

**ZELLER DATA REQUEST**  
**ZELLER-SDG&E-DR-002**  
**SDG&E 2019 GRC – A.17-10-007**  
**SDG&E RESPONSE**  
**DATE RECEIVED: DECEMBER 18, 2017**  
**DATE RESPONDED: JANUARY 5, 2018**

Exhibit Reference: SDG&E - 14  
Witness: Colton  
Subject: ED Capital

1. Ex. 14: On page AFC-92 it states that the cost driver justifying the expenditure of \$2,106,000 in the TY for Phasor Measurement Units is the need to continue an existing program designed to improve reliability.

A) What specific evidence does SDG&E have that this equipment improves reliability?

B) In locations where SDG&E has already installed this equipment, how much has reliability improved?

C) On page 91, the testimony states this equipment is needed to analyze the output of PV systems; doesn't SDG&E's existing set of Smart meters have this capability?

**SDG&E Response 1:**

- a. Phasor Measurement Units (PMUs) are modern technology that measure electrical quantities at synchronized times to allow for comparison at remote points on the grid. PMU technology is in its infancy and SDG&E has not yet fully realized the benefits of this technology, yet SDG&E has already seen instances where synchrophasor data has provided data that was otherwise undetectable by traditional SCADA data to troubleshoot grid problems. One instance of this included early identification of insulation breakdown. Another instance showed mis-operation of a dynamic VAR device. Both issues were resolved more quickly due to PMU data. PMUs are also integral to SDG&E's microgrid installation in Borrego Springs.
- b. Installing SCADA devices with PMU functionality has provided reliability improvements simply because of the additional switching locations available during planned and unplanned outages. SDG&E has been successful in utilizing PMUs to implement a microgrid to support customer load in Borrego Springs. PMUs aren't the only factor to circuit reliability and the implementation onto our system is fairly new for the reliability data to be definitive. See the accompanying file, "Zeller-SDGE-002-Reliability Data Question1b" for reliability data on circuits with this equipment installed. As shown in the accompanying file, three out of the four circuits have seen an improvement in reliability in regards to both System Average Interruption Duration Index (SAIDI) and System Average Frequency Duration Index (SAIFI) contributions.

**ZELLER DATA REQUEST  
ZELLER-SDG&E-DR-002  
SDG&E 2019 GRC – A.17-10-007  
SDG&E RESPONSE  
DATE RECEIVED: DECEMBER 18, 2017  
DATE RESPONDED: JANUARY 5, 2018**

**SDG&E Response 1 Continued:**

- c. SDG&E's existing set of smart meters does not have PMU capability. Basic PMU requirements include microsecond time-stamping of electrical quantities and high-speed communication systems for the large quantities of data (up to 60 measurements per second per quantity).

**ZELLER DATA REQUEST**  
**ZELLER-SDG&E-DR-002**  
**SDG&E 2019 GRC – A.17-10-007**  
**SDG&E RESPONSE**  
**DATE RECEIVED: DECEMBER 18, 2017**  
**DATE RESPONDED: JANUARY 5, 2018**

2. A) What proportion of SDG&E's existing distribution network has #4 or #6 copper conductors? (see pg. 111).
- B) Does SDG&E plan on replacing all of its #4 & #6 conductors in the near future? If yes, when will they be replaced?

**SDG&E Response 2:**

- a. Approximately 38.54% (or 2,321 circuit miles) of SDG&E's total distribution network has small copper conductors.
- b. No, SDG&E is currently focused on replacement of these conductor sizes within the Fire Threat Zone (approximately 1,004 circuit miles) via the Fire Risk Mitigation program (FiRM) and as prioritized via the Wildfire Risk Reduction Model (WRRM). At the current pace of FiRM, SDG&E estimates that it will take almost 13 years to complete the replacement of all these small copper conductors in the FTZ.

**ZELLER DATA REQUEST  
ZELLER-SDG&E-DR-002  
SDG&E 2019 GRC – A.17-10-007  
SDG&E RESPONSE  
DATE RECEIVED: DECEMBER 18, 2017  
DATE RESPONDED: JANUARY 5, 2018**

3. A) How many of SDG&E's existing distribution switchgear use sulfur hexafluoride gas?
- B) When does SDG&E anticipate completing the replacement process for these facilities?  
(pg. 113-114).

**SDG&E Response 3:**

- a. At the beginning of 2017, SDG&E had 1017 known SF6 switches in service.
- b. SDG&E anticipates completing the replacement of the SF6 distribution switches by 2028.

**ZELLER DATA REQUEST**  
**ZELLER-SDG&E-DR-002**  
**SDG&E 2019 GRC – A.17-10-007**  
**SDG&E RESPONSE**  
**DATE RECEIVED: DECEMBER 18, 2017**  
**DATE RESPONDED: JANUARY 5, 2018**

4. A) How are the expenses of pole replacements necessitated by communication infrastructure shared among SDG&E and the communication companies? (CIP)
- B) Does SDG&E pay all the costs and place the expenses in its rate base or does it bill the communication firm whose facilities necessitated the replacement?

**SDG&E Response 4:**

- a. SDG&E solely owns its poles and does not belong to a joint pole association. The costs are not shared when a pole replacement is necessitated by a Communication Infrastructure Provider (CIP).
- b. Per CPUC Decision D.98-10-058 if a pole requires replacement due to a CIP attachment overloading the pole, then the responsible CIP will pay all the costs associated with the pole replacement. SDG&E will pay for the costs if the pole requires replacement due to SDG&E facilities.

**ZELLER DATA REQUEST  
ZELLER-SDG&E-DR-002  
SDG&E 2019 GRC – A.17-10-007  
SDG&E RESPONSE  
DATE RECEIVED: DECEMBER 18, 2017  
DATE RESPONDED: JANUARY 5, 2018**

5. The Electric Integrity Ramp budget for the TY shows an extremely rapid escalation in expenditures in this area.

A) Does SDG&E believe its expenditures for these types of projects have been inadequate in years past?

B) Has SDG&E performed risk analyses to determine which of these proposed projects would have the highest priority if the Commission failed to approve its entire request? If yes, please provide these analyses.

C) Does SDG&E currently have an adequate labor force to perform all of the tasks identified in this area in the TY, or will it have to hire additional staff to complete the work, or make use of contractors? Please provide information about the staffing requirements associated with this initiative.

**SDG&E Response 5:**

SDG&E objects to this request to the extent that it calls for assumptions that misstate SDG&E's testimony. Subject to and without waiving this objection, SDG&E responds as follows:

- a. No.
- b. SDG&E has performed various risk analyses to quantitatively determine highest priorities among the proposed risk mitigation activities discussed in its RAMP Report. Please refer to the Risk Management testimony chapters of Diana Day and Jamie York (Exhibit SCG-02/SDG&E-02, Chapters 1 and 3, respectively) for more details regarding the utilities' RAMP Report.
- c. SDG&E's planned TY 2019 electric distribution O&M requirements and expenditures are stated in the testimony of William H. Speer (SDG&E-15).

**ZELLER DATA REQUEST  
ZELLER-SDG&E-DR-002  
SDG&E 2019 GRC – A.17-10-007  
SDG&E RESPONSE  
DATE RECEIVED: DECEMBER 18, 2017  
DATE RESPONDED: JANUARY 5, 2018**

6. SDG&E’s testimony on pg. 120 states that three of its poles serving the Torrey Pines corridor have been “drastically deteriorated” and need to be replaced.

A) Why did SDG&E permit these poles to “drastically deteriorate” and doesn’t their condition present a fire hazard that SDG&E has a duty to eliminate?

B) Does SDG&E have other poles that are in a comparable condition as the three identified in the Torrey Canyon area? If yes, please identify the poles and (if applicable) detail SDG&E’s plans to repair or replace the facilities.

**SDG&E Response 6:**

- a. SDG&E objects to this request on the grounds that it calls for speculation and assumptions that misstate SDG&E’s testimony. Subject to and without waiving this objection, SDG&E responds as follows: SDG&E performed an intrusive inspection, which revealed the poles have deteriorated. The condition led to installing c-trusses on the existing poles to assist with supporting the poles until the overall project is completed. The proposed project is described in the electric distribution capital testimony of Alan Colton, SDG&E-14.
- b. SDG&E currently is not aware of other poles in a similar situation, with similar characteristics of a deteriorated pole, in a canyon slope and with potentially unstable soil.

**ZELLER DATA REQUEST**  
**ZELLER-SDG&E-DR-002**  
**SDG&E 2019 GRC – A.17-10-007**  
**SDG&E RESPONSE**  
**DATE RECEIVED: DECEMBER 18, 2017**  
**DATE RESPONDED: JANUARY 5, 2018**

7. Regarding the PrIME initiative, SDG&E states that it will analyze 22,600 poles in the TY to determine whether they need to repaired and/or replaced or otherwise modified.

A) How many additional staff will SDG&E need to perform this level of analysis?

B) If SDG&E plans to rely on contractors to perform these analyses, is SDG&E confident it will be able to find a sufficient number of trained contractors to do the work?

C) Similar to Electric Integrity RAMP initiative, the PrIME initiative proposes an extremely rapid escalation in expenses. How much of the data SDG&E is seeking through this initiative is currently available in its geographic information system?

D) Does SDG&E have the authority to deny communication companies's request to attach to its poles because of pole-loading concerns?

E) Why is it SDG&E's responsibility to pay all of the expenses associated with pole loading when generally SDG&E-owned facilities are not the source of the incremental load that led to the overloading condition?

F) According to the testimony, SDG&E uses a zero-based forecasting method to estimate expenditures in this area. Given the modest level of expenditures for this area in 2017 and the large increase in subsequent years, why is SDG&E confident its estimate is accurate?

G) Does SDG&E anticipate that communication companies will want to attach new additional equipment over the next five years that will lead to additional pole loading concerns? If yes, please identify the equipment and the number of poles SDG&E anticipates being affected by such a program.

**SDG&E Response 7:**

- a. SDG&E's planned TY 2019 electric distribution O&M requirements and expenditures are stated in the testimony of William H. Speer (SDG&E-15).
- b. Yes.
- c. SDG&E objects to this request on the grounds that it is vague, ambiguous, and founded on assumptions that misstate SDG&E's testimony. Subject to and without waiving this objection, SDG&E responds as follows: SDG&E is developing a comprehensive Risk Model that will integrate key pole loading risk factors to estimate the potential for risk reduction. Examples of key risk factors include, but are



**ZELLER DATA REQUEST**  
**ZELLER-SDG&E-DR-002**  
**SDG&E 2019 GRC – A.17-10-007**  
**SDG&E RESPONSE**  
**DATE RECEIVED: DECEMBER 18, 2017**  
**DATE RESPONDED: JANUARY 5, 2018**

not limited to, known local conditions (wind), intrusive inspection data, age of pole,  
**SDG&E Response 7 Continued:**

size and class of pole, conductor size and type, amount and size of communication attachments, geographic location of the pole, areas of high density vehicle crossings and railroad crossings. LiDAR/field data coupled with information derived from various data bases such as, but not limited to, SDG&E's Geographic Information System, Intrusive Inspection Database and our Communication Infrastructure Information data bases will be combined to provide an overall risk potential on each pole.

- d. SDG&E does not have the authority to arbitrarily deny Communication Infrastructure Providers access to SDG&E facilities per the Right of Way (ROW) CPUC Decision D.98-10-058. Should a CIP want to attach to a pole in which they will cause the pole to be overloaded, the CIP will be responsible for all of the costs associated with the pole replacement. In addition, per General Order 95 Rule 44.4, SDG&E will notify a CIP when an application for attachment is denied and the reasons for denial which may include, but not limited to, pole loading.
- e. If a pole is overloaded due to a CIP, then the CIP will pay for all of the costs associated with the pole replacement.
- f. SDG&E used a cost per pole estimate which was used to determine future program costs. This type of per pole estimate is consistent with historical cost estimates from other similar SDG&E activities.
- g. Yes, it is anticipated that other communication companies over the next 5 years will want to attach new equipment to SDG&E poles. SDG&E's Electric Distribution Engineering Team will evaluate any newly requested attachments and add them to SDG&E's Standards to ensure they are considered in pole loading calculations. SDG&E has formed a centralized pole loading team to review and ensure that communication companies follow proper pole design procedure per G.O. 95 Rule 31.1.

**ZELLER DATA REQUEST**  
**ZELLER-SDG&E-DR-002**  
**SDG&E 2019 GRC – A.17-10-007**  
**SDG&E RESPONSE**  
**DATE RECEIVED: DECEMBER 18, 2017**  
**DATE RESPONDED: JANUARY 5, 2018**

8. A) What level of PV systems (in raw numbers or percentages) in a given circuit raises the question of whether advanced energy storage facilities should be installed? (see pg. 129).
- B) is the need for such systems a function of the proportion of total load that is being served by such systems during peak demand periods, or is it a function of overall output or some other factor, (please specify)?
- C) how does SDG&E currently deal with intermittency attributable to renewable energy systems on circuits that do not have storage capability?

**SDG&E Response 8:**

- a. There is no set level of PV systems, in a given circuit, that will initiate energy storage installation. Energy storage may be installed for reasons other than the level of PV on a given circuit, it has the capability to integrate renewable energy and maximize its utilization when PV is not producing. In addition, energy storage, coupled with smart inverter functionality, has the ability to regulate voltage and enhance system efficiency, as a result of renewable intermittency.
- b. Installation of energy storage can support the overall output of PV systems in proportion to the total load, and not just during peak demand periods. Energy storage, coupled with smart inverter functionality, has multiple modes of operation that can support voltage regulation, circuit peak shaving and circuit base loading, while integrating renewables and enhancing circuit efficiency and power quality. There is no specific number for PV penetration; however, it is an area that requires more individualized analysis and characterization. It is understood, should the PV penetration level continue to rise, the generation to load ratio also increases. Due to intermittency, as this ratio increases the effects on the circuit become more prominent and devices such as advanced energy storage systems may be required.
- c. Currently, SDG&E utilizes traditional power transformer load-tap changers, voltage regulators and line capacitors to deal with voltage control. SDG&E has piloted several power electronic based products that have the ability to dynamically control the voltage at a localized level to mitigate various issues, including renewable intermittency.