Application No: A.15-09-013
Exhibit No.:
Witness: D. Bisi

In The Matter of the Application of San Diego Gas & Electric Company (U 902 G) and Southern California Gas Company (U 904 G) for a Certificate of Public Convenience and Necessity for the Pipeline Safety & Reliability Project	Application 15-09-013 (Filed September 30, 2015)

PREPARED DIRECT TESTIMONY OF

DAVID M. BISI

ON BEHALF OF

SAN DIEGO GAS & ELECTRIC COMPANY

AND

SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

March 21, 2016

TABLE OF CONTENTS

I. PURPOSE AND OVERVIEW

The purpose of my testimony is to: 1) describe the integrated natural gas transmission system (Gas System) of Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) (collectively, the Utilities) and the portion that operates within San Diego County (SDG&E system), 2) discuss why pipeline improvement is now needed on the SDG&E system, and 3) present the reasoning behind the reliability/resiliency and operational flexibility needs that would be met by the Utilities' Pipeline Safety & Reliability Project (Proposed Project or PSRP), which includes a new 47-mile, 36-inch diameter natural gas transmission pipeline (Line 3602) and associated facilities between the Rainbow Metering Station and a tie-in point with Line 2010 on Marine Corps Air Station (MCAS) Miramar.[1]

II. DESCRIPTION AND OPERATION OF THE SDG&E SYSTEM WITHIN THE INTEGRATED GAS SYSTEM

The Utilities own and operate the Gas System as an integrated gas transmission system consisting of pipeline and storage facilities. With their network of transmission pipelines and four interconnected storage fields, the Utilities deliver natural gas to over five million residential and business customers.

A schematic of the SDG&E system that is part of the integrated Gas System is shown in Figure 1 below. The SDG&E system consists primarily of two high-pressure large diameter

[1] As described in the Amended Application, the Utilities retained Price Waterhouse Coopers (PwC) to perform a cost-effectiveness analysis of the Proposed Project and the alternatives identified in the Joint Assigned Commissioner and Administrative Law Judge's Ruling Requiring an Amended Application and Seeking Protests, Responses and Replies issued January 22, 2016 (Ruling). *See* Amended Application, Volume III – Cost-Effectiveness Analysis. The Cost-Effectiveness Analysis and underlying methodology were performed by PwC with input and data from the Utilities. I have provided data input to the analysis, specifically with respect to the benefits of increased reliability/resiliency, operational flexibility, and system capacity, as well as other data inputs for the portions of the analysis that pertain to my testimony below.

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 SDG&E system is designed to flow from north to south, starting at the Riverside County line, and south to north, starting at the Mexican border, to meet customer demand for heating homes on peak winter days and allow capacity to deliver gas for generating electricity to meet cooling demands on the hottest days of summer within San Diego County. The SDG&E system begins at the Riverside County line to bring gas supplies, originating in the southwestern United States, to flow south to San Diego utilizing two transmission pipelines[2] and a compressor station located in Moreno Valley, California known as the Moreno Compressor Station.

Line 1600 is a 16-inch natural gas transmission pipeline that provides approximately 10 percent of SDG&E's capacity (assuming compression is available). The line runs from Rainbow Station to Mission Station for a length of approximately 50 miles and was installed in 1949.

Also running north to south is Line 3010, a 30-inch transmission pipeline running from the Rainbow Station to the Tecolote Station that was placed into service in 1961 and provides approximately 90 percent of SDG&E's capacity (assuming compression is available).

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, S.R.L. pipeline, providing another receipt point for supplies into the SoCalGas/SDG&E system. SDG&E customers can receive on a firm basis up to 400 million cubic feet per day

[2] The natural gas pipe network includes a SoCalGas pipeline that distributes gas along the Pacific coast, with product flowing from Orange County into San Diego County. This pipeline operates as part of the coastal distribution system, provides natural gas to the local area, and does not transport gas within the larger San Diego region. Less than one percent of the SDG&E system capacity enters the county through this pipeline.

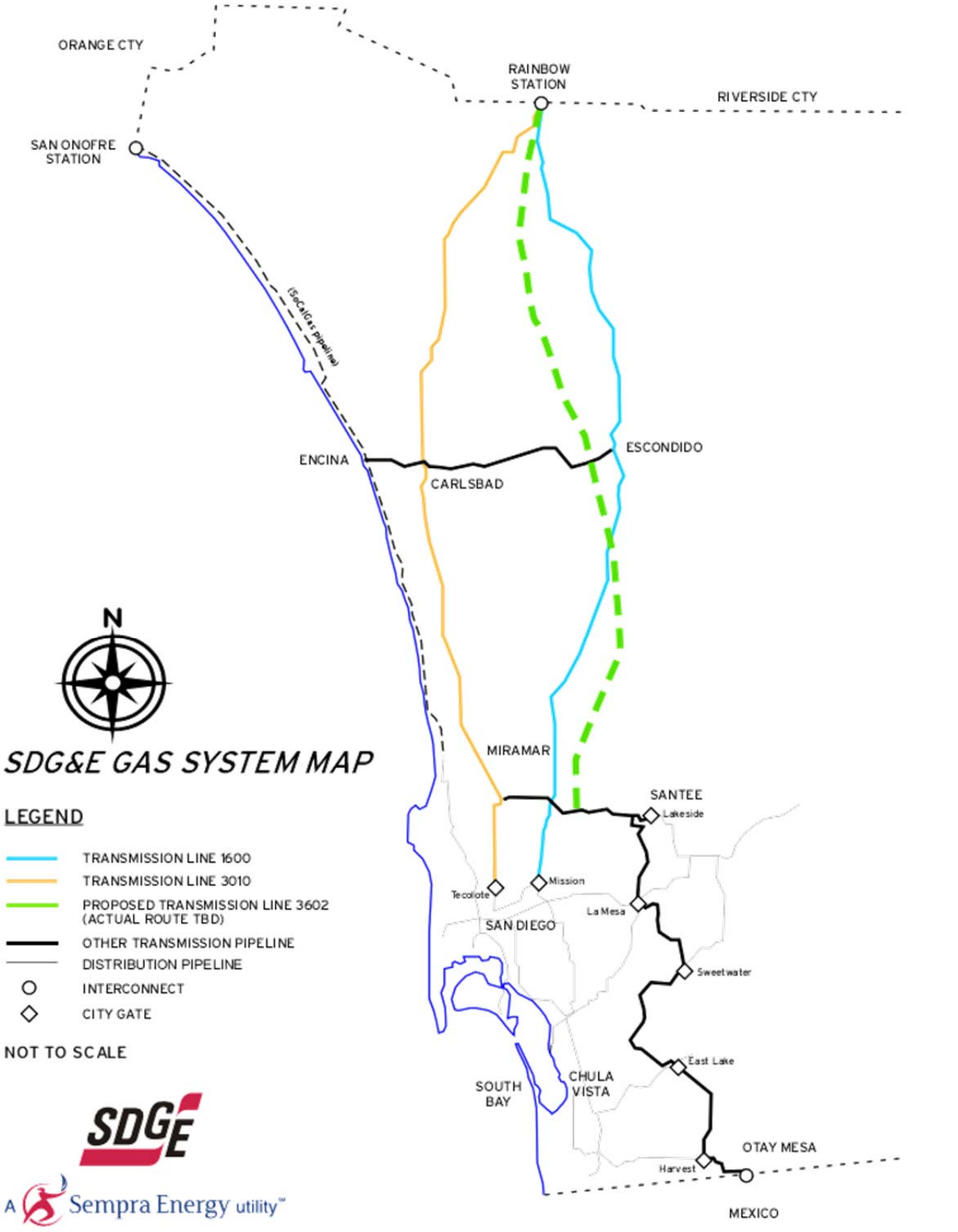
(MMcfd) into the southern end of the Gas System at Otay Mesa on the border with Mexico to flow north, if reliable supply is available.[3] Customers may deliver gas to the Otay Mesa receipt point on the Mexican border where the gas can flow north to the major demand center in San Diego and into Lines 1600 and 3010 to supply other parts of San Diego County and potentially parts of the SoCalGas system north of Rainbow Station. This receipt point is linked by pipelines in Mexico to southwestern gas supplies via El Paso at Ehrenberg, Arizona and the Costa Azul Liquefied Natural Gas (LNG) terminal in Baja California, Mexico. As explained in Ms. Marelli's testimony, however, since the receipt point was established in 2008, San Diego customers have not chosen to utilize the Otay Mesa receipt point except in the very limited context of an order to curtail.

In addition to Lines 3010 and 1600, the third major component of the SDG&E system bringing gas from the north is the Moreno Compressor Station. Moreno Compressor Station is located in the SoCalGas service territory approximately 35 miles north of the San Diego County line in Moreno Valley in Riverside County. The station has over 16,000 units of installed horsepower (HP) that boosts pressure, when necessary, in order to move higher gas volumes to meet San Diego gas demand that could not be met through free flowing gas supplies. Essentially, all gas supplies that come into San Diego County from the north pass through this compressor station. This is a critical facility in meeting gas supply requirements for SDG&E. A much smaller compressor station is located at Rainbow Station to boost pressure into Line 1600, as necessary.

None of the Utilities' four storage fields on the integrated Gas System are located in the SDG&E service territory.

[3] *See* Prepared Direct Testimony of Gwen Marelli for concerns regarding reliable supply at Otay Mesa.

FIGURE 1


ORANGE CTY
RAINBOW STATION
RIVERSIDE CTY
SAN ONOFRE STATION
(SoCalGas Pipeline)
ENCINA
CARLSBAD
ESCONDIDO
MIRAMAR
SANTEE
Lakeside
Tecolote
Mission
La Mesa
SAN DIEGO
Sweetwater
East Lake
SOUTH BAY
CHULA VISTA
OTAY MESA
Harvest
MEXICO
N
SDG&E GAS SYSTEM MAP
LEGEND
TRANSMISSION LINE 1600
TRANSMISSION LINE 3010
PROPOSED TRANSMISSION LINE 3602 (ACTUAL ROUTE TBD)
OTHER TRANSMISSION PIPELINE
DISTRIBUTION PIPELINE
INTERCONNECT
CITY GATE
NOT TO SCALE
SDGE
A Sempra Energy utility™
OCT 2015

III. PRESSURE TESTING LINE 1600 PRESENTS CHALLENGES TO CUSTOMER SERVICE

As explained in the Prepared Direct Testimony of Neil Navin, pressure testing Line 1600 is a technically feasible option as part of the Utilities' Pipeline Safety Enhancement Plan (PSEP); however, he explains that the test would be extremely complicated, protracted, and costly.

While the capacity of Line 1600 is far less than that of Line 3010, several large noncore customers and single-sourced distribution systems are directly served by Line 1600. North of Escondido, a large noncore customer operates an electric generation (EG) peaking facility, and another EG peaking facility along with a gas turbine manufacturing and testing facility are located at the southern end of the pipeline. Single-sourced distribution systems are also directly served by Line 1600 along its entire length. Therefore, many customers would be directly impacted by the prolonged outage on Line 1600 that would be required for pressure testing, if supplies at Otay Mesa are unavailable, as discussed in Ms. Marelli's testimony.

Other customers that are not served directly by Line 1600 may also experience disruptions resulting from a prolonged outage on that pipeline. With Line 3010 in service, Line 1600 contributes approximately 100 MMcfd of capacity to the SDG&E system.[4] As explained by Mr. Navin, while a pressure test of Line 1600 may be theoretically possible, it is expected to require up to four years to perform if tested during the shoulder months, and additional time to make any required repairs, which could further extend the outage absent Otay Mesa supplies. During this time, the loss of capacity provided by Line 1600 could lead to more widespread and/or frequent curtailments of EG demand in San Diego if the repairs cannot avoid being

[4] As discussed further below in the next Section, if there is an outage on Line 3010, Line 1600 operating by itself can contribute up to 150 MMcfd.

scheduled during periods of high sendout and alternative supplies at Otay Mesa cannot be relied upon.

Despite the technical feasibility of pressure testing as an option, the Utilities have determined that it is prudent to replace Line 1600's transmission function for several reasons beyond PSEP implementation. One of those reasons is the need for a new pipeline in San Diego to enhance system reliability and resiliency, as explained in the next Section.

IV. A NEW PIPELINE IMPROVES THE RESILIENCY OF THE SDG&E SYSTEM[5]

As previously stated, the integrity of the SDG&E system is highly dependent upon two transmission assets: Line 3010 and the Moreno Compressor Station. An outage at either of these two facilities may impact the Utilities' ability to maintain continuous service to their customers, including core customers; an outage at both facilities certainly will.[6]

Because of the Gas System's dependence on Line 3010 and its larger 30-inch diameter, Line 3010 transports and provides approximately 90 percent of the entire SDG&E gas supply (assuming compression is available). An outage on Line 3010, either planned or unplanned, severely reduces the capacity of the SDG&E system.[7] Without Line 3010, only gas supply transported via Line 1600 is available, reducing the total capacity of the SDG&E system to 150 MMcfd.[8] This level of capacity is just sufficient to serve only the core load on the SDG&E

[5] *See also* Amended Application, Volume III – Cost-Effectiveness Analysis, Section V, Benefits Analysis.

[6] The Cost-Effectiveness Analysis includes a scenario analysis that evaluates SDG&E's system performance in the case of an outage or pressure reduction of Line 3010. I have provided data input to the analysis, which PWC used to model a range of scenarios across a variety of parameters and variables, with the aim to assess any resulting gas and electric curtailment impacts to customers.

[7] For example, SDG&E experienced several instances of noncore curtailment during 2013 when several valves on Line 3010 were retrofitted for pipeline inspection requirements. *See* Response 14 to TURN's 2nd data request in this proceeding.

[8] With Line 3010 in service, Line 1600 contributes approximately 100 MMcfd of capacity to the SDG&E system.

system in the summer operating season – the time when core demand is at its lowest level.[9] Further, such an outage would also affect in-basin EG, as explained in the Prepared Direct Testimony of S. Ali Yari. As explained in the Prepared Direct Testimony of Jani Kikuts, an outage on the gas transmission system could result in significant disruptions to customers, including core customers.

Similarly, practically all gas supplies destined for use on the SDG&E system pass through the Moreno Compressor Station, which boosts pressures for delivery to the SDG&E system at Rainbow Station. With a loss of some compression at Moreno, delivered pressure at Rainbow Station may be insufficient to maintain service to all SDG&E customers; the loss of all compression capability at Moreno (*i.e.*, "free flowing" supplies from the SoCalGas system, as if bypassing Moreno Compressor Station) will only support an SDG&E demand of 340 MMcfd, less than the SDG&E daily average demand of 369 MMcfd.

In order to provide resiliency to the SDG&E system and redundancy for Line 3010, a new pipeline should be at least 30 inches in diameter. A pipeline with a 30-inch diameter provides complete coverage for an outage on Line 3010 for either planned or unplanned reasons, as long as compression assets are available, and could support an SDG&E demand of 570 MMcfd by itself,[10] enough to serve SDG&E demand for core and noncore customers in the summer season. As shown in Table 6 of the Cost-Effectiveness Analysis, upsizing to a 36-inch diameter would require an incremental expense of approximately $50 million. This is approximately an 12.6 percent increase relative to a 30-inch diameter.

[9] Even a less severe scenario for Line 3010 than a outage has capacity consequences. When pipeline anomalies are found as a result of a pipeline inspection, it is standard practice to reduce the pipeline operating pressure by 20 percent. Such a reduction on Line 3010 will reduce the SDG&E system capacity to 530 MMcfd, insufficient to meet the 1-in-10 year cold day design standard.

[10] The capacity of a single 30-inch pipeline is 570 MMcfd. Line 3010 by itself can provide slightly more than its 530 MMcfd nominal capacity as part of the SDG&E system.

The 12.6 percent incremental cost between a 36-inch diameter pipeline and a 30-inch diameter pipeline would increase the incremental system capacity by nearly 35 percent in the winter operating season, which in turn significantly enhances the resiliency of the SDG&E system. For example, the Utilities could meet an SDG&E demand of 650 MMcfd during an outage on Line 3010. More importantly, a 36-inch diameter pipeline operating alongside Line 3010 can theoretically support the current SDG&E system capacity of 630 MMcfd without any compression required at Moreno. Under either outage scenario, a 36-inch pipeline would provide enough capacity to meet the demand forecast for the Commission-mandated 1-in-10 year cold day design standard through the 2035/36 winter operating season. By contrast, construction of a new 30-inch diameter pipeline would not meet the demand forecast for the Commission-mandated 1-in-10 year cold day design standard under either outage scenario.

The chance of losing all compression at Moreno is relatively small, although such a situation did nearly occur at least once due to a malfunction in the Emergency Shut Down system at the station. Frequently, however, individual engines at the station unexpectedly fail or delivered pressures from SoCalGas to Moreno Compressor Station drop below that required for the compressors to operate. Just as a 30-inch diameter pipeline provides complete redundancy to Line 3010 and makes its continuous in-service operation less critical for SDG&E system integrity, a 36-inch diameter pipeline would provide that same level of redundancy for Moreno Compressor Station, and lessen its criticality to SDG&E system integrity. In addition, a reduction in engine utilization for compression not only reduces fuel usage and maintenance cost, but also may directly reduce emissions.[11]

[11] *See* Attachment A to Prepared Direct Testimony of Neil Navin – San Diego Gas & Electric and Southern California Gas Co. Pipeline Safety & Reliability (PSRP) Report. Attachment XII to the PSRP Report, Moreno Compressor Station – Operation Analysis. While analysis indicates that compression at

The testimony of Mr. Yari discusses the interdependency of the natural gas system and the electric grid and describes the need for coordination between the gas and electric industries. The following are recent examples of this natural gas-electric interdependency, which demonstrate the need for natural gas reliability and resiliency.[12] On June 30, 2015 and July 1, 2015, SoCalGas initiated an emergency localized gas curtailment for the Los Angeles (LA) Basin area due to high electric demand during hot weather conditions. These curtailments affected a portion of EG customers, resulting in limited gas service to those customers during the curtailment.[13] Extreme hot weather in the western region of the U.S., along with decreased sources of hydro-powered EG plants, created a significant demand for natural gas to fuel electric generation plants. In addition, compliance-required maintenance on one of SoCalGas' natural gas pipelines – Line 4000 – contributed to reduced natural gas capacity to meet increased demand. The combination of these factors required SoCalGas to call this emergency localized curtailment of certain EG customers in order to preserve its ability to meet the demands of higher priority core gas customers and support overall electric grid reliability. Although these examples occurred in the LA Basin, they demonstrate the value of redundancy in a gas system. Temporary removal from service of SoCalGas' redundant pipeline serving the LA Basin contributed to the need to curtail customers.[14] By expanding the operational options available within the San Diego system, the Proposed Project would put the Utilities in a much better position to optimize their facilities to reduce risks associated with outages on the San Diego system.

Moreno would be greatly reduced with the installation of the new pipeline, compression operations would still be needed during times where system constraints related to third-party damages, pipeline outages, and other routine maintenance warrants it.

[12] *See* NERC Report, at 7 ("[T]he emergence of this interdependency issue has made the power sector more vulnerable to adverse events that may occur within the natural gas industry (*e.g.*, curtailment of gas supplies. . . .)."

[13] SoCalGas Advice Letters (AL) 4827 and AL 4831.

[14] *See* Mr. Yari's testimony for examples of curtailments affecting the San Diego region.

V. A NEW PIPELINE IMPROVES THE SDG&E SYSTEM'S OPERATIONAL FLEXIBILITY[15]

Installing a new 36-inch diameter pipeline as proposed in San Diego will increase the capacity of the SDG&E system by 200 MMcfd, which would be an increase from 630 MMcfd to 830 MMcfd in the winter operating season.[16] The SDG&E system currently has sufficient capacity to meet the Commission's mandated design standards for core and noncore service through the 2035/36 operating year. However, this 200 MMcfd increase in system capacity has value beyond the design standards.

Embedded within the demand forecasts are assumptions regarding electric transmission capacity and the level and availability of renewable energy sources (wind, solar, geothermal, and hydroelectric). These assumptions, particularly those regarding renewable energy sources, are very difficult to predict, and actual winter demand could be significantly greater than shown by these figures. For example, Southern California has not experienced a rainy winter in quite a number of years, but when it does rain, storms and cloud cover can persist for several days in a row. This impacts the level of solar energy that would be available to meet electric demand, and, if this loss is greater than the assumed level used to develop the demand forecast, the level of natural gas required on the SDG&E system to meet EG demand will be greater.[17]

[15] *See also* Amended Application, Volume III – Cost-Effectiveness Analysis, Section V, Benefits Analysis.

[16] The amount of usable linepack on the SDG&E system will also increase by approximately 22 million cubic feet (MMCF). "Usable linepack" is the net amount of gas storage in a pipeline operating between its Maximum Allowable Operating Pressure (MAOP) and its Minimum Operating Pressure (MinOP). The benefit of this increased linepack has already been included in the increase to the SDG&E system capacity to serve customer demand since the new 36-inch diameter pipeline will operate as part of the integrated SDG&E gas network, and the capacity of the network is calculated based upon operating between its overall MAOP and MinOP.

[17] Discussed in greater detail in Mr. Yari's testimony.

This is more than mere speculation. We have recorded historical usage of a maximum SDG&E demand of 674 MMcfd in the winter operating season, which exceeds recent winter demand forecasts for San Diego.

The Utilities have demonstrated why a new pipeline should be 36-inch diameter, rather than a smaller size, for reliability reasons. Along with that larger diameter comes a capacity increase of 200 MMcfd. This capacity will be useful when the Gas System is called upon to replace losses from other sources of electricity, and will be helpful operationally to respond to sudden changes in customer demand resulting from regularly-occurring losses of renewable sources (such as the sun setting on hot summer nights and the corresponding surge in gas-fired generation that has been the topic of many discussions by the CAISO and State Regulators).[18] This may prove even more beneficial as the renewable energy portfolio requirement increases to 50 percent as planned,[19] and there is further reliance on gas-fired EG units as a result of the intermittent nature of this renewable generation.

A. San Diego has Potential Capacity Issues due to Elevated Electric Generation Demand

Currently, the "connected load"[20] in San Diego is over 1 billion cubic feet per day (Bcfd), much of which is the result of new EG customers in San Diego. This far exceeds the current

[18] Discussed in greater detail in Mr. Yari's testimony.

[19] Senate Bill (SB) 350 requires electric service providers in California to increase their purchase of eligible renewable energy resources from 33 percent to 50 percent under the Renewables Portfolio Standard (RPS) by December 31, 2030.

[20] Connected load is an indication of how much gas would be needed to serve all gas-burning devices connected to the system and running at maximum level all at the same time. In this testimony, the Utilities refer to connected load as a relevant metric only to indicate that San Diego is a potentially capacity-constrained area and provide some insight into possible levels of EG demand. The Utilities are not suggesting that a gas system should be built to serve all connected load, as that would overbuild the system. But if a new transmission pipeline is already to be built to replace Line 1600 to comply with State law (as explained by Mr. Schneider) and to further enhance safety (as explained by Mr. Sera), then it should be appropriately sized to accommodate both redundancy and potential for quick changes in demand.

system capacity of 630 MMcfd (assuming all transmission assets are available without any operational limitations).

Up until recently, the difference between connected load and existing capacity was not considered a significant issue since the core connected load peaked in the winter and EG connected load peaked in the summer. However, on an annual basis, EG demand does appear to have increased as a result of the decommissioning of SONGS. As explained in Mr. Yari's testimony, out of the existing approximately 3,000 MW of in-basin natural gas-fired generation in SDG&E's service territory, approximately 800 MW of new EG is anticipated to come online in the near future.[21] The total net number of MW in San Diego County is expected to decrease by about 336 MW.[22] Although the number of new natural gas-fired power plants in San Diego has dramatically increased by about 86 percent since 2000, no additional pipelines to improve gas system capacity were installed as the electric generation capacity grew. Thus, San Diego's power plants have increased their dependence on natural gas as a fuel source and it is prudent to enhance the San Diego gas system to support the electric system.

In addition, integration of renewables, wind, and solar has increased the reliance on gas-fired generation to ensure safe and reliable electric system operation. The intermittent nature of renewable generation has further resulted in reliance on gas-fired EG units that must come online quickly when the wind generation stops or on mornings and evenings when solar generation is unavailable, including some new quick-start units, such as Carlsbad Energy Center and Pio Pico, that will have 10-minute start-up capability. EG plants no longer have fuel oil back up for

[21] The Pio Pico project is 300 MW. The Carlsbad Energy Center project was reduced to 500 MW from the initial 600 MW.

[22] Pio Pico (300 MW) and Carlsbad Energy Center (500 MW) will add 800MW. However, the expected unit retirements of Kearny (120 MW), Miramar (36 MW), El Cajon (16 MW), and Encina Power Plant (964 MW) will remove about 1,136 MW from San Diego County.

natural gas to utilize in the event of curtailment. As a result, natural gas is now the sole fuel for a substantial portion of the EG resources in San Diego County. Thus, sufficient reliability and capacity for natural gas supply is required to support the electric generation and electric grid reliability in San Diego, as explained by Mr. Yari.

Although the predicted future demand is far less than the current connected load, a change in use patterns by the connected load could quickly increase the demand. Accordingly, although connected load is not the standard that should be used to design capacity on the system, as explained below, it is a useful indicator of the potential for EG demand that may quickly be dispatched and that may not otherwise be captured under long-term demand forecasting.

B. Elevated Electric Generation Requires Operational Flexibility to Handle Daily and Hourly Peak Demands that are not Reflected in Long-Term Demand Forecasting

A new transmission pipeline should be built to replace Line 1600 to comply with State law (as explained by Mr. Schneider) and to further enhance safety (as explained by Mr. Sera). Since a replacement of Line 1600 should be built, the Utilities have already explained that this new pipeline should be at least a 30-inch diameter pipeline to provide redundancy to Line 3010. As a result, this provides a unique and timely opportunity to increase system capacity by upsizing the new replacement line to 36 inches instead of 30 inches not only to provide redundancy on the Gas System, but also to enhance the operational ability to serve fluctuating levels of customer demand and increased renewables, which depend on natural gas-fired electric generation for reliability.

Although the current 1-in-10 cold day peak demand forecast indicates that sufficient capacity is available through the 2035/36 operating seasons (assuming all transmission assets are in service), this demand forecast does not take into account the operational issues associated with

serving the changing EG market. By definition, the peak demand forecast does not address fluctuating EG demand on a daily or hourly basis from an operational standpoint.

As mentioned above, connected load in San Diego still far exceeds the forecast figures under the California Public Utilities Commission (CPUC or Commission)'s design standards[23] and existing SDG&E system capacity. While connected load is only a broad indicator of the potential for elevated EG demand being dispatched beyond what has been forecast, if there is an issue with gas supply or capacity that results in a curtailment, interruptible gas service (much of which are EG plants) would be curtailed first to maintain firm gas service obligations,[24] which could possibly threaten electric grid reliability. As noted above, there have been days when actual demand exceeded available system capacity, and this was not anticipated from the predicted demand forecast. For example, in January 2013, SDG&E's peak sendout on the natural gas system was 674 MMcfd, which exceeds SDG&E's nominal capacity.[25] Additional capacity would be useful in serving EG demand at levels greater than expected or forecast, such as for: (1) days when renewable sources are not available (sun not shining, no wind); (2) days

[23] The CPUC adopted a 1-in-35 year cold day condition as the design criteria for core service, and established a new 1-in-10 year cold day design criteria for noncore firm service.

[24] After a few curtailments, all the EG plants could and likely would seek firm service. It is the Utilities' view that currently, there is a disconnect between EGs often electing interruptible gas service despite their likely need for uninterrupted electric service to avoid threats to electric grid reliability. The CPUC indicated in D.02-11-073 and D.06-09-039 that system planning analyses should examine whether nominations for firm capacity in the open season bidding process exceed available capacity under the 1-in-10 year cold day condition. However, if a substantial percentage of EGs were to switch to firm service after experiencing curtailments, SDG&E would probably not have enough firm capacity to meet all such requests. Accordingly, because the Utilities no longer believe that the open season process is sufficient to estimate system capacity requirements, they have filed to eliminate the firm and interruptible tariff rate distinctions as part of their curtailment rule revision Application (A.) 15-06-020. EG would continue to be curtailed first under the Utilities' proposed revisions to the curtailment rules.

[25] SDG&E's nominal capacity can deliver approximately 630 MMcfd per day in the winter and 590 MMcfd in the summer. Actual capacities are a function of how large the load is and where it is located on the system. The amount of gas being pushed through SDG&E's two transmission lines can fluctuate on any given day. Available system pressures affect SDG&E's ability to serve a certain level of customer demand.

when import capacity falls; and (3) days when EG outages on other parts of the CAISO grid require increased generation in San Diego.

Another example is that the 1-in-10 cold day peak demand forecast shows no EG demand anticipated in the Rainbow Corridor. In assessing the total available capacity to serve the San Diego area, upstream growth in the Rainbow Corridor is an important constraint.[26] The Utilities' system capacity planning looks at the Rainbow Corridor and San Diego together. As demand increases in the Rainbow Corridor, pressure delivered to the SDG&E system at Rainbow Station declines, and the capacity of the SDG&E system decreases. Although the forecast shows no EG demand, if in fact the Utilities are called upon to serve an EG customer in the Rainbow Corridor during a high sendout condition in the winter season, customer curtailment is a very likely possibility.

Accordingly, it is possible that demand in San Diego may exceed the system capacity on a day with conditions that are higher than normal, but less than the CPUC's 1-in-10 year cold day firm demand standard, or during a high hourly peak condition. Either scenario may result in gas curtailments that also risk electric blackouts.[27] Since 2011, SDG&E has had eight separate curtailments related to pipeline maintenance on the SDG&E gas system where having the Proposed Project in place would have mitigated these pipeline maintenance curtailments. Based on a 36-inch diameter pipeline, the Proposed Project's additional 200 MMcfd of capacity to the Gas System would be sufficient to serve additional noncore demand on a higher than predicted

[26] The Rainbow Corridor consists of several pipelines that run south from Moreno Compressor Station to Rainbow Station.

[27] As explained by the NERC, the structure within electric capacity planning is fundamentally different: "Planning for transmission infrastructure is triggered by reliability criteria under stressed system conditions; therefore, there is an implicit level of reserve capacity available in the transmission and generation systems to accommodate contingencies or above-normal weather conditions." NERC Report, at 11. As noted in Mr. Yari's testimony, the electric grid is vulnerable to gas service disruptions.

peak day or hour. Construction of the Proposed Project would thus enhance the reliability of service in San Diego on an operational basis.

VI. THE PROPOSED PROJECT IS THE RIGHT PROJECT FOR SDG&E

For the reasons stated above – to enhance the safety of the SDG&E system by allowing Line 1600's transmission function to be replaced, improve resiliency of the SDG&E system, and increase capacity to meet unexpected and unplanned changes in demand – the Proposed Project is the best solution for SDG&E's future. In addition, as Mr. Navin testifies, the Utilities considered a wide range of potential alternative routes for a new pipeline project of this magnitude and scope in San Diego County – including desert, international, and off-shore routes – and determined that just one route was clearly the most suitable.[28] When there is only one opportunity to construct an additional pipeline in San Diego, it would be imprudent to squander that opportunity with a pipeline that does not provide for a multitude of benefits to the SDG&E system. A 16-inch diameter pipeline only allows for the derating of Line 1600; a 30-inch diameter pipeline adds redundancy for Line 3010. But only a 36-inch or larger diameter pipeline will also provide redundancy for the Moreno Compressor Station, serve an SDG&E demand of 650 MMcfd in the event of an outage of Line 3010, and improve SDG&E's capability to meet rapid changes in customer demand. Therefore, SDG&E should use this singular opportunity to put that pipeline into service.

[28] As noted in the Proponent's Environmental Assessment and Mr. Navin's testimony, the Utilities identified a series of "Route Segment Alternatives" that can be characterized as minor deviations in the context of the same overall Proposed Route from Rainbow Station to a tie-in point on or near MCAS Miramar.

VII. QUALIFICATIONS

My name is David M. Bisi. I am employed by Southern California Gas Company (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.