San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas) Responses
A.15-09-013 Pipeline Safety & Reliability Project (PSRP or Proposed Project)
California Public Utilities Commission (CPUC) Data Request No. 06 Follow Up – December 13, 2017

Data Gap (DG) #	Resource Area/Topic	Source/ Proponent's Environmental Assessment (PEA) Page	DG Question	Response
3-17	Alternatives	CEA page 12 (Alternative H2: Smaller-Scale Battery Storage)	**Provide the following information regarding the Smaller-Scale Battery Storage Alternative:** 1. Provide the calculations and assumptions used to arrive at the estimated 11,200 MWh storage requirement for 4 hours of service. 2. At what MW value was installation proposed for the resulting estimate (11,200 MWh for 4 hours of service)? 3. Regarding the MWh calculation, what Btu/cf value was used? 4. How much gas was expected to be replaced with this smaller-scale battery storage alternative? 5. Was a conventional power generation efficiency factor used to convert gas Btu to the amount of electrical power that a solar plant will need to provide? If so, what efficiency factor was used (it can vary from 0.3 to 0.6 depending on type of gas fired plant)? 6. What power systems were considered when developing this alternative (i.e., Tesla 50KW/210KWH, the 30 MW currently in place in SDG&E service area, the 100 MW system planned in Australia, or others)? 7. How many small scale battery installations would be needed to provide the 11,200 MWh of storage? 8. How much land (acres) will be needed for each battery location in order to provide 11,200 MWh of storage? Include a typical site plan and/or specifications for a small scale battery location (e.g., El Cajon or Escondido installation examples). 9. Provide all assumptions used to calculate land use and power rating of the small-scale battery alternative. NOTE: Please provide a full response to this data request even if any of the above questions were responded to or partially responded to in previous data responses. If prior responses were applicable in some way to these questions, provide a fully updated response based on the best data available at this time.	The following responses pertain to Alternative H2 – Alternate Energy Alternative: Smaller-Scale Battery Storage. 1. The following assumptions/calculations were used to arrive at the estimated 11,200 megawatt hour (MWh) storage requirement for 4 hours of service: • Assume disruption in gas supply during a peak electric load day • Peak SDG&E Electric Load Forecast = 5,372 megawatts (MW) • Import capability = 2,500 MW • Another net qualifying capacity (NQC) of non-gas generation = 70 MW • Remaining = Peak Load – Import Capability – Non-Gas Generation • Remaining = 2,802 MW of customer load that was being supplied through local San Diego County natural gas-fired electric generation until gas supply was disrupted causing curtailment • Assume battery resources need to make up for curtailed in basin natural gas-fired electric generation for 4 hours: 4 hours of duration of 2,802 MW = approximately 11,200 MWh • Unit costs were established based on $500/kWh and used as a proxy to extrapolate costs associated with these battery storage alternatives. For the smaller scale battery storage alternative, a 20% premium was added due to the complexity and the number of installations. 2. 11,200 MWh discharged continuously and uniformly over 4 consecutive hours implies a discharge power rate of 2,800 MW (11,200 / 4 = 2,800) 3. The MWh assumptions and calculations are provided in response to Item 3-17, Question 1, above. No British Thermal Unit (BTU)/cubic foot (cf) calculations were necessary as the calculations were based on the amount of MW that the batteries needed to provide. 4. No calculation was performed to estimate the amount of gas associated with the curtailment of 2,800 MW of in basin generation. The assumptions and calculations of the battery alternatives were based on electric load requirements. 5. No. Please see the responses to Item 3-17, Questions 1 and 4, above. 6. SDG&E and SoCalGas (the Applicants) have not estimated the power systems needed for the "small scale" battery installations needed to obtain the 11,200 MWh. 7. The Applicants have not estimated how many "small scale" battery installations would be required to provide the 11,200 MWh of storage as it would depend on how big a "small scale" system is, and if it were dedicated to this use. The calculation would be (11,200 / [small scale battery installation size in MWh] = number of small scale battery installations needed to provide 11,200 MWh). Installation size could vary and would likely be based on a combination of available land and the amount of energy that the local electric system was able to accept from a battery system. 8. Please see the response to Item 3-17, Question 7 above. As a proxy, Escondido Energy Storage System (ESS) is 120 MWh on approximately 1 acre of open contiguous space, including the balance of plant. Scaled linearly, using the same technology, 11,200 MWh would require approximately 93.3 acres or 4 million square feet. Additional land may be required for interconnections. Specific facilities and technologies will vary, given differences in the contours of land, civil, structural, environmental requirements and the capacity of the local electric infrastructure to accept energy from the battery installation into the system. 9. The assumptions used to calculate land use and power rating of the small-scale battery alternative are provided in the responses above.
3-18	Alternatives	CEA page 11 (Alternative H1: Grid-Scale Battery Storage)	**Provide the following information pertaining the Grid-Scale Battery Storage Alternative:** 1. Provide calculations for Grid-Scale Battery Storage which show how the capacity was determined. Include the facility size (number of	The following responses pertain to Alternative H1 – Alternate Energy Alternative: Grid-Scale Battery/Energy Storage. 1. The capacity for the grid-scale battery storage alternative was derived from system load values, as explained in the response to Item 3-17, Question 1 above. 2. No calculation was performed to estimate the amount of gas associated with the curtailment of 2,800 MW of in basin

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			MWs) considered when developing this alternative. 2. How much gas was expected to be replaced with this grid-scale battery storage alternative? 3. Provide the proposed/theoretical capacity, in MWh, and the power rating for the Grid-Scale Battery Alternative. 4. Provide a typical site plan and/or specifications for the theoretical grid-scale battery location (e.g., El Cajon or Escondido installation examples). 5. Provide the assumptions used to determine that the Grid-Scale Battery Alternative would require 100 acres of land. NOTE: Please provide a full response to this data request even if any of the above questions were responded to or partially responded to in previous data responses. If prior responses were applicable in some way to these questions, provide a fully updated response based on the best data available at this time.	generation. As explained in the response to Item 3-17 above, the assumptions and calculations of the battery alternatives (smaller scale and grid-scale) were based on electric load requirements. 3. The capacity and power rating for the grid-scale battery alternative depends on how big a "grid scale" system is, and if it were dedicated to this use. The calculation would be (11,200 / [grid scale battery installation size in MWh] = number of grid scale battery installations needed to provide 11,200 MWh). 4. The site plan for the Escondido ESS is provided in Confidential Exhibit JJ: Escondido ESS Site Plan, which contains confidential and protected materials pursuant to California Public Utilities Code (P.U. Code) § 583, General Order (GO) 66-C/D, and Decision (D.) 16-08-024. 5. As a proxy, Escondido ESS is 120 MWh on approximately 1 acre of open contiguous space, including the balance of plant. Scaled linearly, using the same technology, 11,200 MWh would require approximately 93.3 acres or 4 million square feet. Additional land may be required for interconnections. Specific facilities and technologies will vary, given differences in the contours of land, civil, structural, and environmental requirements.
3-19	Alternatives	Evidentiary Hearing Application 15-09-013 ALJ Kersten Reporters Transcript September 27, 2017 Volume 6, Pages 873-1050	**Provide the following clarifications pertaining to Line 2010:** 5. Are there any wetland/waterbody crossings, HDD segments, railroad crossings, highway crossings, sensitive habitats, sensitive species, critical habitats, preserved lands, cultural resource sites, parks, fire-hazard rating, or known hazardous material sites along Line 2010 that construction and operation of a new loop has the potential to affect? Provide a detailed list of such locations and/or crossings.	5. Looping Line 2010 would require a second pipeline that parallels Line 2010 from near Kearny Villa Road to West Hills Parkway in Santee. The alignment would traverse open space and cross multiple highways. A matrix depicting the potential to encounter wetland/waterbody crossings, highway crossings, sensitive habitats, sensitive species, critical habitats, preserved lands, cultural resource sites, parks, fire-hazard rating, and known hazardous material sites along Line 2010 based on publicly available data and a desktop-level study is provided in Exhibit MM-1: Conceptual Line 2010 Loop Resources Matrix. A map depicting the location of these features will be provided in Confidential Exhibit MM-2: Conceptual Line 2010 Loop Resources Map, which contains confidential and protected materials provided pursuant to P.U. Code § 583, GO 66-C/D, and D.16-08-024. No railroad crossings would be required and HDD construction techniques are not expected.