

## SYSTEM CAPABILITIES AND CONSTRAINTS

### Questar Gas System Overview

Historically, Questar Gas customers have been served by an integrated transmission and distribution system connecting natural gas fields in Utah, Wyoming and Colorado to the Company's Utah, Wyoming, and Idaho markets. The operation of this integrated system remains intact as a result of Questar Gas' relationship with Questar Pipeline. Questar Gas' ability to serve its customers is dependent primarily upon deliveries from Questar Pipeline and augmented by deliveries from KRGT. The Company also relies on deliveries from Northwest Pipeline Corporation to serve the towns of Moab, Monticello and Dutch John; Williams Field Services to serve the towns of La Barge and Big Piney in Wyoming; and Colorado Interstate Gas Company to serve the towns of Rock Springs and Wamsutter, Wyoming. These pipeline systems and costs are part of the modeling process discussed in other IRP sections. This section will focus on Questar Gas' local distribution system.

Questar Gas builds steady-state and unsteady-state Gas Network Analysis (GNA) system models each year to account for changes in facilities and customer growth. The Company completes these models in April of each year, using year-end data from the year before, and updates them to include facilities and demands as of February of the current year. Then, Questar Gas adjusts the models to match the predicted demand for the following year based on the growth projections discussed elsewhere in this report. The modeling results provided in this report are based on the 2012-2013 models which were created in April 2012.

The unsteady-state models are utilized to account for daily flow requirements. The customer demand on Questar Gas' system is not constant throughout the day. Figure 1 shows the expected peak-day demand profile of a general customer. Unsteady-state models account for system pack within the HP system and utilize the Questar Pipeline system to meet demand swings by allowing gate station pressures and flows to be adjusted as required.

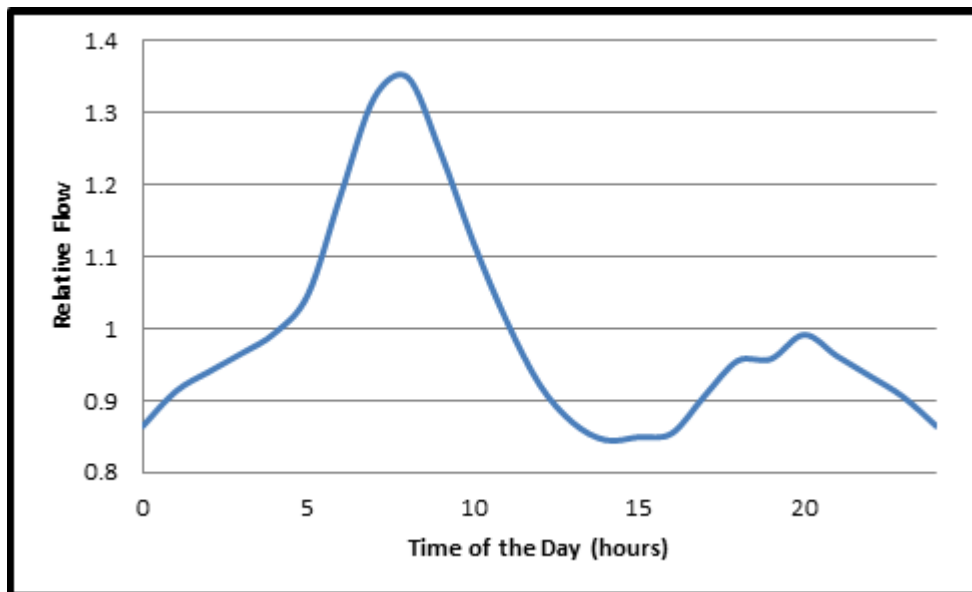


Figure 1: General Demand Profile

Questar Gas uses these GNA models to perform system analysis to meet future capacity requirements while maintaining system reliability. Each time Questar Gas builds the models, the engineering department checks them for accuracy and then reviews them to determine any required system improvements, supply changes, or contracts revisions. The models can then be expanded to meet system analysis needs including planning and operational analysis, creating models at different temperatures and creating different types of models from the standard system model.

## **Ongoing and Future System Analysis Projects**

### *Master Planning Models*

Questar Gas has been in the process of creating Master Planning Models and the methods to update them for the last couple years. These models have been defined to use the expected growth in conjunction with the planned developments for each region. Region engineers collect development plans from city planners and developers to understand the expected growth pattern of their Intermediate High Pressure (IHP) systems. These models have the advantage of identifying specific geographic growth areas on the system and thus are useful in conducting long term planning studies. The models will be reviewed and rebuilt every 3 years which will allow development areas to be updated with actual demand as they are built out while maintaining the projected full build-out demands.

### *System Supply Analysis*

The Questar Gas system supplies are analyzed each year to determine if the current contracts, at each Meter Allocation Point (MAP), and available capacity will meet the coming year's demands. This analysis carefully considers the delivery (Transmission Pipelines) constraints and capabilities as well as the ability to acquire gas to deliver to the Questar Gas system on a peak day. The purpose of this analysis is to determine the amount of gas required on a peak day and if the current contracts facilitate this required delivery.

### *Interruption Analysis*

There are a number of customers on the Questar Gas system who have opted to purchase gas on an interruptible rate utilizing any available excess capacity. While the system is not designed for these customers, it is important to understand the temperature(s) at which interruption is likely to occur. This analysis divides the system into interruption zones and determines the warmest temperature at which interruption of a specific zone is necessary in order to maintain service to firm customers system-wide.

### *Contingency Planning*

Questar Gas uses the HP system models to develop contingency plans for potential emergency scenarios. Questar Gas' engineering and pipeline compliance groups coordinate to

incorporate the various scenarios into the Emergency Plan. Questar Gas' engineering department conducts modeling using the unsteady-state model to determine the system impact and time required to make changes to maintain system integrity or enact emergency procedures. While it may not be possible to model every possible scenario, it is beneficial to prepare general plans that can be tailored to specific events.

#### *Construction Timeline Analysis*

During construction season, there are numerous projects that require feeder lines and HP facilities to either be limited (reduced pressure or flow) or shut down completely. Each month a construction timeline analysis is performed to determine whether or not the planned construction can take place without adversely impacting customers. This analysis considers the gate station settings, supply issues, probable temperatures and any other conditions specific to the month analyzed. This allows construction to proceed with confidence that the work planned will not impact service to customers.

#### *Operational Models*

Another way Questar Gas prepares to respond to unforeseen scenarios is by developing and maintaining operational models of the system. Questar Gas maintains these models to represent current actual conditions that exist in the system at expected temperatures. Questar Gas' engineers review these models on an ongoing basis with Gas Control, Gas Supply, Marketing, Operations, and Measurement and Control departments in order to inform them of expected system conditions.

### **System Modeling and Reinforcement**

Questar Gas' engineering department utilizes steady-state IHP models to determine the required improvements in order to maintain operational pressures. Questar Gas uses these models to identify the required location(s) and sizing of new mains and/or regulator stations. Questar Gas also uses the models to compare the required flow from regulator stations to the maximum capacity of the existing stations. This analysis provides Questar Gas with the information necessary to determine which reinforcements should be constructed each year. Based on the modeling results, Questar Gas constructs a number of mains and new stations, as well as upgrades to existing stations.

The HP system models have more variables than the IHP system models. Engineers consider gate stations, existing supply contracts, supply availability, line pack, and the piping system in conducting HP analysis. Because HP projects typically take longer to complete than similar IHP projects, Questar Gas must also identify the need for improvements earlier than would be required on IHP projects. Questar Gas and the interstate pipeline companies that supply its system to identify potential constraints to ensure that Questar Gas' supply needs are met.

## **Model Verification**

Questar Gas verified the accuracy of the steady-state GNA models using recorded pressure data and calculated demands. Questar Gas' engineers built steady-state models to represent the system conditions on Monday December 5, 2011 using actual data from that day (verification day). Model settings were adjusted to match the actual temperatures and other conditions for this day. The model pressures were compared to actual pressures at verification points and were found to be within 7 percent of the actual pressures on that day. Based on this analysis, the model calculated demands and infrastructure are accurate.

Questar Gas also compared the total modeled demand with the daily recorded deliveries (sendout) for the same validation day at the gate stations. The results of this analysis showed that the demand the model predicted was within approximately 10 percent of the actual deliveries for the verification day. This difference is likely due to the fact that the steady-state model does not include line pack and does not account for any lost and unaccounted for gas. Actual system flows would provide for some line pack in the system. The results of the comparisons confirm the accuracy of the calculated demand used in the steady-state models.

Questar Gas verified the unsteady-state models in the same manner as the steady-state models. Questar Gas matched the temperatures and the gate station flows and pressures as closely as possible. The Central and Northern Regions are the largest connected high pressure systems belonging to Questar Gas with 7 gate stations and 2 pressure zones. There are three smaller isolated systems which also require unsteady-state model analysis: Summit/Wasatch, Eastern, and Southern. This analysis has 52 pressure verification points as well as the known pressures and flows from the gate stations. None of the pressure differences at the verification points have error values higher than 6.5%, when compared to the actual minimum and average pressures. The results of these comparisons confirm the accuracy of the unsteady-state models.

## **Gate Station Flows vs. Capacity**

The gate stations, in the system models, must stay within the pressure and flow limits of each specific station. In order to ensure this, Questar Gas completed a capacity study for each of the gate stations. Questar Gas calculated the hourly and daily flow capacities for each station based on facility limitations, set pressures, and inlet pressures provided by the Questar Pipeline systems engineering group and those identified in interconnect agreements with other pipeline suppliers.

The current models reflect the existing capacity of the Hunter Park Gate Station in West Valley City. The station capacity is limited by 250 MMcfd through the KRGT facilities. Additional changes to this station occurred in 2011 in order to remediate some operational concerns. The Moab stations are still near capacity and being monitored for possible upgrades in the near future.

## **System Pressures**

Once Questar Gas verifies the system models and properly sets contractual obligations and station capacities, Questar Gas uses the models to analyze the system to verify that the system has adequate pressures in order to supply Questar Gas customers. Questar Gas uses peak model(s) for this analysis. Peak models include firm loads for sales and transport customers. Questar Gas uses the daily contract limits for applicable customers and assumes that interruptible demands are off system during the peak day.

### *Northern*

The Northern Region includes the main system around Salt Lake City and northern Utah, including Salt Lake County, Tooele County, Summit County, Utah County, Wasatch County, Davis County, Morgan County, Weber County, Cache County, and Box Elder County. Questar Gas serves this area through interconnects with Questar Pipeline at MAP 164 through the Hyrum, Little Mountain, Payson, Porter's Lane, and Sunset stations. Questar Gas also serves the area through multiple smaller taps from Questar Pipeline (MAP 162) and KRGT (Hunter Park and Riverton stations).

Questar Gas meets the peak-day demands by serving customers in the Northern Region gas from both Questar Pipeline and KRGT. Questar Gas utilizes the Kern River gate stations to provide up to 450 MMcfd of fixed flow supply. Questar Gas utilizes its firm capacity along with its no notice services on Questar Pipeline to manage peak hourly and daily deliveries.

In the steady-state model, the low point in the main northern system is 185 psig at the endpoint of Feeder Line 36 (FL 36) in West Jordan. The next lowest pressure in the Northern Region is at Alta, with a steady-state pressure of 214 psig. These pressures remain higher than the lowest allowable pressure of 125 psig.

The steady-state pressures at some of the key locations in the Northern Region are shown in Figure 2 and Table 1. Questar Gas models these pressures on a peak day at system endpoints, low points in the area and important intersections. Questar Gas builds steady-state models using average daily flows that most closely represent average pressures for the peak day. The unsteady-state models profile the load throughout the day and represent the pressure fluctuations throughout the peak day.



Figure 2: Northern Region Key Pressures

Table 1: Steady-State Peak Day Pressures

Location	Pressure (psig)
Endpoint of FL29 – Plymouth	277
Endpoint of FL36 – West Jordan	185
Endpoint of FL48 – Stockton	260
Endpoint of FL51 – Plain City	221
Endpoint of FL62 – Alta	214
Endpoint of FL63 – West Desert	256
Endpoint of FL70 – Promontory	288
Endpoint of FL74 – Preston	269
Endpoint of FL106 – Bear River City	295
Intersection of FL29 & FL23 – Brigham City	345

The curves shown in Figures 3, 4, and 5 are the expected peak-day pressures in the Northern Region. In the unsteady-state models, the low points in the Northern Region are expected to be in West Jordan and Plain City. West Jordan has an expected minimum peak-day pressure of 138 psig and Plain City will likely reach 140 psig should a peak day occur during the 2012-2013 heating season. These pressures are sensitive to changes in the amount of gas brought into the system through KRGT tap, meaning the pressures may be influenced by simply shifting supply points.

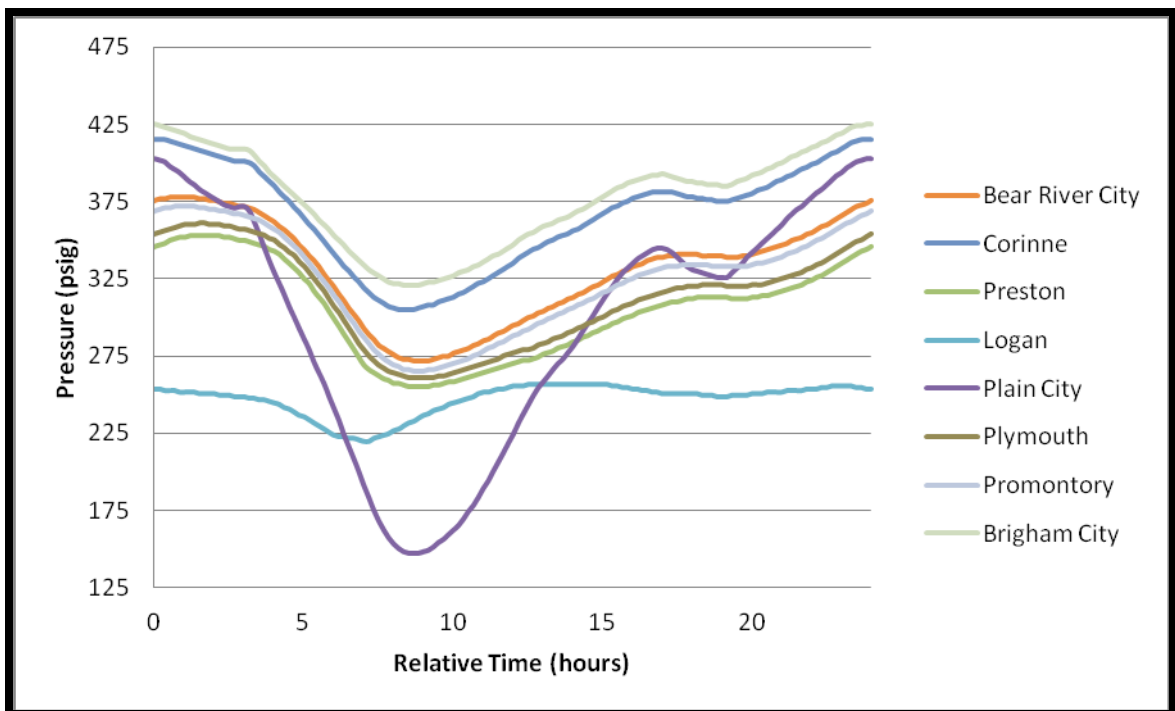


Figure 3: 2012 Northern Peak Day Pressures (North of North Temple)

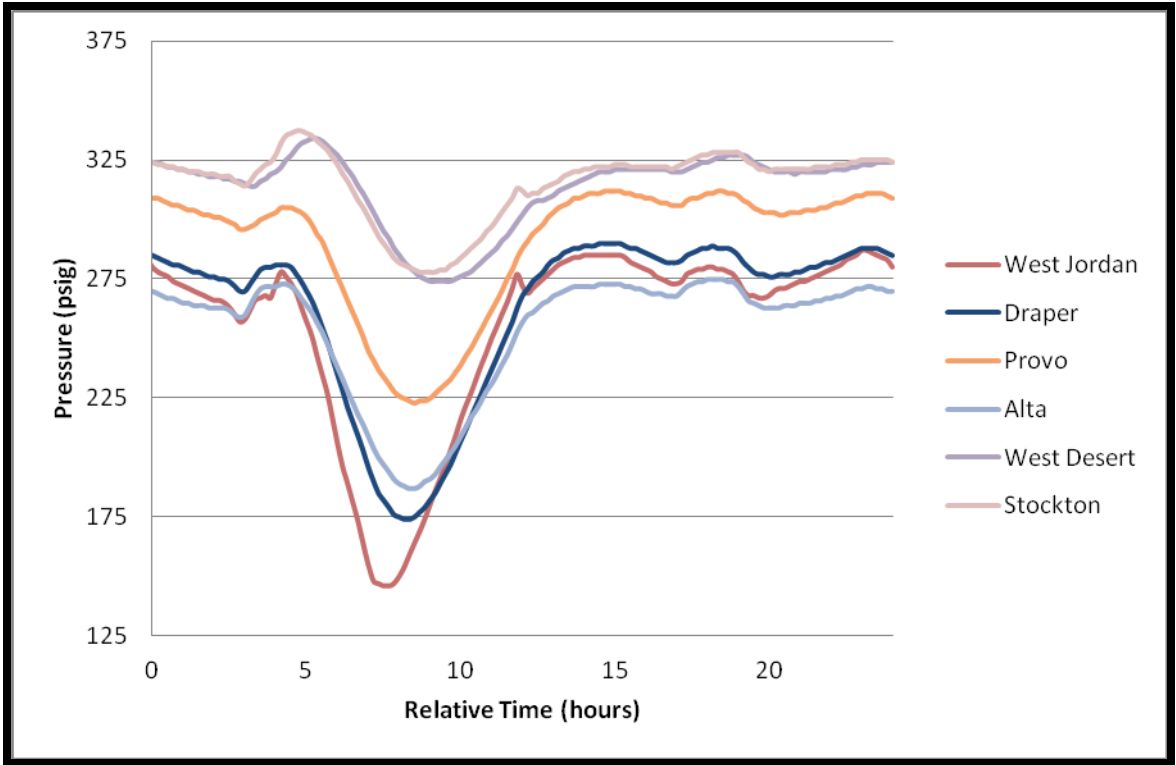


Figure 4: 2012 Northern Peak Day Pressures (South of North Temple)

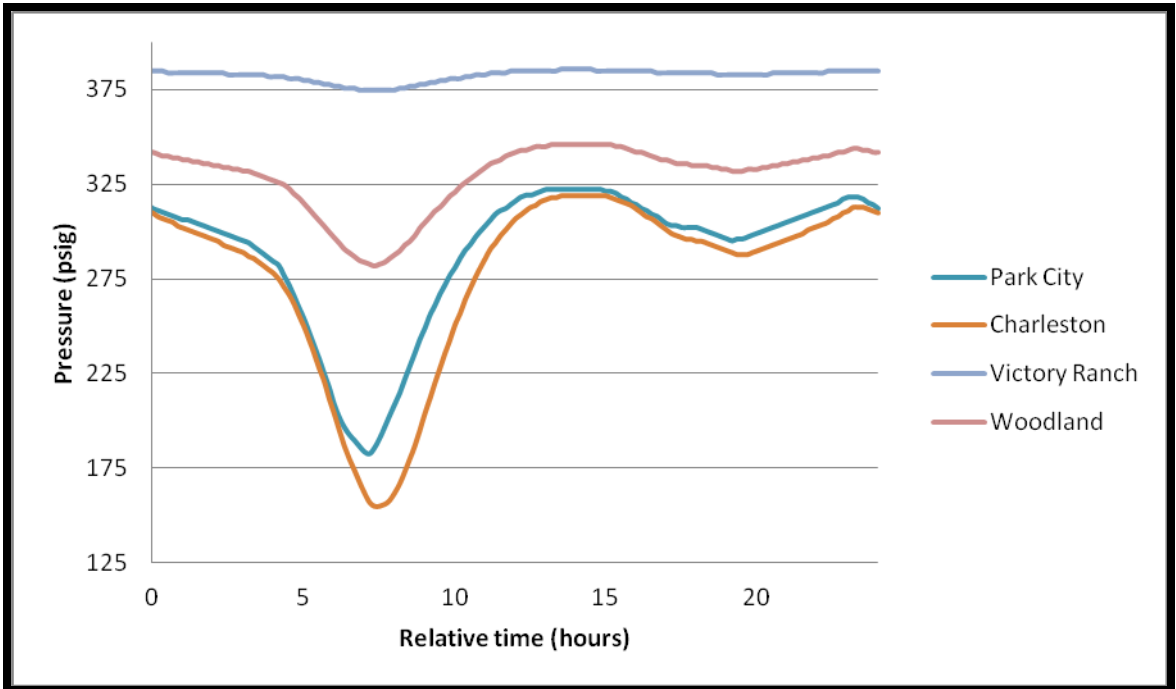


Figure 5: 2012 Northern Peak Day Pressures (Summit and Wasatch Counties)



The gate stations in the Northern system having carrying flow throughout the day. Figure 6 shows the expected peak day flow rates for the large (average volumes greater than 25 MMcfd) gate stations in the Northern System. Little Mountain gate station is the key station in maintaining pressures in the entire Northern HP system. Without Little Mountain's constantly adjusting flow rates, the current system configuration would not function on a peak day.

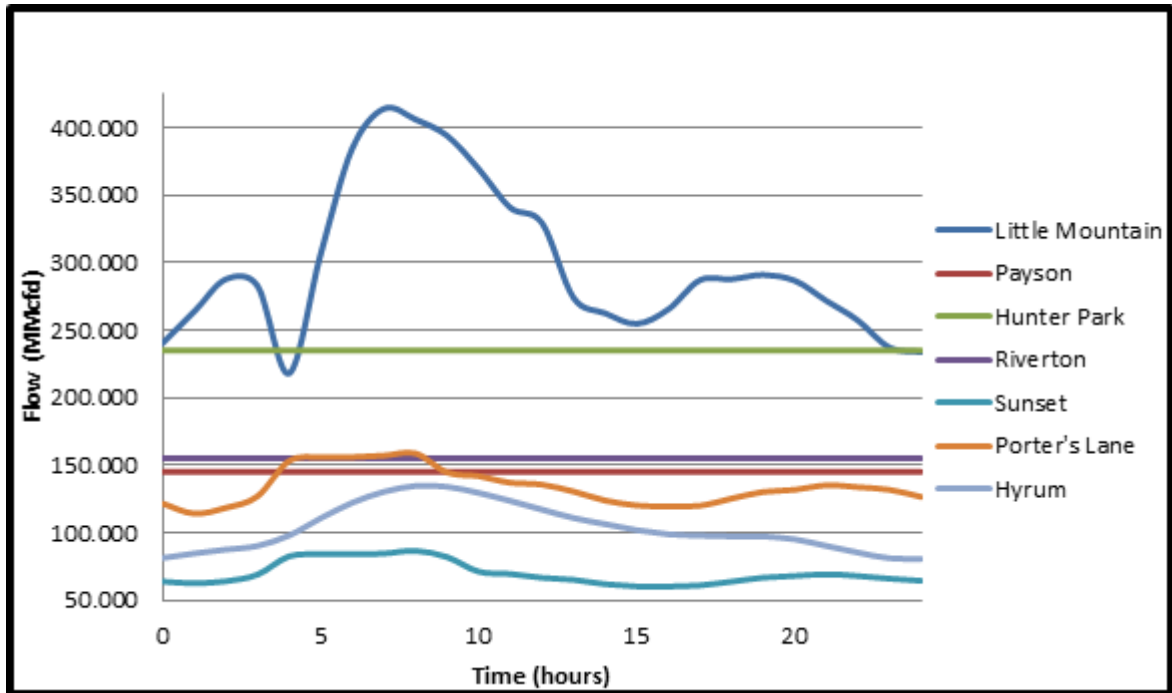
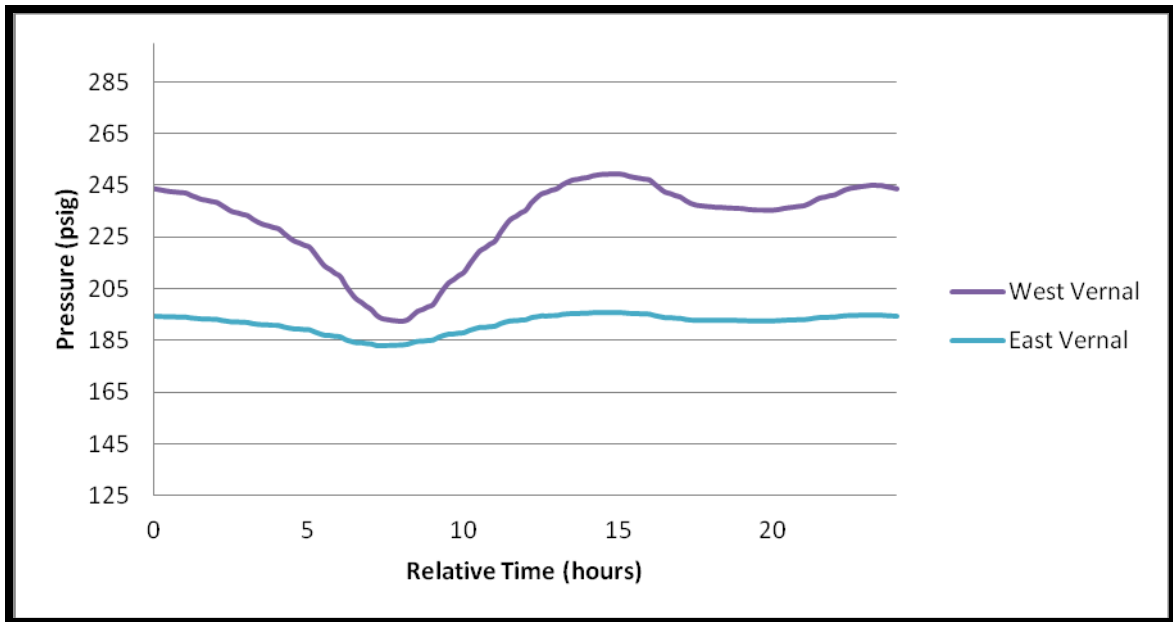


Figure 6: 2012 Northern Gate Station Peak Day Flow Rates

*Eastern (North)*

The Eastern (North) Region includes Duchesne County, Uintah County, Carbon County, and Emery County, including Price and Vernal. The Vernal system is a system that was previously owned by Utah Gas. This area is served from Questar Pipeline by multiple taps through MAP 163.

The pressure at the end of Feeder Line 90 (FL 90), in west Vernal, is being monitored. The low point is predicted to be 192 psig at the regulator station there during a peak event. The pressures in east Vernal, at the endpoint of Feeder Line 89 (FL 89), are actually lower than FL 90 due to regulation at the Diamond Mountain regulator station which will be retired in 2012.



**Figure 7: 2012 Eastern Peak Day Pressures**

*Eastern (Northwest Pipeline)*

The Eastern (Northwest Pipeline) Region includes Moab, Monticello and Dutch John. Utah Gas previously owned the Moab system. Questar gas serves these areas from Northwest Pipeline by two stations in Moab, one station in Monticello, and one tap in Dutch John.

The system in this area is made up of separate subsystems with individual taps from Northwest Pipeline. All of the segments in this area have adequate pressures and do not require any improvement to meet the existing general service demand. A study in progress will determine if Moab Salt requires additional facilities in order to meet their projected demand.

*Southern (Main System)*

The Southern (Main System) Region encompasses the areas served by the Indianola/Wecco/Central facilities including Richfield, Cedar City and St. George. Questar Gas serves these areas from Questar Pipeline at Indianola station through MAP 166 and from KRG T at Central and Wecco stations.

Using the steady-state model, the lowest pressure on a peak day is 431 psig in Hurricane. This is higher than the pressures in the northern system due to the higher operating pressures that range between 625-700 psig. Using the unsteady-state model, the lowest pressure in the southern area is 196 psig in St. George.

Questar Gas is designing a new pressure station in Santa Clara on the 8-inch feeder line from the KRG T interconnect at Central Station, a pressure increase for Feeder Line 81 (FL 81) and compression at Central Station, in order to meet the growing demand in this area. Questar Gas is preparing to install the compressor station prior to the 2013 heating season.

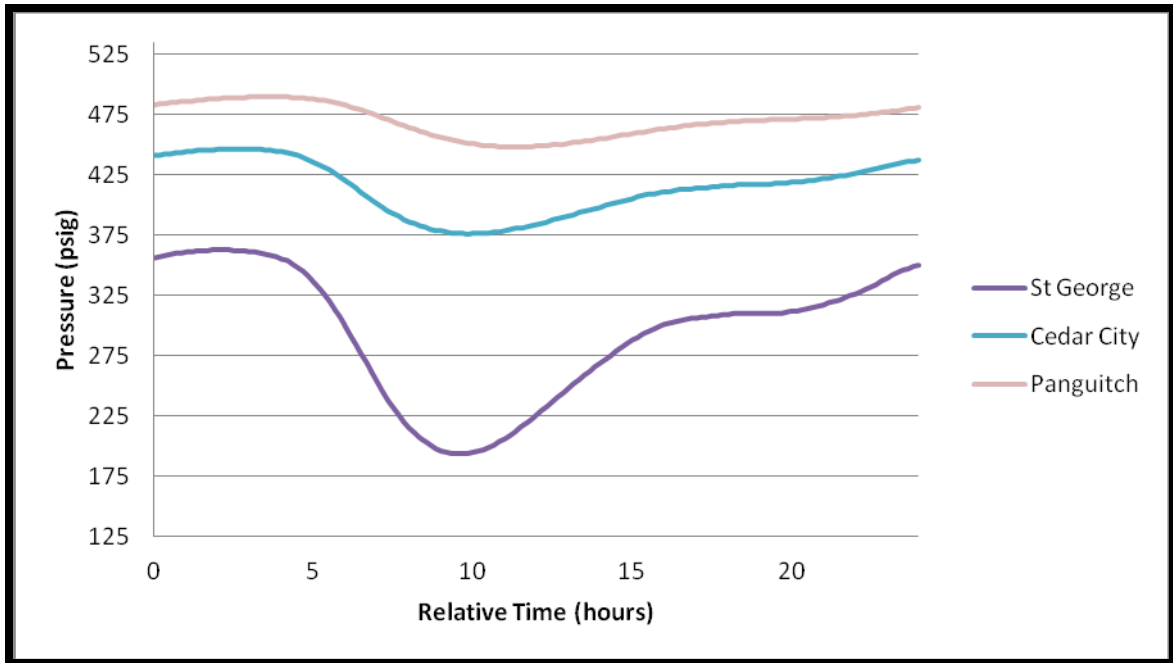


Figure 8: 2012 Southern Peak Day Pressures

*Southern (KRG Taps)*

The Southern Region includes towns in Juab County, Millard County, Beaver County, Iron County, and Washington County (all of the towns that are served south of Payson Gate Station and are not part of the Indianola/Wecco/Central system). These areas are all single feed systems served by KRG T.

The system in this area is made up of separate subsystems with individual taps from KRG T. All of the segments in this area have adequate pressures and do not require any improvement to meet the existing demand.

*Wyoming*

The Wyoming Region includes Rock Springs, Evanston, Lyman, Kemmerer, Baggs, and Granger. These areas are served from Questar Pipeline through MAP 168, MAP 169, and MAP 177; from Colorado Interstate Gas (CIG) at Wamsutter and Rock Springs; and from Williams Field Services (WFS) at La Barge and Big Piney.

In 2011, a new gate station was added to the Rock Springs area to improve system reliability with a feed from CIG. The new station connects Questar Gas' system with CIG feeding Rock Springs through the new Feeder Line 112 (FL 112).

## System Capacity Conclusions

Questar Gas' HP feeder line system is capable of meeting the current peak day demands with adequate supplies and pressures in the system. This system capacity assessment is based on the fact that the gate stations have adequate capacity, the supply contracts are adequate, and system models show that pressures do not drop below the design minimum of 125 psig. The system will continue to grow along with the demand and Questar Gas will conduct an analysis annually to ensure that the system continues to meet the peak day needs.

Questar Gas is conducting analysis relating to several system constraints including the following:

- *Increasing Demand in the Northern and Central Regions.* Questar Gas is considering installing new interconnects with Questar Pipeline, KRG T, and/or Ruby Pipeline in order to meet the supply needs associated with long term growth of the Northern and Central Regions. Questar Gas is also considering upgrading existing stations and procuring additional supply contracts for areas experiencing growth.

One method of addressing the increasing demand consideration is to increase the outlet pressure from Payson Station. This would utilize the higher design pressure of Feeder Line 26 and provide pressures near the system MAOP close to the system demand center. This improvement is currently tied to the Lake Side 2 project.

- *Growth in the Southern Region.* Questar Gas' Southern Region is reaching capacity. The first improvement to mitigate capacity issues is to install compression on FL 81, uprate the feeder line and the facilities upstream of the existing station, as well as install a new regulator station at the terminus of FL 81. This improvement is planned to be installed by heating season 2012-2013.
- *Saratoga Springs Growth.* Questar Gas is installing a feeder line that will extend south to Saratoga Springs which will be completed in 2012. This feeder line will provide the IHP system with capacity for anticipated growth in this area.
- *Low Pressures in the Northern Region.* Questar Gas' modeling shows that pressures near the end of FL 51, in the Northern Region, are low and will likely require improvements in the foreseeable future. Questar Gas is considering a variety of options to increase the pressures in that area including a replacement or increased pressures at one of the gate stations in the area.
- *Low Pressures in West Jordan.* Questar Gas is currently replacing portions of FL 36 which will greatly improve the pressures in West Jordan on the HP system. If the Lake Side 2 improvements are installed, the pressures in West Jordan will increase dramatically. Additionally, a tap line from Feeder Line 34 (FL 34) is planned to be installed in 2013. This improvement will increase system pressures in West Jordan by reducing the required flow through FL 36 and also provide another redundant feed to the local IHP system.

- *Low Pressures in Charleston.* Questar Gas is planning improvements in the Charleston area in Summit County. Current improvement plans upstream of Charleston will increase pressures. There are a number of options that may follow initial reinforcements, the nature of which will be determined when required.
- *Growth in Vernal.* Additional growth in Vernal may result in the need to reinforce FL 90. Questar Gas will monitor growth in the area in order to determine when further reinforcement is appropriate.

## **DNG Action Plan**

Questar Gas is currently planning, designing and constructing several reinforcement and replacement projects on its distribution system. The following is a brief description of the major projects anticipated by Questar Gas in 2012 and beyond.

### *Gate Station Projects*

1. Hunter Park Gate Station Project: Questar Gas has been working on improving the capacity and functionality of the Hunter Park Gate Station since 2008. In 2011, Questar Gas started designing the site improvements, and in 2012 Questar Gas had anticipated completing this project by installing several modifications at the site. Specifically, Questar Gas planned to install a new line heater and heater building, remove the existing turbine meter set and replace it with an ultrasonic meter run, add a larger control room for telecom and automation equipment, add gas detection to all the buildings, add a dual tap onto FL 11 and acquire additional property at the station. However, due to complications in acquiring necessary property, as well as modifications to the plan, this project has been delayed until the 2013 construction season.

In 2012, Questar Gas will continue to finalize the design of the facility improvements, finalize land acquisition, procure materials with long lead times, and start the permitting process. The estimated expenditure for 2012 is \$4,300,000 with an annual revenue requirement of \$715,000.

In 2013, Questar Gas anticipates completing the following scope of work: Installation of a new line heater, installation of two ultrasonic meters, installation of two new control valves, installation of a filter separator for liquids and solids removal, installation of a new odorization system, upgrading the existing control system, upgrades to the security system, upgrades to the electrical system, as well as installing backup generation for the entire facility.

Questar Gas will also be installing new buildings on site to house the in-line heater, the ultra-sonic meter runs, as well as the odorization tanks and facilities. To ensure safe operations, all buildings on site will be equipped with gas

detection sensors. Questar Gas will also install a new district regulator station on site to help support the IHP system in the area.

The majority of the improvements, as well as the increased scope, noted above are necessary to facilitate the new inline heater system while meeting KRGT's current delivery capacity of 250 MMcfd. Other improvements, such as the installation of the ultrasonic meter runs and gas detection capability help improve the operational functionality of the facility.

Questar Gas is also working to anticipate future capacity needs at the station. As part of Questar Gas' property acquisition for this project, steps have been taken to ensure enough land is available to allow future expansion of the facility if load growth dictates such expansion is necessary.

As noted above Questar Gas contemplates completing construction of the Hunter Park Gate Station in 2013. The estimated expenditure in 2013 is \$ 3,300,000 with an annual revenue requirement of \$619,000.

2. Central Gate Station Project: As part of the St. George reinforcement project (discussed later in the Feeder Line Section), Questar Gas needs to increase the capacity of the Central Gate Station. Currently the gate station has a capacity of approximately 30 MMcfd. With this project, Questar Gas plans to immediately increase the capacity of the station to 47 MMcfd, while configuring the site for possible future expansion in the 100 MMcfd range.

In 2012, Questar Gas plans to enter into an agreement with KRGT for the proposed improvements on the KRGT facilities at Central Gate Station. The estimated costs for these improvements are not currently known. Likewise, in 2012 Questar Gas plans to begin design of improvements on its facilities at Central Gate station and develop estimated costs for construction. Construction of the facilities will likely occur in 2013.

Estimates for both the KRGT and Questar Gas portions of this project will be provided as part of the IRP Variance Report process.

#### *Feeder Line Projects*

1. St. George Reinforcement: Questar Gas continues work towards reinforcing the HP feeder line system in St. George, Utah. This project description and the comparison of alternatives were included in the 2011/2012 Integrated Resource Plan.

In addition to the Central Gate station scope of work described above, in 2012 Questar Gas will continue its planning and design efforts for this project. Specifically Questar Gas will finalize design of the compressor station, as well as

the finalizing the “uprate” procedure for FL 81. Lastly, Questar Gas will continue its efforts to procure any rights-of-ways necessary for this project.

In November of 2012, Questar Gas anticipates ordering materials and starting the contractor selection process.

Questar Gas estimates 2012 expenditures at \$5,100,000 with an annual revenue requirement of \$767,000.

In 2013, Questar Gas anticipates starting construction of these facilities. Construction will commence with the shop fabrication of assemblies in January of 2013. Currently the field construction is slated to get underway in March. The anticipated in service date for the facilities is November 1, 2013.

Questar Gas estimates 2013 expenditures at \$10,500,000 with an annual revenue requirement of \$1,800,000.

2. Feeder Line 26 Uprate Project: In August of 2011, Questar Corporation responded to an RFP from PacifiCorp to provide up to 90,000 Dth/day high-pressure gas service to serve the expansion at its Lake Side power plant (Lake Side 2). On November 9, 2011, Questar Corporation was notified that its submittal was the favored proposal and Questar Corporation entered into negotiations with PacifiCorp to finalize a contract. The Questar Corporation proposal included commitments from both Questar Gas Company and Questar Pipeline Company to provide service to Lake Side 2. The proposal called for construction of facilities by Questar Gas in 2012 and 2013, with an in service date in the spring of 2014.

Currently this contract is under review as part of Docket No. 12-057-04, therefore Questar Gas will not detail the specifics of this project here. If the contract is approved Questar Gas will provide a detailed description of the project as part of the IRP Variance Report Process.

3. Saratoga Springs Feeder Line: The project was discussed in detail in the 2011-2012 IRP. However, the scope of work discussed in 2011-2012 IRP for the Saratoga Springs feeder line may have changed. If the Lake Side 2 contract, discussed above, is approved, Questar Gas will no longer need to increase capacity at the KRGT gate station, nor will it be required to replace any portion of FL 85.

In addition, Questar Gas is analyzing its growth projections for Saratoga Springs to determine if the required diameter can be decreased from 12” to 8”. Questar Gas is also reviewing different routing options for the pipeline because portions of the proposed alignment discussed in the 2011-2012 IRP may conflict with future plans for UDOT’s extension of the Mountain View Corridor into Utah County.

This potential conflict was discovered during preliminary permitting discussions with UDOT.

Questar Gas' current approach is as follows: Instead of tying directly to FL 85, the feeder line will now tie directly to the tap facility at KRGT. Questar Gas originally planned to avoid the future conflict by connecting to FL 85 approximately a half mile to the west of the original proposed location. However, after further review, Questar Gas determined it would be more beneficial for system operations to extend the line another 2,000 linear feet (lf) to the west and tie into the existing KRGT tap. By making this additional modification, Questar Gas is able to avoid having to acquire additional property, since the Company could now use the existing tap facility property for the construction of an inline heater, a control valve, and a pig launching facility. The revised length for the project is approximately 23,000 lf.

The revised estimates for the project are between \$4,900,000 and \$5,500,000. The annual revenue requirement for this range is between \$730,000 and \$832,000. Questar Gas still anticipates constructing this project in 2012. Questar Gas will provide updates to this project, as needed, as part of the IRP Variance Report process.

4. Charleston Feeder Line: This project was discussed in detail in the 2011-2012 IRP. In 2011 Questar Gas completed a preliminary geotechnical evaluation of the preferred route. Questar Gas has also continued to monitor growth in this area to determine the appropriate timing for construction of this project. Continued slow load growth in the area has delayed the immediate need for the project. Questar Gas currently estimates that this project will be needed in 2014 or 2015. The Company will continue to monitor this area for growth and report any changes, if needed, as part of the IRP Variance Report process.
5. Heber City HP Reinforcement: This project was discussed in detail in the 2011-2012 IRP. Questar Gas completed the preliminary design for this project in 2008. Since then Questar Gas has been monitoring load growth in the area to determine the appropriate timing for construction of the project. Stagnant load growth in the area has delayed the immediate need for the project. Questar Gas currently estimates that this project will be needed in 2014 or 2015. The Company will continue to monitor this area for growth and report any changes, if needed, as part of the IRP Variance Report process.
6. 90<sup>th</sup> South Feeder Line Extension: In 2011, Questar Gas began investigating how to solve a low IHP system pressures near 9000 South and 3500 West in South Jordan, Utah. After investigating possible IHP solutions to the problem, it was determined that a HP Feeder Line would need to be extended into the area to provide a new source of HP gas. In order to find the most viable solution, Questar Gas formed a team and investigated eight different route alternatives. There were two major themes, with route variations in each theme, which the team



investigated. Three routes looked at extending a feeder line west from FL 34 (located in 1300 West), along varying corridors located at approximately 9000 South. Most of these routes included large sections of private right-of-way (ROW).

The remaining routes (5 in total), looked at different methods of extending a feeder line from FL 34, along 9800 South to varying locations between 2700 West and 3500 West. The benefit associated with these route options was the ability to minimize to amount of private ROW that would be required. In most instances, the routing would occur in city streets.

After estimating costs on all eight routes, Questar Gas found the least expensive option would be to construct 1.53 miles of 6" HP pipeline, starting at 9840 South at FL 34 and extending west to 2700 West Street. The estimated cost to construct the pipeline and future regulator station is approximately \$1,800,000 with an annual revenue requirement of \$314,000.

In 2012, Questar Gas will finalize the design and engineering of the project. Questar Gas anticipates constructing this project in 2013.

It should be noted, that as part of the of the final engineering of the project, Questar Gas is going to continue its evaluation of the area and determine if there are significant system improvements that could be obtained by continuing this project to the west and connecting to FL 36 on the west. By doing so Questar Gas could eliminate the dead end of FL 36 and have a tie between FL 34 on the east and FL 36 on the west. Questar Gas will provide updates to this study, if needed, as part of the IRP Variance Report process.

7. Feeder Line Replacement Project: Questar Gas is continuing its Feeder Line Replacement program in 2012 with replacements planned on FL 25, FL 23, FL 35, FL 50, and FL 14. Pursuant to the Settlement Stipulation and the Utah Commission's order approving the Settlement Stipulation, in Docket No. 09-057-16, the Company will file an infrastructure replacement plan detailing the planned projects, the anticipated costs, and other relevant information.

#### *Intermediate High-Pressure Projects*

1. Salt Lake City Belt Main Replacement: In 2011, Questar Gas started a replacement project on its 12" IHP steel belt main in Salt Lake City. The line was originally installed in 1929. The project replaced approximately 2,200 lf of 12" IHP main with 16" IHP steel main. The work was on 800 South Street between 1000 East and 700 East. The project also included installation of almost 3000 lf of 2" plastic IHP main. The installation of the plastic IHP main was necessary to avoid tying IHP services to the large 16" line. Questar Gas spent approximately \$1,300,000.

In 2012, Questar Gas has plans for a similar replacement project along 800 South, beginning at 700 East and continuing west to 300 East. This project will replace approximately 3,300 lf of 12" steel IHP main with 16" steel IHP main. Questar Gas will also need to install approximately 5,800 lf of 2" plastic IHP main. The estimated cost for this work is \$1,500,000 with an annual revenue requirement of \$249,000.

At this time Questar Gas does not have plans in place for constructing further phases of this project in 2013 or 2014. If further study warrants continuing this project, Questar Gas will provide an update as part of the IRP Variance Report process.

2. Utah County Belt Main Replacement: In 2012, Questar Gas will start a multi-year project for the replacement of the existing IHP Belt Main in Provo, Utah. This existing line was originally installed in 1931.

In 2012, Questar Gas will replace approximately 16,000 lf of 16" and 14" diameter belt mains. The belt main runs north from 2600 South in Provo along State Highway 89 to 400 South in Provo. At this point, it turns west and runs for two blocks to 500 East. The estimated cost for this project is approximately \$1,990,000 with an annual revenue requirement of \$298,272.

In 2013, Questar Gas plans to replace approximately 3,500 lf of 12" IHP steel main with 10" steel main along 400 South, from 500 East to 800 West in Provo. Questar Gas will also replace approximately 3,400 lf of existing 10" IHP steel main with new 10" steel main along 100 West from 300 South to 400 South in Provo. The estimated cost for the 2013 Work is \$1,380,000, with an annual revenue requirement of \$259,000.

In 2014, plans to replace approximately 8000 lf of 10" IHP steel main with 8" plastic main along 800 West from 900 North to 400 South in Provo. The estimated cost for this work is \$795,000, with an annual revenue requirement of \$149,000.

3. Monticello Uprate Project: The project was discussed in detail in the 2010-2011 IRP. In 2012 Questar Gas hopes to complete the fifth phase of this project. Questar Gas anticipates replacing approximately 13,200 lf of 2" IHP main, 7,000 lf of 4" IHP main, and approximately 200 service lines. The estimated cost to perform this work is \$1,300,000, with an annual revenue requirement of \$204,000.

## *Project Summary*

### 2012 Projects:

1. Hunter Park Gate Station Design.
2. Central Gate Station Design.
3. St. George Reinforcement Design and Material Acquisition.
4. Portions of FL 26 Uprate Project.
5. Saratoga Springs Feeder Line Extension.
6. 90<sup>th</sup> South Feeder Line Extension Design.
7. Salt Lake City Belt Main Replacement.
8. Utah County Belt Main Replacement.
9. Continuation of the FL Replacement Project

### 2013 Projects:

1. Hunter Park Gate Station improvements.
2. Central Gate Station Improvements.
3. St. George Reinforcement Project.
4. Phase II of FL 26 Uprate Project.
5. 90<sup>th</sup> South Feeder Line Project.
6. Continuation of FL Replacement Project.
7. Continuation of Utah County Belt Main Replacement Project.

### 2014 Projects:

1. Charleston Feeder Line Project.
2. Heber Reinforcement Project.

## **Integrity Management Plan Activities and Associated Costs**

### *Overview*

Questar Gas Company continues to implement integrity activities for transmission lines as originally mandated by the Pipeline Safety Improvement Act of 2002 and later codified in the Federal Regulations (see 49 CFR Part 192 Subpart O). The requirements for transmission integrity management require Questar Gas to identify all high consequence areas along the segments of feeder lines that are defined as transmission lines<sup>43</sup>. Once these high consequence areas are defined, a risk score is then calculated for each segment located in the high consequence area. These risk scores are then summed up for each unique feeder line. These risk scores establish the baseline and sets the priority for when these segments are assessed for integrity. The verification of high consequence areas and calculating the risk score is completed

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<sup>43</sup> Transmission Lines are those feeder lines (or segments of feeder lines) that are operating (i.e. MAOP) at or above 20% SMYS.

on an annual basis. Questar Gas Company has ten years<sup>44</sup> to complete the baseline assessment of all segments in high consequence areas.

Questar Gas Company is also required by the transmission integrity rule to conduct additional preventive and mitigative measures on feeder lines in high consequence areas and class<sup>45</sup> 3 and 4 locations. These additional measures include monitoring excavations (excavation standby) near the feeder lines and performing semi-annual leak surveys. Other integrity activities include annual high consequence area validation, pipeline centerline survey and the day-to-day administration of the program.

On December 4, 2009, the Pipeline and Hazardous Materials Safety Administration (PHMSA) issued the final rule titled: “Integrity Management Program for Gas Distribution Pipelines.” This final rule became effective on February 12, 2010, with implementation required by August 2, 2011.

The distribution integrity management rule requires operators to develop, write, and implement a distribution integrity management program with the following elements:

Knowledge; identify threats; evaluate and rank risks; identify and implement measures to address risks; measure performance, monitor results, and evaluate effectiveness; periodically evaluate and improve program; and report results.

Questar Gas Company continues to implement activities defined in its Distribution Integrity Management plan for the distribution system. The activities are implemented to mitigate the threats that are identified in the plan.

## **Transmission Integrity Management**

### *Costs*

See attached table (Table 1- Transmission Integrity Management Costs) for details on the anticipated costs associated with transmission integrity management.

### *Baseline Assessment Plan*

The baseline assessment plan prescribes the methods that will be used to assess each high consequence area segment. These methods are determined by the known or anticipated threats to these segments. Currently the threats on the pipeline include external corrosion, internal corrosion, and third party damage. The assessment methods utilized to address these threats are external corrosion direct assessment (ECDA), internal corrosion direct assessment (ICDA), direct visual examination, and inline inspection.

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<sup>44</sup> The baseline assessment must be completed by 12/17/2012 (49 CFR §192.921 (d))

<sup>45</sup> Class location as defined by 49 CFR Part 192 (§192.5)

### *External Corrosion Direct Assessment*

ECDA is intended to evaluate the integrity of pipeline segments for the threat of external corrosion. This includes segments of cased gas transmission pipelines. During the assessment process other types of damage may be identified. In those cases the damage must be documented and other suitable assessment methodologies used to evaluate the integrity of the pipeline segments. Refer to Figure 1 for an overview of the ECDA process.

The ECDA methodology is a four-step process requiring integration of pre-assessment data, data from multiple indirect field inspections, and data from pipe surface examinations. The four steps of the process are:

1. Pre-Assessment - The Pre-Assessment step utilizes historic and recent data to determine whether ECDA is feasible, identify appropriate indirect inspection tools, and define ECDA regions.
2. Indirect Inspection - The Indirect Inspection step utilizes above ground inspections to identify and define the severity of coating faults, diminished cathodic protection, and areas where corrosion may have occurred or may be occurring. A minimum of two indirect inspection tools are used over the entire pipeline segment to provide improved detection reliability across the wide variety of conditions encountered along a pipeline right-of-way. Indications from indirect inspections are categorized according to severity.
3. Direct Examination - The Direct Examination step includes analyses of pre-assessment data and indirect inspection data to prioritize indications based on the likelihood and severity of external corrosion. This step includes excavation of prioritized sites for pipe surface evaluations resulting in validation or re-ranking of the prioritized indications. During the Direct Examination step, high priority areas with corrosion damage are re-evaluated for further action.
4. Post-Assessment - The Post-Assessment step utilizes data collected from the previous three steps to assess the effectiveness of the ECDA process and determine reassessment intervals and provide feedback for continuous improvement.

### *Internal Corrosion Direct Assessment*

ICDA is a process to predict the most likely areas of internal corrosion, including those caused by chemical and microbiologically induced corrosion. ICDA focuses on directly examining locations at which internal corrosion is most likely to occur. Refer to Figure 2 for an overview of the ICDA process.

The basis of ICDA is that detailed examination of the most susceptible locations along a pipeline where liquids would first accumulate provides information about the downstream

condition of the pipeline. If the locations most likely to accumulate liquids have not corroded, other downstream locations that are less likely to accumulate liquids may be considered free from corrosion. ICDA relies on the ability to identify locations most likely to accumulate liquids.

The ICDA methodology is a four-step process that is intended to assess the threat of internal corrosion in pipelines and assist in verifying pipeline integrity.

1. **Pre-Assessment:** The Pre-Assessment step collects and utilizes historic and recent data to determine whether ICDA is feasible and to define ICDA regions.
2. **ICDA Region Identification:** The ICDA Region Identification step covers flow-modeling techniques, developing a pipeline elevation profile and identifying sites where internal corrosion may be present.
3. **Detailed Examination:** The Detailed Examination step integrates the pre-assessment data and ICDA Region Identification analyses to select locations for detailed examinations. This step includes excavation of sites to evaluate for the presence of internal corrosion.
4. **Post-Assessment:** The Post-Assessment step utilizes data collected from the previous three steps to assess the effectiveness of the ICDA process, establish monitoring programs, and determine reassessment intervals.

#### *Visual Examination of Aboveground Pipe and Pipe in Vaults*

Piping that falls in a high consequence area (HCA) and is aboveground or because of its location is not feasible to be assessed using external corrosion direct assessment methods is assessed by visual examination. This includes spans (e.g. over waterways) and pipe in vaults. This examination typically includes the removal of external coating and checking the pipe for external corrosion and physical defects.

#### *Inline Inspection*

Pipelines that are constructed and configured in such a way as to allow for inline inspection are assessed by inline inspection devices also referred to as smart pigs. Only a few pipelines in Questar's system are currently capable of utilizing this method of assessment. As aging infrastructure is replaced with new pipelines, these new pipelines are being designed and built to accommodate inline inspection. Questar Gas is also researching certain advancements in technology that allow some limited application of inline inspection for non-piggable pipelines. If appropriate, this technology could compliment our current assessment methodologies.

#### *High Consequence Area (HCA) Validation*

Each year, Questar Gas Company conducts a survey on all transmission lines to validate the current high consequence areas as well as any new potential HCAs. This information is

captured in Questar Gas' mapping system and is used to calculate high consequence areas on an annual basis.

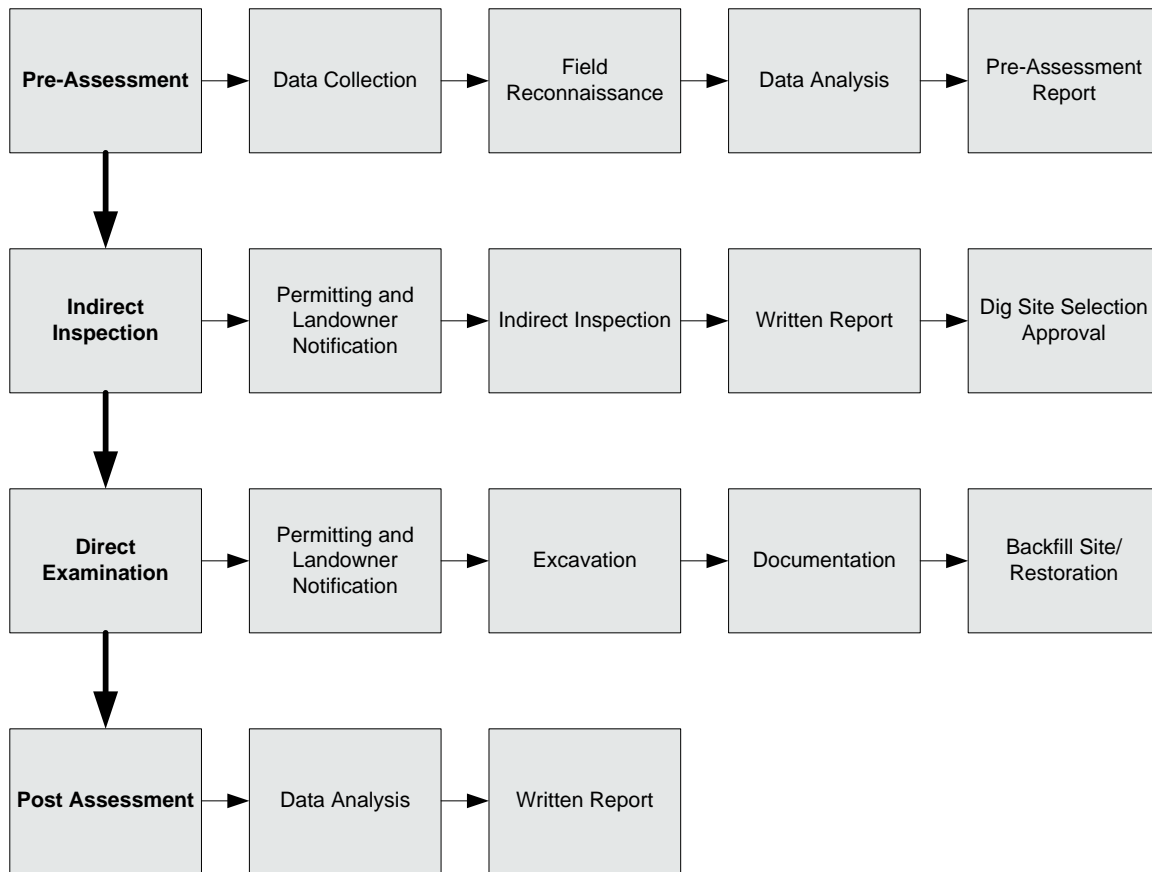
## **Distribution Integrity Management**

### *Costs*

See attached table (Table 2- Distribution Integrity Management Costs) for details on the anticipated costs associated with distribution integrity management.

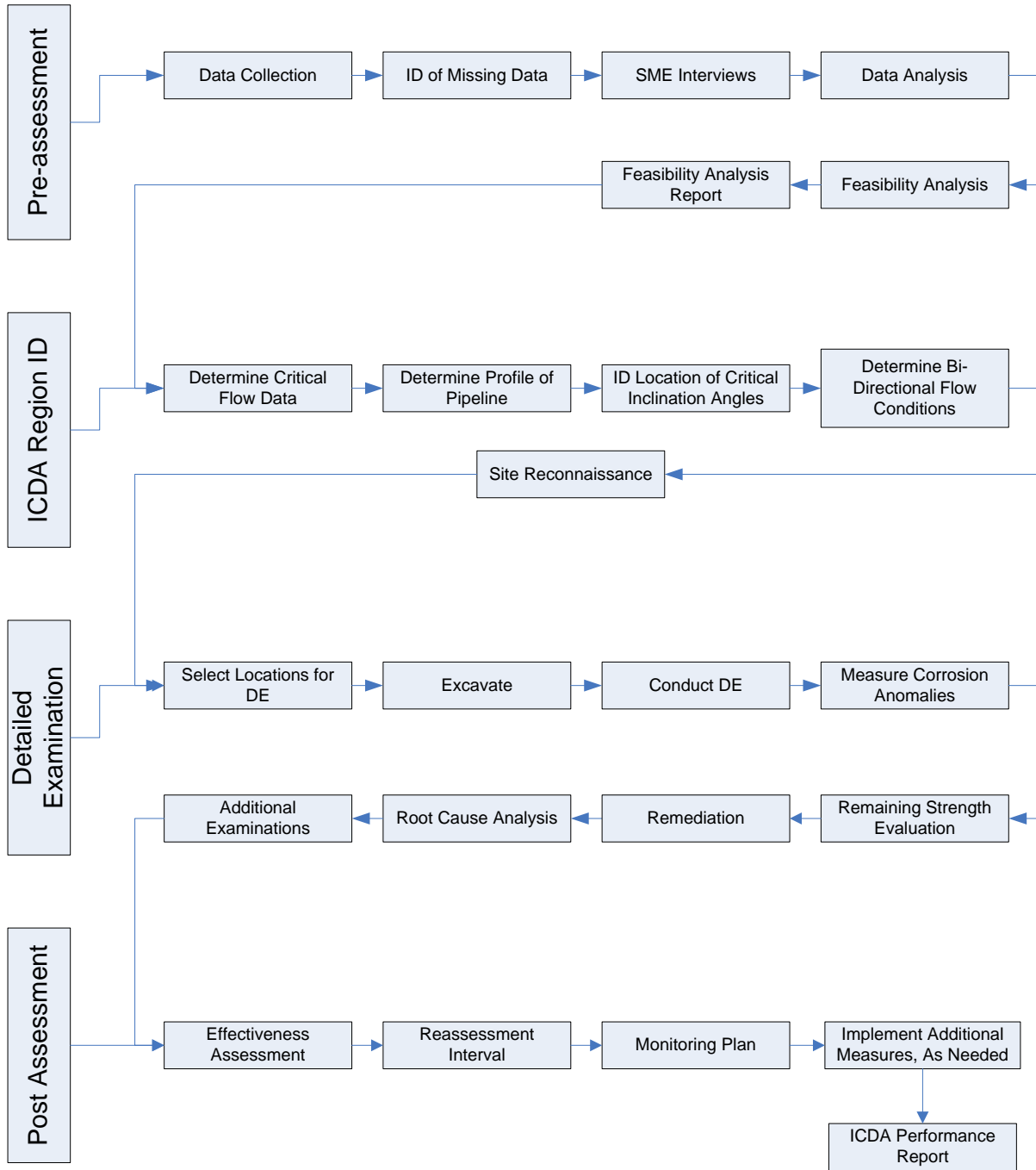
### *Implementation*

Questar Gas implemented its written distribution integrity management plan in August of 2011. Implementation included identifying the threats associated with the distribution system as well as calculating the risk score for each threat with input from key operations personnel and using existing infrastructure data and leak history. Once the threats and risks were completed, each operating region identified measures that would help in mitigating these risks on the distribution system. These measures are currently being implemented or will be implemented. The process of identifying threats and calculating the risk for each threat is an ongoing process and will be done on at least an annual basis.



**Figure 1 – ECDA Process Overview**





**Figure 2 – ICDA Process Overview**

**Table 1 – Transmission Integrity Management Costs**

**\$ Thousands**

<b>Activity</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Transmission Integrity Management</b>			
<b>ECDA (Utah Only)</b>			
Pre-Assessment			
2012 (FL06, 12, 13, 24, 33, 46) (28 HCA miles @ 2 K / mile)	56		
2013 (FL17,18,19,21, 22, 47) (43 HCA miles @ 2 K / mile)		86	
2014 (FL23,28,29,71,81) (23 HCA miles @ 2K/mile)			46
Indirect Inspections			
2012 (FL06, 12, 13, 24, 33) (28 HCA miles @ 30 K / mile)	840		
2013 (FL17,18,19,21, 22, 47) (43 HCA miles @ 30K/ mile)		1,290	
2014 (FL23,28,29,71,81) (23 HCA miles @ 30K/mile)			690
Direct Examinations			
2011 ECDA Digs carried over (FL35, 14, 85, 11, 21) (14 excavations @ 12 K ea.)	168		
2011 ECDA Casing Digs carried over (FL85, 42, 21, 18, 26) (7 Casings @ 100 K ea.)	700		
2012 (FL006, 12, 13, 24, 33, 46, 55, 62) (12 excavations @ 12 K ea.)	144		
2012 (FL006, 12, 13, 24, 33, 46, 55, 62) (4 casings @ 100 K ea.)	400		

**Table 1 – Transmission Integrity Management Costs**

\$ Thousands

Activity	2012	2013	2014
2013 (FL18, 19, 21, 22, 47) (6 excavations @ 12 K ea.)		72	
2013 (FL18, 19, 21, 22, 47) (4 casings @ 100 K ea.)		400	
2014 (FL23, 28, 29, 71, 81) (12 excavations @ 12 K ea.)			72
2014 (FL23, 28, 29, 71, 81) (4 casings @ 100 K ea.)			400
<b>Post Assessment</b>			
2012 (FL06, 12, 13, 24, 33, 46, 55, 62) (28 HCA miles @ 1.5 K / mile)	42		
2013 (FL18,19,21, 22, 47) (43 HCA miles @ 1.5 K / mile)		64.5	
2014 (FL23,28,29,71,81) (23 HCA miles @ 1.5 K/ mile)			34.5
<b>ICDA (Utah Only)</b>			
2012 Excavations + Direct Examination (2 excavations @ 20 K ea.)	40		
ICDA Post Assessment (Region 7)	11		
<b>Inline Inspection</b>			
2012 (FL104)	300		
2012 (FL006, 13) - hot tap inline inspection (casings only)	450		
2012 Excavations/ Validation Digs/ Remediation (6 excavations @ 12 K ea)	72		

**Table 1 – Transmission Integrity Management Costs**

**\$ Thousands**

<b>Activity</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
2013 (FL004, 81)		600	
2013 (FL021-50,22) - hot tap inline inspection (casings only)		500	
2013 Excavations/ Validations Digs/ Remediation (12 excavations @ 12 K ea)		144	
2014 (FL19)			300
2014 - hot tap inline inspection (casings only)			500
2014 Excavations/ Validations Digs/ Remediation (6 excavations @ 12 K ea)			72
<b>Direct Examination (Utah Only)</b>			
2012 - Spans (2 @ 75 K/ span)	150		
2012 - Vaults (3 @ 5 K/ vault)	15		
2012 - Casing Removal (1 @ 75 K)	75		
2013 - Spans Reassessment (7 @ 10 K/ span)		70	
2013 - Vaults (3 @ 5 K/ vault)		15	
2013 - Casing Removal (3 @ 100 K / casing)		300	
2014 - Spans Reassessment (3 @ 10 K/ span)			30

**Table 1 – Transmission Integrity Management Costs**

**\$ Thousands**

<b>Activity</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
2014 - Vaults (3 @ 5 K/ vault)			15
2014 - Casing Removal (3 @ 100K / casing)			300
<b>Pressure Test Assessment</b>			
2012 - FL014	100		
<b>HCA Validation</b>			
Identified Site Survey ( QPEC - 1200 hrs @ \$30.00 / hr)	36	36	36
Identified Site Survey (misc. travel expenses 40 days @ \$125/day)	5	5	5
Data integration/ update HCAs (100 hrs @ \$70.00/ hr)	7	7	7
<b>Excavation Standby</b>			
4 employees (2080 hrs x 4 x \$70.00/hr)	582.4	582.4	582.4
<b>Additional Leak Survey</b>			
120 hrs @ \$70.00/hr	8.4	8.4	8.4
<b>Additional Cathodic Protection Survey</b>			
Contractor	200	200	200
System Integrity Support - Cathodic Protection (2080 hrs x \$70.00/hr)	145.6	145.6	145.6

**Table 1 – Transmission Integrity Management Costs****\$ Thousands**

<b>Activity</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Administration</b>			
Project Coordination (3 employees (2080 hrs x 3 x \$70.00/hr))	436.8	436.8	436.8
Engineer - Operations Support (0.5 employee (2080 hrs x 0.5 x \$70.00/hr))	72.8	72.8	72.8
Data Integration Specialists (1.5 employees (2080 hrs x 1.5 x \$70/hr))	218.4	218.4	218.4
Supervisor (1560 hrs x \$70/hr) 75% TIMP/ 25% DIMP	109.2	109.2	109.2
Engineering (1560 hrs x \$70/hr) 75% TIMP/ 25 % DIMP	109.2	109.2	109.2
Manager (1040 hrs x \$70/hr) 50% TIMP/ 50% DIMP	72.8	72.8	72.8
Training (for IM and Engineering personnel)	22.45	22.45	22.45
<b>Transmission Integrity Management Total (\$ Thousands)</b>	<b>\$ 5,589</b>	<b>\$ 5,568</b>	<b>\$ 4,486</b>

**Table 2 – Distribution Integrity Management Costs**

\$ Thousands

Activity	2012	2013	2014
<b>Distribution Integrity Management</b>			
<i>NOTE: The following is a detailed description of the impact on the Company’s on-going operations and costs associated with the new distribution integrity management rule these numbers represent the projected future costs associated with compliance with this new rule. These numbers represent total costs for the entire company and is not limited to just Utah.</i>			
<b>§ 192.383 Excess Flow Valve Installation</b>			
Administrative Functions (reporting, procedures, documentation) 10 hrs + 2500 hrs @ \$70.00/hr	175.7	175.7	175.7
<b>§ 192.1001 What definitions apply to this subpart?</b>			
Procedures and training – 200 hrs/year @ \$70.00/hr	14	14	14
<b>§ 192.1005 What must a gas distribution operator do to implement this subpart?</b>			
Implementation Team – 50 Hrs/ year @ \$70.00/ hr	3.5	3.5	3.5
Plan Template - \$25,000.00 (covered in 2010)			
Plan Prep – 250 hrs (2011 only)			
Plan update/revisions – 250 hrs/year @ \$70.00/hr	17.5	17.5	17.5
Manage overall program – 500 hrs/year @ \$70.00/hr	35	35	35
<b>§ 192.1007 What are the required elements of an integrity management plan?</b>			
System Knowledge – 200 hrs/year @ \$70.00/hr	14	14	14
Identify threats – 100 hrs/year @ \$70.00/hr	7	7	7
Risk Software – annual maintenance fee (10K/year)	10	10	10
Risk Calculations – 250 hrs/year @ \$70.00/hr	17.5	17.5	17.5
Region Meetings – 240 hrs/year @ \$70.00/hr	16.8	16.8	16.8
Field Activities including UTA TRAX Interference – \$700,000.00/year	700	700	700
Measuring performance – 100 hrs/year @ \$70.00/hr	7	7	7
Periodic evaluation – 100 hrs/year @ \$70.00/hr	7	7	7
Reporting – 20 hrs/year @ \$70.00/hr	1.4	1.4	1.4

**Table 2 – Distribution Integrity Management Costs**

Activity	\$ Thousands		
	2012	2013	2014
<b>§ 192.1009 What must an operator report when compression couplings fail?</b> Revisions to database/ capture of field data - 20 hrs/year @ \$70.00/hr	1.4	1.4	1.4
<b>§ 192.1011 What records must an operator keep?</b> 80 hrs/year @ \$70.00/hr	5.6	5.6	5.6
<b>Administration</b>			
Engineer - Operations Support (0.5 employee (2080 hrs x 0.5 x \$70.00/hr))	72.8	72.8	72.8
Supervisor (520 hrs x \$70/hr) 75% TIMP/ 25% DIMP	36.4	36.4	36.4
Data Integration Specialists (0.5 employees (2080 hrs x 0.5 x \$70/hr))	72.8	72.8	72.8
Manager (1040 hrs x \$70/hr) 50% TIMP/ 50% DIMP	72.8	72.8	72.8
Engineering (520 hrs x \$70/hr) 75% TIMP/ 25% DIMP	36.4	36.4	36.4
Operations (2080 hrs x \$70/hr)	145.6	145.6	145.6
<b>Distribution Integrity Management Total (\$ Thousands)</b>	<b>\$ 1,470.20</b>	<b>\$ 1,470.20</b>	<b>\$ 1,470.20</b>



## **Environmental Review**

Questar Gas is committed to compliance with environmental laws and regulations. Some of the regulations with which Questar Gas must comply include the National Environmental Policy Act, the Endangered Species Act, the Clean Air Act, the Clean Water Act, and the National Historic Preservation Act, as well as similar state and local rules.

Federal, state and local agencies frequently place restrictions on Company activities. These requirements have become more stringent over time and can affect the location and construction of Questar Gas infrastructure. For example, the Endangered Species Act was developed to protect certain listed threatened and endangered species. A critical habitat designation for a protected species, such as the sage grouse or desert tortoise, can result in restrictions to federal, state and private land use and can delay or prohibit land access or development. Because Questar Gas' infrastructure crosses many miles of federal and state lands that include the critical habitat of various listed plant and animal species, there can be a material impact on location of pipeline facilities and construction schedules. The Clean Water Act and similar state laws regulate discharges of storm water, wastewater, oil, and other pollutants to surface water bodies, such as lakes, rivers, wetlands, and streams. Failure to obtain permits for such discharges or accidental releases could result in civil and criminal penalties, orders to cease such discharges, corrective actions, and other costs and damages.

Existing regulations that complicate projects are those addressing remedial actions at owned, previously owned and third-party facilities. Substantial costs may be incurred to take corrective actions at these facilities. Accidental spills and leaks requiring cleanup may occur in the ordinary course of business or third party historical hazardous materials sites (known or unknown) may be encountered while conducting routine construction or repair activities. As standards change, the Company may incur significant costs in situations where past operations followed practices that were considered acceptable at the time but now require remedial actions to meet current standards. Failure to comply with these laws and regulations may result in fines, significant costs for remedial activities, or injunctions.

New and revised environmental policy is affecting industry, in general, and Questar Gas specifically, and will result in additional costs to conduct business. For example, federal and state courts and administrative agencies continue to consider the scope and scale of climate-change regulation under various laws pertaining to the environment, energy use and development, and greenhouse gas emissions.

The EPA has adopted regulations for the measurement and reporting of greenhouse gases emitted from combustion at large facilities (emitting more than 25,000 metric tons/year of carbon dioxide equivalent) that began with 2010 emissions. For 2010, Questar Gas reported 7.5 million metric tons of CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emissions attributable to combustion emissions for all of its customers except those emissions of downstream natural gas local distribution company customers and industrial customers

using more than 460 MMCF of natural gas annually. Reporting under this regulation has been expanded to include measurement and reporting of greenhouse gas emissions attributed to methane venting and leaking starting in 2011, which incorporates measurement and monitoring of meter and regulator station methane emissions for Questar Gas.

EPA's Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, which went into effect January 1, 2011, currently regulates greenhouse gases as a Clean Air Act pollutant at large new sources or at existing sources undergoing major modifications. Analysis of near-term capital projects indicates that these permitting regulations will not inhibit development or expansion of Questar services, unless the EPA reduces thresholds in the future.

Questar Gas has implemented several best management practices to reduce greenhouse gas emissions from company operations, such as:

- Directed inspection and maintenance to repair or replace valves/components at surface facilities;
- Customer meter maintenance and replacement programs;
- Infrastructure replacement of aging feeder lines;
- Blowdown avoidance during pipeline maintenance, when possible; and
- Use of hot tapping technology to reduce gas loss and avoid shut downs.

The Green House Gas (GHG) Reporting Rule has essentially developed an "inventory" of CO<sub>2</sub>e emissions that could be used in future climate change initiatives, such as cap and trade, carbon tax, or other scenarios. Depending on how EPA rolls out any new rule in the future, companies subject to the GHG Reporting Rule could be required to pay a fee based on the amount of CO<sub>2</sub>e emitted; this is already in place for inventoried Clean Air Act emissions.

While actual climate-change regulation is also possible, it is too early to predict how potential regulation will affect Questar Gas' business, operations, or financial results. If forthcoming regulations recognize that use of natural gas in high-efficiency residential, commercial, transportation, industrial, and electricity generation applications is essential to lower U.S. greenhouse gas emissions, use of natural gas in these applications will increase. In this scenario, natural gas will be essential in ensuring electrical-grid reliability as reliance on intermittent renewable energy increases in the future. Use of natural gas as an alternative transportation fuel continues to grow, and Questar Gas is actively involved in expanding refueling infrastructure. Alternatively, federal regulation of CO<sub>2</sub>e could increase the price of natural gas, restrict access to or the use of natural gas, and/or reduce natural gas demand. Federal, state, and local governments may pass laws mandating the use of alternative-energy sources, such as wind, solar, and geothermal energy which could reduce the future demand for natural gas.

Questar Gas will continue to comply with existing environmental rules and regulations that protect employees, the public, and the environment. Routine environmental situations, such as contaminated soils encountered during pipeline excavation in city streets, will continue to be properly mitigated while work is conducted in an efficient manner. Similarly, Company personnel will participate in rulemaking efforts to encourage the use of natural gas to be more environmentally efficient.