RESULTS

Base Case

The IRP process engaged in by the Company involves months of preparation and data gathering beginning in the fall and culminating in the spring. Thousands of data elements are reviewed, compiled and prepared for input to the SENDOUT model. The value of computer based analysis is in the speed with which complex analysis involving many variables can be performed. This, in turn, facilitates the evaluation of multiple scenarios.

There is a constantly evolving dynamic between resource availability and market forces and energy-policy directives. Most of the variables modeled in the IRP process are subject to some extent to this dynamic. As a means of assessing risk, the Company models a wide variety of scenarios focusing on those variables that are most difficult to predict and their expected range of occurrence. Exhibits 9.1 to 9.9 show summary results of the 231 scenarios modeled this year. Each has a unique identification label as shown in Column B. Additional labels in Column A help in the identification of families of scenarios. The adjacent columns show summary modeling results for these scenarios.

Even though the reality that what will actually happen during the plan year will be different from what was anticipated, it is still useful to identify, for planning purposes, a base case . . . a case that can serve as a type of benchmark, a reflection of the Company's expectations for the future. The identifier for the base case this year is "tiajlaaa", a cryptic, but necessary label. The summary results for this base case are replicated at the top of each page of Exhibits 9.1 to 9.9 to facilitate comparison with other cases modeled.

In the Customer and Gas Demand Forecast section of this report, the assumptions underlying the Company's annual demand forecast and the design-peak-day forecast are described. Both forecasts are fundamental drivers of the modeling process. The customer demand forecast for the first model year is 114.0 million decatherms, up from 109.5 million decatherms last year. The design-peak-day forecast for the 2007/2008 winter heating season is 1.163 million decatherms per day, up approximately 15,000 decatherms per day from last year. Historically, the most likely calendar day for a design-peak event in the service territory of the Company is January 2. To ensure that adequate resources are available in the event of a late design-peak event, the Company models the design peak day as occurring on February 8. Exhibit 9.10 shows the resources utilized for the base case this year by the SENDOUT model in meeting the design-peak day.

Understandably, the natural gas price forecast used in the base case is also a fundamental input, and unfortunately, among the most difficult to accurately predict on a consistent basis. The starting price for the first model year has been assumed to be $7.00 per decatherm, the same level used last year. Adjusting the current natural-gas forward curve for Henry Hub by subtracting the average geographic basis differential yields a ball-park verification of this number. The first-year price is assumed to be the arithmetic average of the monthly prices, as is the case for every modeled year.

Equally important in the natural gas price forecast is the assumed escalation rate. The escalation rate is composed of two components, the general inflation rate and the real gas inflation rate. In developing its base case this year, the Company has utilized the reference case forecasts prepared by the Energy Information Administration (EIA) from the U.S. Department of Energy. This information is published in EIA's Annual Energy Outlook for 2007.[1] The forecast utilized as the general inflation rate in the base case is shown in Exhibit 9.11 and is labeled as "AEOREF". In the SENDOUT model, rates are calculated by using multiplicative factors which are derived by compounding this rate on an annual basis. The resulting annual compound multipliers are shown in Exhibit 9.12 as the line labeled "AEOREF".

The real natural gas inflation rate utilized by the Company this year in the base case is also from the EIA and is labeled as "AEOFOM" in Exhibit 9.13. The compound multipliers associated with this forecast are graphed as the line labeled "AEOFOM" in Exhibit 9.14. The combination of the general inflation rate and the real natural gas inflation rate yield the nominal natural gas price forecast. This forecast for the base case is shown as the line labeled "AEOFOM" in Exhibit 9.15.

As a means of accounting for seasonal variations in natural gas prices, the Company utilizes a "seasonality profile" to generate monthly prices from the annual nominal natural gas price forecast. From year to year, seasonal gas price profiles have taken on relatively divergent shapes depending on the unique aspects of the market at that time. The Company has created a profile for modeling purposes by smoothing averaged historical data. The profile utilized in the base case this year is shown in Exhibit 9.16 and is labeled as "GIIMOD1".

A primary function of the modeling process engaged in each year is the selection of packages of purchased gas. The "Purchased Gas" section of this report describes the RFP process this year and summarizes the response. Last year the SENDOUT model selected purchased-gas packages totaling 60.8 million decatherms. This year, packages totaling 64.2 million decatherms were selected (including supplies from the Brady field). Exhibit 9.1, line 1, shows the mix of purchased-gas resources selected. Base-load supplies have availabilities of 365, 180, 150, 120, and 90 days. By way of diversity (risk management), eleven companies submitting responses to the RFP had at least one purchased-gas package selected.

Proposals consisting of purchase packages for peaking purposes were also received as part of the RFP process this year. The SENDOUT model selected peaking supplies delivered from Questar Pipeline totaling 180 thousand decatherms per day for the base case, up from 85 thousand per day last year. Peaking supplies from Kern River totaled 173 thousand decatherms per day, down from 210 thousand decatherms per day last year.

As pricing terms for purchased gas packages are refreshed and contract details negotiated, some of the deals selected by the SENDOUT model inevitably fall through.

[1] "Annual Energy Outlook 2007 With Projections to 2030," Energy Information Administration, Office of Integrated Analysis and Forecasting, U.S. Department of Energy, Washington D.C., February 2007.

During the summer and fall months, the Company looks for opportunities to fill any shortfall that may develop.

Another important output of the modeling process each year is a determination of the appropriate level of Company-owned gas. The level of this resource selected by the SENDOUT model this year is 49.6 million decatherms. Last year 49.4 million decatherms were selected.

Additional planning detail is shown in Exhibits 9.17 to 9.20 for the first two years of the base case. Monthly data for each category of Company-owned gas and each purchased-gas package are listed. From an operating standpoint, these exhibits are among the most useful products of the IRP process. They are used extensively in making monthly and day-to-day nomination decisions. Exhibit 9.21 shows a side-by-side comparison of key modeling assumptions for the base case this year and the previous year.

Starting Price and Inflation

The availability of Company-owned gas, a long-term resource, necessitates a longer modeling time horizon than that utilized by most local distribution companies. The Company utilizes a 21-year time frame to allow the model sufficient latitude to weigh long-term economic alternatives. Projecting natural gas market prices is difficult given the year-to year volatility that has occurred historically. Consequently, the starting price for natural gas and the associated escalation rate are variables that lend themselves to sensitivity analysis.

This year, the Company has modeled 14 starting prices (counting the base case) that range from $1.00 per decatherm to $15.00 per decatherm. Exhibit 9.1, lines 3 to 17 show the summary results for these first-year price scenarios. Understandably, changes in starting price, especially over a range as broad as $14.00 per decatherm, have a substantial impact on starting price. Higher first-year starting prices result in slightly higher levels of first year Company-owned production and lower first-year levels of purchased gas. Exhibit 9.22 shows the impact of starting price on first-year Company-owned production (the base case is the bolded symbol).

As discussed earlier, the nominal gas prices used by the SENDOUT model are generated from forecasts for general inflation and the real gas inflation rate. A range of combinations for both of these variables at different natural gas starting prices have been modeled. The summary results are shown in Exhibits 9.3 through 9.6. The impact of changes in the general inflation rate on first-year levels of Company-owned production is shown in Exhibit 9.23. As the general inflation rate increases, first year levels of Company-owned production decline slightly. Exhibit 9.24 shows the same graph for the real gas inflation rate. The effect on levels of first-year Company-owned production are similar to that for general inflation rate increases.

Seasonality

Within the context of the IRP modeling process, seasonality is used to describe the monthly natural gas price profile in any given modeling year. The data underlying these profiles is used to convert the nominal natural gas price forecast into the monthly data that is used by the SENDOUT model. A steep seasonality profile is indicative of a higher summer/winter price differential. A flat profile indicates a lower differential. Annual seasonality profiles in recent history have been widely divergent and are difficult to forecast. For the base case, the Company utilized smoothed historical data to create the seasonality profile. Other profiles, flatter and steeper than the base case have been created to provide a meaningful range of seasonalities for sensitivity analysis purposes. The profiles modeled by the Company this year are shown in Exhibit 9.16. As can been seen in Exhibit 9.25, flatter seasonality profiles result in higher levels of first-year Company-owned production.

Discount Rate

As a means of accounting for timing differences over the 21-year modeling time horizon, the costs associated with the resource options in the model must be discounted. The SENDOUT model discounts on a monthly basis. The base case this year utilizes a 7 percent discount rate, the same as was used last year.

Nine different discount rates ranging from one to eleven percent have been modeled this year. Summary modeling results for this range of rates are shown in Exhibits 9.6 and 9.7. Of particular interest is the impact of discount rate on Company-owned production. As can be seen in Exhibit 9.26, lower discount rates result in substantially lower levels of first-year Company-owned production than higher discount rates. At discount rates lower than four percent, first-year production declines more rapidly.

Demand

In addition to making a demand forecast for the base case, the Company also develops a high demand forecast and a low demand forecast. The assumptions associated with these forecasts are explained in the Customer and Gas Demand Forecast section of this report.

Summary results from the SENDOUT modeling process this year for these three demand profiles can be reviewed on Exhibit 9.1, lines 41 to 49. As would be expected, changes in demand have a significant impact on the first-year total costs and the 21-year total costs. Less dramatic is the impact of demand on levels of first-year Company-owned production. The low demand case results in slightly higher levels of first-year Company production (49.8 million decatherms). The high demand case results in slightly lower levels of first-year Company production (48.8 million decatherms).

In addition to modeling the high and low demand cases that extend over the 21-year modeling time frame, the Company also evaluates changes in demand for the first model year only. Exhibit 9.1, lines 20 to 29 shows the impact on the summary modeling results of a ten-percent-warmer-than-normal and a ten-percent-colder-than-normal first year. In the ten-percent-warmer case, first-year Company-owned production is slightly higher, with the opposite effect for the colder case. The shortfall in both cases is made up with purchased gas.

DSM Programs

As indicated in the DSM section of this report, Questar Gas has modeled DSM programs using an Excel-based model (DSM Model) and calculated the cost-effective potential of these programs as indicated by the standard California Tests (see Exhibits 8.1 through 8.6). In addition, the Company has modeled the residential programs recently implemented by using the DSM module of its SENDOUT model. While the Excel-based DSM Model has the favorable attributes of speed, ease-of-use, and ability to trace and audit formulas, the avoided costs must be calculated externally and provided to the model. The more sophisticated (and cumbersome) SENDOUT model, with its ability to evaluate all of the available supply-side and demand-side resource options together, generates its own avoided cost profile over the entire modeling time frame. Of interest is how the results of the two different modeling systems compare.

Exhibits 9.27 and 9.28 show the DSM results of the SENDOUT model using the base case data. The SENDOUT modeling results are similar to the results of the Company's DSM model. For example, the benefit/cost ratios for the Participant Test for the residential DSM programs range from 2.2 to 5.4 using the DSM Model. Comparable results from the SENDOUT model range from 2.4 to 6.2. It would be expected that different modeling tools such as these would give similar, but not identical results. The results from both models, however, appear to fundamentally support the cost-effective justification of these DSM programs.

While the SENDOUT model and DSM model give similar results for the Participant Test, Total Resource Cost Test and Utility Cost Test, there is a difference between the two models in the calculation of the Ratepayer Impact Measure Test. One of the costs used in the RIM test is Lost Revenue. The DSM model uses Distribution Non-Gas revenue as the lost revenue component of this calculation. It excludes Commodity and Supplier Non-Gas revenue because these revenues ultimately have no impact on the earnings or revenue requirement of Questar Gas. The SENDOUT model includes all revenue as lost revenue. This explains the difference in the lower benefit to cost ratio for the RIM test from the SENDOUT model.

Risk Analysis

Exhibits 9.29 through 9.33 list the summary results of all of the 231 IRP cases modeled this year. With the complexity of the modeling process, and given the tendency for many of the variables to be subject to much volatility, the Company believes that an effective way to evaluate risk is by modeling a wide variety of scenarios. For each case, the first year discounted cost, the deviation of this cost from the base case, and the cost deviation in percentage terms is listed. Scenarios are ranked from highest first-year cost to lowest first-year cost. The first-year cost deviations range from $1.493 billion above the base case to $321 million below the base case. If the higher first-year cost deviations have anything in common, it is the $15.00 per decatherm natural gas index price assumption they share. Not surprisingly, that single variable says more about the order of scenarios than any other single variable.