future development programs suggests that increases in the operator service fee will likely continue to occur. Wexpro's development drilling programs are designed to deliver new cost-of-service natural gas that is competitive with purchased gas. Cost-of-service production is also an effective hedge against price volatility. A continuous drilling program allows for the retention of valuable personnel. More

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<sup>1</sup> "The Wexpro Stipulation and Agreement," Executed October 14, 1981, Approved October 28, 1981, by Public Service Commission of Wyoming and December 31, 1981, by Public Service Commission of Utah; Parties: Mountain Fuel Supply Company, Wexpro Company, Utah Department of Business Regulations, Division of Public Utilities, Utah Committee of Consumer Services, and Staff of Wyoming Public Service Commission.

<sup>2</sup> Questar 2010, Annual Report, page 3.

information on Wexpro's planned development-drilling programs is contained in the Future Resources section of this report.

Among the most important results of the SENDOUT modeling process each year is a determination of the appropriate production profiles for cost-of-service gas. This year, Questar Gas modeled 47 categories of cost-of-service production. These categories have been created to naturally group wells which have common attributes including factors such as geography, economics and operational constraints. A large amount of data must be compiled to provide the inputs to the SENDOUT modeling process. Questar Gas has relied on the expertise of Wexpro personnel in assembling the data elements needed to model each category. Some of those data elements are: reserve estimates, production decline parameters, depreciation and amortization rates, carrying costs, general and administrative costs, operating and maintenance costs, production taxes, royalties, income taxes, and oil revenue credits. The probability curves and median levels of production for cost-of-service gas resulting from the SENDOUT modeling process this year are contained in the Results section of this report.

Questar Gas has submitted periodic variance reports as required under Utah Commission's integrated resource planning standards and guidelines since the late 1990s. Under these standards and guidelines, Questar Gas has provided quarterly reports each year to Utah regulatory agencies detailing the material deviations between planned performance and actual performance of cost-of-service natural gas supplies. Under the recently established 2009 IRP Standards, that process will continue into the future.

As part of the IRP modeling process, Wexpro and Questar Gas are required to anticipate the production capability of more than 1,200 wells. Some of these wells have not been drilled yet, but are included in the planning process. When variance reports are submitted by Questar Gas, it is important to realize that forecasting production from existing wells is not a precise science, and forecasting for wells not yet drilled involves even more uncertainty. New wells can be; and occasionally are, dry holes. Production from new wells can vary from non-commercial quantities to levels several times that anticipated during the planning process. Fortunately, non-commercial wells occur very rarely.

Unanticipated delays during the partner approval process can postpone production that was previously planned for. Delays during permitting, drilling and completion can also affect the timing of production volumes. An unexpected archeological find on a drill site can cause extensive delays for all the wells planned for the site, or can cause the wells not to be drilled at all. Timetables missed for any reason can be further delayed due to the need to comply with environmental windows for the migration, mating and/or nesting of local species. Pad drilling, with all its inherent cost efficiencies can also create delays. Since all the wells on a pad are typically hooked up to a gathering system at the same time, any delay in one well affects the production timing of all the pad wells.

For existing wells, a multiplicity of geotechnical factors can affect production levels. Although reservoir engineers are skilled in the utilization of sophisticated techniques to forecast future production decline rates, precisely predicting the performance of reservoirs

many thousands of feet deep is complex and uncertain. Further complicating the prediction process is the fact that the pressures of the gathering lines that wells are being produced into are constantly changing due to fluctuating supplies into, and demands from, the local gathering system (a phenomenon often totally out of the control of the producers). New wells drilled by any party typically come in at very high pressures and, in the short term, can “pressure-off” old wells temporarily affecting existing production levels from a field. While compression can remedy such problems, those costs must be factored into the overall economics of the production stream. Plus, the design and construction of compression facilities takes additional time to complete. In a nutshell, there are many reasons for variances between planned and actual cost-of-service gas volumes.

## Producer Imbalances

In most of the wells where Questar Gas receives cost-of-service gas, there are multiple working interest partners. Each of these partners generally has the right to nominate its legal entitlements from a well subject to restrictions as defined in the operating agreement and/or gas balancing agreement governing that well. As the individual owners in a well each nominate supplies to meet their various marketing commitments, imbalances between the various owners are created. Imbalances are a natural occurrence in wells with multiple working interest owners. There are no fields or wells with multiple owners having individual marketing arrangements where an imbalance doesn't exist. No individual working interest owner can control, in the short term, the level of producer imbalances associated with a well because they do not have control over the volumes that their partners are nominating. Anytime allocated wellhead volumes differ from legal entitlements for any one party an imbalance is created for all the parties in the well. Further complicating matters is the fact that it is not uncommon for the market of a working interest owner to be lost unexpectedly, either in part or in full, for a variety of reasons. This can happen without the knowledge of the other parties for a significant period of time, and will contribute to an imbalance.

For some wells with multiple working interest partners, contract-based producer-balancing provisions exist. These provisions generally allow for parties that are under-produced to nominate recoupment volumes from parties that are over-produced. Given the time lag in the accounting flow of imbalance information, delays of several months can occur. Also complicating the process is the fact that advance notice of several weeks is typically required before imbalance recoupment can begin to be nominated.

Over the past year, producer-imbalance recoupment has taken place in fields where Questar Gas is entitled to receive cost-of-service production. Exhibit 6.1 shows the monthly volumes nominated for recoupment during calendar year 2010 and for the first two months of 2011.

Questar Gas has had an overproduced position in Hiawatha Deep Well No. 1, and an under-produced position in Hiawatha Deep Well No. 3. In early 2008, the Company began nominating recoupment in the Hiawatha Deep Well No. 3 and was recouped against by its working interest partner in Well No. 1. This recoupment has continued through 2009 and

early 2010. The net effect is that imbalance levels in both wells were lessened and the volumes offset in the determination of the field total. Exhibit 6.1 shows monthly recoupment volumes for both Hiawatha Deep wells.

Recoupment has also been taking place for wells in the Ace/Jacks Draw area. As can be seen in Exhibit 6.1, these volumes are relatively minor.

Questar Gas has been overproduced in the Mesa/Pinedale, Trail and Moxa fields. For selected wells in these areas, the working interest partners of Questar Gas have nominated imbalance recoupment volumes as Exhibit 6.1 shows.

In the Church Buttes field, wells exist that fall outside of the Church Buttes Unit which are designated as Church Buttes Buffer Wells. Questar Gas had an overproduced position in these wells. During 2009 and early 2010, a working interest partner in the Buffer Wells nominated recoupment against Questar Gas. These volumes are also shown in Exhibit 6.1.

Wells in the Canyon Creek field are designated by the pricing category. These categories were defined in the Natural Gas Policy Act of 1978 (NGPA). Questar Gas' working interest partner in this field nominated recoupment in one NGPA category during December of 2010 where it was underproduced. Questar Gas countered by nominating makeup gas in another NGPA category where it was underproduced.

As of December 31, 2010, Questar Gas had a total net producer imbalance level for all of the fields from which it receives cost-of-service production of approximately 2.6 Bcf. By way of comparison, the total net producer imbalance level for December 31, 2009 was approximately 2.2 Bcf. The Hydrocarbon Monitor reviews producer imbalances as part of its responsibilities. In a recent audit report, the Hydrocarbon Monitor concluded that total producer imbalance levels had been reasonable.<sup>3</sup>

## Future Resources

The current market price of natural gas coupled with future price expectations directly drives the level of drilling in the U.S.<sup>4</sup> But, other factors play into the drilling decision. Among the most valued assets in any energy production company are knowledgeable personnel such as reservoir engineers or geotechnical experts. Increasing or decreasing staff with swings in market prices generally results in the loss of valuable employees with specific knowledge. A case can also be made for drilling when prices are down since drilling costs are generally lower then. By the time a well is drilled and turned to production, prices may have rebounded.

In many situations, drilling permits dictate that leases must be developed within a specified period of time (such as two years) or the leases will be lost. These provisions

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<sup>3</sup> Wexpro Hydrocarbon Auditor Review, Evans Consulting Company, April, 2011.

<sup>4</sup> See the Introduction and Background section of this report for a discussion of the natural gas rig count.

generally prevent exploration and production companies from holding leases indefinitely without creating value for royalty owners. In the current price environment, a substantial portion of drilling in shale gas plays is being done on a non-voluntary basis to hold leases.

There can be other factors affecting the rate of leasehold development. For example, the customers of Questar Gas benefit from the receipt of significant quantities of cost-of-service production from wells in the Pinedale Anticline Project Area (PAPA) in Sublette County, Wyoming. Development in the PAPA is governed by a Record of Decision (ROD), issued by the U.S. Department of Interior, Bureau of Land Management during September of 2008. The ROD was issued in response to certain environmental mitigation measures and operational safeguards proposed by the partners in PAPA.<sup>5</sup>

As a means of minimizing environmental impacts, the Pinedale ROD, in an orderly and systematic way, allows for concentrated development by limiting the number of well pads and requiring the maximum use of existing well pads before constructing new well pads. Operators are required to “stay on a well pad until the well pad is completely drilled out”.<sup>6</sup> Drilling is fundamentally sequential with time limitations for development in certain areas.

Wexpro’s focus is to maintain its long-term drilling plans, thereby continuing to benefit the customers of Questar Gas. For the remainder of 2011 (May through December) Wexpro plans on drilling approximately 46 net wells with a capital budget for those wells of approximately \$95 million.<sup>7</sup> For the years 2012 through 2015, the planned net wells decline from 57 to 37 with annual investments in the range of \$118 to \$122 million. Given the uncertainties in the financial and natural gas markets, these longer term estimates could vary. Drilling activity through the remainder of 2011 is expected to focus primarily in the following areas: Powder Wash, Trail, Canyon Creek, and Mesa/Pinedale. Relatively minor drilling is expected to take place in the Sugar Loaf, Spearhead Ranch, Bruff and Kinney areas.

Plans, forecasts and budgets for drilling development wells under the Wexpro Agreement are always subject to change. Many factors including economic conditions, ongoing success rates, partner approval, availability of resources (rigs, crews and services), access issues associated with environmentally sensitive areas, re-completion requirements, drainage issues and demand letters all have an impact on drilling and capital budget projections.

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<sup>5</sup> Record of Decision for the Supplemental Environmental Impact Statement, Pinedale Anticline Oil and Gas Exploration and Development Project, U.S. Department of the Interior, Bureau of Land Management, Cheyenne Wyoming, September 12, 2008.

<sup>6</sup> Ibid., Summary, Page 20.

<sup>7</sup> “Net wells” are the summation of working interests (total and partial ownership).