

**SAN DIEGO GAS & ELECTRIC COMPANY  
SOUTHERN CALIFORNIA GAS COMPANY  
PIPELINE SAFETY & RELIABILITY PROJECT (PSRP)  
(A.15-09-013)  
(DATA REQUEST ORA-18)  
Date Requested: June 29, 2016  
Date Responded: July 15, 2016**

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**PRELIMINARY STATEMENT**

1. These responses and objections are made without prejudice to, and are not a waiver of, SDG&E and SoCalGas' right to rely on other facts or documents in these proceedings.
2. By making the accompanying responses and objections to these requests for data, SDG&E and SoCalGas does not waive, and hereby expressly reserves, its right to assert any and all objections as to the admissibility of such responses into evidence in this action, or in any other proceedings, on any and all grounds including, but not limited to, competency, relevancy, materiality, and privilege. Further, SDG&E and SoCalGas makes the responses and objections herein without in any way implying that it considers the requests, and responses to the requests, to be relevant or material to the subject matter of this action.
3. SDG&E and SoCalGas will produce responses only to the extent that such response is based upon personal knowledge or documents in the possession, custody, or control of SDG&E and SoCalGas. SDG&E and SoCalGas possession, custody, or control does not include any constructive possession that may be conferred by SDG&E or SoCalGas' right or power to compel the production of documents or information from third parties or to request their production from other divisions of the Commission.
4. A response stating an objection shall not be deemed or construed that there are, in fact, responsive information or documents which may be applicable to the data request, or that SDG&E and SoCalGas acquiesces in the characterization of the premise, conduct or activities contained in the data request, or definitions and/or instructions applicable to the data request.
5. SDG&E and SoCalGas objects to the production of documents or information protected by the attorney-client communication privilege or the attorney work product doctrine.
6. SDG&E and SoCalGas expressly reserve the right to supplement, clarify, revise, or correct any or all of the responses and objections herein, and to assert additional objections or privileges, in one or more subsequent supplemental response(s).
7. SDG&E and SoCalGas will make available for inspection at their offices any responsive documents. Alternatively, SDG&E and SoCalGas will produce copies of the documents. SDG&E and SoCalGas will Bates-number such documents only if SDG&E and SoCalGas deem it necessary to ensure proper identification of the source of such documents.
8. Publicly available information and documents including, but not limited to, newspaper clippings, court papers, and materials available on the Internet, will not be produced.

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9. SDG&E and SoCalGas object to any assertion that the data requests are continuing in nature and will respond only upon the information and documents available after a reasonably diligent search on the date of its responses. However, SDG&E and SoCalGas will supplement its answers to include information acquired after serving its responses to the Data Requests if it obtains information upon the basis of which it learns that its response was incorrect or incomplete when made.
10. In accordance with the CPUC's Discovery: Custom And Practice Guidelines, SDG&E and SoCalGas will endeavor to respond to ORA's data requests by the identified response date or within 10 business days. If it cannot do so, it will so inform ORA.
11. SDG&E and SoCalGas object to any ORA contact of SDG&E and SoCalGas officers or employees, who are represented by counsel. ORA may seek to contact such persons only through counsel.
12. SDG&E and SoCalGas objects to ORA's instruction to send copies of responses to entities other than ORA.

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**Subject: Cost Effectiveness Analysis for the Pipeline Safety & Reliability Project by PWC**

**QUESTION 1:**

At page 9 of the above subject entitled “Cost Effectiveness Analysis for the Pipeline Safety & Reliability Project” prepared by PWC<sup>1</sup>, the document states:

The Ruling requires the Applicants to conduct an analysis that will apply quantifiable data to define the relative costs and benefits of the Proposed Project and a range of Alternatives.<sup>20</sup> To comply with the requirement to apply quantifiable data to define the relative costs of the projects, PwC reviewed the Applicants’ estimates of both the fixed cost for constructing the Proposed Project and the Alternatives and the on-going estimated costs for operating and maintaining them. Additionally, PwC and the Applicants identified certain avoided costs applicable to the Proposed Project and the Alternatives. PwC and the Applicants then quantified the impact of those avoided costs on the Proposed Project and the Alternatives over time to derive the “net cost” associated with the Proposed Project and each Alternative.

To comply with the requirement to apply quantifiable data to define the relative benefits of the projects, PwC and the Applicants first identified quantifiable characteristics and desirable outcomes associated with the seven benefits categories identified in the Ruling. Next, a scoring mechanism was developed and applied as an objective means to evaluate the Proposed Project and the Alternatives against each of the seven benefit types. The Applicants identified and defined a number of individual benefits within each of the seven benefit categories and applied non-monetary, quantifiable measures (e.g., percent reduction in pipeline failures, percent increase in capacity) as the basis for scoring the Proposed Project and the Alternatives against each benefit. Care was taken to treat each benefit as unique and not count them more than one time in the scoring model. Once each of the projects was scored, PwC ranked them from highest to lowest based on the overall benefit score.

- (a) Please confirm that the “Ruling” in the above statement refers to the “Joint Assigned Commissioner and Administrative Law Judge’s Ruling Requiring an Amended Application” in A.15-09-013 dated 1-22-16 regarding the original application dated 9-30-15.
- (b) Please clarify whether the original application dated 9-30-15 (“original application”) submitted to the Commission had already included either a cost-benefit analysis or a cost effectiveness analysis of the Proposed Project. If neither cost-benefit analysis nor cost effectiveness analysis was included in the original application, then please so state and explain why that is the case.

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<sup>1</sup> SoCalGas and SDG&E A.15-09-013, Vol.III prepared by PWC, dated March 2016. PWC stands for PricewaterhouseCoopers Advisory Services, LLC.

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- (c) If your response to item (b) is yes, please state whether the PwC prepared the cost-benefit analysis or the cost effectiveness analysis for the Applicants in the original application.
- (d) Please briefly describe any difference in the results between the original application's cost-benefit analysis or cost effectiveness analysis and the same analysis for the amended application.
- (e) Based on your response to item (d), please explain the reason(s) for any differences in the results of the analysis noted above.
- (f) Please explain whether the results of the cost-benefit analysis or cost effectiveness analysis ultimately decided or in any way factored into the Applicants' selected proposed pipeline route.

**RESPONSE 1:**

- (a) Yes, the "Ruling" in the above statement refers to the January 22, 2016 Joint Assigned Commissioner and Administrative Law Judge's Ruling Requiring an Amended Application and Seeking Protests, Responses and Replies in A.15-09-013.
- (b) Rule 3.1(f) of the Rules of Practice and Procedure of the California Public Utilities Commission requires an applicant seeking a certificate of public convenience and necessity to include in its application, "A statement detailing the estimated cost of the proposed construction or extension and the estimated annual costs, both fixed and operating associated therewith." The September 30, 2015 Application (Original Application) did not include either a cost-benefit or cost effectiveness analysis for the Proposed Project, as the Commission's Rule 3.1 does not require submission of either a cost-benefit or cost effectiveness analysis and it has not been Applicants' practice to include such analyses in other applications for certificates of public convenience and necessity, nor have Applicants been required to do so by the Commission.
- (c) Not applicable.
- (d) Not applicable.
- (e) Not applicable.
- (f) Applicants introduced and described their proposed pipeline route in their Original Application filed in September 2015, which was five months before the Cost-Effectiveness Analysis (CEA) was submitted. As such, the results of the CEA did not ultimately decide or factor into Applicants' proposed pipeline route. Rather, the pipeline route was selected applying the routing criteria set forth in the Proponents' Environmental Assessment, which include minimizing costs to ratepayers.

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**QUESTION 2:**

Continuing with the above quoted statement in Question 1, please respond to the questions below:

- (a) Please identify and describe the how each of the characteristics associated with each of the seven benefits categories pursuant to the Ruling were quantified (hereafter called "data parameters"). (Please explain for each benefit category, including: (i) Safety; (ii) Reliability, (iii) Operational Flexibility (iv) System Capacity, (v) Gas storage through line pack, (vi) Other benefits (be specific), and (vii) reduction in gas price for ratepayers.) If there were specific criteria used or data gathered in order to quantify a category, please say so and provide such criteria and/or data.
- (b) Please identify and describe the data parameters for purposes of the quantifiable desirable outcomes associated with each of the seven benefits categories identified in item (a) above.
- (c) Please explain the scoring mechanism developed by PWC referenced in the above statements and describe how these were applied as an objective means to evaluate the Proposed Project and the Alternatives against each of the seven benefit categories.
- (d) Please specify all the individual benefits the Applicants identified and defined within each of the seven benefit categories and where non-monetary, quantifiable measures (e.g., percent reduction in pipeline failures, percent increase in capacity) were applied as the basis for scoring the Proposed Project and the Alternatives against each benefit.
- (e) Please state the key assumptions necessary to calculate the seven benefit categories and explain why these should be considered reasonable assumptions.
- (f) Please state the number of years assumed over which each of the seven benefit categories accrue.
- (g) Please define the specific meaning of each of the seven benefit terms for purposes of the categories which are being measured in the analysis listed in item (a). For other benefits, please specify these "other benefits" to the extent possible. For reduction in gas price for ratepayers, please specify the gas price and whether this refers to the gas commodity price or the gas transportation price.
- (h) Please clarify whether the seven benefit categories are from the perspective of the Applicants' Southern System or from a system-wide perspective instead.

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**RESPONSE 2:**

(a) The methods used to quantify each of the seven benefits identified in the Ruling is described on Page 9 of the CEA:

To comply with the requirement to apply quantifiable data to define the relative benefits of the projects, PwC and the Applicants first identified quantifiable characteristics and desirable outcomes associated with the seven benefits categories identified in the Ruling. Next, a scoring mechanism was developed and applied as an objective means to evaluate the Proposed Project and the Alternatives against each of the seven benefit types. The Applicants identified and defined a number of individual benefits within each of the seven benefit categories and applied non-monetary, quantifiable measures (e.g., percent reduction in pipeline failures, percent increase in capacity) as the basis for scoring the Proposed Project and the Alternatives against each benefit. Care was taken to treat each benefit as unique and not count them more than one time in the scoring model.

The table below describes how each unique benefit type was quantified.

Description	Metric/Measure	Method used to Quantify Benefit	Reference to CEA
Safety – Increased safety margin to prevent pipeline rupture through the de-rating of Line 1600	Defined benefit score	Percentage of specified minimum yield strength (SMYS) on Line 1600.	Page 36
Safety - Long-term safety benefit of transmission pipeline	Defined benefit score	Ability to sustain safety over the life of the transmission pipeline due to known pipeline characteristics	Page 36
Safety - Reduction in incidents per HCA mile of pipeline	Defined benefit score	Quantified using the Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) data, age, type of pipeline material, wall thickness, and other parameters	Pages 36 and 58-63
Safety - Increased real-time awareness of excavation damage	Defined benefit score	Ability to detect excavation damage in real-time based on pipeline design standards	Page 37
Safety - Achievement of "as soon as practicable" safety objective	Duration by year	Estimated completion or in-service year for a project	Page 37
Increased Reliability - Redundancy to natural gas transmission system	Defined benefit score	Ability for a project to provide redundancy to the natural gas system should an unplanned event occur and place any of the two primary gas transmission assets (Line 3010 and Moreno Compression Station) out of service	Page 42

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Description	Metric/Measure	Method used to Quantify Benefit	Reference to CEA
Increased Reliability - Curtailment impact to core gas customers	Percentile of average severity of curtailment scores	Outage scenario analysis to model the impact of the Alternatives on overall system reliability	Pages 42-43 and 62-73
Increased Reliability - Curtailment impact to electric generation (EG) gas customers	Percentile of average severity of curtailment scores	Outage scenario analysis to model the impact of the Alternatives on overall system reliability	Pages 43 and 62-73
Increased Reliability - Curtailment impact to non-core, non-gas EG customers	Percentile of average severity of curtailment scores	Outage scenario analysis to model the impact of the Alternatives on overall system reliability	Pages 44 and 62-73
Increased Reliability - Curtailment impact to electric customers	Percentile of average severity of curtailment scores	Outage scenario analysis to model the impact of the Alternatives on overall system reliability	Pages 44-45 and 62-73
Increased Operational Flexibility - Meeting current and future natural gas peak demand	Defined benefit score	Ability to meet increasingly volatile daily and hourly peak demand due to various factors	Pages 48-49
Increased Operational Flexibility - Utility operational control of asset	Defined benefit score	SDG&E's ability to control the physical asset	Page 49
Increased System Capacity - Impact to system capacity	Percentage increase in MMcfd of capacity	Ability of a project to increase current system capacity based on the diameter of the pipe and other critical design features	Page 52
Increased gas storage through line pack	Proportional to capacity	Any incremental benefit that line pack provides is implicitly captured by the potential increases in system capacity provided above	Page 54
Reduction in gas prices to ratepayers	Defined benefit score	Potential for an increase in gas prices to ratepayers owing to transportation costs to fill LNG tanks and the incremental transportation costs for supply from Otay Mesa	Page 54
Other Benefits - Emissions reductions due to reduced operating hours at compressor stations	Percent reduction in net Moreno operating hours	Ability to manage excess capacity or load demand with minimal compression can lead to significant reductions in emissions at Moreno Compressor Station and a consequential reduction in combustion emissions of GHGs	Page 55

(b) The parameters (characteristics associated with each of the seven benefits categories) of each benefit category is described in the CEA. See below for specific references:

1. Safety: CEA Pages 35-37
2. Reliability: CEA Pages 41-45
3. Increased Flexibility: CEA Pages 48-49
4. System Capacity: CEA Pages 51-52

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5. Gas Storage through Line Pack: CEA Page 54
  6. Reduction in Gas Prices for Rate Payers: CEA Page 54
  7. Other Benefits – Reduction in Net Emissions: CEA Page 55

(c) The scoring mechanism developed by PwC referenced in questions (a) and (b) above consists of a model built in excel that is used to capture and tabulate Applicants' scores for each of the sub-benefits, (see CEA Table 3, Page 10) for the Proposed Project and each Alternative. For the Proposed Project and the Alternatives, the score for each sub-benefit was averaged to calculate a benefit category score. Each benefit category score was summed to calculate a total score for the Proposed Project and each Alternative.

PwC and Applicants defined each sub-benefit to be unbiased and impartial. Where possible, benefits were defined using numerical, quantifiable measures to ensure objectivity such as percentage of curtailment impacts. Where numeric measures cannot be used to define the benefit, definitions were developed to eliminate subjectivity using definitions that could similarly be "measured" such as "increase" "decrease" and "no change".

(d) The individual benefits identified for each benefit category and the manner in which each was measured are described in the CEA as follows:

1. Safety: CEA Pages 35-37
2. Reliability: CEA Pages 41-45
3. Increased Flexibility: CEA Pages 48-49
4. System Capacity: CEA Pages 51-52
5. Gas Storage through Line Pack: CEA Page 54
6. Reduction in Gas Prices for Rate Payers: CEA Page 54
7. Other Benefits – Reduction in Net Emissions: CEA Page 55

(e) The key assumptions necessary to evaluate and calculate each benefit are described in the CEA (Pages 35-55 and 58-73). The assumptions are based on Applicants' deep expertise as the system operator around its natural gas system, its customers' needs, its operating market, the natural gas industry, and the Federal, state and local regulations and policies impacting its gas system and services.

(f) Applicants assume that each of the benefits accrue for the useful life of the Proposed Project and the Alternatives. The CEA assumes a useful life of 100 years (see CEA, Page 29, Footnote 64).

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(g) The seven benefit categories are defined as follows:

1. Safety: Includes safety of SDG&E's customers, employees, contractors and the public.
2. Reliability: Refers to the ability to maintain safe, consistent, and continuous service to customers. System reliability is insured by maintaining safe operating pressures, which in turn result from having sufficient supply to meet demand and sufficient pipeline and storage capacity. (CEA Page 41).
3. Operational Flexibility: The ability of the system to respond to operational (supply or demand) uncertainty in a manner that sustains normal operations with minimal impact to customers. Incremental pipeline capacity can provide flexibility to operate the Applicants' system by expanding the options available to handle stress conditions on a daily and hourly basis that put system integrity and customer service at risk. (CEA Page 48)
4. System Capacity: Capacity of SDG&E's natural gas transmission system.
5. Gas Storage through Line Pack: All additional pipelines on the SDG&E system incrementally increase the system line pack to greater or lesser extents. Line pack simply provides an operational buffer to changes in customer demand, and any incremental benefit that line pack provides is implicitly captured by the potential increases in system capacity. (CEA Page 54)
6. Reduction in Gas Prices for Ratepayers: Refers to a reduction in commodity costs. (CEA Page 54)
7. Other Benefits: Include environmental and other external or societal impacts as a result of any of the project options, such as emissions reductions, air quality improvements, and the environmental and jurisdictional zoning impacts of route or site selection. The specific benefit evaluated in the CEA was net emissions reductions. (CEA Page 55)

(h) The seven benefit categories are from a system-wide perspective.

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**QUESTION 3:**

Please explain whether the Amended Application in A.15-09-013 dated March 21, 2016 has considered the new Aliso Canyon gas storage situation as part of its cost Effectiveness analysis, that is, the post-Aliso situation after the leak occurred on October 23, 2015 and ultimately led the Commission to order SoCalGas to reduce the working gas level at Aliso Canyon to 15 Bcf with uncertainty of future injections and other aspects of its Aliso gas storage operations. If so, please cite reference in the Applicants' testimony and/or workpapers for the Applicants' discussion pertaining to the post-Aliso situation.

**RESPONSE 3:**

The Amended Application did not attempt to quantify the benefits of the Proposed Project in light of the status of Aliso Canyon; rather, the Amended Application discusses and quantifies the "operational flexibility" and other benefits associated with the Proposed Project. The loss of Aliso adds stress to the system, impacts customers system-wide, and underscores the need for flowing supplies. Although the SDG&E system does not receive gas supplies directly from Aliso Canyon, supplies that would normally be used for the southern system (including SDG&E) must also serve the Los Angeles basin.

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**QUESTION 4:**

On September 11, 2015, the California Senate and Assembly passed Senate Bill (SB) 350 which became law on October 7, 2015. SB 350 establishes a Renewable Portfolio Standard (RPS) of 50 percent by the year 2030 and requires doubling of energy efficiency savings. Please explain whether the Amended Application in A.15-09-013 dated March 21, 2016 has considered the possible impact of SB 350 in the cost effectiveness analysis. If so, please cite reference in the Applicants' testimony and/or workpapers for the Applicants' discussion pertaining to the impact of SB 350.

**RESPONSE 4:**

Yes. The Amended Application considers the possible impact of SB 350 and its projected increase in the use of renewable electricity. (See Prepared Direct Testimony of Ali Yari, Page 6). As described more fully in Mr. Yari's testimony (at pages 6-9), increased use of renewables results in the emergence of new operating conditions such as steep ramping periods, and availability fluctuations—renewable resources do not always produce energy at the time it is needed most. Natural gas is necessary to ensure the lights stay on during rapid demand peak periods and when the sun is not shining and the wind is not blowing. As various renewable energy sources increasingly penetrate the grid, the California Independent System Operator Corporation (CAISO) is relying on grid-stabilizing energy sources (e.g., natural gas peaker plants) that can quickly ramp up to meet demand and ramp down when renewable energy is available.

This growing reliance on renewables is also considered in CEA's benefit evaluation model. Specifically, the model scores the ability of the Proposed Project and the Alternatives to meet "increasingly volatile daily and hourly peak demand due to . . . dependence on intermittent renewable power [and the] need to meet future peak demand due to increases in the use of renewable energy sources (up to 50% renewable generation by 2030) . . ." (CEA Page 48.) The scale for scoring this benefit gives a higher (more favorable) score to those projects that provided for the greatest ability to meet current and future natural gas peak demand. (CEA Pages 48-49).

Investments in the safety, reliability, and flexibility of the natural gas transmission system are necessary and prudent even with the growth of renewable energy for purposes of electric generation because of the role that natural gas currently plays and will continue to play for decades to come in meeting California's energy needs. The Applicants note that natural gas, as a cost-effective and clean-burning source of energy, can play a key role in advancing the state's energy and environmental policies—including the policies that promote renewable energy.

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**QUESTION 5:**

California Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006, requires the reduction of statewide greenhouse gas (GHG) emissions to 1990 levels by 2020, a reduction of approximately 15 percent below emissions expected under a “business as usual” scenario.<sup>2</sup> In April 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. Please explain whether the Amended Application in A.15-09-013 dated March 21, 2016 has considered the possible impact of AB 32 and/or The California Governor’s executive order regarding greenhouse gas reduction target of 40 percent in in the cost effectiveness analysis. If so, please cite reference in the Applicants’ testimony and/or workpapers for the Applicants’ discussion pertaining to the impact of these GHG-related targets.

**RESPONSE 5:**

The CEA considered the impact of reduced GHG emissions in two places: 1) the avoided cost analysis; and 2) the benefits evaluation model.

1. One of the two avoided costs analyzed in the CEA was the costs for reduced annual operations and maintenance at the Moreno Compressor Station. The Moreno Compressor Station costs that impact emissions include: emissions fees and permitting; NOx sales and purchases; and costs for GHG emissions arising from Moreno Compressor Station operations. (CEA Page 30)
2. In the benefits evaluation section of the CEA, Applicants identify reduced emissions as an “other benefit”. This benefit is defined as, “[t]he ability to manage excess capacity or load demand with minimal compression can lead to significant reductions in emissions at Moreno Compressor Station and a consequential reduction in combustion emissions of GHGs such as carbon dioxide, as well as a reduction in emissions of other pollutants such as nitrous oxides.” (CEA Page 55)

The scale for scoring this benefit gives a higher (more favorable) score to those projects that provided for the greatest reduction in net emissions at Moreno Compressor Station. (CEA Page 55).

Additionally, as explained in the Proponent’s Environmental Assessment (PEA) for the Proposed Project the Applicants found the Proposed Project to be consistent with State and

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<sup>2</sup> <http://www.arb.ca.gov/cc/ab32/ab32.htm>

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local GHG policies, including AB 32. (See PEA, Chapter 4). Furthermore, the Proposed Project will help to achieve the goals of AB 32 because it provides the infrastructure necessary to reduce transportation-based GHG emissions, the single largest source of GHG emissions in the region. On a statewide basis, approximately 38% of diesel particulate matter (PM) emissions are attributable to on-road diesel-fueled vehicles, with approximately 60% coming from other mobile sources with diesel engines. These transportation-related GHG and criteria air pollutant emissions can be reduced significantly by utilizing natural gas engines for heavy transportation, mass transit, and shipping because natural gas engines emit substantially reduced volumes of criteria air pollutants than diesel engines and also emit fewer GHG emissions. By replacing traditional vehicles with natural gas and electric vehicles, air quality will improve. Indeed, by just switching to natural gas as compared to diesel, vehicle GHG emissions can be reduced by 20%.