

Application No: A.15-09-013
Exhibit No: SDGE-7-R
Witness: D. Haines

In The Matter of the Application of San Diego Gas
& Electric Company (U 902 G) and Southern
California Gas Company (U 904 G) for a Certificate
of Public Convenience and Necessity for the Pipeline
Safety & Reliability Project

Application 15-09-013
(Filed September 30, 2015)

UPDATED

PREPARED DIRECT TESTIMONY OF

DEANNA HAINES

ON BEHALF OF

SAN DIEGO GAS & ELECTRIC COMPANY

AND

SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

March 21, 2016, updated February 21, 2017

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1 **I. PURPOSE AND OVERVIEW**

2 The purpose of my prepared direct testimony on behalf of San Diego Gas & Electric
3 Company (SDG&E) and Southern California Gas Company (SoCalGas) (collectively, the
4 Utilities) is to respond to the request in the Joint Assigned Commissioner and Administrative
5 Law Judge’s Ruling Requiring an Amended Application and Seeking Protests, Responses, and
6 Replies dated January 22, 2016 (Ruling) for information to address safety-related issues in
7 support the Utilities’ proposed pipeline project (the Proposed Project, also known as the Pipeline
8 Safety & Reliability Project or PSRP). In particular, the Ruling requests that the Utilities
9 provide information on the following safety- and records-related topics:

- 10 • A specific description of how the proposed pipeline meets or exceeds all applicable
11 federal and state safety regulations, rules, and requirements;¹
- 12 • A specific description of how the proposed pipeline management procedures and
13 processes for the construction project provide public and worker safety during all
14 phases of the project including, but not limited to, trenching, construction/fabrication,
15 testing, and initial operation;² and
- 16 • A specific description of adequate management procedures and processes for fully
17 documenting, and retaining records and documents related to, initial design, materials
18 procurement, employee and contractor operator qualifications, construction, testing,
19 and initial operation.³

20 In my testimony, I address how in implementing the Proposed Project, the Utilities are
21 committed to meeting and exceeding safety requirements, protecting the safety of workers and
22 the public, and assuring that adequate records are maintained and retained.⁴

¹ Ruling, at 14.

² *Id.*

³ *Id.* at 14-15.

⁴ As described in the Amended Application, the Utilities retained PricewaterhouseCoopers (PwC) to perform a cost-effectiveness analysis of the Proposed Project and the alternatives identified in the Ruling. *See* Amended Application, Volume III – Cost-Effectiveness Analysis. The Cost-Effectiveness Analysis

1 **II. THE PROPOSED PROJECT WILL MEET OR EXCEED ALL APPLICABLE**
2 **STATE AND FEDERAL SAFETY REGULATIONS**

3 The Proposed Project will, at a minimum, meet the applicable federal and state safety
4 regulations, rules, and requirements by complying with applicable SDG&E and SoCalGas Gas
5 Standards, and will, in many cases, exceed these requirements. SDG&E's and SoCalGas' Gas
6 Standards comprise the policy and procedures that govern the design, construction, operations,
7 and maintenance of the Transmission and Distribution systems and are based on the relevant
8 regulatory codes and ordinances. Gas Standards are the documents that memorialize compliance
9 requirements in company policies and procedures, and explain, in detail, how the Utilities
10 comply with (or exceed) federal and state safety regulations, rules, and requirements. The Gas
11 Standards are internally reviewed and updated periodically. Further, the Gas Standards are
12 subject to periodic audit by the Commission's Safety and Enforcement Division (SED). The
13 Utilities provided matrices to SED during these audits that explain which Gas Standards address
14 which federal and state safety regulations, rules, and requirements. Because the Gas Standards
15 themselves are confidential, they are available upon request and execution of a nondisclosure
16 agreement.

17 Although the Gas Standards themselves may exceed federal and state safety regulations,
18 rules, and requirements, for the Proposed Project, the Utilities have also identified additional
19 areas where they are proposing to exceed federal and state safety regulations, rules, and
20 requirements. Table 1 below provides a summary of where the Proposed Project will exceed the
21 applicable state and federal safety regulations, rules, and requirements, including: (1) California
22 Public Utilities Commission (CPUC or Commission) General Order (GO) 112-F; (2) 49 Code of

and underlying methodology were performed by PwC with input and data from the Utilities. In addition to responding to the Ruling's requirements to address safety-related issues with respect to the Proposed Project, I have provided data input to the Cost-Effectiveness Analysis as well as other data inputs for the portions of the analysis that pertain to my testimony below.

1 Federal Regulations (CFR) Part 191 and Part 192; and (3) the California Occupational Safety and
 2 Health Act (Cal/OSHA).⁵

3 **TABLE 1**

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
CPUC General Order 112-F					
Subpart B-REPORTS	122	Gas Incident Reports		Meet	
Subpart B-REPORTS	123	Annual Reports		Meet	
Subpart B-REPORTS	124	Reporting Safety – Related Conditions		Meet	
Subpart B-REPORTS	125	Proposed Installation Report		Meet	
49 Code of Federal Regulations Part 191					
Reports	§191.5	Immediate notice of certain incidents		Meet	
Reports	§191.7	Report submission requirements		Meet	
Reports	§191.15	Transmission systems; gathering systems; and liquefied natural gas facilities: Incident report		Meet	
Reports	§191.17	Transmission systems; gathering systems; and liquefied natural gas facilities: Annual report		Meet	
Reports	§191.23	Reporting safety-related conditions		Meet	

⁵ When the word “code” is used in Table 1, it means 49 CFR Part 192, which governs nearly all aspects of the design, inspection, and testing of a pipeline and its appurtenances.

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Reports	§191.25	Filing safety-related condition reports		Meet	
49 Code of Federal Regulations Part 192					
Subpart A - GENERAL	192	General		Meet	
Subpart B – MATERIALS	§192.53	General		Meet	
Subpart B – MATERIALS	§192.55	Steel pipe	Comply with American Petroleum Institute’s (API) 5L “Specification for Line Pipe.” Minimum impact of toughness of 30 ft-lbs. Minimum seam weld toughness is 20 ft-lbs.	Exceed	The Utilities will exceed API5L by requiring greater pipe impact toughness and seam weld toughness of 80 ft-lbs and 66 ft-lbs respectively for the 36” diameter pipe and a more stringent chemical composition to comply with qualified welding procedures.
Subpart B – MATERIALS	§192.65	Transportation of pipe	Comply with API5L recommended practice RP5L1 and RP5LW	Exceed	The Utilities also require compliance with API recommended practice RP5LT, for Truck Transportation of Line Pipe
Subpart C –PIPE DESIGN	§192.103	General		Meet	
Subpart C –PIPE DESIGN	§192.105	Design formula for steel pipe		Meet	
Subpart C –PIPE DESIGN	§192.109	Nominal wall thickness (t) for steel pipe		Meet	
Subpart C –PIPE DESIGN	§192.111	Design factor (F) for steel pipe	Classes 1, 2, 3 and 4 locations require 0.72, 0.6 0.5, 0.4 Design Factors, respectively.	Exceed	A 0.4 Design Factor, which is only required in Class 4 locations, will be used for all locations, resulting in significantly higher safety factors than required in Class 1,2, and 3 locations.

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart C –PIPE DESIGN	§192.115	Temperature Degrating Factor (T) for Design of Steel Pipe		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.143	General requirements		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.144	Qualifying metallic components		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.145	Valves		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.147	Flanges and flange accessories		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.150	Passage of internal inspection devices		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.153	Components fabricated by welding		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.155	Welded branch connections		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.159	Flexibility		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.161	Supports and anchors		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.163	Compressor stations: Design and construction		N/A	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.165	Compressor stations: Liquid removal		N/A	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.167	Compressor stations: Emergency shutdown		N/A	

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.169	Compressor stations: Pressure limiting devices		N/A	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.171	Compressor stations: Additional safety equipment		N/A	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.173	Compressor stations: Ventilation		N/A	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.179	Transmission line valves	The required Spacing between Main Line Valves is 20 miles in Class 1, 15 miles for Class 2, and 8 miles for Class 3 locations. Each section of a transmission line must have a blow down valve with enough capacity to blow down a line as rapidly as practicable.	Exceed	The pipeline is designed to have 5-mile Main Line Valve spacing, which is shorter valve spacing than is required by code for all locations.
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.183	Vaults: Structural design requirements		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.185	Vaults: Accessibility		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.187	Vaults: Sealing, venting, and ventilation		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.189	Vaults: Drainage and waterproofing		Meet	

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.195	Protection against accidental over pressuring	Each pipeline that is connected to a gas source so that the maximum allowable operating pressure could be exceeded as the result of pressure control failure or of some other type of failure, must have pressure relieving or pressure limiting devices that meet the requirements of §§192.199 and 192.201	Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.199	Requirements for design of pressure relief and limiting devices		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.201	Required capacity of pressure relieving and limiting stations		Meet	
Subpart D - DESIGN OF PIPELINE COMPONENTS	§192.203	Instrument, control, and sampling pipe and components		Meet	
Subpart E – WELDING OF STEEL IN PIPELINES	§192.225	Welding procedures		Meet	
Subpart E – WELDING OF STEEL IN PIPELINES	§192.227	Qualification of welders	API 1104, "Welding of Pipelines and Related Facilities"	Exceed	The Utilities require welders to perform an additional overhead weld for qualification that is not required by API 1104.

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart E – WELDING OF STEEL IN PIPELINES	§192.229	Limitations on welders		Meet	
Subpart E – WELDING OF STEEL IN PIPELINES	§192.231	Protection from weather		Meet	
Subpart E – WELDING OF STEEL IN PIPELINES	§192.235	Preparation for welding	API 1104, “Welding of Pipelines and Related Facilities” allows misalignment of 1/8”	Exceed	The Utilities require more precise alignment by limiting misalignment to 3/32”.
Subpart E – WELDING OF STEEL IN PIPELINES	§192.241	Inspection and test of welds		Meet	
Subpart E – WELDING OF STEEL IN PIPELINES	§192.243	Nondestructive testing	Code requires 10% and 15% of welds in Class 1 and 2 locations respectively, that are not in highway or railroad right- of-ways to be non- destructively tested.	Exceed	100% of welds in Class 1 and 2 locations not in highway or railroad right-of-ways will be non-destructively tested.
Subpart E – WELDING OF STEEL IN PIPELINES	§192.245	Repair or removal of defects	API 1104, “Welding of Pipelines and Related Facilities” allows repair of rejected first time repair	Exceed	The Utilities do not allow subsequent repair of a rejected first-time repair.
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.305	Inspection: General		Meet	

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.307	Inspection of materials		Meet	
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.309	Repair of steel pipe		Meet	
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.313	Bends and elbows		Meet	
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.317	Protection from hazards		Meet	
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.319	Installation of pipe in a ditch		Meet	
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.323	Casing	Code does not require coating or cathodic protection of casing pipe.	Exceed	All casing pipe will be coated and cathodically protected regardless of outside agency requirements.

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.325	Underground clearance		Meet	We typically exceed 12” clearance unless impracticable.
Subpart G— GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS	§192.327	Cover	Class 1 locations require 30" of soil cover above the pipe. Class 2 and 3 locations require 36" cover.	Exceed	Soil cover will be specified as 42" minimum unless constraints prevent the extra cover.
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.453	General		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL FOR CORROSION CONTROL	§192.455	External corrosion control: Buried or submerged pipelines installed after July 31, 1971		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.459	External corrosion control: Examination of buried pipeline when exposed		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.461	External corrosion control: Protective coating		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.463	External corrosion control: Cathodic protection		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.465	External corrosion control: monitoring		Meet	

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.467	External corrosion control: Electrical isolation		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.469	External corrosion control: Test stations		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.471	External corrosion control: Test leads		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.473	External corrosion control: Interference currents		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.475	Internal corrosion control: General requirements		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.476	Internal corrosion control: Design and construction of transmission line.		Meet	
Subpart I— REQUIREMENTS FOR CORROSION CONTROL	§192.479	Atmospheric corrosion control: General requirements		Meet	
Subpart J—TEST REQUIREMENTS	§192.503	General requirements		Meet	
Subpart J—TEST REQUIREMENTS	§192.505	Strength test requirements for steel pipeline to operate at a hoop stress of 30 percent or more of SMYS	Tests in Class 1 require a test to a pressure of 1.1 x Maximum Allowable Operating Pressure (MAOP); For Class 2 - 1.25 x MAOP; and Class 3 and 4 - 1.5x MAOP.	Exceed	Where possible the pipeline will be tested to 90% of its Yield Pressure (YP) including at least a 5% pressure spike. This will result in a test that is more than 2.5x MAOP, which exceeds the testing requirement for all locations.

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart J—TEST REQUIREMENTS	§192.515	Environmental protection and safety requirements		Meet	
Subpart J—TEST REQUIREMENTS	§192.517	Test Documentation		Meet	
Subpart L - OPERATIONS	§192.605	Procedural Manual for operations, maintenance, and emergencies		Meet	
Subpart L - OPERATIONS	§192.613	Continuing surveillance		Meet	
Subpart L - OPERATIONS	§192.614	Damage prevention program	Each operator of a buried pipeline must carry out, in accordance with this section, a written program to prevent damage to that pipeline from excavation activities.	Exceed	Additional pipeline cover is provided to aid in damage prevention. See 192.327 for "cover" details and 192.705 additional monitoring. Warning Mesh will be installed above the pipeline to identify the pipeline below. Fiber optic cabling with real-time monitoring for ground movement and inferential leak detection will be installed along the pipeline route.
Subpart L - OPERATIONS	§192.615	Emergency plans		Meet	
Subpart L - OPERATIONS	§192.616	Public awareness		Meet	
Subpart L - OPERATIONS	§192.619	Maximum allowable operating pressure (MAOP): Steel pipeline	The MAOP is the lowest of the following: 1. Design Pressure of the weakest component; or 2. Pressure obtained by dividing the test pressure by a factor based on Class Location.	Exceed	The pipeline will be operating at a lower pressure than the code allows in Class 1, 2 and 3 locations due to designing the entire pipeline for a Class 4 location and testing to a higher pressure than required by code (see sections 192.505 and

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
					192.619).
Subpart L - OPERATIONS	§192.625	Odorization of gas	Odorizing is required for Class 3 and 4 locations.	Exceed	The Utilities transmission pipelines are odorized regardless of location.
Subpart L - OPERATIONS	§192.629	Purging of pipelines		Meet	
Subpart M— MAINTENANCE	§192.705	Transmission lines: Patrolling	The requirement for the frequency of patrolling varies from 2 - 4 times per year depending on the location.	Exceed	Fiber-optic right-of-way continuous intrusion monitoring is planned to be installed on this pipeline to provide early threat warning, consistent with the technology enhancements discussed in the Utilities' Pipeline Safety Enhancement Plan (PSEP).
Subpart M— MAINTENANCE	§192.706	Transmission lines: Leakage surveys	Leakage surveys must be conducted at intervals of 7.5 - 15 months depending on Class Location.	Exceed	Real-time methane above ground methane sensors will be installed on select segments of the pipeline identified by risk analysis consistent with the technology enhancements discussed in the Utilities' PSEP for right-of-way leak monitoring. The Fiber optic cable monitoring system referenced under 192.705 and 192.614 will also allow for pipeline leak detection in near-real time.
Subpart M— MAINTENANCE	§192.707	Line Markers		Exceed	In addition to the requirement to install aboveground pipeline markers, the Utilities will install Warning Mesh above the pipeline to indicate that there is a pipeline below the mesh.

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart M— MAINTENANCE	§192.731	Compressor stations: Inspection and testing of relief devices		N/A	
Subpart M— MAINTENANCE	§192.735	Compressor Station Storage of Combustible materials		N/A	
Subpart M— MAINTENANCE	§192.736	Compressor Station: Gas Detection		N/A	
Subpart M— MAINTENANCE	§192.743	Pressure Limiting and regulating stations; Capacity of relief devices		Meet	
Subpart M— MAINTENANCE	§192.751	Compressor stations: Prevention of accidental ignition		N/A	
Subpart N— QUALIFICATION OF PIPELINE PERSONNEL	§192.801	Scope		Meet	
Subpart N— QUALIFICATION OF PIPELINE PERSONNEL	§192.803	Definitions		Meet	
Subpart N— QUALIFICATION OF PIPELINE PERSONNEL	§192.805	Qualification program		Meet	
Subpart N— QUALIFICATION OF PIPELINE PERSONNEL	§192.807	Recordkeeping		Meet	
Subpart N— QUALIFICATION OF PIPELINE PERSONNEL	§192.809	General		Meet	

PSRP					
Where the Utilities Plan to Meet or Exceed Applicable State and Federal Regulations					
Code	Section	Title	Requirement	Meet or Exceed	If exceeding, how?
Subpart O—GAS TRANSMISSION PIPELINE INTEGRITY MANAGEMENT	§192.939	What are the required reassessment intervals	Operators are required to only perform a lesser confirmatory reassessment every 7 years if a longer reassessment period has been obtained.	Exceed	The Utilities will be performing full integrity reassessments of the pipeline with internal inspection devices called smart pigs at a maximum interval of 7 years.

1 In addition to the summary provided in Table 1, the Utilities provide the following
2 supplemental explanation regarding the applicable code requirements the Proposed Project will
3 meet or exceed.

4 **A. Subpart B - MATERIALS §192.55 “Steel Pipe”**

5 The Utilities utilize greater pipe base metal and weld toughness than API5L. API5L
6 requires the steel pipe to have a minimum impact toughness of 30 ft-lbs whereas the Utilities
7 utilize over 80 ft-lbs. Minimum weld toughness by API5L is 20 ft-lbs but the Utilities utilize a
8 minimum of 66 ft-lbs. The Utilities also utilize a more stringent chemical composition to
9 comply with qualified welding procedures. By exceeding the API5L requirements, the Proposed
10 Project is designed to provide greater resistance to propagating cracks and increases the pipe’s
11 resistance to third party damage.

12 **B. Subpart C - PIPE DESIGN §192.111 “Design factor (F) for Steel pipe”**

13 The design factor of a pipe segment establishes the safety margin against pipe yielding
14 from its internal pressure.⁶ For example, a pipeline in a Class 3 location is required to have a

⁶ For clarity, the term yielding does not mean the pipe ruptures but rather it will be permanently deformed. Pipe has additional strength beyond its yield point.

1 design factor of 0.5 or lower. This limits the maximum pressure in a pipe segment to half of its
 2 yield pressure, which is equivalent to having a safety factor of 2, based on yield. Table 2 below
 3 illustrates the following code requirements for design factors based on the location of a pipe
 4 segment.

5 **TABLE 2**

Class Location	Description of Class Location	Design Factor
1	10 or fewer buildings intended for human occupancy	0.72
2	More than 10 but fewer than 46 buildings intended for human occupancy.	0.60
3	46 or more buildings intended for human occupancy, or an area where the pipeline lies within 100 yards of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period.	0.50
4	Where buildings with four or more stories above ground are prevalent	0.40

6 The Proposed Project will have Class 1, 2, and 3 locations, but will not have any Class 4
 7 locations. However, the Utilities will design the entire length of pipeline to meet Class 4
 8 requirements, exceeding code requirements, in order to provide an additional safety margin and
 9 accommodate future growth and development that would cause the location to become Class 4.

10 **C. Subpart D - §192.179 “Transmission Line Valves”**

11 The Proposed Project is designed to enable designated Class 3 and/or High Consequence
 12 Area (HCA) segments to be isolated and depressurized within 30 minutes should a failure occur.
 13 This design will meet or exceed the Utilities’ Pipeline Safety Enhancement Plan (PSEP) for
 14 isolation and depressurization of segments of a pipeline, which already exceeds code
 15 requirements.⁷ All Main Line Valves (MLVs) installed on this Proposed Project will have

⁷ A.11-11-002, Amended Testimony of Southern California Gas Company and San Diego Gas & Electric Company in Support of Proposed Natural Gas Pipeline Safety Enhancement Plan, Chapter V, Proposed

1 capabilities for remote operation by the Utilities' Gas Control Center and/or automatic closure,
2 without operator intervention in the event of a significant failure. Further, valves on selected
3 taps, crossovers and bridle assemblies will be equipped with remote control capabilities to
4 support operation of the pipeline and prevention of back-flow of gas into any main pipeline
5 section isolated to control an unplanned gas release.

6 MLVs will have actuators that reside above ground or will be installed below grade
7 within a concrete vault. The actuator will operate using gas pressure provided from the pipeline,
8 supported by pneumatic and electronic controls. The MLVs will be 36-inch, full-opening, to
9 allow for the passage of internal inspection devices. Each MLV location would have a blow
10 down valve installed on each side of the MLV to allow for depressurization of either of the
11 adjoining pipe segments.

12 Remote Control Valves will also be installed at interconnect locations, and at the
13 Rainbow Pressure Limiting Station and MLV 7.⁸

14 The Proposed Project is planned to have a maximum spacing between MLVs of 5 miles
15 unless other constraints requires spacing more than 5 miles apart. Five mile spacing exceeds
16 code requirements for all locations, which specifies a maximum valve spacing of 20, 15, and 8
17 miles for Class 1, 2, and 3 locations, respectively. The closer valve spacing will enable a faster
18 blow down time for all pipe sections than would be achieved if the less stringent valve spacing
19 requirements of the code were followed.

Valve Enhancement Plan, dated December 2, 2011, <http://www.socalgas.com/regulatory/documents/r-11-02-019/Amended%20Testimony-12.2.11.pdf>.

⁸ MLV 7 is located at the north end of Lake Hodges.

1 **D. Subpart E - WELDING OF STEEL IN PIPELINES §192.241 “Inspection**
2 **and test of welds”**

3 The current code requires non-destructive testing for pipelines constructed in Class 1 and
4 2 locations that are not in highway or railroad right-of-ways on 10% and 15% of welds,
5 respectively. The Utilities will exceed the requirement by non-destructive testing of 100% of the
6 welds and non-destructive examination by dye penetrant of branch connections for pipelines in
7 these areas.

8 **E. Subpart G - GENERAL CONSTRUCTION REQUIREMENTS FOR**
9 **TRANSMISSION LINES AND MAINS §192.317 “Protection from hazards”**

10 The proposed pipeline route does not cross any active seismic faults. The pipeline does
11 traverse two potential landslide areas. Typical mitigation for potential landslides is to slightly
12 reroute the pipeline away from the potential landslide areas or to install the pipe at a depth below
13 the slide plane of the landslide. Further site-specific geological investigation will be performed
14 to select the appropriate mitigation method.

15 **F. Subpart J - TEST REQUIREMENTS §192.505 “Strength test requirements**
16 **for steel pipeline to operate at a hoop stress of 30 percent or more of SMYS”**

17 The Proposed Project will traverse Class 1, 2 and 3 locations. However, the entire
18 pipeline will be designed to the more rigorous requirements for Class 4 locations. As a result,
19 the pipeline will have greater strength and safety margins than is required by the code for these
20 areas.

21 Another safety factor to be incorporated into the design is at the pressure testing phase.
22 The pipe is planned to be tested to more than 2.5 times the MAOP, which provides an additional
23 66% safety factor beyond even the more rigorous testing requirements for Class 3 and 4
24 locations. The pressure testing will also include a short duration pressure spike to provide an
25 additional factor of safety.

1 **G. Subpart L - OPERATIONS §192.625 “Odorization of gas”**

2 The entire proposed pipeline will be odorized even though the requirement is to only
3 odorize pipelines in Class 3 and 4 locations. Odorization of these lines will enhance the ability
4 to detect leaks.

5 **H. Subpart M - MAINTENANCE §192.705 “Transmission lines: Patrolling”**

6 Consistent with the Utilities’ PSEP Technology Plan enhancements proposal, the
7 Proposed Project will be equipped throughout its routing with an advanced right-of-way
8 intrusion detection/monitoring systems to provide early warning when digging, drilling, boring,
9 cutting, compacting or where unplanned heavy vehicle operations by third parties pose a threat to
10 pipeline integrity. The system(s) will also continuously monitor for ground movement and
11 temperature gradients associated with an unplanned release of gas from the pipeline. This
12 monitoring will employ the use of fiber optic cabling buried above and/or adjacent to the
13 pipeline during construction and system monitoring stations co-located with Supervisory Control
14 and Data Acquisition (SCADA) and control assets at up to four (4) mainline valve locations.

15 **I. Subpart M - MAINTENANCE §192.706 “Transmission lines: Leakage**
16 **surveys”**

17 Consistent with the Utilities’ PSEP Technology Plan enhancements proposal, to further
18 support the early detection and management of unplanned gas releases, gas detection sensors will
19 be employed at key locations along the pipeline routing, including near earthquake faults and
20 where the pipeline is routed in proximity to facilities which pose special consideration for
21 evacuation and/or commerce impact in the event of a pipeline incident. The Utilities’ preliminary
22 assessment is that 50 such monitors (point sensors) will be installed along the pipeline route.
23 The systems will provide near-real time alarm notification to operations personnel when gas
24 concentration levels indicate a potential gas release.

1

TABLE 4

Management Procedure/Processes/Requirement
Injury & Illness Prevention Program
Contracting Transmission Pipeline Construction
Contractor Safety Observation Areas
Contractor Safety Program
Employee Safety Training
General Construction Requirements Steel Transmission System
General Construction Requirements for Distribution Mains and Service Lines
Pedestrian Path of Travel and Accessibility
Pipeline/Facilities Testing
Prevention of Damage to Subsurface Installations
Qualification of New Construction Contractors
Traffic Control Plans

2

A. Contractors/Contractor Employees

3

Contractors working for the Utilities are required to comply with all applicable federal,

4

state and local laws, ordinances and regulations and ensure the safety compliance of their

5

employees, as well as ensuring their operations do not impact the safety of the Utilities’

6

employees and the public. The Utilities work collaboratively to promote a safe work

7

environment for all workers and, prior to commencement of work, contractors and the Utilities’

8

representative review project scope and determine specific relevant health, safety, and

9

environmental requirements. At a minimum, contractors are required to:

10

- Abide by all applicable federal, state, and local environmental, health, and safety laws and regulations;

11

12

- Have a written Injury and Illness Prevention Plan (IIPP) meeting the requirements of Title 8, CCR, Section 3203; and

13

14

- Sign a Contractor Safety Notice, which ensures understanding of and adherence to all essential safety programs needed to be in place to mitigate typical safety hazards/conditions known to exist on utility projects.

15

16

1 **B. Department of Transportation (DOT) and CPUC-Covered Functions**

2 If performing DOT or CPUC-covered functions, contractors must ensure that its
3 employees adhere to all Operator Qualification requirements in CFR 49, section 192, CPUC GO
4 112-F and those set forth in SoCalGas standard 167.0100 – Operator Qualification Program. In
5 addition, contractors must have a qualified Anti-Drug and Alcohol Misuse Prevention Program
6 either self-administered, or administered by a qualified third party consortium. Contractors must
7 ensure its program includes random testing of contractor’s DOT-covered employees in
8 accordance with the DOT CFR, Title 49 CFR, Part 40 and Part 199 regulated by the Pipeline &
9 Hazardous Materials Safety Administration (PHMSA). If contractor employees operate
10 commercial motor vehicle(s), contractors must also have a Drug & Alcohol Misuse Prevention
11 Program that conforms to the DOT Federal Motor Carrier Safety Administration’s 49 CFR, Part
12 382 regulations.

13 Prior to commencement of covered safety-sensitive functions, contractors will be
14 required to register with the Utilities’ service agent, Veriforce LLC, to initiate review and
15 approval of the contractor’s Operator Qualification program and Anti-Drug and Alcohol Misuse
16 Prevention Program. Contractors will be required to submit requested compliance
17 documentation to the Utilities’ service agent. Furthermore, contractors must submit to
18 unannounced job site inspections by the Utilities’ field personnel, and allow Veriforce LLC
19 access to property and records in accordance with Part 199 and Part 382, for comprehensive
20 record audits of contractor’s Anti-Drug Abuse Prevention Programs and Alcohol Misuse
21 Prevention Programs.

22 When requested, contractors must also provide statistical data on all drug testing
23 conducted in accordance with Title 49, Part 40, Part 199 and/or Part 382, and per the schedule set
24 forth by Veriforce LLC and the company administrator. Each contractor is, in all respects,

1 responsible for maintaining a DOT compliance program for work under DOT-covered functions
2 and a CPUC compliance program for work under CPUC-covered functions.

3 **C. Pre-Work Meetings**

4 Pre-work meetings will be held to discuss specific environmental, safety, and/or health
5 issues for the job or facility. The following are examples of the information that will be
6 discussed at the pre-work meetings and is required to be acknowledged in writing using the
7 Contractor Safety Notice:

8 *Hazard Communication:* Specific hazards at the Utilities' facilities and procedures that
9 have the potential to impact contractors' employees are communicated to contractors. These
10 hazards may include, but are not limited to: asbestos, lead, confined spaces, equipment operation,
11 energized electrical and gas systems, fall hazards, specific hazardous substances, etc.

12 Contractors must share and communicate hazard information covered in this meeting with all
13 contractor employees and subcontractors before work begins. Contractors who utilize non-
14 English speaking workers on site are required to have English speaking and reading interpreters
15 with them at all times.

16 *Hazardous Materials:* Prior to the start of a job or project, contractors are required to
17 disclose any and all hazardous materials they plan to use to the Utilities' representative who will
18 then inform contractors if: (1) the use of the hazardous materials is allowed, (2) the use of certain
19 hazardous materials is prohibited, or (3) the use of a certain hazardous material is not prohibited,
20 but requires either supervision, recordkeeping, reporting, or the use of safety procedures.

21 *Prohibited Materials:* No materials containing detectable amounts of asbestos may be
22 used for construction or otherwise used at the Utilities' sites. No Proposition 65 listed chemicals

1 may be introduced at the Utilities’ -controlled sites unless the contractor provides adequate
2 warning to the Utilities and other persons who may be exposed.

3 *Handling and Disposal of Contractor’s Hazardous Materials:* Contractors must ensure
4 proper handling and disposal of hazardous materials brought on-site, including primary and
5 secondary chemical labeling, location of Material Safety Data Sheets, disposal, and recycling.

6 *Handling and Disposal of Hazardous Waste:* When waste is generated during
7 construction activities, contractors must contact the Utilities’ representative or Field
8 Environmental Specialist. All utility generated waste must be disposed of at an approved
9 SoCalGas/SDG&E disposal site.

10 *Specific safety rules and requirements:* To ensure safe work practices are followed
11 according to the Contractor Safety Program and any SoCalGas/SDG&E practices that are
12 required by contract specific safety rules and requirements are discussed with contractors.

13 *Reporting of Incidents:* Contractors are required to immediately and properly report any
14 fires, hazardous situations, hazardous substance releases, incidents, OSHA recordable injuries
15 and illnesses, injury or property damage involving the public.

16 *Enforcement and Reporting of Post-Accident Testing:* Proper review, reporting and
17 enforcement of drug and/or alcohol testing of incidents meeting the post-accident criteria of CFR
18 Title 49, Part 40, Part 199 and Part 382.

19 *Emergency Response:* Emergency response such as evacuation alarms, routes, assembly
20 areas, and interaction with emergency services will be discussed.

21 *Stop the Job (STJ) Process:* If an unsafe work condition or activity is identified, anyone
22 working onsite has the authority to stop the job. All work will immediately cease once the STJ is
23 declared and will not begin again until site supervision and the involved Contractor(s) have done

1 a thorough investigation, remediated the unsafe situation, determined it is safe and
2 communicated this to affected employees.

3 **D. Non-Compliance with Safety and Health Requirements**

4 The Utilities reserve the right to intervene on issues of imminent danger anytime
5 throughout any construction project. Quality assurance is achieved through observations of the
6 work and routine monitoring. While enforcement of a contractor's safety program is the
7 responsibility of the contractor, the Utilities identify hazards and unsafe actions and
8 communicate them to the contractor's superintendent or safety representative, when noted
9 through routine monitoring of the construction activities or when reported by others. These
10 observations and discussions with the contractor's personnel are documented and filed with the
11 contractor safety notice. The Utilities' representative is responsible for holding contractors
12 accountable for quality and safety relative to the contract.

13 The Utilities reserve the right to take action which includes warnings up to termination of
14 contract in the event a contractor has any non-compliance with environmental, safety and health
15 requirements or observed safety hazards.

16 **E. The Utilities' Employees**

17 Employees follow the IIPP of each individual company. At SDG&E this can be found in
18 the Employee Safety Handbook. At SoCalGas it is found in section one of the IIPP Manual.
19 Each contains the required seven elements of Title 8 §3203 along with action steps to implement
20 each element.

21 Beyond the IIPP, additional safety direction is provided within the Employee Safety
22 Handbook (SDG&E) and the IIPP Manual (SoCalGas). Included therein are Employee
23 Responsibilities, Supervisor Responsibilities, Personal Protective Equipment, Basic Safety

1 Rules, Codes of Safe Practices, and Incident Reporting (injuries, near misses/close calls, and
2 motor vehicle incidents). Additionally, safety procedures are included where necessary in
3 SoCalGas/SDG&E policies and procedures.

4 **F. Employee Training**

5 The Utilities are committed to its employees performing their job duties safely and in
6 compliance with applicable safety laws, rules, regulations, permit requirements, company
7 standards, and the IIPP. Providing and documenting employee safety training is an integral part
8 of the company's safety compliance efforts.

9 All SoCalGas/SDG&E employees who perform job duties that are governed by federal,
10 state, and local safety regulations, statutes, company and corporate policies, and the IIPP must
11 complete all applicable mandatory safety training courses. In some cases, employees may not be
12 allowed to perform affected job duties prior to completion of mandatory training. Supervisors
13 are responsible for ensuring that their employees receive all applicable mandatory safety
14 training. When an employee is unable to attend training on the scheduled date, arrangements
15 must be made for the employee to complete the training. Employees who miss the mandatory
16 safety training are not qualified to perform tasks covered by the training until training is
17 completed.

18 **IV. THE UTILITIES ARE COMMITTED TO A COMPLETE RECORDKEEPING**
19 **OF ALL ASPECTS OF THE PROPOSED PROJECT**

20 The Utilities have established policies and procedures to support a comprehensive
21 management system for traceable, verifiable and complete recordkeeping for all aspects of a
22 project such as initiation, scoping, engineering design and material procurement, construction,
23 strength testing and close-out. The Utilities summarize the primary policies in Table 5 below

1 which includes, but is not limited to, standards for project record management and operator
2 qualifications.

3 **TABLE 5**

Management Procedure/Processes
Records Management and Retention
Map Maintenance for High Pressure Pipelines
Documentation Traceability of Pipeline Materials
As-Built Surveys for Construction of High Pressure Pipelines and Pipeline Facilities
Data Gathering and Integration
Operator Qualification Program

4 The Utilities' record management system is a process of gathering, organizing,
5 reviewing, storing and sharing documents, enhancing the ability to collaborate, retrieve, and
6 share information across the project team and, eventually, for the life of the asset. During
7 document generation there is version control and various approval processes, including quality
8 assurance and quality control (QA/QC) before a document is considered issued for review,
9 approval and/or construction. A similar QA/QC process is implemented post-construction in
10 order to incorporate construction drawing redlines and produce the final completion drawings.

11 **A. Project Management**

12 The Utilities utilize hardcopy and electronic records systems that document a project's
13 scope development, construction and commissioning, and close-out. The Utilities' record
14 management system includes software systems specifically designed to manage and retain
15 project records for the life of the asset. The Utilities' systems include tools such as SharePoint,
16 Computer Aided Design (CAD)/Geographic Information System (GIS), Pipeline Document
17 Management System (PDMS), Network Servers and SAP modules and other company databases
18 that link to company-defined record systems and databases. The Utilities' project record

1 management systems also include various business controls that manage the financial,
2 contractual and general project management governance that support the project.

3 **B. Engineering & Design**

4 Typically the format for document distribution is in electronic format and within a CAD
5 system. The Utilities' engineering and design process includes drawing and design
6 specifications, GIS, mapping and surveying standards, QA/QC prior to issuance and an approval
7 process before a design is released to construction. Post-construction Global Position System
8 (GPS) data is validated to be transferred into the Utilities' GIS system and construction redlines
9 are integrated into the final completion drawings. An additional QA/QC is completed to assure
10 the GIS system matches the final completion drawings.

11 **C. Material Procurement**

12 Material procurement is a function of the Utilities' supply management process that
13 includes checkpoints for engineering approval of manufacturer specifications and material
14 testing requirements. Material procurement includes site surveillance at the manufacturer or
15 vendor's initiation point in order to witness identified key material generation activities by
16 certified inspectors representing the Utilities.

17 Material traceability documentation, such as the Mill Test Report or Certificate of
18 Compliance, is managed through the Utilities' inventory system, where the material is verified at
19 construction staging and at installation. Material inspection can be performed by gas engineering
20 at the construction staging location or at the SoCalGas inspection department at the Pico Rivera
21 storeroom. Interim material traceability documentation is verified at this point, as well as
22 various other control points before and after construction staging and installation. Additional

1 verification is performed during fabrication, prior to installation and during the project close-out
2 process.

3 **D. Construction Management**

4 The Utilities manage field changes of construction drawings through the appropriate
5 approval process, when required, in the format of change orders, Request for Information,
6 engineering review and approval and other identified processes. GIS mapping and surveying
7 occurs during construction and the GPS data is reconciled with field changes, engineering re-
8 designs, inspector drawing redlines and other approved field changes.

9 Construction inspectors document field changes in daily inspection reports and redline
10 changes on the construction drawings. The construction inspector also verifies operator
11 qualifications for contractors through hardcopy cards or the Utilities' enterprise system. A
12 construction inspector documents material installed, monitors and inspects the installation
13 process, including, but not limited to, fabrication, non-destructive examinations, strength testing
14 and field coating.

15 **E. Project Turnover and Close-Out**

16 The project close-out process includes the reconciliation of any approved engineering
17 revisions, field changes and final surveying data which will lead to the final completion drawings
18 and upload of data into the Utilities' enterprise systems for records management. Pipeline asset
19 and related records are retained for the life of the asset within the company-defined asset
20 management system. Turnover of project records includes initiation of operating and
21 maintenance service orders of installed pipeline and other compliance activities. Project close-
22 out includes a QA/QC of all defined project compliance records that will be retained through the
23 life of the asset.

1 **V. CONCLUSION**

2 With respect to the Proposed Project, the Utilities are committed to meeting and
3 exceeding safety requirements, protecting the safety of workers and the public, and assuring
4 adequate records and retention.

1 **VI. QUALIFICATIONS**

2 My name is Deanna Haines. My business address is 555 W. Fifth St., Los Angeles,
3 California, 90013. I am employed by SoCalGas as the Director of Gas Engineering for both
4 SoCalGas and SDG&E.

5 I joined SoCalGas in 1988 and have held various positions of increasing responsibility in
6 the Transmission, Engineering, Customer Service, and Environmental departments of SoCalGas
7 and SDG&E. I have been in my current position at SoCalGas since December 2013. I have a
8 Bachelor of Science Degree in Chemical Engineering from University of Southern California
9 and a Masters in Business Administration from University of Redlands.

10 I have previously testified before the Commission.

11 This concludes my prepared direct testimony.

A.15-09-013 Pipeline Safety & Reliability Project
SDG&E and SoCalGas Prepared Direct Testimony Change Log – February 2017
(Page and line references are to the original version of the prepared direct testimony served on March 21, 2016)

Witness	Page	Line(s)	Revision Detail
Deanna Haines	Cover	N/A	Added “SDGE-7-R”
Deanna Haines	Cover	N/A	Added “Updated”
Deanna Haines	Cover	N/A	Added “updated February 21, 2017”
Deanna Haines	3	1-2	Modified as follows: “Federal Regulations (CFR) Part 191 and Part 192; and (3) the <u>California</u> Occupational Safety and Health Act (<u>Cal/OSHA</u>).”
Deanna Haines	17	15	Deleted the word “physical” before “constraints”
Deanna Haines	20	2-6	Modified paragraph as follows: “In addition to safety areas discussed above, the Utilities <u>incorporate other non-DOT design practices when required by law and otherwise where the Utilities determine it is appropriate to do so to further their facilities in accordance with recommended practices, codes, and standards to promote safe operations. As an example, a</u> A <u>list of other non-DOT design recommended practices, codes, and standards</u> is included in Table 3 below. This list is not all-inclusive and additional <u>non-DOT design recommended practices, codes, and standards</u> may be applied to the design as it progresses.”
Deanna Haines	20	7	Deleted the entire second row of Table 3, which used to read: Document Title: International Society of Automation (ISA) 84.00.01 P1, P2, P3 Title of Code Section: Functional Safety: Safety Instrumented Systems for the Process Industry Sector
Deanna Haines	20	10-13	Modified sentence as follows: “ <u>When applicable, t</u> The Utilities follow <u>meet or exceed Cal/OSHA California Occupational Health and Safety</u> requirements under Title 8 of the California Code of Regulations (CCR) and have numerous procedures that provide guidelines which company personnel and their agents are required to follow when performing specific duties when installing or repairing pipeline systems, including pipeline facilities.”

Witness	Page	Line(s)	Revision Detail
Deanna Haines	21	3	Added the word “applicable” before “federal”
Deanna Haines	22	1-4	Modified section heading as follows: “Department of Transportation (DOT) <u>and CPUC-Covered Functions</u> ” Modified the first sentence as follows: “If performing DOT or <u>CPUC-covered</u> functions, contractors must ensure that its employees adhere to all Operator Qualification requirements in CFR 49, section 192, <u>CPUC GO 112-F</u> and those set forth in SoCalGas standard 167.0100 – Operator Qualification Program.”
Deanna Haines	22	24	Added “and a CPUC compliance program for work under CPUC-covered functions” to the end of the sentence.
Deanna Haines	24	9	Replaced “this” with “the” before “Contractor Safety Program”