Application No: A.13-12-xxx
Exhibit No.:
Witness: David M. Bisi

Application of Southern California Gas Company (U 904 G) and San Diego Gas & Electric Company (U 902 G) For Authority To Recover North-South Project Revenue Requirement In Customer Rates And For Approval Of Related Cost Allocation And Rate Design Proposals	A.13-12-xxx (Filed December 20, 2013)

DIRECT TESTIMONY OF

DAVID M. BISI

SAN DIEGO GAS & ELECTRIC COMPANY

AND

SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

December 20, 2013

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DIRECT TESTIMONY OF DAVID M. BISI

I. PURPOSE

The purpose of my direct testimony is to: (1) describe the Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) gas transmission system; (2) discuss the design and operation of the Southern Transmission System (Southern System) and the current need for a minimum flowing supply requirement; and (3) describe the potential infrastructure improvements to reduce or eliminate the need for that flowing supply requirement, and explain the reasons behind our preferred option.

II. SOCALGAS AND SDG&E TRANSMISSION SYSTEM

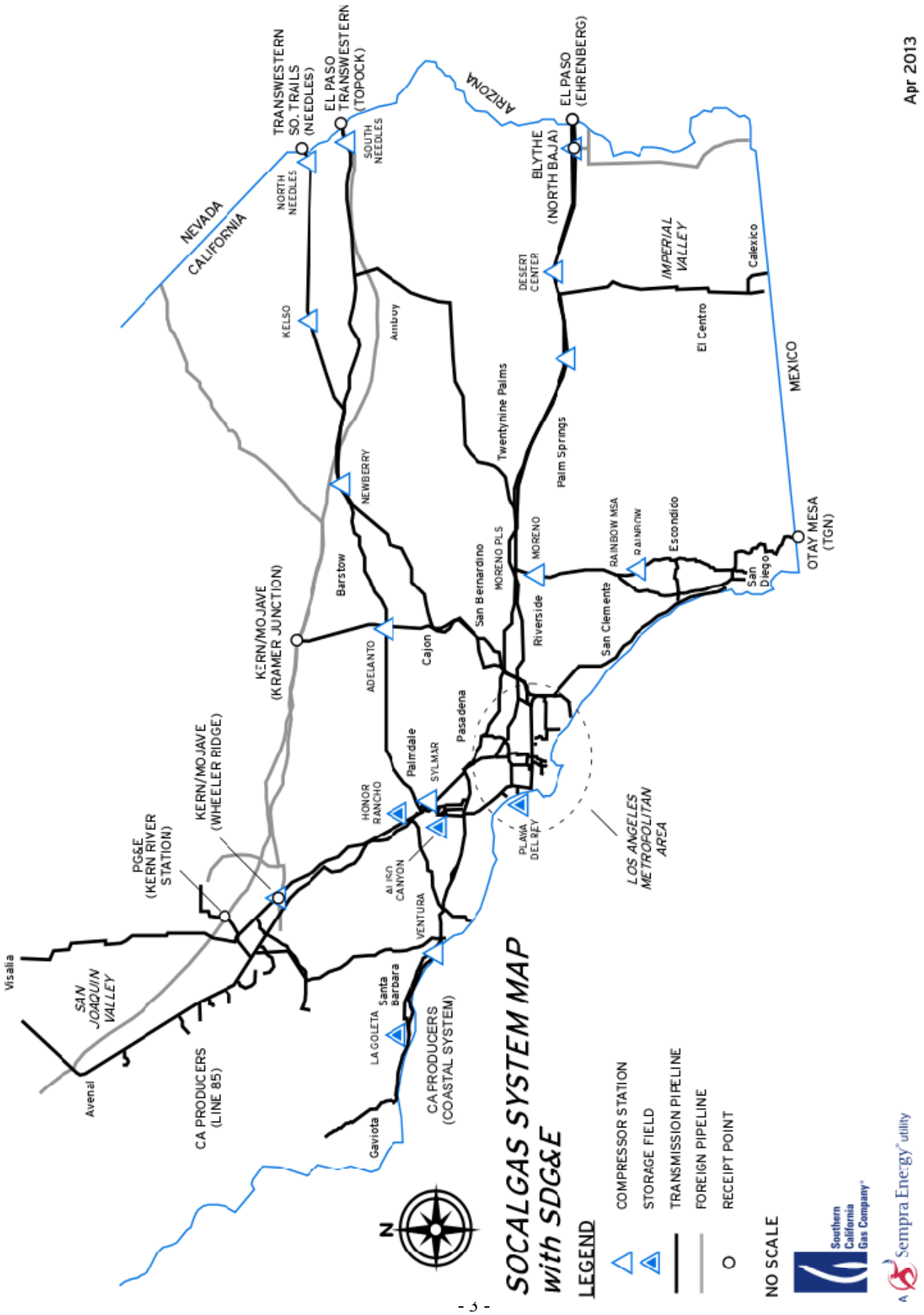
SoCalGas and SDG&E own and operate an integrated gas transmission system consisting of pipeline and storage facilities. With their network of transmission pipelines and four interconnected storage fields, SoCalGas and SDG&E deliver natural gas to over five million residential and business customers.

A map of the SoCalGas transmission system is attached as Figure 1. The transmission system extends from the Colorado River on the eastern end of SoCalGas' approximately 20,000 square mile service territory, to the Pacific Coast on the western end; from Tulare County in the north, to the U.S./Mexico border in the south (excluding parts of Orange County and San Diego County).

The SoCalGas transmission system was initially designed to receive and redeliver gas from the east, to the load centers in the Los Angeles basin, Imperial Valley, San Joaquin Valley, north coastal areas, and San Diego County. As our customers sought to access new supply sources in Canada and the Rocky Mountain region, we modified our system to concurrently accept deliveries from the north. As a result, the system today can accept up to 3,875 million cubic feet per day (MMcfd) of interstate and local California supplies on a firm basis. Primary supply sources are the

southwestern United States, the Rocky Mountain region, Canada, and California on- and off-shore production. The interstate pipelines that supply the SoCalGas transmission system are El Paso Natural Gas Company (El Paso), North Baja Pipeline (North Baja), Transwestern Pipeline Company (Transwestern), Kern River Gas Transmission Company (Kern River), Mojave Pipeline Company (Mojave), Questar Southern Trails Pipeline Company (Southern Trails), and Gas Transmission Northwest (GTN) via the intrastate system of Pacific Gas and Electric Company (PG&E). The SoCalGas transmission system interconnects with El Paso at the Colorado River near Needles and Blythe, California, with North Baja near Blythe, California, and with Transwestern and Southern Trails near Needles, California. SoCalGas also interconnects with the common Kern/Mojave pipeline at Wheeler Ridge in the San Joaquin Valley and at Kramer Junction in the high desert. At Kern River Station in the San Joaquin Valley, SoCalGas maintains a major interconnect with the PG&E intrastate pipeline system, and receives PG&E/GTN deliveries at that location. SoCalGas operates four storage fields that interconnect with its transmission system. These storage fields – Aliso Canyon, Honor Rancho, La Goleta, and Playa del Rey – are located near the primary load centers of the SoCalGas system. Together they have a combined inventory capacity of 134.1 billion cubic feet (Bcf), a combined firm injection capacity of 850 MMcfd, and a combined firm withdrawal capacity of 3,195 MMcfd.

FIGURE 1


SOCALGAS SYSTEM MAP
with SDG&E
LEGEND
COMPRESSOR STATION
STORAGE FIELD
TRANSMISSION PIPELINE
FOREIGN PIPELINE
RECEIPT POINT
NO SCALE
Apr 2013
NEVADA
CALIFORNIA
ARIZONA
MEXICO
TRANSWESTERN SO. TRAILS (NEEDLES)
EL PASO TRANSWESTERN (TOPOCK)
EL PASO (EHRENBERG)
NORTH NEEDLES
SOUTH NEEDLES
KELSO
Amboy
BLYTHE (NORTH BAJA)
DESERT CENTER
IMPERIAL VALLEY
Calexico
El Centro
Twentynine Palms
Palm Springs
NEWBERRY
Barstow
KERN/MOJAVE (KRAMER JUNCTION)
ADELANTO
Cajon
San Bernardino
MORENO PLS
MORENO
RAINBOW MSA
RAINBOW
Escondido
San Diego
OTAY MESA (TGN)
Riverside
San Clemente
Palmdale
SYLMAR
Pasadena
HONOR RANCHO
ALISO CANYON
VENTURA
PLAYA DEL REY
LOS ANGELES METROPOLITAN AREA
PG&E (KERN RIVER STATION)
KERN/MOJAVE (WHEELER RIDGE)
CA PRODUCERS (LINE 85)
CA PRODUCERS (COASTAL SYSTEM)
SAN JOAQUIN VALLEY
Visalia
Avenal
LA GOLETA
Santa Barbara
Gaviota
N
Southern California Gas Company
Sempra Energy utility

A schematic of the SDG&E gas transmission system is shown in Figure 2. The SDG&E gas transmission system consists primarily of two high-pressure large diameter pipelines that extend south from Rainbow Station, located at the Riverside/San Diego County border. Both pipelines terminate at the San Diego metropolitan area.

The pipelines are interconnected approximately at their midpoint and again near their southern terminus. The northern cross-tie runs between Carlsbad and Escondido, with the southern cross-tie running through Miramar.

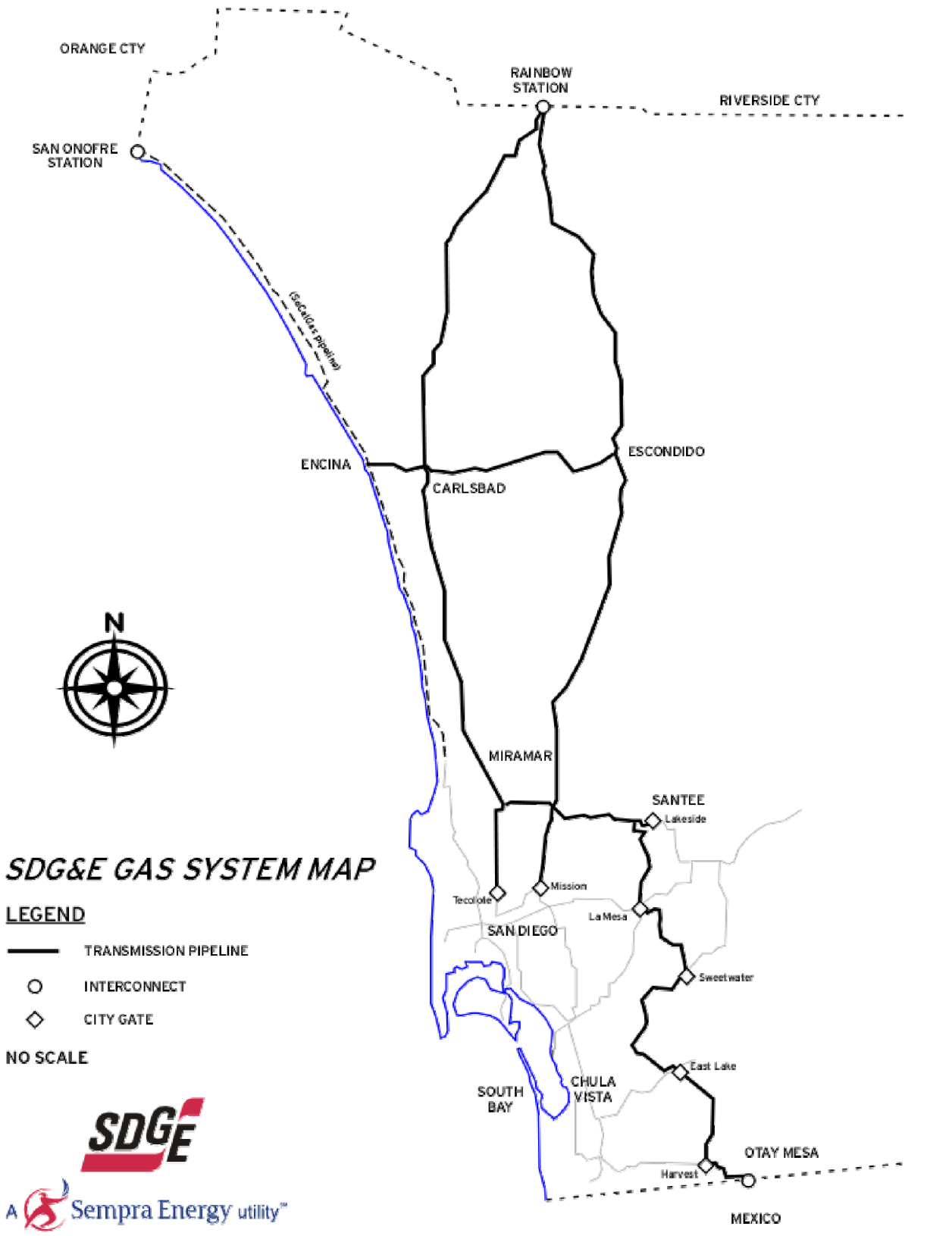
A large diameter pipeline extends from the cross-tie at Miramar to Santee. At Santee, another large diameter pipeline extends to the Otay Mesa metering station at the U.S./Mexico border. At Otay Mesa, the SDG&E system interconnects with the Transportadora de Gas Natural de Baja, California, S.de R.L. de C.V. (TGN) pipeline, providing another receipt point for supplies into the SoCalGas/SDG&E system.

A small diameter, lower pressure pipeline owned by SoCalGas also extends south from Orange County down to San Diego.

Two compressor stations are also a part of the SDG&E gas transmission system. SDG&E's Moreno compressor station, located in Moreno Valley, boosts pressure into the SoCalGas transmission lines serving Rainbow Station. A much smaller compressor station is located at Rainbow Station.

SDG&E has no storage fields in its service territory.

FIGURE 2


ORANGE CTY
RAINBOW STATION
RIVERSIDE CTY
SAN ONOFRE STATION
(SoCalGas Pipeline)
ENCINA
CARLSBAD
ESCONDIDO
N
MIRAMAR
SANTEE
Lakeside
Tecolote
Mission
La Mesa
SAN DIEGO
Sweetwater
East Lake
SOUTH BAY
CHULA VISTA
OTAY MESA
Harvest
MEXICO
SDG&E GAS SYSTEM MAP
LEGEND
TRANSMISSION PIPELINE
INTERCONNECT
CITY GATE
NO SCALE
SDGE
A Sempra Energy utility™
Jun 2011

III. SOUTHERN SYSTEM MINIMUM FLOW REQUIREMENT

The SoCalGas Southern System consists primarily of three high-pressure pipelines extending westward from the Colorado River near Blythe to Moreno Station in the City of Moreno Valley and two high-pressure pipelines extending westward from Moreno Station to the Los Angeles Basin. Three high-pressure pipelines also extend southward from Moreno Station to the SDG&E gas transmission system; the area between Moreno Station and the SDG&E gas transmission system is referred to as the Rainbow Corridor. Additionally, compressor stations are located near Blythe, Desert Center and Cactus City to boost pressures westward along the system and near Moreno Valley and Temecula to boost pressures south into San Diego. The Southern System was primarily designed to receive gas from El Paso at the Colorado River near Blythe and redeliver it to load centers in the Inland Empire, Imperial Valley, San Diego and the Los Angeles basin. Furthermore, the system consists of pipelines with "telescoping" operating pressures as gas moves from the receipt point towards the load centers. Specifically, the pipelines' Minimum Operating Pressures (MinOPs) and Maximum Allowable Operating Pressures (MAOPs) are higher at the Blythe receipt point and lower near the load centers.

The Southern System can receive additional supplies from other pipelines within the SoCalGas transmission system by the use of two valve stations located along each of the two high-pressure pipelines extending westward from Moreno Station. These two valve stations are Chino and Prado Stations near the cities of Chino and Corona, respectively. Supplies from Chino and Prado Stations can flow both westward to the Los Angeles basin and eastward to Moreno Station.

Supplies can also be received into the Southern System at the Otay Mesa receipt point in San Diego.[1] The Otay Mesa receipt point was designed to receive supplies through TGN from two sources: LNG supplies from the Energia Costa Azul LNG terminal in Baja California, and

[1] D.04-09-022, Ordering Paragraph 7.

Southwestern Basin supplies from the El Paso system via the North Baja pipeline. However, since 2008 the volume of supplies received into the Southern System at Otay Mesa has been minimal, due to market price differentials between domestic United States and foreign LNG supplies and due to growing demand for domestic supplies exported to Mexico.

SoCalGas also has the ability to transport a limited volume of supply from its Northern System to the Southern System via Transmission Line 6916, formerly the Questar Southern Trails Pipeline. SoCalGas can transport up to 80 MMcfd on this pipeline to the Southern System.

Unlike other parts of SoCalGas' system, the Southern System requires minimum flow volumes at the Blythe and/or Otay Mesa receipt points to maintain service to its customers in the Imperial Valley and San Diego load centers and other communities in San Bernardino and Riverside Counties. While supplies from the Chino and Prado Stations and from Line 6916 can flow eastward, these facilities provide only a limited amount of supplies to meet the demand of the Southern System during peak periods. Additionally, due to the telescoping operating pressures of the Southern System pipelines, the higher MinOPs of the pipelines east of Moreno Station restrict further eastward flow. Similarly, supplies delivered via Line 6916 cannot flow east of the Cabazon area. In other words, supplies delivered at the pipeline MAOP from Chino and Prado Stations and from Line 6916 are at lower pressures than the MinOPs on the eastern portion of the Southern Transmission System. As a result, the remaining supply needed to meet Southern System demand must be delivered from El Paso or North Baja at the Blythe receipt point, and/or from TGN at the Otay Mesa receipt point, in order to maintain service to both core and noncore customers on the Southern System.

IV. POTENTIAL INFRASTRUCTURE IMPROVEMENTS

SoCalGas examined three different pipeline projects to address the Southern System reliability needs. Each of the pipeline projects has the capacity to transport 800 MMcfd of supply

from the Northern Transmission System to the Southern System in the event of low deliveries at Blythe and/or Otay Mesa. As a design condition, SoCalGas used a 1-in-10 year cold day demand forecast for core customers along with the connected capacity for existing large noncore customers, and no gas supply delivered at Blythe or Otay Mesa. All three projects examined kept system pressures above MinOPs and below MAOPs, did not exceed the capacity of current transmission facilities (unless otherwise noted and identified as needing improvement), and allowed the system linepack to be fully recovered at the end of the 24 hour simulated period.

The design criteria used for this assessment was similar to the CPUC-mandated design standard for firm noncore service, but was modified for this analysis because of the issue unique to the Southern System, in order to ensure long-term service to the region. The CPUC-mandated design standard for firm noncore service is the 1-in-10 year cold day demand forecast for core customers and a forecast of firm demand for noncore customers.[2] The forecasted noncore demand is less than the connected capacities for noncore customers since noncore customers either have redundant equipment or are not typically all at their connected capacity at the same time. Therefore, the demand used for this assessment represented an extreme condition, and as such, gives us more confidence that the evaluated pipeline improvements can meet the design criteria to maintain service to all noncore customers without supply delivered on the Southern System.

The demand condition assumed in this evaluation is also similar to, but not the same as, the demand used when evaluating the results of the SoCalGas and SDG&E constrained area open seasons. Pursuant to Decision (D.) 06-09-039, SoCalGas and SDG&E conduct open seasons for firm noncore transportation capacity in areas of the system where requests for firm noncore service can or have exceeded the available capacity. When reviewing the results of the open season bid process, SoCalGas and SDG&E use the bid requests for firm noncore service coupled with the 1-in-

[2] *See* D.06-09-039, mimeo., at 184.

10 year cold day demand forecast for core customers. Bid requests are typically less than either the forecasted noncore demand or their connected capacities discussed previously, and to date, SoCalGas and SDG&E have been able to award all requests for firm noncore service in its currently capacity constrained areas.[3]

Per D.06-09-039, SoCalGas and SDG&E filed an advice letter documenting the results of the capacity open seasons and discussing any further action. The issue of reinforcing the Southern System with a new pipeline from the Northern Transmission System was not discussed in any of these advice letter filings because this interconnect does not expand capacity to a capacity constrained area, and is not needed for that purpose. In other words, any of the pipelines discussed in more detail below will transport supply from the Northern Transmission System to the Southern System in the event of low deliveries at Blythe or Otay Mesa; however, they do not provide for additional capacity to move those gas supplies south into the capacity constrained areas of the Rainbow Corridor or San Diego. The SDG&E Gas Capacity Planning and Demand Forecast Semi-Annual Report, most recently submitted on October 30, 2013, documents potential capacity improvements to this area.

A. NORTH-SOUTH PROJECT

The North-South Project, shown in Figure 3, involves installing new pipeline between the town of Adelanto and our Moreno Pressure Limiting Station, and rebuilding the Adelanto Compressor Station. Approximately 60 miles of 36-inch diameter pipeline must be installed from the Adelanto Compressor Station to the Moreno Pressure Limiting Station. The preliminary route will take it through the Cajon Pass, inhabited regions of San Bernardino County, and wetland areas.

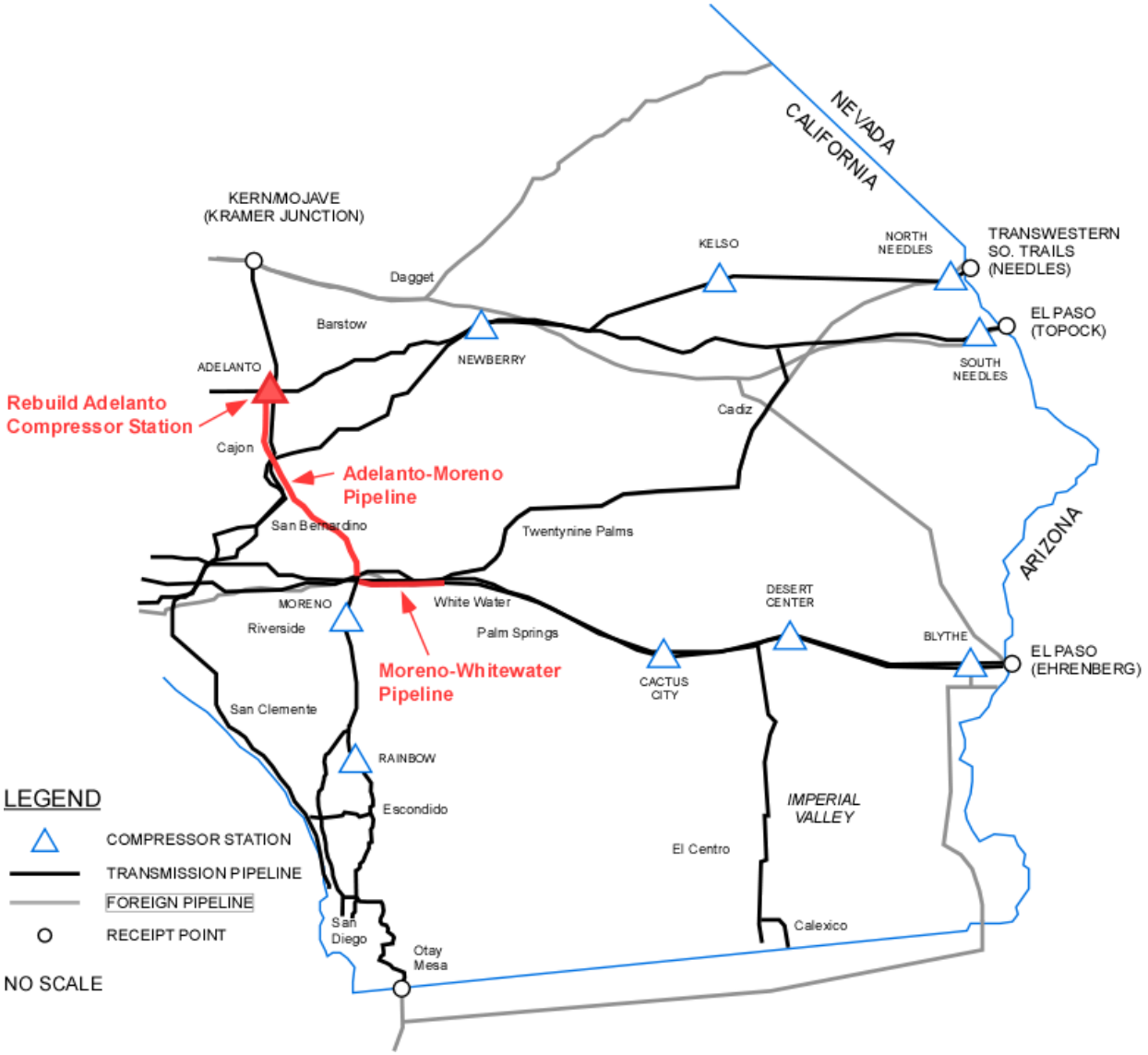
[3] Requests for firm noncore service exceeded the available capacity in the 2007 Imperial Valley open season. Subsequently, SoCalGas expanded the capacity of the system by installing Transmission Line 6914, and the Imperial Valley is no longer a potential capacity constrained area.

The Adelanto Compressor Station must be rebuilt with approximately 30,000 HP of compression in order to accommodate the design throughput.[4]

In addition, approximately 31 miles of new pipeline between Whitewater Station and Moreno Pressure Limiting Station would need to be installed in order to facilitate the higher pressures that would result from the new Adelanto-Moreno pipeline and compression, and move those gas supplies transported from Adelanto to load centers on the Southern System east of Moreno Pressure Limiting Station. The new pipeline would closely follow the route of existing SoCalGas Line 5000. Because Line 5000 between Moreno and Whitewater Stations operates at a lower MAOP than pipelines east of Whitewater Station, it cannot meet the design parameter of no supply delivered at Blythe. Instead, the new Moreno to Whitewater pipeline will be needed to facilitate the higher pressures resulting from the new Adelanto-Moreno pipeline and associated compression facilities and to move those gas supplies transported from Adelanto to load centers on the Southern System east of the Moreno Pressure Limiting Station. New pressure controlled ties from Line 5000 to Lines 2000 and 2001 are also needed.

[4] SoCalGas believes that this new compressor should be gas-driven. Electric drive compression may be suitable for some applications that are not critical to reliably serve customer demand or manage system deliveries, such as our project to replace the compressors at our Aliso Canyon storage field. However, SoCalGas cannot tolerate an impact to its critical gas operations when the electric grid is down, or even just resulting from a simple electric service interruption to its facility. An interruption at a major mainline compressor station could certainly lead to noncore customer curtailment and may also jeopardize core reliability. In addition, an electric service interruption to an electric mainline natural gas compressor could in turn cause additional problems with the electric grid if needed flowing natural gas supplies are not able to reach electric generators. Conversely, natural gas mainline compressors act as a backstop to electric grid reliability by enabling local generators to come back on line in the event of a large-scale grid outage.

Figure 3
North-South Project



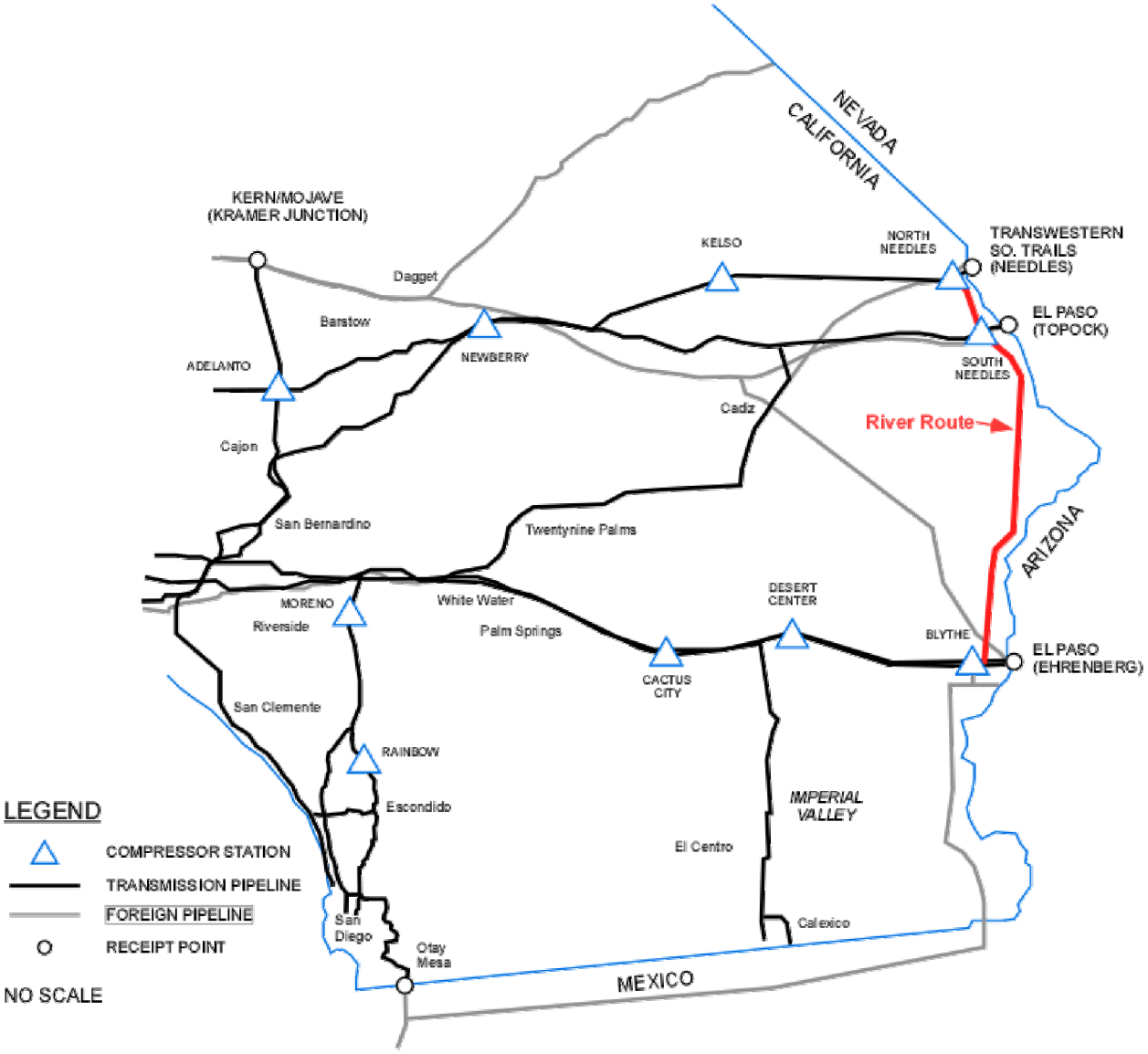
The North-South Project can transport supply delivered at the North Needles, South Needles, Kramer Junction, Wheeler Ridge, and Kern River Station receipt points, as well as transport storage supplies from our Honor Rancho storage field to serve customers off the Southern System.

B. RIVER ROUTE PIPELINE

The River Route Pipeline, shown in Figure 4, involves the installation of approximately 100 miles of 36-inch diameter pipeline connecting North Needles to South Needles and continuing to

Blythe. No additional compression is required for this project. Since the River Route Pipeline transports its supplies to the inlet of the Blythe Compressor Station, the flow of gas on the Southern System is unchanged from its current operation, and no additional improvements are necessary on existing Southern System facilities.

Figure 4
River Route Pipeline



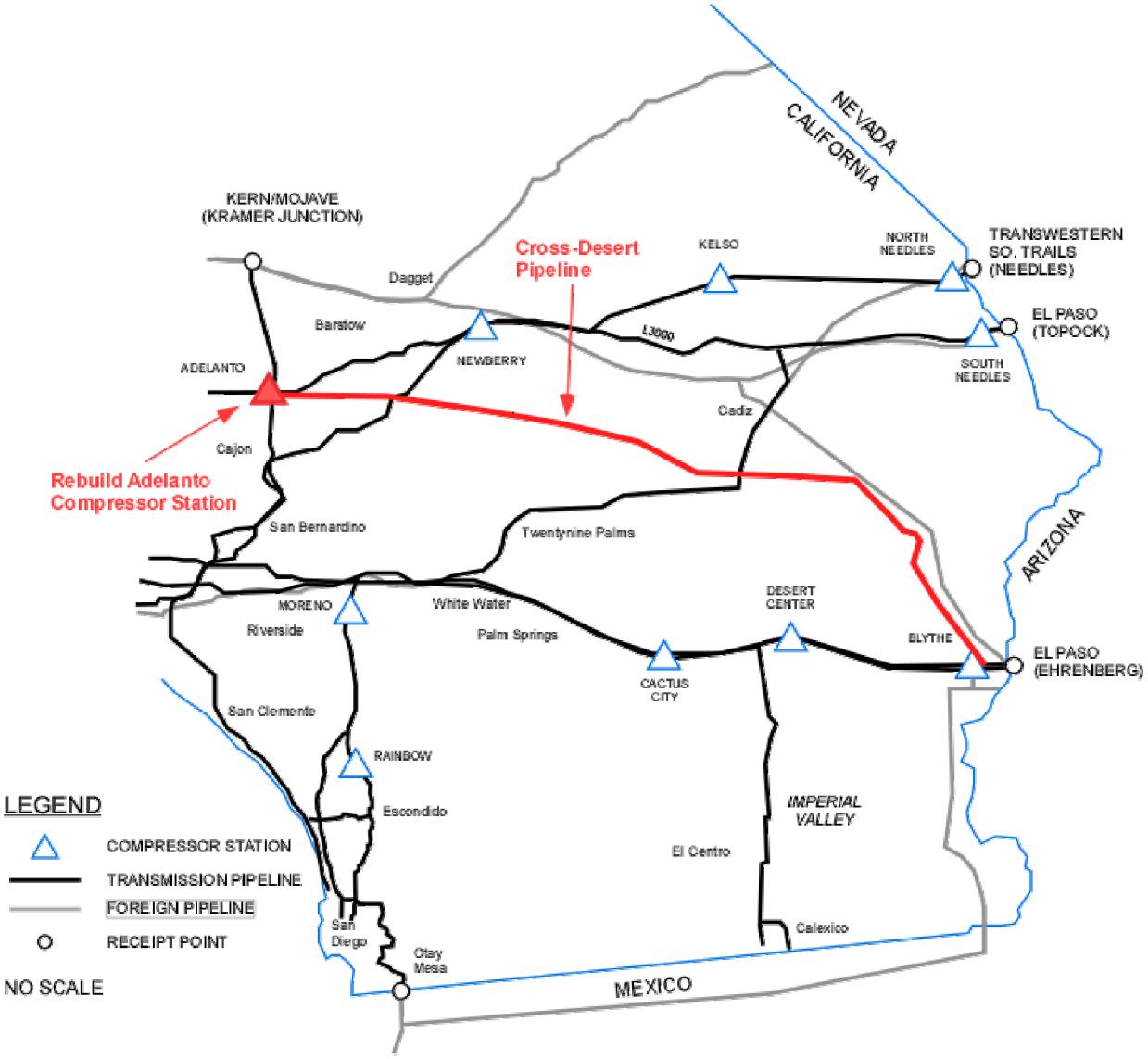
Supplies transported on the River Route Pipeline are limited to those delivered at the North Needles and South Needles receipt points. Because of pressure limitations in the design of SoCalGas' pipeline network, gas supplies cannot be transported east from Newberry to North and

South Needles. This means that supplies delivered at Kramer Junction, Wheeler Ridge, and Kern River Station cannot be redelivered to the Southern System via the River Route Pipeline, nor gas supply from the Honor Rancho Storage field.

C. CROSS DESERT PROJECT

The Cross Desert Project, shown in Figure 5, includes the installation of new pipeline and rebuilding of the Adelanto Compressor Station. Approximately 200 miles of 36-inch diameter pipeline must be installed from the Adelanto Compressor Station to Blythe. The Adelanto Compressor Station must be rebuilt with approximately 35,000 HP of compression. As with the River Route Pipeline, the flow of gas on the Southern System is unchanged from its current operation, so no additional improvements are necessary on existing Southern System facilities.

Figure 5
Cross Desert Project



The Cross Desert Project can transport the same supplies to the Southern System as the North-South Project, including storage supplies from the Honor Rancho storage field.

V. THE NORTH-SOUTH PROJECT WOULD INCREASE THE SYSTEM RECEIPT CAPACITY

The receipt capacity of the Northern Zone is 1,590 MMcfd.[5] Although it was not a driving factor for this analysis, all three pipeline projects discussed in Section V can increase this receipt capacity by 300 MMcfd. However, because both the River Route and Cross Desert Pipelines interconnect with the Southern System upstream of the Blythe compressor station, any increase in receipt capacity in the Northern Zone is offset by a loss in receipt capacity on the Southern Zone – specifically at Blythe due to the capacity of the Blythe compressor station and the take-away capacity of the pipelines downstream of that location. Only the North-South Project can increase the Northern Zone receipt capacity without degrading the Southern Zone receipt capacity because it interconnects with the Southern System far downstream of Blythe and is not limited by the take-away capacity from that location.

Therefore, with any of the pipelines discussed herein, the Northern Transmission Zone receipt capacity can be increased by 300 MMcfd to 1,890 MMcfd. However, both the River Route and Cross Desert Pipelines would degrade the Southern Transmission Zone receipt capacity, and only the North-South Project can also increase the entire system receipt capacity from 3,875 MMcfd to 4,175 MMcfd.[6]

Again, increased receipt capacity was not a problem that SoCalGas was seeking to solve with any of these three pipelines, but is rather an added benefit that the market and our customers may appreciate. SoCalGas believes that its current receipt capacity of 3,875 MMcfd is sufficient to

[5] More information on SoCalGas' receipt capacity can be found at https://scgenvoy.sempra.com and in SoCalGas Schedule No. G-BTS.

[6] System capacity, which is defined as system demand plus injection capacity less off-system deliveries, must be equal to the level of supply delivered to the system. SoCalGas and SDG&E cannot receive its total system receipt capacity of 3,875 MMcfd (or 4,175 MMcfd with the North-South Project) of supply unless the system capacity is also at least this much.

meet the long term demand requirements of our customers and also provides a sufficient level of excess, or "slack," capacity per Commission guidelines.[7]

VI. NORTH-SOUTH PROJECT IS THE BEST INFRASTRUCTURE ALTERNATIVE

SoCalGas' preference between these three pipeline options is the North-South Project. The North-South Project provides a direct interconnect between the Northern System and the largest load center on the Southern System: the Rainbow Corridor and San Diego. That direct interconnect will allow the system to respond more quickly to changes made by our Gas Control Department to meet changing demand conditions on the Southern System.

The North-South Project also provides a level of redundancy for supply delivered to the Southern System that the other two pipelines do not. Because the River Route Pipeline and Cross Desert Project interconnect upstream of the Blythe Compressor Station, an outage on the Southern System downstream of Blythe has the ability to impact supply to all points downstream. By providing an independent interconnect on the Southern System, the North-South Project can mitigate the customer impact from any supply disruption at Blythe.

Demand on the Southern System has steadily increased over the years, and SoCalGas is aware of further potential growth in this part of our service territory. The North-South Project is uniquely suited to meet growth in customer demand. As already discussed earlier, because it interconnects far downstream of Blythe, it does not impede or impact our ability to receive 1,210 MMcfd at Blythe if we have enough demand on our system to support that level of supply. In contrast, supply transported from the Northern System to the Southern System via either the River Route Pipeline or the Cross Desert Project simply displaces supply that would normally be delivered at Blythe from El Paso. Without further expansion on the Southern System, neither pipeline can be effective in meeting incremental growth in customer demand.

[7] *See* SoCalGas Advice Letter No. 4383, Biennial Report on Backbone Transmission and Slack Capacity, June 29, 2012.

VII. FROM A DESIGN AND OPERATION STANDPOINT, AN INFRASTRUCTURE IMPROVEMENT IS MUCH BETTER THAN THE OTHER ALTERNATIVES CONSIDERED BY SOCALGAS

As discussed by Ms. Musich, SoCalGas has considered various contractual alternatives to deal with future Southern System minimum flow requirements. Such alternatives may have certain price advantages or disadvantages which I will leave to the other witnesses to discuss. From a system design and system operation standpoint, however, any of the infrastructure improvement projects that SoCalGas has proposed in this application are clearly superior to any contractual alternative.

A new pipeline, such as the North-South Project that SoCalGas prefers, provides operational flexibility that is maintained, controlled, and operated by SoCalGas within the jurisdiction and oversight of the Commission, and is not reliant on outside companies to maintain their pipeline systems and contractual obligations upstream of SoCalGas. Additionally, all contractual alternatives assume that customers and shippers (or, potentially, the System Operator) are able to actually acquire gas supply on that upstream pipeline and make use of the pipeline capacity on the day that supply is needed on the Southern System. This is not a significant improvement over the current situation. Any supply shortages upstream of our system could still leave SoCalGas unable to maintain service to our customers on the Southern System.

In contrast, the North-South Project allows supplies to be delivered virtually anywhere on the SoCalGas system to support the Southern System, and does not depend upon a single or specific path or contract. While dependency on upstream pipelines can never be fully eliminated, as a system planner, there is value in eliminating extreme levels of dependency, such as the situation that currently exists on the Southern System.

VIII. QUALIFICATIONS

My name is David M. Bisi. I am employed by SoCalGas as the Gas Transmission Planning Department Manager. My business address is 555 West Fifth Street, Los Angeles, California, 90013-1011.

I received a Bachelor of Science degree in Mechanical Engineering from the University of California at Irvine in 1989. I have been employed by SoCalGas since 1989, and have held positions within the Engineering, Customer Services, and Gas Transmission departments.

I have held my current position since April, 2002. My current responsibilities include the management of the Gas Transmission Planning Department responsible for the design and planning of SoCalGas and SDG&E's gas transmission and storage systems. As such, I am responsible for: ensuring that the transmission system meets the CPUC-mandated design standards for core and noncore firm service over a 25 year forecast period; recommending improvements and additions as necessary; monitoring the changing dynamics of the gas transmission system as new load centers develop and new supply receipt points are created; alerting management when operating precautions or changes become necessary; performing short-term capacity analyses for customer service requests from the transmission system; evaluating system impacts from storage expansion projects and new product offerings to customers; and developing staff to maintain continuity and consistency in system planning.

I have previously testified before the Commission.

This concludes my prepared direct testimony.