SAN DIEGO GAS & ELECTRIC COMPANY
SOUTHERN CALIFORNIA GAS COMPANY

PIPELINE SAFETY & RELIABILITY PROJECT (PSRP)

(A.15-09-013)

(15th DATA REQUEST FROM SOUTHERN CALIFORNIA GENERATION COALITION)

Date Requested: March 9, 2017
Date Responded: March 29, 2017

PRELIMINARY STATEMENT

1. These responses and objections are made without prejudice to, and are not a waiver of, SDG&E's 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 do 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, as set forth in the California Public Utilities Commission ("Commission or CPUC") Rules of Practice and Procedure. SDG&E and SoCalGas possession, custody, or control does not include any constructive possession that may be conferred by SDG&E's and 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 expressly reserves 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).

6. 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.

7. Publicly available information and documents including, but not limited to, documents that are part of the proceeding record, newspaper clippings, court papers, and materials available on the Internet, will not be produced.

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GENERAL OBJECTIONS

1. SDG&E and SoCalGas object to each instruction, definition, and request to the extent that it purports to impose any requirement or discovery obligation greater than or different from those under the CPUC Rules of Practice and Procedure, Statutes, and the applicable Orders of the Commission.

2. SDG&E and SoCalGas object to each request that is overly broad, unduly burdensome, or not reasonably calculated to lead to the discovery of admissible evidence.

3. SDG&E and SoCalGas object to each instruction, definition and data request to the extent that it seeks information protected from disclosure by the attorney-client privilege, deliberative process privilege, attorney work product doctrine, or any other applicable privilege. Should any such disclosure by SDG&E and SoCalGas occur, it is inadvertent and shall not constitute a waiver of any privilege.

4. SDG&E and SoCalGas object to each instruction, definition and data request as overbroad and unduly burdensome to the extent it seeks documents or information that are readily or more accessible to Southern California Generation Coalition (SCGC) from SCGC's own files, from documents or information in SCGC's possession, or from documents or information that SDG&E and SoCalGas previously released to the public or produced to SCGC. Responding to such requests would be oppressive, unduly burdensome, and unnecessarily expensive, and the burden of responding to such requests is substantially the same or less for SCGC as for SDG&E and SoCalGas.

5. SDG&E and SoCalGas object to each instruction, definition and data request to the extent that it seeks the production of documents and information that were produced to SDG&E and SoCalGas by other entities and that may contain confidential, proprietary, or trade secret information.

6. To the extent any of SCGC's data requests seek documents or answers that include expert material, including but not limited to analysis or survey materials, SDG&E and SoCalGas object to any such requests as premature and expressly reserves the right to supplement, clarify, revise, or correct any or all responses to such requests, and to assert additional objections or privileges, in one or more subsequent supplemental response(s) in accordance with the time period for exchanging expert reports set by the Commission.

7. SDG&E and SoCalGas incorporate by reference every general objection set forth above into each specific response set forth below. A specific response may repeat a general objection for emphasis or some other reason. The failure to include any general objection in any specific response does not waive any general objection to that request. Moreover, SDG&E and SoCalGas do not waive their right to amend any responses.

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Date Responded: March 29, 2017

Supplemental Testimony Chapter 5, Scoping Memo Issue 4 (Q.15.1 – Q.15.11)

QUESTION 15.1:

In Mr. Schneider's testimony at page 66, line 14, Mr. Schneider says that "preliminary Phase II results" indicate "safety-related conditions" at two locations on Line 1600.

15.1.1. What are the "safety-related conditions?"

15.1.2. What are the "two locations?"

15.1.3. Are the "two locations" in a Class 3 or 4 area or an HCA?

RESPONSE 15.1:

This response contains confidential information (shaded in gray) provided pursuant to the Nondisclosure and Protection Agreement between SCGC and SDGE/SoCalGas.

15.1.1 Two (2) dents with stress risers.

15.1.2 The locations are as follows:

15.1.3 HCA.

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QUESTION 15.2:

Please identify the Line 1600 mileage that is in a Class 3 or 4 area or an HCA identify the Line 1600 mileage that is in a Class 1 or 2 area.

RESPONSE 15.2:

Class designation will change over time as development occurs within the San Diego area. Furthermore, the results may also be affected by construction and re-route activities. As of March 2017, this is the current class location information for Line 1600, calculated using an MAOP of 640 psig:

- Line 1600 Class 1 Areas: 9.7 miles
- Line 1600 Class 2 Areas: 7.9 miles
- Line 1600 Class 3 Areas: 32.2 miles
- Line 1600 Class 4 Areas: 0 miles
- Line 1600 HCA: 32.3 miles

The HCA mileage for Line 1600 was determined per Method 1 of 49 CFR § 192.903.

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QUESTION 15.3:

Please identify on a map the Line 1600 mileage that is in a Class 3 or 4 area or an HCA identify the Line 1600 mileage that is in a Class 1 or 2 area.

RESPONSE 15.3:

Applicants object to this Question on the ground it is vague, ambiguous and compound—words seem to be missing. To the extent Applicants properly understand the question, please see attached.

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Date Requested: March 9, 2017
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QUESTION 15.4:

In Mr. Schneider's testimony at page 66, lines 16-17, Mr. Schneider says the Utilities implemented an immediate temporary pressure reduction on the two segments in which there were potential safety-related conditions on February 11, 2017.

15.4.1. What was the reduced pressure on the two segments?

15.4.2. Did the temporary pressure reduction on the two segments result in a pressure reduction on other segments of Line 1600?

15.4.3. If the answer to the previous question is "yes," what were the other segments?

RESPONSE 15.4:

15.4.1. The pressure on the two segments was reduced to 384 psig.

15.4.2. The two locations identified in the Phase II assessment were between Lake Hodges and Kearny Villa Station, and the pressure in Line 1600 was reduced for this entire segment of the pipeline.

15.4.3. N/A

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QUESTION 15.5:

In Mr. Rosenfeld's testimony at page 76, lines 4-5, Mr. Rosenfeld says that Line 1600 is "potentially susceptible to selective seam weld corrosion (SSWC) which can cause ruptures at low stresses."

15.5.1. What is the range of "low stresses" that Mr. Rosenfeld has in mind?

15.5.2. Is there a stress expressed in percentage of SMYS at which ruptures cannot occur?

15.5.3. If so, what is that stress level stated in percentage of SMYS at which it is not possible to have a rupture?

15.5.4. If there were a rupture "at low stresses," what would be the severity of the consequences of the rupture?

RESPONSE 15.5:

15.5.1. The lowest hoop stress at which Applicants' witness Michael J. Rosenfeld of Kiefner & Associates, Inc. (Kiefner) has observed a rupture to occur in service was 4.6% of specified minimum yield strength (SMYS). This incident occurred in a 1957 vintage 16-inch outside diameter (OD) hazardous liquid pipeline due to selective corrosion of a low-frequency electric resistance welded (ERW) seam. Mr. Rosenfeld has also observed a service rupture that occurred at 7.3% of SMYS due to a similar cause in a 1946 vintage gas pipeline.

15.5.2. It is a commonly held notion that ruptures cannot occur at hoop stress levels below approximately 30% of SMYS, based on fracture mechanics arguments. This is a valid position for ductile materials, but exceptions exist where a material is nonductile.

15.5.3. If a material is nonductile, there is no practical lower stress level (see response to Question 15.5.1 above) that is immune to rupture. However, a pipeline operating at low hoop stress will likely be doing so at a relatively low pressure which would tend to reduce the consequence of the rupture.

15.5.4. SDG&E and SoCalGas (Applicants) object to this question on the grounds that it is vague, ambiguous and poses an incomplete hypothetical by asking "what would be the severity of the consequences of the rupture" without identifying or providing information about the hypothetically ruptured pipeline, such as pipe diameter and gas pressure, and also define wall thickness, yield stress, how "low" the stress is, and the radiant heat flux threshold, or the location of the rupture in relation to persons and property at

the time of the rupture. Subject to and without waiving its objections, and interpreting this question as seems reasonable, Applicants respond as follows.

There is no unique answer to this question. It depends on a number of factors including: (a) whether the released gas ignites (it does not always do so especially if the pipe is not large or the pressure is not high), (b) if it does ignite, the quantity of fuel present which is in turn a function of the pipe diameter and square root of the operating pressure, and (c) the numbers of people and structures located nearby and within a proximate radius.

A way of gauging the potential consequence is to apply the calculation for the Potential Impact Radius (PIR) defined in 49 CFR §192.903, $R = 0.69 \times D \times (P)^{0.5}$ where R is the PIR in ft, D is the pipe diameter in inches, and P is the gas pressure in psig. The PIR corresponds to a threshold of radiant heat flux that if exceeded would be expected to cause certain consequences, namely ignition of a wood framed structure (*e.g.,* a house) in under 20 minutes or greater than 1% mortality to persons exposed more than 30 seconds unabated. This does not imply that no consequences occur outside a radius of R, but the radiant heat flux varies inversely with the square of the distance away, so at greater separating distances from a heat source the radiant heat flux drops accordingly, reducing consequences. In order to answer the question in a more specific way one must be specific about the pipe diameter and gas pressure, and also define wall thickness, yield stress, how “low” the stress is, and the radiant heat flux threshold. Hypothetically, consider Line 1600 operating at a hoop stress of 20% of SMYS. The corresponding internal pressure would be 325 psig. The resulting PIR per §192.903 would be 199 ft. The PIR would increase for larger pressure, larger diameter, or greater operating stress, or would decrease for lower values.

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QUESTION 15.6:

In Mr. Rosenfeld's testimony at page 76, lines 7-8, Mr. Rosenfeld says: "Studies have also shown that pipelines of Line 1600's vintage are significantly more vulnerable to failures caused by damage from excavators than modern pipelines." Mr. Rosenfeld says at page 76, lines 8-10: "Most of the pipe in Line 1600 has a wall thickness of only 0.250 inch which can be penetrated by most excavators in general construction usage…."

15.6.1. If Line 1600 were replaced with a new 16-in pipeline, what would be the likely wall thickness?

15.6.2. Would "most excavators in general construction usage" be able to penetrate the wall of the pipeline at that thickness?

RESPONSE 15.6:

15.6.1. If Line 1600 were to be replaced with a new 16-inch pipeline, the wall thickness that would be required depends on the operating pressure and the material grade selected for the pipe, as necessary to comply with the steel pipe design formula in 49 CFR § 192.105. The steel pipe design formula can be written in terms of required nominal wall thickness as $t = (P \times D)/(2 \times F \times SMYS)$, where P is the design pressure, D is the specified pipe outer diameter, F is the design factor corresponding to the location classification, and SMYS is the specified minimum yield strength of the selected pipe material grade. (The steel pipe design formula also includes the joint efficiency factor, E, and temperature derating factor, T. This response assumes that E and T have values of 1.0.)

The operating pressure would depend on (a) the desired quantity of gas to be delivered and (b) the capacity of the compressors at Moreno or whatever the source of gas entering the line is. If it is desired to deliver more gas than currently is delivered by Line 1600 while maintaining a 16-inch diameter, the gas pressure must be increased. If the hypothetical new 16-inch gas pipeline is to deliver only the same quantity of gas as the present Line 1600, then it could operate at the same MAOP. It could then be constructed using new pipe having the same SMYS of 52,000 psi and wall thickness of 0.250 inch and meet the requirements for Class 3 locations for which F=0.5. One could even select a higher strength grade of pipe and use thinner wall. Same with more remote Class 1 or 2 locations having higher design factors. If the new pipeline is to transport more gas without an increase in operating pressure, then it must be of a larger diameter. In order to meet the same design factor then the pipe wall must be proportionately heavier.

As of this point in time, for a hypothetical 16" replacement line, no final wall thickness and strength grade combination has been selected. The wall thickness that will likely receive strong consideration is 0.375" as that is a standard wall thickness utilized by SoCalGas/SDG&E for 16" diameter pipe.

15.6.2. As indicated in the response to Question 15.6.1 above, the response depends on the wall thickness and the strength grade of the pipe selected. If the pipe is to be larger in diameter, the pipe wall thickness will likely be greater. Resistance to penetration by excavators is a function of material strength and metal thickness. Pipe having a wall thickness of ½ inch or greater would be very resistant to being punctured by excavators of a size used in most land development projects. However, even scrapes or gouges that do not penetrate the pipe wall introduce metallurgical damage that should be repaired. The ability of the pipe to withstand such damage provides an opportunity to discover and repair the pipe before it fails.

According to the Kiefner report (Attachment C of SDGE-12 Supplemental Testimony of SDG&E and SoCalGas), page 22): "Testing and experience has shown that resistance to mechanical damage is proportional to the thickness, toughness, and ultimate tensile strength of the pipe material." Consequently, while much safer than Line 1600, a 16" replacement with a 0.375" wall thickness is still 33-67% less resistant to mechanical damage than the proposed Line 3602 0.500" to 0.625" wall thickness assuming all other parameters being equal. Also, based on Table 3 on page 23 of the Kiefner report, an excavator has to be huge to penetrate the wall of Line 3602. In fact, the vast majority of the excavators that exist are not large enough to generate the penetration force making failure of proposed Line 3602 due to third party damage extremely unlikely.

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Date Requested: March 9, 2017
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QUESTION 15.7:

In Mr. Rosenfeld's testimony at page 76, lines 12-14, Mr. Rosenfeld says: "Studies have also shown that pipelines of Line 1600's vintage are significantly more likely to experience failures from natural events such as floods, seismic activity, or other soil movement events."

15.7.1. Have SoCalGas/SDG&E studied the likelihood of Line 1600 to "experience failures from natural events such as floods, seismic activity, or other soil movement events?"

15.7.2. If the answer is "no," please explain why SoCalGas/SDG&E have not studied the likelihood of Line 1600 to "experience failures from natural events such as floods, seismic activity, or other soil movement events."

15.7.3. If the answer is "yes," please provide all such studies.

RESPONSE 15.7:

15.7.1. Yes.

15.7.2. N/A

15.7.3. The threats referenced in the response to Question 15.7 are covered by Section A9 in ASME B318.S. Applicants review the likelihood of failure of these threats pursuant to the process described by Fig. A9. The result of the review to date is that no threats related to natural events have been identified for Line 1600. Additionally, please refer to the attachment to this response.

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QUESTION 15.8:

In Mr. Rosenfeld's testimony at page 76, lines 15-16, Mr. Rosenfeld says that "Line 1600 was constructed before radiography of girth welds was generally practiced in the pipeline industry."

15.8.1. What are the safety benefits of radiography?

15.8.2. If Line 1600 were replaced with a new 16-inch pipeline, would the new pipeline be radiographed?

15.8.3. Is there a state or federal regulation that would require the new pipeline to be radiographed?

15.8.4. If so, please identify the state or federal regulation that would require the new pipeline to be radiographed.

RESPONSE 15.8:

15.8.1. Radiography or some other method of nondestructive examination such as ultrasonic testing can indicate welding workmanship defects that could lead to a leak or weaken the weld's resistance to external loadings acting on the pipeline.

15.8.2. The welds would almost certainly all be nondestructively inspected, consistent with modern pipeline construction practice. The choice of inspection method would be dictated by the welding process. If the line was constructed using traditional manual welding, the weld inspection method would be radiography. Today, construction of pipelines 20 inches in diameter and larger and extending 20 miles or longer may achieve cost savings using automated welding processes. The automated welds are usually inspected using automated ultrasonic testing rather than radiography. However, even then, certain welds (at tie-ins and thickness transitions) must be made manually and those are typically inspected by radiography. Whether automated welding and inspection would be utilized in a 16-inch replacement of Line 1600 would depend on the potential for project savings and whether this equipment and methodology could be effectively employed in a constrained work space that is anticipated when working in existing streets.

15.8.3. There is no regulation that specifically requires radiography of all welds, but regulations do require weld inspection. 49 CFR § 192.241 requires that welds be nondestructively tested in accordance with 49 CFR § 192.243 if the pipeline has a nominal diameter of 6 inches or greater or the pipe is to operate at a hoop stress of 40% of SMYS or greater. 49 CFR § 192.243 requires that nondestructive testing must

be performed by any process that will clearly indicate the presence of defects that may affect the integrity of the weld. The inspection could be performed using radiography or ultrasonic methods. Not all welds must be nondestructively inspected. 49 CFR § 192.243 specifies the minimum proportion of welds made each day depending on location class: 10% in Class 1; 15% in Class 2; and 100% in Class 3 and 4, within road or railroad rights of way, at river crossings, and at tie-ins.

Commission General Order 112-F § 101.2 and § 104.1 adopts and incorporates 49 CFR § 192.

15.8.4. See the response to Question 15.8.3 above.

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QUESTION 15.9:

In Mr. Rosenfeld's testimony at 77, lines 3-5, Mr. Rosenfeld says: "De-rating Line 1600 to distribution service would also reduce consequences by lowering the probability of a rupture occurring."

15.9.1. Would de-rating Line 1600 to distribution service (below 20% of SMYS) eliminate "the probability of a rupture occurring?"

RESPONSE 15.9:

No. A defect must be larger to cause a rupture at a reduced operating stress, particularly if the material is ductile. Thus, it takes a longer period of time for a defect that is growing in service to attain a critical size, and larger flaws are easier to detect by a number of condition assessment methods, including but not limited to in-line inspection, external corrosion direct assessment, or pressure testing, so there may be more opportunity to detect a serious condition, reducing the probability of a rupture. However, if the material is nonductile or the defect attains a sufficiently large size, a rupture is still possible at stresses below 20% of SMYS. See the response to Question 15.18.

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QUESTION 15.10:

In Mr. Sera's March 21, 2017 Direct Testimony at page 25, lines 8-9, Mr. Sera states that "no rupture conditions are reasonably expected to occur below 20% SMYS" as stated in Mr. Sera's March 21, 2017 Direct Testimony at page 25, lines 8-9? Does Mr. Rosenfeld agree with Mr. Sera's statement?

RESPONSE 15.10:

Yes, Mr. Rosenfeld agrees with the quoted statements from Mr. Sera's testimony set forth in this question, provided SDG&E is able to detect selective corrosion along the weld seam if it occurs and is of significant size.

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QUESTION 15.11:

In Mr. Sera's March 21, 2017 Direct Testimony at page 25, lines 15-17, Mr. Sera states: "De-rating the line [1600] would significantly reduce the risk management of those time-dependent threats because no rupture conditions would reasonably be expected." Does Mr. Rosenfeld agree with Mr. Sera's statement?

RESPONSE 15.11:

Yes, Mr. Rosenfeld agrees with the quoted statements from Mr. Sera's testimony set forth in this question, but SDG&E will still have to manage integrity threats related to external corrosion and excavator damage.

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Supplemental Testimony Chapter 8, Scoping Memo Issue 7 (Q15.12- Q15.14)

QUESTION 15.12:

In Mr. Bisi's testimony at 80, line 8, Mr. Bisi says that the existing transmission pipelines in San Diego currently have an MAOP of 800 psig.

15.12.1. If Line 1600 were replaced with a new 16-inch pipeline instead of constructing Line 3602 and derating Line 1600, would the new Line 1600 have an MAOP of 800 psig?

15.12.2. What would be the capacity of a new Line 1600 at MAOP of 800 psig if operated without Line 3010 in service?

15.12.3. What would be the capacity of a new Line 1600 at MAOP of 800 psig if operated with Line 3010 in service?

RESPONSE 15.12:

Applicants object that Question 15.12 misstates Mr. Bisi's testimony, which states: "Any new 36-inch diameter pipeline installed would be operated in common with the existing transmission pipelines in San Diego that currently have an MAOP of 800 psig." Without waiving and subject to their objection, Applicants respond as follows;

15.12.1. Any new transmission pipeline in lieu of the Proposed Project would have an MAOP of 800 psig. Please refer to SDGE-12: Supplemental Testimony at page 80, lines 7 – 10.

15.12.2. Please refer to the response to SCGC DR 14, Question 6 in this proceeding.

15.12.3. Please refer to the response to SCGC DR 14, Question 6 in this proceeding.

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QUESTION 15.13:

In Mr. Bisi's testimony at page 81, line 4, Mr. Bisi identifies "Kearny Villa Station."

15.13.1. Is Kearny Villa Station at the proposed point of interconnection between the proposed Line 3602 and Line 2010?

15.13.2. If not, please identify the location of Kearny Villa Station and identify the pipelines with which Line 3602 would interconnect at Kearny Villa Station.

15.13.3. Is Kearny Villa Station a pressure limiting station?

15.13.4. If Kearny Villa Station is not a pressure limiting station, what is it?

RESPONSE 15.13:

15.13.1. Yes

15.13.2. N/A

15.13.3. Yes

15.14.3. N/A

QUESTION 15.14:

In Mr. Bisi's testimony at page 81, lines 11-12, Mr. Bisi says that tying the new Line 3602 into Line 3600 at Santee would "present additional construction difficulty, environmental impacts and cost."

15.14.1. What would be the "additional construction difficulty?"

15.14.2. What would be the "additional environmental impacts?"

15.14.3. What would be the incremental costs?

15.14.4. Would Line 3602 be tied into Line 3600 by looping Line 2010?

15.14.5. Is the right-of-way or easement of Line 2010 wide enough to accommodate an extension of Line 3602 to Santee?

15.14.6. If not, what would be the route of the extension of Line 3602 to Santee?

RESPONSE 15.14:

15.14.1. See the response to Question15.14.2 below for information regarding the route segment alternatives that were reviewed. Compared to the route and termination location included as part of the Proposed Project, routing and constructing proposed Line 3602 so that it will terminate by tying into Line 3600 in Santee introduces some additional construction difficulties. The interconnection point at Line 3600 is a relatively small area and offers only limited workspace to place the necessary equipment and be able to perform construction activities as it is bound by streets and residential property. In addition, several of the potential routes segment alternatives that extend proposed Line 3602 to Line 3600 involve building a portion of proposed Line 3602 parallel to portions of the existing Line 2010 easement. This introduces cost and complexity due to having to cross the Highway 52 Freeway in two locations that are challenging from a geotechnical and workspace perspective as the new pipeline would need to be drilled or bored under the freeway.

15.14.2. Applicants looked at several alternatives and route segment alternatives that terminate the Proposed Project in Santee at the existing Line 3600 and the potential environmental impacts associated with each were presented in Chapter 5 Discussion of Significant impacts and Project Alternatives of the Proponent's Environmental Assessment (PEA). A matrix comparing the Proposed Project to the various alternatives, including potential environmental impacts, was included on

page 5-19 of the PEA in Table 5-1: Alternatives Screening Matrix. Additional information regarding potential environmental impacts of alternatives and route segment alternatives is presented in Section 5.2.3 Alternatives Fully Evaluated starting on page 5-15 of the PEA and Section 5.2.4 Route Segment Alternatives Considered starting on page 5-37 of the PEA. All of the alternatives considered that terminate at Line 3600 have a longer route and cross more open space. As a result, impacts to biological and hydrological resources are anticipated to be greater when compared to the Proposed Project.

15.14.3. As the route segment alternatives that resulted in proposed Line 3602 interconnecting directly into Line 3600 were not further pursued, detailed cost studies necessary to determine the incremental cost of this alternative compare to the Proposed Project were not completed. However, based on a cursory review and engineering judgment, it is believed that terminating at Line 3600 would be more expensive than the Proposed Project due to a potential increase in length of the project, the potential additional construction difficulties discussed in response to Question 15.14.1 above, as well as potential additional environmental mitigation costs.

15.14.4. No.

15.14.5. No, the existing easement for Line 2010 is only 30 feet wide and is occupied by that gas transmission line. If portions of proposed Line 3602 were to be routed to Santee along portions of the existing Line 2010 easement, additional permanent easement will be required for proposed Line 3602 as well as an expanded temporary easement to facilitate construction.

15.14.6. See the response to Question 15.14.2 above for reference information regarding the route segment alternatives that were reviewed

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(15th DATA REQUEST FROM SOUTHERN CALIFORNIA GENERATION COALITION)

Date Requested: March 9, 2017
Date Responded: March 29, 2017

Supplemental Testimony Chapter 10, Scoping Memo Issue 9

QUESTION 15.15:

In Mr. Chaudhury's testimony at page 88, line 20, Mr. Chaudhury says: "The CEC adopted a new electricity demand forecast on January 25, 2017."

15.15.1. Is Mr. Chaudhury referring to the California Energy Demand Updated Forecast, 2017-2027?

15.15.2. Will the California Energy Demand Updated Forecast, 2017-2027, be used to develop the next SDG&E Gas Capacity Planning and Demand Forecast Semi-Annual Report?

15.15.3. Please identify the date on which SDG&E will submit its next SDG&E Gas Capacity Planning and Demand Forecast Semi-Annual Report to the Commission.

15.15.4. Please e-mail the next SDG&E Gas Capacity Planning and Demand Forecast Semi-Annual Report to SCGC at npedersen@hanmor.com and cathy@barkovichandyap.com when it is sent to the Commission.

RESPONSE 15.15:

15.15.1. Yes. Mr. Chaudhury is referring to the California Energy Demand Updated Forecast, 2017-2027.

15.15.2. No. The California Energy Demand Updated Forecast, 2017-2027, was not adopted early enough to be used to develop the next SDG&E Gas Capacity Planning and Demand Forecast Semi-Annual Report.

15.15.3. The next SDG&E Gas Capacity Planning and Demand Forecast Semi-Annual Report will be filed with the Commission in April 2017.

15.15.4. Applicants will endeavor to e-mail the next SDG&E Gas Capacity Planning and Demand Forecast Semi-Annual Report to the e-mail addresses provided in this question.

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Date Requested: March 9, 2017
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Supplemental Testimony Chapter 12, Scoping Memo Issue 11 (Q.15-16 – Q.15.17)

QUESTION 15.16:

In Mr. Borkovich's testimony at page 96, lines 7-8, Mr. Borkovich says that "the Utilities have not located another CMFL circumferential magnetic flux leakage inspection tool." Why is a new CMFL inspection tool that can be used to inspect Line 1600 so hard to find?

RESPONSE 15.16:

Please note that this question incorrectly identifies Mr. Borkovich as the sponsor of this portion of testimony. The witness for the cited section is Travis Sera, which is accurately reflected in SDGE-12 Supplemental Testimony of SDG&E and SoCalGas.

Finding another tool has been difficult due to the lack of market availability of a CMFL inspection tool capable of navigating through the pipeline without becoming lodged.

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(15th DATA REQUEST FROM SOUTHERN CALIFORNIA GENERATION COALITION)

Date Requested: March 9, 2017
Date Responded: March 29, 2017

QUESTION 15.17:

Is there a difference in capability between a circumferential magnetic flux leakage ("CMFL") tool and a transverse field [magnetic flux leakage] inspection ("TFI") tool?

15.17.1. If there is a difference, please explain the difference.

15.17.2. If there is a difference and the TFI tool is superior in capability, please explain why a TFI tool was not used for the 2012-2015 inspections of Line 1600.

RESPONSE 15.17:

15.17.1. No, there is no difference.

15.17.2. N/A

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(15th DATA REQUEST FROM SOUTHERN CALIFORNIA GENERATION COALITION)

Date Requested: March 9, 2017
Date Responded: March 29, 2017
Amended Response Submitted: April 14, 2017

The response to Question 15.18.2 has been amended, changes are noted in **red, bold and underline**.

Supplemental Testimony Chapter 13, Scoping Memo Issue 12

QUESTION 15.18:

In Mr. Sera's testimony at page 97, lines 10-12, Mr. Sera says: "Lowering the pressure further, so that Line 1600 operates below 20% of the SMYS at an MAOP of 320 psig, will create an additional safety margin and effectively nullify the risk of rupture." However, in Rosenfeld and Fassett, Study of Pipelines that Ruptured While Operating at Hoop Stess Below 30% SMYS (February 13, 2013), Rosenfeld and Fassett say at page 3: "Kiefner data showed there were 7 pipeline ruptures that occurred in service while operating at pressure below 20% Specified Minimum Yield Strength," and that the likelihood of a low-stress rupture "is not so low where certain conditions can be present that they do not need to be considered in an operator's distribution integrity management plan (DIMP) or transmission integrity management plan (TIMP)."

15.18.1. Does Mr. Sera agree or disagree with Messrs. Rosenfeld and Fassett?

15.18.2. Please explain the basis for the agreement or disagreement in light of Mr. Sera's testimony at page 97, lines 10-12.

RESPONSE 15.18:

15.18.1. Mr. Sera agrees that given the specific circumstances outlined in the Rosenfeld and Fassett Study (namely cracking and selective seam corrosion of low frequency ERW seams) that rupture below 20% SMYS is both unlikely and possible.

15.18.2. Given that the focus of the PSRP is specific to the materials, properties, and hook cracks in the electric flash welded seams of Line 1600, there are no inconsistencies between Mr. Sera's testimony and the Rosenfeld/Fassett study. Note that no incidents associated with seams other than HF-ERW, LF-ERW, or lap welds at stress levels <50% SMYS in the table on top of Page 7 of the Rosenfeld/Fassett study. Also note that no failures were associated with EFW seams below 30% SMYS in Figure 6. **Additionally, the threats specific to Line 1600 would be considered within the distribution integrity management plan (DIMP), and managed accordingly using condition assessment methods capable of detecting adverse conditions (see also response to Question 15.9).**

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Date Requested: March 9, 2017
Date Responded: March 29, 2017

Supplemental Testimony Chapter 17, Scoping Memo Issue 16 (Q.15.19 – Q.15.21)

QUESTION 15.19:

In Mr. Bisi's testimony at page 110, lines 13-16, Mr. Bisi states:
"[I]f Line 1600 were de-rated to 320 psig without replacing its transmission capacity, the SDG&E system capacity would drop to 570 MMcfd. When gas demand is forecast to exceed this level, the System Operator will request the delivery of gas supply to Otay Mesa per SoCalGas Rule 41 to make up the difference. If this effort is unsuccessful, which was the case in a past circumstance, SoCalGas and SDG&E would implement curtailments per SDG&E Gas Rule No. 14."

Please describe the "past circumstance" which resulted in curtailments and provide the date(s) of the event.

RESPONSE 15.19:

On February 3, 2011 at 3PM, SoCalGas and SDG&E ordered a curtailment of noncore service due to a shortage of gas supply on its Southern System. The curtailment ended at 12 noon on February 4. The decision to curtail was made when neither the Operational Hub nor the Gas Acquisition Department could secure enough supply in response to the System Operator's requests to meet forecast demand. Noncore load was curtailed to bring supply and demand into balance.

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(15th DATA REQUEST FROM SOUTHERN CALIFORNIA GENERATION COALITION)

Date Requested: March 9, 2017
Date Responded: March 29, 2017

QUESTION 15.20:

In Mr. Bisi's testimony at page 111, line 2, Mr. Bisi discusses the "power plant demand in Escondido." Please identify the power plant to which Mr. Bisi refers.

RESPONSE 15.20:

Applicants object to this question as vague and ambiguous. There are several EG facilities in the Escondido area, and it is unclear to which SCGC is referring. Further, customer names and how they are served are considered confidential.

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Date Requested: March 9, 2017
Date Responded: March 29, 2017

QUESTION 15.21:

In Mr. Bisi's testimony at page 113, lines 18-20, Mr. Bisi states: "De-rating Line 1600 without replacing its transmission capacity would make that situation worse, and the Utilities do not consider it prudent."

15.21.1. If Line 1600 were de-rated to below 320 psig, i.e., to below 20 percent of SMYS, would no gas flow into Line 1600 from the interconnection with SoCalGas Rainbow Corridor pipelines at Rainbow?

15.21.2. If some gas would flow into Line 1600 please identify the range of potential flows into Line 1600 from the interconnection at Rainbow.

RESPONSE 15.21:

15.21.1. As with the entirety of Applicants' approximately 40,000+ mile distribution pipeline network, gas would flow into Line 1600 while functioning as a distribution pipeline.

15.21.2. Flow will depend upon local demand. Please refer to the responses to SCGC DR 4, Question 3 in this proceeding, SCGC DR 6, Question 9 in this proceeding, and ORA DR 6, Question 1 in this proceeding.

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(15th DATA REQUEST FROM SOUTHERN CALIFORNIA GENERATION COALITION)

Date Requested: March 9, 2017
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Supplemental Testimony Chapter 18, Scoping Memo Issue 17 (Q.15.22 – Q15.23)

QUESTION 15.22:

In Mr. Sera's testimony at page 117, line 20-23, Mr. Sera says: "At transmission pressure, Line 1600 passes through 32.7 miles of HCAs, whereas a de-rated Line 1600, at distribution pressure, would pass through only 2.3 miles of HCA."

15.22.1. Please explain why the miles of HCA would be reduced from 32.7 miles to 2.3 miles if Line 1600 were de-rated to distribution pressure.

15.22.2. Please provide Mr. Sera's workpapers showing his calculation of the reduction in the miles of HCA.

RESPONSE 15.22:

Applicants object that Question 15.22 mischaracterizes Mr. Sera's Supplemental Testimony by omitting Footnote 215, which states in part: "Line 1600, once de-rated, will be a distribution line and will therefore not be subject to Subpart O and TIMP regulations. Using HCA comparison for a de-rated Line 1600 is shown for comparability purposes only." Without waiving and subject to their objection, Applicants respond as follows:

15.22.1. HCA miles do not exist for distribution pipelines.

To qualify as a HCA pipeline segment, a pipe segment must be a transmission line, which in SDG&E's gas system means it must operate at a transmission stress level (i.e., at or above 20% SMYS). When the MAOP is reduced below the transmission stress level, it becomes a distribution segment and does not qualify as an HCA. As such, Mr. Sera explicitly indicates in his supplemental testimony that the "HCA comparison for a de-rated Line 1600 [was] shown for comparability purposes only."

When preparing the Cost-Effectiveness Analysis (CEA) in early 2016, a calculation was made to determine the amount of Line 1600 pipe that would remain at or above 20% SMYS if the MAOP was reduced to 320 psig. Data was taken from a database that had not been fully updated to reflect information learned from research of historical records and to reflect recent construction activity. Based upon the updated data, the statement in the CEA at page 62 and Table 28 that there would be 2.3 "HCA miles" remaining on Line 1600 after the MAOP was reduced to 320 psig is incorrect. Similarly, Mr. Sera's cited supplemental testimony at page 117, line 20-23, is incorrect. Based upon the updated data, including the replacement of

a pipeline segment pursuant to Resolution SED-1, at a reduced MAOP of 320 psig the number of transmission and HCA miles is 0. Mr. Sera's supplemental testimony and Mr. Sawaya's supplemental testimony regarding the CEA statement about "HCA miles" will be corrected when they testify.

15.22.2. Work papers were not generated for this calculation. At the time the CEA and supplemental testimony was prepared, the reduction in the miles of HCA was determined as follows:

A calculation was made to determine the mileage of pipe that transitioned from transmission service to distribution service at 320 psig. At an MAOP of 640 psig, there are 50.2 miles of transmission pipe, of which 32.7 miles qualify as HCA. At the time the supplemental testimony was prepared, a pressure of 320 psig reduced the mileage of transmission pipe to 2.9 miles, of which 2.3 miles operated in a HCA. As noted above, the data for this calculation was taken from a database that has since been updated. Based upon the updated data, including the replacement of a pipeline segment pursuant to Resolution SED-1, at a reduced MAOP of 320 psig the number of HCA miles is 0.

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(15th DATA REQUEST FROM SOUTHERN CALIFORNIA GENERATION COALITION)

Date Requested: March 9, 2017
Date Responded: March 29, 2017

QUESTION 15.23:

In Mr. Kohl's testimony at page 122, lines 2-4, Mr. Kohls says: "If there is an extended outage on a Line 1600 segment for repairs or other contingencies, SDG&E's total transmission capacity would be reduced by approximately 100 MMcfd."

15.23.1. Please confirm that Mr. Kohl's 100 MMcfd capacity reduction figure is based on the assumption that Line 1600 is operated "as part of the SDG&E system," i.e., with Line 3010 in service. (See Borkovich, p. 41, fn. 70.)

15.23.2. Please confirm that the nominal capacity of Line 3010 without Line 1600 is 570 MMcfd. (See Borkovich, p. 41, line 12 and fn. 69.)

15.23.3. Please confirm that if there were an extended outage on a Line 1600 segment for repairs or other contingencies so that Line 3010 were operating without Line 1600, the net reduction in SDG&E's total transmission capacity from Rainbow would be 60 MMcfd (from 630 MMcfd to 570 MMcfd, the nominal capacity of Line 3010). (See Borkovich, p. 41.)

RESPONSE 15.23:

15.23.1. Confirmed.

15.23.2. Confirmed.

15.23.3. Confirmed.