SAN DIEGO GAS & ELECTRIC COMPANY
SOUTHERN CALIFORNIA GAS COMPANY

PIPELINE SAFETY & RELIABILITY PROJECT (PSRP)

(A.15-09-013)

(9th DATA REQUEST FROM THE SIERRA CLUB)

Date Requested: June 15, 2017
Date Responded: June 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 Sierra Club from Sierra Club's own files, from documents or information in Sierra Club's possession, or from documents or information that SDG&E and SoCalGas previously released to the public or produced to Sierra Club. 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 Sierra Club 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 Sierra Club'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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QUESTION 1:

Page 62:3-7 of Applicants' Rebuttal Testimony states that "Intervenors seek to show that the Utilities' gas demand forecast overstates gas demand from now to 2022/23, and therefore Line 1600 could be de-rated sooner without violating the Commission's design standards. Thus, Sierra Club claims: 'Due to California's decarburization laws, no new pipeline capacity to replace capacity lost by derating Line 1600 is needed to meet the Commission's 1-in-10 cold year standard.'" [citing to Sierra Club Prepared Testimony at p. 19]. The line of Sierra Club's testimony immediately preceding the quoted sentence states, "By just accounting for the increased RPS, were Line 1600 derated and operated at 320 psig without new facilities installed, existing capacity 'would become sufficient after the 2022/23 operating year.'" [citing SDGE-12 pp. 21-22].

a) Please identity all statements in Sierra Club's testimony supporting the claim that Sierra Club seeks to show Line 1600 could be de-rated *sooner* than 2022/23 without violating the Commission's design standards.

b) Given that Applicants estimate Line 1600 would not be de-rated until 42 months after environmental or regulatory approval of proposed Line 3602 and the de-rate of Line 1600 (see DR SDG&E-Sierra Club-6, Q(1d)), when do Applicants estimate Line 1600 would be de-rated were this Application approved, given the current schedule of this proceeding

RESPONSE 1:

a) In Sierra Club-01, Sierra Club disputes SDG&E's and SoCalGas' (Applicants) demand forecast for electric generation (EG) throughout its testimony, both prior to and following the 2022/23 operating year. In a discussion at page 12 regarding the California Energy Commission (CEC) 2016-2027 demand projection from the 2016 Integrated Energy Policy Report (IEPR), Sierra Club states "The failure to account for any AAEE savings functions to overstate future demand." Sierra Club further states "Applying the mid-case AAEE forecast here, the California Energy Commission's 2016-2027 demand forecast in the 2016 IEPR Update projects that peak SDG&E electric demand will *decrease* at an average annual rate of -0.85%." The date range specified by Sierra Club incorporates those years prior to 2022/23.

   In Sierra Club-01 at page 13: "Because SB 350's efficiency targets have not yet been established, the 2016 IEPR Update's demand forecast does not account for the doubling of efficiency required under SB 350. When the doubling is accounted for and incorporated into the 2017 IEPR forecast, I would expect peak demand to decrease further." and "Virtually all of the load that would be eliminated would have been produced by combustion of natural gas producing a reduction of roughly 13 MMcf/d in gas demand

for electricity production in addition to the demand reduction for direct end use." Again, the date range for the IEPR forecast incorporates those years prior to 2022/23.

Further, in Sierra Club-01 at page 14: "One way the Applicants' demand forecast overstates future demand is that measures that will occur between now and 2030, such as a doubling of efficiency, are not accounted for. In addition, Applicants' demand forecast assumes that no additional action to reduce reliance on fossil fuels occurs after 2030. This assumption is inconsistent with California's decarbonization trajectory and serves to overstate total gas demand between 2030 and 2035. It is my understanding that Southern California Generation Coalition expert Catherine Yap will provide testimony modeling the specific impact of certain measures on gas demand." SCGC has testified on page 13 of Catherine Yap's Direct Testimony that "SDG&E gas demand for Line 3010 could be less than the standalone capacity of Line 3010 during the entire forecast period," and therefore that Line 1600 is presently unnecessary to meet the Utilities' design standards.

It is abundantly clear to Applicants that Sierra Club, both by its own testimony and through its reference to SCGC's testimony, believes that the EG demand forecast presented by the Applicants is "overstated" both in the present and in the future.

b) Applicants object to this question on the grounds that it calls for speculation. The Commission has not established a formal schedule for all phases of this proceeding and there has been no date established as to when a final decision will be rendered. Therefore, Applicants are unable to provide an estimate of when Line 1600 would be de-rated as the estimate would be based on speculation.

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QUESTION 2:

Applicants' Rebuttal Testimony does not respond to the estimates of biomethane potential in California and SDG&E service territory that were set forth in Sierra Club's prepared testimony on p. 11. Please confirm that Applicants agree with the estimates of biomethane potential provided on page 11 of Sierra Club's prepared testimony. If Applicants do not agree, please provide your estimates of biomethane potential in California and SDG&E service territory and all supporting documentation.

RESPONSE 2:

The estimate of biomethane potential within SDG&E's service territory is consistent with current estimates performed by Applicants. The estimate of biomethane potential within SDG&E's service territory is consistent with current estimates performed by Applicants. The estimates have the potential to increase, due to the requirements imposed by SB 1383, among other things, which will require more diversion of waste and may result in increased use of waste to biogas. However, as Sierra Club notes, there is insufficient biomethane production within SDG&E's service territory to meet total natural gas demand for its customers. Therefore, it will continue to be necessary to transport supplies of geologic and renewable gas across the SDG&E transmission system for the foreseeable future. The same natural gas infrastructure that currently delivers geologic gas is already used to deliver renewable gas to customers such as the San Diego Metropolitan Transit System. According to the California Air Resources Board (CARB) Low Carbon Fuel Standard (LCFS) database, over 60% of all compressed natural gas (CNG) and liquefied natural gas (LNG) in the state comes from renewable gas resources, including in-state supplies like Waste Management's Altamont facility and out-of-state resources. Renewable natural gas is scheduled just like geologic gas and can be transported through any of the upstream pipelines serving SDG&E.

There are several estimates for the California and national supply of biomethane. The most commonly referred to studies include "The Feasibility of Renewable Natural Gas as a Large-Scale, Low Carbon Substitute" by UC Davis,[1] Department of Energy (DOE) study "U.S. Billion-Ton Update: Biomass Supply for a Bioenergy and Bioproducts Industry" study[2] and the American Gas Foundation study "The Potential for Renewable Gas: Biogas Derived from Biomass Feedstocks and Upgraded to Peipeline Quality."[3] These studies quantify the potential amount of feedstock from a variety of resources. In 2016, ICF International, Inc. (ICF) prepared

[1] https://www.arb.ca.gov/research/apr/past/13-307.pdf
[2] https://www1.eere.energy.gov/bioenergy/pdfs/billion_ton_update.pdf
[3] http://www.gasfoundation.org/researchstudies/agf-renewable-gas-assessment-report-110901.pdf

the attached memo, included as Attachment 1, describing the feedstock studies and estimating the total available supply of renewable natural gas. ICF estimated that in-state supplies range from 109 to 216 Bcf/year. The DOE Billion-Ton Update study is the most commonly used estimate of supply for deep decarbonization studies, such as the E3 Pathways studies, attached to this response as Attachment 2 and the executive summary is attached as Attachment 3. The Billion-Ton Update study indicates national supplies of biomethane are 1.2 to 9.6 Tcf/year.

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QUESTION 3:

Do Applicants agree that the widespread electrification of end uses, such as residential space and water heating, is required for California to reduce greenhouse gas pollution to 80 percent below 1990 levels as called for under Executive Order S-03-05? If not, please provide all supporting analyses.

RESPONSE 3:

Applicants do not agree that widespread electrification of residential space and water heating is required to achieve the target in the Governor's Executive Order S-03-05. E3 completed a study in November 2014 entitled, "Decarbonizing Pipeline Gas to Help Meet California's 2050 Greenhouse Gas Reduction Goal." This study used their PATHWAYS model to evaluate an alternate scenario where the natural gas infrastructure was utilized to deliver lower carbon gas resources from biomethane, power-to-gas and other zero carbon resources. The E3 study concluded that technology pathways demonstrate pipeline decarbonization and use of gas pipeline infrastructure through 2050 can balance electric generation, transmission and distribution infrastructures. The technology pathway for decarbonized gas to meet the state's GHG reduction goals may be easier to implement in some sectors than a high electrification strategy. Decarbonized gas technologies help diversify technology risk associated with heavy reliance on a limited number of decarbonized energy carriers, and would allow consumers, businesses and policymakers greater flexibility and choice in the transition to a low-carbon energy system.

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QUESTION 4:

Page 107:9 of the Rebuttal Testimony states that "If the gas supply were interrupted, about 127 MW of in-basin resource would remain." (citing to footnote describing the 127 MW as 90 MW of non-gas fired generation and approximately 37 MW of battery storage for up to 4-hours.) Please identify each project, including resource type, location, and size, comprising the 127 MW of in-basin resource referenced on page 107.

RESPONSE 4:

Non-Gas fired Generation

Type	Name	Location	NQC (MW)*	Rounded (MW)
Solar	NRG Borrego Solar 1	Borrego	23.22	23
Solar	Desert Green Solar Farm	Borrego	4.15	4
Solar	Ramona 1	Ramona	1.62	2
Solar	Ramona 2	Ramona	3.98	4
Wind	Kumeyaay Wind Farm	Crestwood	8.6	8
Pump Hydro	Lake Hodges Pump Storage Unit 1	Escondido	20.00	20.00
Pump Hydro	Lake Hodges Pump Storage Unit 2	Escondido	20.00	20.00
Solar	Mesa Crest	Lilac	2.26	2
Solar	Cole Grade	Valley Center	1.76	2
Solar	Valley Center 1	Valley Center	1.43	1
Solar	Valley Center 2	Valley Center	4.41	4

Battery Storage

Type	Name	Location	NQC (MW)*	Rounded (MW)
Battery Storage	El Cajon Battery Storage	El Cajon	7.5	7
Battery Storage	Escondido Battery Storage	Escondido	30	30

***** Based on July 2017 Net Qualifying Capacity (NQC) published numbers.
Refer to
http://www.caiso.com/Documents/NetQualifyingCapacityReport_ComplianceYear2017.xlsx

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QUESTION 5:

The Rebuttal Testimony asserts on page 107 that the additional 225 MW of in-basin preferred resources Sierra Club stated in its Prepared Testimony was authorized by the PUC "were not detailed after a formal data request was submitted" (citing to Sierra Club Response to Utilities DR-04, Q6) and therefore "[g]iven the unknown and speculative nature of the number, SDG&E did not incorporate these resource into the power flow studies to calculate the total number of customers that would be unserved or need to be shed." Sierra Club response to DR-04, Q6 stated the following:

RESPONSE NO. 6

The 224.6 MW of preferred resources and energy storage is identified in Table 2.9-2 of the Board Approved CAISO 2016-2017 Transmission Plan, supra, at p. 142. This table is provided in the answer to Question 4(a), above. The table breaks down these 224.6 MW of new resources by in-service date, MW, and resource type. It is Sierra Club's understanding that the resources identified by CAISO in Table 2.9-2 have been or will be procured by SDG&E through its various procurement mechanisms. Specifics on sponsor location, fuel, current status and expected in-service data should be in Applicant's possession or under Applicant's control for future procurements. Given the Commission's prohibition of fossil-reliant resources in demand resource programs, Sierra Club does not believe any of these resource rely on natural gas for fuel.

The Table provided in Questions 4(a) referenced in the Response to Question 6:

Table 2.9-2: Authorized Conventional Gas Fired, Preferred Resources and Energy Storage

		Unit	2018	2021	2026
Track 1 and 4 Authorized Conventional Gas Fired		MW (in NQC)	808.0	808.0	808.0
CPUC Authorized Preferred Resources and Energy Storage	LTPP EE	MW	5.0	11.0	22.4
	Demand Response	MW	0.0	33.6	33.6
	Existing Repurposed Demand Response	MW	19.0	19.0	19.0
	RPS Distributed Generation	MW	28.8	65.6	65.6
	Energy Storage	MW	0.0	45.0	84.0
	Subtotal of MW in NQC	MW	52.8	174.2	224.6

a) Given that Sierra Club's data request response provided the resource type, size and on-line date, please explain why these resources could not be modelled in SDG&E's power flow studies.

b) Confirm that Table 2.9-2 reflects specific resource procurement contracts either approved by the PUC or where SDG&E seeks approval in a pending application. If yes, explain why these resources could not be modeled in SDG&E's power flow studies.

c) Is there any overlap between the 127 MW of in-basin resources referenced on page 106:8 of the rebuttal testimony and the preferred resources referenced in Table 2.9-2? If yes, please identify each specific project.

d) Please identify any additional approved or proposed preferred resource procurement that is not captured in Table 2.3-2 or in the 127 MW of in-basin resources referenced on page 106:8 of Applicants' Rebuttal Testimony.

RESPONSE 5:

a) The load forecast already takes into account the effect of the LTPP EE, Demand Response, and Existing Demand Response. In other words, the load forecast has already been modified by subtracting the aforementioned resources.

   RPS Distributed Generation has not been procured.

   The in-service battery storage projects at El Cajon and Escondido were modelled and accounted for in the analysis.

b) No, Table 2.9-2 was created based on preliminary assumptions established by the CPUC in D.14-03-004 ("Track 4" Decisions). SDG&E did not build this table and does not know the specific source the CAISO used to develop the table. However, SDG&E is seeking approval for projects based on the results from its 2016 Track IV Local Capacity Requirement Preferred Resources Request for Offers. Please see the responses to Question 5.a and Question 5.c for the resources that were modeled.

c) Yes, the El Cajon Battery Storage and the Escondido Battery Storage.

d) Applicants do not understand how Table 2.3-2 of the CAISO 2016-2017 Transmission Plan relates to this question.

Table 2.9-2 does not represent a table of actual resources. As part of the results from its 2016 Track IV Local Capacity Requirement Preferred Resources Request for Offers*, SDG&E is seeking 88MW in Total Preferred Resources and Energy Storage.

Table 1
2016 Preferred Resources LCR RFO Contracts

Product Category	ProductType	Counterparty	Commercial Operation Deadline	Term (yrs.)	MW (Avg. Contract Capacity)
Energy Storage	EPC[17]	RES Americas Construction, Inc.	March 31. 2019	20	30
Energy Storage	BOT[18]	AES Energy Storage, LLC	March 31, 2021	20	40
Energy Storage	PPTA[19]	Enel Green Power North America, Inc.	December 31, 2021	15	3
Energy Storage	PPTA	Advanced Microgrid Solutions, Inc.	December 1, 2019	20	4
Energy Storage	PPTA	Powin Energy	June 30, 2021	10	6.5
Demand Response	DR	Ohmconnect, Inc.	January 1, 2018	5	4.5
Total Preferred Resources and Energy Storage					88

*Refer to
https://www.sdge.com/sites/default/files/regulatory/A.17-04-____2016_LCR_RFO_Application_w_Attachments%5B1%5D.pdf

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QUESTION 6:

SDG&E's Rebuttal Testimony at page 89, line 3-6, states: "California is faced with an increasingly urgent need to deploy utility-scale energy storage solutions to support the integration of a rapidly expanding supply of intermittent renewable power generation resources. P2G [power-to-gas] and reliable natural gas infrastructure are essential to the success of the state goals."

a) In D. 17-04-039, recently issued as part of the energy storage procurement proceeding (R. 15-03-011), the Commission held that power-to-gas does not qualify as energy storage because of its use of natural gas pipelines. Under what existing mechanism would P2G projects using natural gas infrastructure be procured?

b) Please provide all known estimates of cost per unit energy of power-to-gas.

RESPONSE 6:

a. Senate Bill (SB) 1383 directed the California Energy Commision (CEC), California Air Resources Board (CARB) and the California Public Utilities Commission (CPUC) to evaluate policies needed to support the development of renewable gas, including biomethane and Power-to-Gas (P2G). As part of the 2017 Integrated Energy Policy Report (IEPR), the CEC included P2G as part of the May 12, 2017 Joint Agency Workshop on the Increasing Need for Flexibility in the Electricity System. The specific mechanisms for procuring P2G in California still needs to be defined. However, P2G is part of the energy resources currently being developed in Germany and other parts of Europe, as well as China and Canada. The European Association for Storage of Energy issued a paper in May 2017 highlighting the importance of Power-to-Gas and Power-to-Liquid as resources to integrate intermittent renewable electricity resources. http://ease-storage.eu/wp-content/uploads/2017/05/2017.05.15_EASE-Recommendations-PtG-PtL_final.pdf

b. The California Hydrogen Business Council issued a whitepaper in October 2015, which illustrates a comparison of battery vs P2G costs over different time periods. https://californiahydrogen.org/sites/default/files/CHBC%20Hydrogen%20Energy%20Storage%20White%20Paper%20FINAL.pdf

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QUESTION 7:

SDG&E's Rebuttal Testimony at page 104, line 5, quotes Mr. Yari's Direct Testimony, stating that the maximum electric power import capability (SDIT) is "up to 3500 MW." However, Figure 2 on page 106 of the Rebuttal Testimony shows a maximum of 3300 MW "2022 Import Capability" with a voltage stability limit.

a) Please explain the difference between the 3500 MW import capability referenced on page 104, and the 3300 MW import capability shown on page 106 in Figure 2.

b) What quantity of optimally located incremental voltage support (in MVAR) is required to raise the SDIT limit above 3500 MW to the next thermal limit?

c) Is the next thermal limit driven by the S Line thermal limit, shown in Figure 2 as 4700 MW? If not, what is the next limiting thermal element, and what is the SDIT at that limit?

RESPONSE 7:

a) The 3,500 MW import capability referenced in SDG&E's Rebuttal Testimony on page 104, line 5 is SDG&E's current voltage stability limited import capability with all gas fired units available. The referenced 3,300 MW import capability shown in SDGE-13 Rebuttal Testimony of SDG&E and SoCalGas at page 106, Figure 2, is the voltage stability limited import capability in the year 2022 with no gas fired units available.

b) This question seeks information that is irrelevant to resolving the primary issue of mitigating the voltage stability limit or the thermal limit under the scenario when the gas units are not available.

c) See response to Q7b.

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QUESTION 8:

Applicants' Rebuttal Testimony at pages 97 – 98 states that "natural gas infrastructure is more likely, not less likely, to exhibit integrity and reliability issues as it ages" and cites to testimony from The Utility Consumer Action Network (UCAN) and its contention that Line 1600 and Line 3010 are "near the end of their useful life." Page 5 of a report prepared by the Interstate Natural Gas Association of America (INGAA) titled *The Role of Pipeline Age in Pipeline Safety* (attached in full to this data request) made the following key findings:

KEY FINDINGS

Ultimately, the safety of a particular natural gas transmission pipeline is not necessarily related to its age because:

1. 85% of pipeline incidents reported to PHMSA from 2002-2009 occurred irrespective of the age of the pipeline, with just 15% related in some way to the age of the pipeline.

2. The properties of the steels which comprise natural gas pipelines do not change with time; that is, pipe does not "wear out."

3. The fitness of a pipeline for service does not necessarily expire at some point in time.

4. The integrity of those pipelines for which the fitness for service may degrade with the passage of time can be assessed periodically. Timely repairs - and other mitigation efforts - based on those assessments will ensure the pipeline's continued fitness for service.

5. A well-maintained and periodically assessed pipeline can safely transport natural gas indefinitely.

a) Do Applicants disagree with any of these five findings? If so, please state which finding Applicants disagree with and all analysis that supports the basis for this disagreement.

b) Are Applicants aware of any specific safety concerns with Line 3010? If yes, please identify all such concerns and provide all documentation supporting those concerns.

c) Please state the witness responsible for this answer.

RESPONSE 8:

a) No, and Applicants agree that integrity of pipelines must be assessed as they age and necessary repairs must be made.

b) Not at this time based on available information.

c) Travis Sera