

Application No: A.13-12-013  
 Exhibit No.: \_\_\_\_\_  
 Witness: David Buczkowski

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 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.13-12-013  
 (Filed December 20, 2013)

**UPDATED DIRECT TESTIMONY OF**

**DAVID BUCZKOWSKI**

**SAN DIEGO GAS & ELECTRIC COMPANY**

**AND**

**SOUTHERN CALIFORNIA GAS COMPANY**

BEFORE THE PUBLIC UTILITIES COMMISSION  
 OF THE STATE OF CALIFORNIA

November 12, 2014

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1                                   **UPDATED DIRECT TESTIMONY OF DAVID BUCZKOWSKI**

2   **I.       NOVEMBER 2014 UPDATE**

3               The North-South Project described in our Application consisted of three elements: (1) a  
4 new 36-inch diameter pipeline approximately 60 miles long, from Adelanto Compressor Station  
5 to the Moreno Pressure Limiting Station, (2) rebuilding of the existing Adelanto Compressor  
6 Station with approximately 30,000 HP of compression, and (3) an additional 31 miles of new  
7 pipeline from Whitewater Station to Moreno. As explained by Ms. Marelli in her Updated  
8 Direct Testimony, SoCalGas has reduced the scope of the proposed North-South Project.  
9 SoCalGas is continuing to pursue the first two elements of the project, namely the Adelanto-to-  
10 Moreno pipeline and the Adelanto Compressor Station upgrade. SoCalGas will no longer be  
11 moving forward with the proposed 31-mile Moreno-to-Whitewater pipeline portion of the  
12 project. My updated direct testimony reflects this scope reduction.

13              By eliminating over \$186 million in forecasted expenditures, this scope reduction will  
14 substantially reduce the cost of the project. Although the Moreno-to-Whitewater pipeline was  
15 originally estimated to cost \$186.1 million, this estimate was provided before SoCalGas refined  
16 route and cost inputs, as we have now done for the remaining portions of the project. An  
17 updated estimated for the Moreno-to-Whitewater portion of the project would be well above  
18 \$186.1 million. In addition, this scope reduction should also simplify environmental review,  
19 permitting, and land acquisition, and reduce project risks.

20              Since filing the Application SoCalGas has continued to move forward on project  
21 activities: pipeline route refinement, planning, engineering, design and environmental approval  
22 processes, CEQA and NEPA. This work built off of the effort made by SoCalGas and their  
23 consultant, TRC, in 2013 that was summarized in the report attached to my supplemental

1 testimony filed on March 28, 2014. During 2014 SoCalGas has performed extensive field  
 2 review and has met with federal, state and local agencies. These efforts have resulted in the  
 3 refinement of North-South Project scope and increased the level of project definition, degree of  
 4 completeness of deliverables, and improved accuracy of the cost estimate. As a result of this  
 5 work, we are also providing up-to-date detailed cost information for the Adelanto to Moreno  
 6 pipeline and Adelanto Compressor Station upgrade.

7 Estimated direct costs for the Adelanto-to-Moreno pipeline have increased from \$331.8  
 8 million (in 2013 dollars) to \$484.5 million (in 2014 dollars). The primary drivers for this  
 9 increase (see Table 1) are attributed to changes in construction, engineering, environmental and  
 10 material costs along with updates to other project execution costs identified.

11 **Table 1**  
 12 ***Adelanto to Moreno Pipeline Costs Changes***

<b>Direct Capital Cost Increases</b>	<b>Total</b>
Materials	\$8.1
Construction	\$90.3
Engineering	\$7.9
Environmental	\$22.3
Pressure Limiting Stations <sup>1</sup>	\$12.7
Other Project Execution Activities	\$11.4
<b>Total Increase</b>	<b>\$152.7</b>

13  
 14 The Adelanto-to-Moreno pipeline route alignment adjustments resulted in an increase in  
 15 mileage from approximately 60 miles to approximately 63 miles and increased footage in paved

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<sup>1</sup> Three new pressure limiting stations at Whitewater, Shaver Summit, and Desert Center were previously planned as part of the Moreno to Whitewater cost estimates (\$ 5.7 million in 2013 direct dollars). Included are updates for the three new PLSs (\$2.6 million) and cost increases for Moreno PLS (\$4.4 million).

1 roads as opposed to previously planned in dirt roads. The basis for valve spacing has also been  
2 refined resulting in an increase in mainline and other valves. These alignment and others  
3 changes increased the costs estimates for materials, engineering and construction.

4 Additional research and discussions with local agencies have improved our understanding  
5 of terrain and soil conditions, specifically sandy soil, historic road construction practices<sup>2</sup> and  
6 ground water, resulting in better definition of the requirement to shore trenches with plywood,  
7 trench through multiple layers of asphalt and concrete, and dewater trenches. The United States  
8 Forest Service has provided guidance on construction access and construction related restoration.  
9 These challenges and guidance have driven up the per foot cost estimates of construction along  
10 with increasing engineering cost estimates. Furthermore, pipeline construction costs have  
11 increased over 5% in 2014 and going forward skilled pipeline construction trades are  
12 commanding wage and per diem premiums as pipeline construction takes off across the country  
13 further driving costs. As a result of these and other construction challenges and risks, we have  
14 increased our construction cost contingencies to 16%.

15 Environmental cost estimates have been updated based on more extensive field studies  
16 and input from state and federal agencies. Increases include costs required by state and federal  
17 agencies for consultants to prepare CEQA and NEPA environmental reports and studies,  
18 construction monitoring and mitigation.

19 Other project execution activities that have cost estimate increases include, land  
20 acquisition, outside legal services, Company labor and outreach activities.

21 Estimated direct costs for the Adelanto Compressor Station upgrade have increased from  
22 \$110.7 million to \$136.8 million. The major drivers for the \$26.1 million increase in the

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<sup>2</sup> Historic practice of building new roads on top of old roads was identified along the proposed route and not previously anticipated.

1 estimated direct cost of the Adelanto Compressor Station upgrade include: pipe and fittings;  
2 updated compressor equipment cost estimates; additional environmental costs; and an increase in  
3 Adelanto Compressor Station project contingency to 15%.

4 The new total estimated direct cost of the North-South Project, taking into account these  
5 estimated cost increases for the Adelanto-to-Moreno pipeline and the Adelanto Compressor  
6 Station upgrade as well as elimination of the Moreno-to-Whitewater pipeline portion of the  
7 project, is now reduced to \$621.3 million from our original estimate of \$628.6 million.

8 As a result of a more mature project scope definition, degree of completion of  
9 deliverables, and execution plan development, our estimate is within a Class 3 range of accuracy  
10 as defined by the Association for the Advancement of Cost Engineers International (AACE). A  
11 Class 3 estimate as applied for the Building and General Construction Industries, most relevant  
12 to pipeline construction, is defined as:

- 13 • Having a maturity level of project definition deliverables between 10% and 40%
- 14 • An end usage of design development, budget authorization, feasibility
- 15 • Based on a methodology of semi-detailed unit costs with assembly level line items
- 16 • An expected accuracy range of -5% to -15% and +10% to +20%

17 The only variance between the Class 3 estimate above and as applied for the Process  
18 Industries, most applicable to compressor station construction, is a higher range of expected  
19 accuracy of +30%. It should be noted that in concert with better definition of the project scope  
20 and requirements resulting in more accurate cost estimates, the contingency applied to various  
21 project expenditures has also been updated based on this improved understanding of the project  
22 challenges and risks. This update of the contingency percentages better reflects the risk profile

1 of the project and has resulted in a higher contingency percentage as compared to the original  
2 cost estimate.

3 In addition to updating project cost estimates, SoCalGas has updated ongoing O&M cost  
4 estimates based on revised scope and updated the factored cost estimates for River Route and  
5 Cross Desert alternatives to reflect the updated cost per mile and updated cost per horsepower on  
6 the North-South Project.

7 **II. PURPOSE & OVERVIEW**

8 The purpose of my direct testimony on behalf of Southern California Gas Company  
9 (SoCalGas) and San Diego Gas & Electric Company (SDG&E) is to present the estimated direct  
10 project costs, and schedule for the North-South Project.

11 This project consists of two major components: Adelanto-Moreno Pipeline and Adelanto  
12 Compressor Station. The estimated project direct costs are summarized as follows in Table 2:

13 ***Table 2 Estimated North - South Project Direct Costs***  
14 *(In Millions of Dollars)*

Direct Capital Costs	Total
Adelanto-Moreno Pipeline	\$484.5
Adelanto Compressor Station	\$136.8
Total	\$621.3

15  
16 The costs described in this chapter are direct costs (in 2014 direct dollars) and cover anticipated  
17 project elements, including, engineering, environmental review, permitting, mitigation, land and  
18 right-of-way acquisition, equipment and materials, construction labor, construction management,  
19 consultant costs, and internal company labor.

The overall project schedule is estimated to encompass six years from commencing work until the new assets are placed in service. The estimated annual capital expenditures are summarized as follows in Table 3:

**Table 3**  
**Estimated North - South Project Annual Direct Capital Expenditures**  
*(In Millions of Dollars)*

2014	2015	2016	2017	2018	2019	2020 (Labor Only)	2020- 2039	Total
\$3.4	\$11.0	\$22.1	\$169.8	\$135.6	\$276.0	\$1.2	\$2.2	\$621.3

**III. PROJECT SCOPE**

The North-South Project scope includes the design, and construction of approximately 63 miles of new pipeline from Adelanto to our Moreno pressure limiting station (Moreno PLS) and upgrades to the compressor station in Adelanto.

Based on the preliminary engineering and design work completed to date and the project experience of SoCalGas, SDG&E, and consultants,<sup>3</sup> the overall scope of work presented below is feasible and constructible. SoCalGas and SDG&E have evaluated this proposed project scope against other possible project alternatives, as discussed in the updated testimony of Ms. Marelli and Mr. Bisi. High-level cost estimates for two of the most feasible project alternatives are presented in Section VI below.

This project is anticipated to require an extensive environmental review and involve monitoring and mitigation activities throughout the construction phase. For purposes of

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<sup>3</sup> These consultants include ARB Construction (ARB), Spec Services, BonTerra Psomas, and URS. Information about each of these firms can be found at the following websites: ARB - <http://www.arbinc.com/> Spec Services - <http://www.specservices.com/> BonTerra Psomas - <http://www.psomas.com/> URS - <http://www.urs.com/>



1 determining the environmental activities and costs associated with this project, SoCalGas and  
2 SDG&E assume that the project is subject to the requirements of the National Environmental  
3 Policy Act and the California Environmental Quality Act as well as permits from various federal,  
4 state and local agencies.

5 **A. Adelanto-Moreno Pipeline**

6 The Adelanto-Moreno pipeline is a new 36” diameter pipeline that originates at  
7 SoCalGas’ Adelanto Compressor Station and traverses approximately 63 miles in a southeasterly  
8 direction, terminating at the Moreno PLS. The new pipeline will traverse both undeveloped and  
9 urban locations in San Bernardino and Riverside counties, and will pass through private and  
10 public land. SoCalGas project management, environmental, land services, and operations  
11 personnel, developed the proposed pipeline alignment.

12 SoCalGas and SDG&E conducted field investigations; obtained publicly available GIS,  
13 topography, land ownership, and fault data to use in our review and analysis of the pipeline  
14 route. We identified several challenges along the route, including traversing the Cajon Pass and  
15 crossings of multiple highways, earthquake faults, the California Aqueduct, Santa Ana River,  
16 and flood control channels.

17 The Adelanto-Moreno Pipeline scope also includes the installation of pressure control  
18 equipment at Moreno PLS and on three SoCalGas pipelines at Whitewater, Shaver Summit, and  
19 Desert Center Stations. Three new pressure control stations (PLSs) are required to flow gas east  
20 from Moreno to Blythe and were originally included in the Moreno – Whitewater Pipeline cost  
21 estimate.

1           **B.     Adelanto Compressor Station**

2           The project scope for this application also includes an upgrade of the existing Adelanto  
3 Compressor Station. SoCalGas and SDG&E determined the operational requirements for the  
4 station (e.g., minimum and maximum station throughput, minimum inlet pressure, maximum  
5 outlet pressure), and URS Corporation, a consultant with compression station expertise, was  
6 contracted to further develop the engineering and design and provide a detailed estimate based  
7 on their expertise in conjunction with input from equipment manufacturers.<sup>4</sup>

8           The current station consists of a single gas-turbine driven compressor installed in the  
9 early 1970's. The total horsepower of this existing unit is inadequate to provide the necessary  
10 throughput for the North-South Project at the required design conditions. Without the ability to  
11 move the required volume of gas through the Adelanto Compressor Station, the minimum flow  
12 requirements on the Southern System described in the updated testimonies of Ms. Marelli and  
13 Mr. Bisi could not be met through this project. As such, the aforementioned station upgrades are  
14 required. Since the existing turbine-driven compressor is no longer in commercial production,  
15 and ongoing maintenance and procurement of replacement parts is difficult and costly, it will be  
16 retired.<sup>5</sup>

17           **IV.    COST ESTIMATES**

18           SoCalGas and SDG&E developed direct cost estimates to implement the above scope of  
19 work, including costs associated with project management, engineering and design,  
20 environmental permitting, land acquisition, material and equipment procurement, and

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<sup>4</sup> Please note that the initial work on this topic was prepared by outside consultant TRC. SoCalGas and URS used this initial work as a starting point for our analyses and estimates, but the revised estimates in this updated testimony are the product of the detailed work done by SoCalGas and URS.

<sup>5</sup> The same type of gas turbine-driven compressor (GE LM 1500) is also being replaced through a different project at the Aliso Canyon Storage facility. See Decision 13-11-023.

1 construction. Various consultants provided support for this effort. All cost information and  
2 vendor quotes gathered by contractors were reviewed by experienced SoCalGas project and  
3 construction management personnel.

4 **A. Adelanto-Moreno Pipeline**

5 The installation of approximately 63 miles of new 36” diameter pipeline from Adelanto  
6 Compressor Station to Moreno is estimated to cost \$484.5 million (direct costs). The estimated  
7 pipeline costs are summarized as follows in the Table 4 below:

8 **Table 4<sup>6</sup>**  
9 **Estimated Adelanto-Moreno Pipeline Direct Costs**  
10 **(In Millions of Dollars)**

Direct Capital Costs	Total
Materials	\$92.8
Construction	\$270.4
Other <sup>7</sup>	\$121.5
Total	\$484.7

11 SoCalGas and SDG&E consulted with vendors to determine current material costs for  
12 pipe and valves. The new pipeline will allow passage of commonly available in-line inspection  
13 tools. Costs are included for a launcher/receiver at each end of the new pipeline. The project  
14 scope includes approximately 20 main line valves for the Adelanto-Moreno pipeline route. The  
15 main line valves installed as part of this project will be capable of operating in automatic shut-off  
16 and remote control modes, and the cost estimates include the controls and actuators necessary to  
17 permit such operation.

<sup>6</sup> See Appendix A for Adelanto-Moreno Pipeline Direct Cost Detail.

<sup>7</sup> See Table III in Appendix A for a breakdown of “Other” costs for Adelanto-Moreno Pipeline.

1 SoCalGas obtained estimates for the construction costs from ARB which has extensive  
2 experience constructing large diameter natural gas transmission pipelines. The estimates account  
3 for type of terrain traversed during construction and the effect of the terrain on such factors as  
4 type of construction methods employed and rate of construction progress. The estimates were  
5 reviewed by experienced SoCalGas project management personnel considered to be technically  
6 acceptable and complete with respect to scope and schedule. The estimates are incorporated into  
7 the direct costs presented in Table 4 above. Third party construction management man hours  
8 were developed based upon the construction schedule, number of construction crews, and work  
9 hours provided by ARB. Labor rates for construction management personnel were obtained  
10 from current vendors.

11 Land costs include acquisition of additional land for PLSs, temporary work space, and  
12 permanent easements along the proposed Adelanto-Moreno pipeline route. After construction is  
13 completed, our scope and estimate basis is that the sections of the pipeline outside dedicated  
14 roads and highways will have a 50 foot right-of-way. Temporary work space during  
15 construction will vary in open terrain. An additional 50 feet is required to establish a 100-foot  
16 work strip in open land and mountainous terrain. In urban areas along paved roadways,  
17 temporary work space will be utilized where space is available and necessary.

18 SoCalGas and consultants combined analysis of aerial images and U.S. Geological  
19 Survey maps with multiple site visits to develop our engineering and construction cost estimates.  
20 The engineering cost estimate incorporates anticipated man hours and estimated labor rates for  
21 activities related to site investigation, project coordination, survey, pipeline and traffic control  
22 design drawings and review for permitting from local municipalities, preparation of bid

1 specifications and coordination with vendors, construction support, review of right-of-way  
2 documents, and project closeout.

3 SoCalGas environmental staff provided anticipated man-hours and labor rates in order to  
4 develop estimated costs for environmental data collection surveys (including cultural resources,  
5 natural resources, water resources, soils, geology and hazardous materials), geotechnical support,  
6 and permitting activities, as well as preconstruction surveys, mitigation compliance, and  
7 construction monitoring. Costs for mitigation are based on estimated acreage impacts and fees to  
8 available mitigation banks, as well as costs per acre for restoration of specific habitat types.

9 Other items covered in the cost estimate are legal support services, an allowance for  
10 public relations activities and community outreach, and installation of fiber optic right-of-way  
11 monitoring and methane detection devices along the pipeline route.

## 12 **B. Adelanto Compressor Station**

13 Compressor station upgrades at Adelanto adding approximately 30,000 horsepower of  
14 compression are estimated to cost \$136.8 million (2014 direct dollars).

15 **Table 5<sup>8</sup>**  
16 ***Estimated Adelanto Compressor Station Direct Costs***  
17 ***(In Millions of Dollars)***

<b>Direct Capital Costs</b>	<b>Total</b>
Equipment and Materials	\$80.5
Construction	\$30.4
Other <sup>9</sup>	\$26.0
<b>Total</b>	<b>\$136.8</b>

<sup>8</sup> See Appendix B for Adelanto Compressor Station Direct Cost Detail.

<sup>9</sup> See Table III in Appendix B for breakdown of “Other” costs for Adelanto Compressor Station.

1 This estimate assumes the 30,000 horsepower of compression is provided by three natural  
2 gas turbine-driven compressors. It is assumed that this three-unit configuration will allow for the  
3 required operational flexibility. URS consulted with a reputable compressor manufacturer to  
4 obtain pricing for the compressors and related equipment. As the project design moves forward,  
5 additional engineering is required to thoroughly evaluate the horsepower and flow rate  
6 requirements of the station. If further engineering and design suggests an alternate configuration  
7 of type and quantity of compressors is better suited for this project, it is assumed the resultant  
8 change will be within the accuracy of the cost estimate.

9 Construction of the station upgrades is assumed to take place just outside the fence line of  
10 the existing Adelanto Compressor Station. The total parcel of land owned by SoCalGas is  
11 approximately 560 ft. x 875 ft., with the existing Adelanto Station covering much less than half  
12 of the entire parcel. This provides sufficient room to install the new compressor station on the  
13 SoCalGas parcel, outside the existing fence line and due south of the existing station. This will  
14 reduce land acquisition costs for the new compression equipment installation, however additional  
15 land acquisition is assumed to be required for ancillary facilities. In addition, executing the  
16 construction in this manner will eliminate the need for any immediate demolition of the existing  
17 compressor and will not impact system operation and remote control of critical valves while the  
18 new station is being built. The current turbine driven compressor will remain in service until the  
19 new units are installed and commissioned. The direct costs for the Adelanto Compressor Station  
20 do not include demolition of the existing unit. As stated in Mr. Yee's testimony, those costs are  
21 accounted for in authorized depreciation rates.

22 In order to meet regional air quality requirements, emissions controls and continuous  
23 emissions monitoring equipment will be required. The compressor station will be subject to

1 Federal Operating Permit (Title V) requirements due to its potential to emit emissions in excess  
2 of federal major source thresholds. As a federal major source, the facility will meet the Lowest  
3 Achievable Emission Rate (LAER). The capital costs for procurement and installation of this  
4 equipment are included in the project estimate. The emission reduction credits cost estimate are  
5 based on ERC costs per ton of a recent transaction in the Mojave Desert Air Quality  
6 Management District provided by an emissions broker and validated by the air district. These  
7 emissions offset costs and other air permit related fees necessary to construct the station  
8 upgrades are also included towards the total cost of the compressor station.

9 SoCalGas and SDG&E evaluated natural gas driven compression as the basis for the  
10 project scope and cost estimates in this application. As stated in Mr. Bisi's testimony, SoCalGas  
11 and SDG&E believe that this new compression should be gas-driven for a number of reasons.

### 12 **C. Company Labor**

13 SoCalGas will use company resources to perform various functions over the course of the  
14 project. In particular, SoCalGas will be responsible for overall project and construction  
15 management, environmental management, project controls, and various other support functions.  
16 All third party contractor and consultant activity, including but not limited to environmental  
17 surveys and monitoring, procurement, engineering/design, land and right-of-way acquisition,  
18 construction management, and legal services will be overseen by company resources. SoCalGas  
19 developed a preliminary staffing plan for the functions that will be supporting the project. It is  
20 estimated that the number of SoCalGas full-time equivalent employees working on this project  
21 will range from roughly 7 in the early stages of the project to approximately 39 during the peak  
22 construction activities. The total direct costs for company labor are estimated to be  
23 approximately \$22.1 million.

1           **D.     Contingency**

2           The estimated project costs in this application include contingencies that, in aggregate,  
3 amount to 13.8% of the total direct cost. Contingency is a direct cost to the project and will be  
4 spent over the course of engineering, design, procurement, and construction. Per the Association  
5 for the Advancement of Cost Engineering (AACE), contingency is defined as “a cost element of  
6 the estimate used to cover the uncertainty and variability associated with a cost estimate, and  
7 unforeseeable elements of cost within the defined project scope.”<sup>10</sup> The risk of these unknown  
8 elements within the defined scope, and their associated costs materializing, is always present on  
9 construction projects like the North-South Project. Including a contingency allows for these  
10 costs to be budgeted, even though the exact contingency-related expenditures and unforeseen  
11 events are unknown at the current level of project definition. To calculate contingency for the  
12 Adelanto to Moreno pipeline, we analyzed each cost component<sup>11</sup>, considered the risks related to  
13 the component that fall within the defined project scope, and established a contingency  
14 percentage.<sup>12</sup> For the Adelanto Compressor Station, we determined contingency at the project  
15 level. This is a common process for calculating contingency. For example, in D.09-03-026, the  
16 Commission authorized PG&E's smart meter Program Upgrade. The approved authorized cost  
17 of that project included a risk based allowance (i.e., contingency) of 12.9%. In another example,  
18 in D.06-07-027 the Commission authorized PG&E's Advanced Metering Infrastructure project  
19 with an 8.0% contingency included in the cost estimate. In D.09-03-026, the Commission

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<sup>10</sup> AACE International Recommended Practice, No. 34-R-05, TCM Framework: 7.3 - Cost Estimating and Budgeting, 2007, p. 4.

<sup>11</sup> Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK) in section 7.2.2.6 Reserve Analysis states, “contingency reserves can provide for a specific activity, for the whole project, or both.”

<sup>12</sup> AACE Recommended Practice No. 40R-08 defines expert judgment as having a strong basis in experience and competency in risk management and analysis.



1 explains that “the analysis of risk for the Upgrade should consider the risk profiles specific to the  
2 Upgrade, rather than that of the original AMI project.”<sup>13</sup> Consistent with good estimating  
3 practice, and these prior Commission precedents, SoCalGas and SDG&E have taken the  
4 approach of contemplating the risks specific to the North-South Project costs when determining a  
5 reasonable contingency to include in the cost estimate.

6 At the project component level, we included contingency amounts that range from 0% to  
7 30% of the direct cost. Those project components where fewer issues are expected to arise and  
8 the scope and cost estimates are more fully developed will have contingencies towards the lower  
9 end of the aforementioned range. Project components where issues with greater cost impact can  
10 arise and the scope and costs estimates are not as fully developed will have a higher contingency  
11 applied. In aggregate, the contingency for the project is approximately \$75.4 million.

12 Even after accounting for the contingency in the direct cost estimate, there still may be  
13 variability in the overall cost of the project. The amount of expected variability is related to  
14 external, uncontrollable factors that impact skilled labor costs, material costs, etc. For example,  
15 the best quality estimate would be a firm quote from a vendor to perform a specific task. While  
16 many cost estimates for this project are based on input from vendors and contractors, no firm  
17 quotations were obtained, as many of the project activities estimated will not be occurring for  
18 several years.

19 It should be noted that there are risks outside of the defined project scope that are  
20 excluded from the cost estimate and contingency. Examples of such risks include:

- 21 • Costs for skilled labor and qualified resources (e.g., engineers, contractors,  
22 construction workers, specialty consultants), materials, or other commodities

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<sup>13</sup> D.09-03-026, mimeo., at 88.

1 increasing significantly over the project duration, beyond the escalation included in  
2 the revenue requirement.

- 3 • Significant changes to the project scope as a result of the environmental and/or  
4 regulatory review of the project.
- 5 • Significant delays in the project schedule as a result of the environmental and/or  
6 regulatory review, local community intervention, natural disaster, labor strike, etc.
- 7 • Changes to laws or regulations that would significantly affect project cost and/or  
8 schedule.
- 9 • Earthquakes, fires, natural disasters, strikes or other force majeure type events.

10 **E. O&M Costs**

11 **O&M Costs During Project Construction**

12 The costs discussed in the preceding sections of this testimony are all estimated capital  
13 expenditures. In addition, we also expect that there will be O&M expenses incurred during  
14 project execution, prior to placing the new pipelines and compressor equipment in service.

15 These expenses are anticipated to be primarily for office space and other office related costs.

16 The cost estimate includes office space for the project team, including company personnel and  
17 key consultants. These costs are included in the revenue requirement discussed in Mr. Yee's  
18 testimony.

19 **Table 6**  
20 ***Estimated North - South Project O&M Expenses***  
21 ***(In Millions of Dollars)***

2014	2015	2016	2017	2018	2019
\$0.2	<\$0.1	<\$0.1	<\$0.1	\$0.2	\$0.2

## Ongoing Post-Construction O&M Costs

This project will also result in incremental ongoing O&M expenses for the pipelines and compressor station after they are placed into service. Estimates of these costs are provided in Table 7. Pipeline operations and compliance activities, including valve maintenance and cathodic protection, will incur ongoing costs, as will activities related to right-of-way mitigation. The compressor station will have associated O&M expenses (labor and non-labor) from such activities as operating the station and maintaining the emissions monitoring equipment. Emissions fees based on the amount of greenhouse gases generated through operation of the compressors will also be an ongoing expense. Recovery of these ongoing O&M costs is not included in the proposed revenue requirement for this application. However as discussed in the testimony of Mr. Ahmed, these post-construction O&M costs will be recorded in the requested memorandum account until they are addressed in SoCalGas' next GRC or other applicable proceeding.

*Table 7<sup>14</sup>*  
*Estimated Ongoing O&M Costs*  
*(In Millions of Dollars Per Year)*

O&M Costs	Total
Pipeline Operations & Compliance	\$0.2
Right-of-Way	\$0.6
Compressor Station	\$0.8
Greenhouse Gas Emissions Fees <sup>15</sup>	\$0.8
Total	\$2.4

<sup>14</sup> One expense not included in Table 7 is the cost of catalyst replacement. It is assumed replacement of the catalyst will not occur prior to the next GRC or other applicable proceeding after the compressor station is placed in service.

<sup>15</sup> The estimated cost presented in Table 7 assumes the compressors operate at approximately 30% load. Previous estimate was based on 100% load factor. Actual fees will be assessed based on actual compressor operation and greenhouse gas generation.

1 **V. PROJECT SCHEDULE**

2 SoCalGas and SDG&E estimate that it will take approximately six years to permit,  
3 engineer/design, procure, construct, and place the new assets in service by the fourth quarter of  
4 2019. The basis for the schedule, cost estimates, and revenue requirement is that all assets will  
5 go into service at approximately the same time. We may be able to place certain project  
6 components in service before the others are completed. If this ends up occurring, per Mr.  
7 Ahmed’s testimony, the capital-related costs of the assets in-service will be recorded in the  
8 requested memorandum account until we are authorized to recover the revenue requirement in  
9 rates.

10 If SoCalGas and SDG&E had waited to commence work on the project until after  
11 regulatory approval, the project would have taken the time needed for regulatory approval plus  
12 approximately six years. In order to develop this project as quickly as possible, SoCalGas and  
13 SDG&E initiated planning, engineering design, and permitting work in advance of Commission  
14 authorization, so these estimates reflect an in-service date in Q4 2019 rather than Q4 2021.

15 The environmental clearance process is also assumed to commence in parallel with the  
16 regulatory approval phase of the project. By not waiting for final regulatory approval before  
17 starting planning, engineering, design and permitting work, the overall schedule from the filing  
18 of this application to placing the new assets in service can be compressed, potentially saving in  
19 escalation costs that would otherwise be passed on to ratepayers.<sup>16</sup>Since the environmental  
20 clearance process has the potential to impact the overall project scope, it is assumed that material  
21 procurement (including long lead time valves and compression equipment), land and right-of-  
22 way acquisition, and awarding of major construction contracts will not occur until after

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<sup>16</sup> Escalation is discussed in the testimony of Mr. Yee.

1 SoCalGas and SDG&E receive the final environmental clearance for the project. It is estimated  
2 that detailed engineering and design, procurement, and construction for the project will be  
3 completed within roughly three years of receiving the final environmental clearances.

#### 4 **VI. PHYSICAL ALTERNATIVES**

5 High-level cost estimates have been evaluated for the two alternative projects described  
6 in Mr. Bisi and Ms. Marelli's testimonies (River Route and Cross Desert). These projects  
7 involve similar components as the proposed North-South Project (i.e., pipeline and compressor  
8 station equipment), though in different quantities. The pipeline material specifications (diameter,  
9 wall thickness, and grade) for each alternative would be the same as the proposed Adelanto to  
10 Moreno pipeline, for which we've already obtained estimated costs. There may be lower  
11 construction costs in rural areas (particularly on the River Route) where longer stretches of  
12 trench can be left open. However, these same areas may also have higher costs to mitigate  
13 environmental impacts. Other costs for activities such as engineering, survey, right-of-way  
14 acquisition, etc., should be comparable, on a unit cost basis, to the estimates obtained for the  
15 Adelanto to Moreno pipeline. The compressor station required for the Cross Desert alternative  
16 would have a higher total horsepower than the station proposed as part of the North-South  
17 Project, but it would be comprised of similar equipment (i.e., gas turbine driven compressors,  
18 emissions reduction and monitoring equipment, compressor building, gas cooling, etc.) and  
19 would be subject to the same emissions requirements.

20 As such, we determined that applying overall per mile costs obtained for the Adelanto-  
21 Moreno pipeline and overall per horsepower costs obtained for the proposed Adelanto  
22 Compressor Station to the project alternatives would provide sufficient preliminary estimates  
23 that can be used for comparison. While construction cost of these facilities is an important

1 consideration, it should be noted that the other benefits of the North-South Project discussed in  
2 the testimonies of Mr. Bisi and Ms. Musich were the primary drivers for determining the best  
3 option to address long-term Southern System reliability.

4 **Table 8**  
5 **Preliminary Direct Costs for Project Alternatives**  
6 *(In Millions of Dollars)*

Direct Capital Costs	Total
River Route	\$769.0
Cross Desert	\$1,538.1

7 The costs above assume \$7.7 million/mile for the 100 miles of pipeline in the River  
8 Route and 200 miles of pipeline in the Cross Desert option, and approximately  
9 \$4,500/horsepower for the 35,000 horsepower compressor station required for the Cross Desert  
10 option.

## 11 **VII. QUALIFICATIONS**

12 My name is David L. Buczkowski. I am employed by SoCalGas as the Senior Director of  
13 Major Projects. My business address is 555 West Fifth Street, Los Angeles, California 90013-  
14 1011.

15 I graduated from the University of Illinois in 1989 with a Bachelor of Science degree in  
16 Mechanical Engineering. I have over 23 years of domestic and international experience in  
17 various energy industries.

18 I have been employed by SoCalGas as the Director and then Senior Director of Major  
19 Projects since May of 2011. In these positions, my responsibilities include overseeing the  
20 project management and project execution of major capital and expense gas infrastructure  
21 projects for SoCalGas and SDG&E.

1 Prior to joining SoCalGas, I served as a project manager on several multi-billion dollar  
2 mega-projects. Through my career my roles have included project management, engineering  
3 management, start-up, and O&M engineering for projects in refineries, oil and gas processing  
4 facilities, biofuels, and petrochemical plants. Project scopes included conceptual engineering,  
5 basic engineering, front-end engineering, program management, and detailed engineering and  
6 design, procurement and construction efforts. From 2001 to 2011, I worked for Fluor in various  
7 project management positions of increasing responsibility, ultimately serving in the role of  
8 Project Director. In that role, I had overall responsibility for project cost, schedule, and  
9 execution, including engineering/design, procurement, contracts, and construction of large  
10 capital projects.

11 From 1997 to 2001, I was employed by Parsons Corporation, first as a Project Engineer,  
12 then in various project management positions of increasing responsibility. From 1990 to 1995, I  
13 was employed by Shell Oil Company, first as an Operations Support Engineer and subsequently  
14 in various roles of increasing responsibility, including project management of major refinery  
15 projects and ultimately ascended to the position of Start-Up Engineer for the Shell Refinery  
16 Expansion and Clean Fuels megaproject.

17 I have previously testified before the California Public Utilities Commission.

18 This concludes my updated prepared direct testimony.

**Appendix A – Adelanto-Moreno Pipeline Direct Cost Detail**



1

## I. Material Costs

Cost Element	Direct Costs (\$ Million)
Pipe & Coating	\$58.8
Pipe Delivery	\$10.8
Ells	\$4.8
Valves	\$3.8
Other Materials	\$5.1
Freight (other than Pipe)	\$1.2
Filter / Separator For Pipeline	\$1.4
Odorization	\$0.2
Tax	\$6.6
<b>TOTAL MATERIAL</b>	<b>\$92.8</b>

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## II. Construction Costs

Cost Element	Direct Costs (\$ Million)
Mobilization	\$0.5
Unload –Stockpile Pipe	\$0.4
Load Pipe – Haul to right-of-way	\$1.5
Unpaved Rural Road	\$14.9
Two lane Paved	\$39.2
Low Roll	\$11.2
Steep terrain	\$5.3
Roll Chop Sidecut	\$14.9
US 66 Paved	\$19.8
Primary Paved Road	\$114.9

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Additional footage, elevation gains -5%	\$5.3
HDD Bores	\$1.9
Silt Fence	\$1.4
Tier 4 emissions equipment	\$8.4
Restore ROW/Seed, Stabilize	\$1.0
Temporary By=Pass Road on two lane	\$0.6
Security Fencing	\$0.4
Conventional Bores	\$6.7
Mainline Valves	\$4.3
Launcher/receiver	\$0.4
Caliper Survey	\$0.1
X-Ray Services	\$2.5
Hydro Testing and Drying	\$2.5
Casing Wax	\$1.2
Demobilization	\$0.3
Construction Management	\$10.8
<b>TOTAL CONSTRUCTION LABOR</b>	<b>\$270.4</b>

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## III. Other Costs

<b>Cost Element</b>	<b>Direct Costs (\$ Million)</b>
ROW Acquisition	\$17.8
Legal Services	\$8.0
Public Relations	\$2.7
Environmental Permitting	\$38.1
Geotechnical Investigation	\$0.4
Ministerial Permits	\$1.2
Engineering	\$14.3
SCADA	\$2.8
ROW Intrusion Monitoring	\$5.9
Methane Detection	\$0.1
PLS's	\$12.7
Company Labor	\$17.5
<b>TOTAL OTHER COSTS</b>	<b>\$121.5</b>

**Appendix B – Adelanto Compressor Station Direct Cost Detail**

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## I. Material Costs

Cost Element	Direct Costs (\$ Million)
Turbine-driven Compressors	\$36.3
Buildings	\$4.5
Gas Cooling	\$1.1
Selective Catalytic Reduction System	\$5.5
Continuous Emissions Monitoring Systems	\$0.9
Aqueous Unit (Ammonia)	\$4.0
Major Piping and Fittings – Valves	\$12.6
Major Electrical Equipment	\$3.3
Concrete and Foundations	\$0.7
Other Process Equipment	\$1.8
Misc Process Equipment List	\$0.5
Vendor Reps	\$0.2
Auxiliary Generator	\$2.3
Tax	\$6.6
<b>TOTAL MATERIAL</b>	<b>\$80.5</b>

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## II. Construction Costs

Cost Element	Direct Costs (\$ Million)
Construction Labor	\$27.4
Construction Management	\$3.0
<b>TOTAL CONSTRUCTION</b>	<b>\$30.4</b>

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## III. Other Costs

<b>Cost Element</b>	<b>Direct Costs (\$ Million)</b>
Public Relations	\$0.2
Legal Services	\$0.0
ROW Acquisition	\$0.1
Maintenance Parts	\$0.4
Environmental Permitting	\$10.3
Survey	\$0.4
Ministerial Permits	\$0.1
Engineering	\$3.3
As-built	\$0.2
SCADA	\$0.4
Company Labor	\$4.6
Freight	\$5.9
<b>TOTAL OTHER COSTS</b>	<b>\$26.0</b>

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