MUSSEY GRADE ROAD ALLIANCE DATA REQUEST
MGRA-DR-006-PARTIAL
SDG&E/SOCALGAS 2021 RAMP REPORTS- A.21-05-011/014

DATE RECEIVED: SEPTEMBER 13, 2021

DATE RESPONDED: SEPTEMBER 28, 2021

In its reply to TURN in Data Request TURN-DR-009, SDG&E refused to provide additional WiNGS model data in Excel format as requested by TURN, with the justification that the request was overbroad, not relevant to the subject matter of the present proceeding, would not lead to admissible evidence, and potentially would disclose proprietary information. SDG&E refers TURN to the data provided in the Excel spreadsheet TURN DR6 Excel Responses_162.xlsx.

MGRA understands that the data provided in TURN DR6 Excel Responses_162.xlsx contains WiNGS analysis of the circuits and segments that SDG&E has selected for inclusion in its 2022-24 RAMP proceeding. Discussion during the September 2nd workshop indicated that the WiNGS analysis had been run for all circuits, and that other criteria related to feasibility were applied afterwards.

MGRA notes that the circuits selected for inclusion in the present RAMP analysis vary by a factor of 8 in risk, by a factor of 10 in cost, and by a factor of 20 by RSE, leading to the conclusion that no simple or transparent set of criteria was used to choose the circuits selected for the upcoming GRC cycle. It follows that a different selection of circuits would lead to significantly different costs and risk reductions, and this will affect ratepayers. Therefore, the mechanism by which circuits were selected for inclusion is within scope of this proceeding, likely would provide admissible and relevant evidence, and does not foreseeably infringe on SDG&E's rights to confidential and proprietary materials. MGRA therefore requests that SDG&E provide the following information:

Request 1 (MGRA-27): Provide the top 40 circuits as ranked by overall circuit risk as calculated by WiNGS, in an Excel spreadsheet in the same format shown in the "Updated Workpaper" tab of the "TURN DR6 Excel Responses". Individual segment data may be omitted from the response.

SDG&E Response 1 (MGRA-27):

See Tab "Final_27&28" in the attached Excel file: MGRA DR6 Excel Response.xlsx.

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Request 2 (MGRA-28): Add a column to the spreadsheet specified above that includes:
- A column specifying whether the circuit has been included in the 2022-2024 circuits in the scope of the planned 2022-2024 GRC cycle (TURN DR6 Responses)
- A column containing a text explanation of why the circuit is not included in the list in the planning for 2022-2024, where applicable (TURN DR6 Responses).

SDG&E Response (MGRA-28):

See Tab "Final_27&28" in the attached Excel file: MGRA DR6 Excel Response.xlsx.

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Request 3 (MGRA-29): If alternatives were developed for the hardening of specific circuits and segments that were not included in the list shown in "TURN DR6 Excel Responses", including cost, RSE, and risk reduction calculations for covered conductor or undergrounding of specific segments, provide these estimates in an additional Excel file spreadsheet in the same format as the "Updated Workpaper" tab of TURN DR6 Responses.

SDG&E Response (MGRA-29):
September 28 reply: SDG&E continues to work on the response to this question and plans to provide a reply by Thursday, September 30.

September 30 reply: SDG&E objects to this request on the grounds that it is vague and ambiguous. SDG&E further objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure to the extent it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

See Tab "Final_29" in the attached Excel file: MGRA DR6Q29 Excel Response 09302021.xlsx

SDG&E understands this request to be asking whether SDG&E completed an alternatives analysis between covered conductor or undergrounding for segments not included in "TURN DR6 Excel Responses" (i.e., segments not selected for hardening during the 2022-2024 forecast years of the Test Year 2024 GRC), and if so, to provide the results of that analysis.

In response, SDG&E has provided the complete list of segments evaluated in WiNGS with those two alternatives, in the attached spreadsheet. This alternatives analysis does not consider other mitigations that may be implemented on segments not included in the RAMP grid hardening scope (i.e., SDG&E did not quantitatively analyze the implementation of vegetation management vs. grid hardening).

SDG&E's response to this question is also considered a response to verbal requests during the workshops for additional data from the WiNGS model. SDG&E is providing a complete list of all the segments currently included in the WiNGS model along with two alternatives for each segment: implementation of covered conductor on the entire segment or undergrounding of the entire segment.

In addition to the segment level analysis, the attached Excel file includes columns that show circuit-level analysis for the two alternatives mentioned above.

SDG&E Response (MGRA-29): - Continued

SDG&E notes that the provided alternatives analysis is only a starting point for decision-making. As was discussed in replies to data requests (TURN DR6) and during the workshops (9/2/2021 and 9/8/2021), other factors – most importantly a "human review" factor – are incorporated as part of the overall evaluation process to determine final mitigations that SDG&E would identify as being feasible to pursue implementing.

Another important factor to remember when reviewing and comparing the results in the attached Excel file to what SDG&E included in the 2021 RAMP report and to what SDG&E may identify in its 2024 Test Year GRC is that the data in the WiNGS model is updated on an ongoing basis, i.e., the data in the model used to develop these results is different from the data (circa Q4 2020) used to develop the results in the RAMP Report and is different from the data that will be used (~Q4 2021) to develop results to that will be reflected in SDG&E's GRC application. Data is continuously being updated within the model to capture the latest system configurations and scoping of projects across the system.

Finally, SDG&E recognizes that the current model has room for improvement and is continuing to work on improving its data and analysis to support its risk-informed decision-making process.

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The following questions are follow-up questions to SDG&E's responses to MGRA Data Request #3.

Request 4 (MGRA-30): In its response to DR-003, Question 6, SDG&E stated that "*SDG&E has not fit a power law distribution to the financial loss distribution.*" Has SDG&E evaluated power law functions for any of its risk distributions? If so, provide any evaluation including calculations and workpapers, along with minima/maxima from the fit. Note: An SDG&E representative stated that power laws had been evaluated during the August 13th workshop.

SDG&E Response (MGRA-30):
September 28 reply: SDG&E continues to work on the response to this question and plans to provide a reply by Thursday, September 30.

September 30 reply: SDG&E objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure on the grounds that it mischaracterizes the record, and, as written, is overbroad and unduly burdensome. SDG&E further objects to this request to the extent it seeks information that is not within SDG&E's possession, knowledge or control. Subject to and without waiving the foregoing objection, SDG&E responds as follows:

During the August 13th Workshop, an SDG&E representative indicated the Company′s willingness to look at power law distribution or different distributions for the consequences. While the representative stated his belief that some power law distribution may have been analyzed previously, SDG&E has conducted a reasonable inquiry but is unable to determine if it has responsive documents. SDG&E will supplement this response if it is able to locate them.

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Request 5 (MGRA-31): In its response to DR-003, Question 9, SDG&E stated that its current PSPS risk calculation "assumes one safety unit for every 10 billion customer-minutes of PSPS initiated outage minutes."
Explain and provide citations and workpapers as to the source of the relationship between customer-minutes of outage and safety units.

SDG&E Response (MGRA-31):

This estimate is based on Subject Matter Expert judgement.

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Request 6 (MGRA-32): In its response to Question 10, SDG&E provides links to two newspaper articles as citations for "industry research" used to estimate impact values and assign consequence weighting.
Explain how information in the newspaper articles was used to derive the specific relationships used by SMEs to bucketize impact values and assign attribute consequence weighting.

SDG&E Response (MGRA-32):

When reviewing SDG&E's initial scoring of critical customer impacts, given the large range of critical customers ranging from medical centers to public transportation, a proxy customer type was selected to represent the average impact across different critical customer types. The proxy selected was an outage to a communications tower since this outage was determined to best represent a typical critical customer.

The referenced linked articles provided information from areas outside of SDG&E's service territory that SDG&E's SMEs used when estimating the consequences of a communications tower outage. The New York Times article titled "California Blackouts Hit Cellphone Service, Fraying a Lifeline" cites that during a power shutoff event in Marin, CA during October 2019, more than half of all 280 cell towers in the county were out of service. Given the population size of Marin County, which is approximately 250,000 per the 2010 census, the outage event provided an average estimate of the number of people that would be impacted per a cell tower outage. Both news articles cited also noted that during the same 2019 fire season, Sonoma County, covering a population size of approximately 484,000 per the 2010 census, experienced an outage of nearly one quarter of its 436 cell towers were out of service for some period of time. The combination of both data points helped SMEs determine that the reliability weighting of "30", which is defined as "1000+ customers being directly impacted", is most appropriate.

The safety impact of a communications tower outage is largely due to emergency calls not being connected. Both news articles note that in California, more than 80% of emergency calls to 911 were made through a cellphone and cited the California Governor's Office of Emergency Services and a statement by an official at the CPUC. The combination of this statistic and the average number of people impacted by a communications tower led SMEs to assign a safety weighting of "20", defined as "3-5 potential SIFs over a 12 hour outage period", for a communications tower outage event.

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The following questions are follow-ups to the September 8, 2021 workshop.

Request 7 (MGRA-33): To what extent, quantitatively, do SDG&E teams working on covered conductor deployment and undergrounding overlap? Which resources are independent and which are in common?

SDG&E Response (MGRA-33):

SDG&E objects to this request on the grounds that it is vague and ambiguous, specifically as to the terms "quantitatively," "teams," "working," and "overlap." Subject to and without waiving the foregoing objection, SDG&E responds as follows.

Many SDG&E departments are involved in implementing the conductor deployment and undergrounding programs, including Engineering, Project Management, Accounting, Land Management, Environmental, Supply Management (materials and contracts), Permitting, Construction (includes internal (ERO) and external (Construction Management)), Public Relations, Aviation Services, and Distribution Operations (including Mapping & Records).

For purposes of this response, SDG&E assumes that MGRA requests identification of employee and contractor skillsets that could work on both covered conductor and undergrounding projects. Because so many departments, activities, and skillsets are involved in implementing the covered conductor and undergrounding programs, SDG&E is unable to identify all such employees with similar skillsets. SDG&E provides below some examples of skillsets included in both the covered conductor and underground hardening programs, including design and engineering, phases of construction, and program management:

- Examples of design and engineering skillsets necessary in both programs include drafting and field surveying. Examples of design and engineering skillsets that are dissimilar include the engineering of pole loading for covered conductor and civil engineering of underground trenches for undergrounding. SDG&E estimates that 40%-50% of the design and engineering skillsets are similar.
- Examples of construction phase skillsets necessary in both programs include environmental monitoring, traffic control, and dedicated fire watch crews. Examples of construction phase skillsets that are dissimilar include construction crews performing the electrical work and construction crews performing civil construction.
- Examples of program management skillsets that are similar include coordination at the scoping, design, and engineering stages. Examples of dissimilar skillsets include project management after the scope-design-engineering stages, i.e., the project management aspects of the programs that currently operate independently.

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Request 8 (MGRA-34): What is the maximum rate of underground deployment that SDG&E could do with current staffing, if resources were dedicated to undergrounding?

SDG&E Response (MGRA-34):

SDG&E objects to this request on the grounds that it calls for speculation and seeks a response based on studies, analyses and/or calculations that do not exist. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

The forecasted range of miles of underground hardening in the 2022-2024 forecast period is based on the planned level of staffing assigned to the underground hardening program along with factoring other elements that traditionally impact the scope, cost, and schedule for these types of construction projects, e.g., system operating conditions, permitting, subsurface conditions, easement acquisition, and weather conditions. Of significance is that some of these non-staffing factors include time elements that are outside of SDG&E's control.

When considering the factors mentioned above, and also considering that pre-construction tasks can take 18-24 months, SDG&E believes that the forecasted range of underground hardening miles identified in the 2021 RAMP for the 2022-2024 period is the appropriate range, even if additional existing staffing with the required skillsets were made available. SDG&E continues to update and evaluate data for use in the Test Year 2024 GRC.

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Request 9 (MGRA-35): What is the maximum rate of covered conductor deployment that SDG&E could do with current staffing, if resources were dedicated to covered conductor deployment?

SDG&E Response (MGRA-35):

SDG&E objects to this request on the grounds that it calls for speculation and seeks a response based on studies, analyses and/or calculations that do not exist. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

The forecasted range of miles of covered conductor hardening in the 2022-2024 forecast period is based on the planned level of staffing assigned to the covered conductor hardening program along with factoring other elements that traditionally impact the scope, cost, and schedule for these types of construction projects, e.g., system operating conditions, permitting, field conditions, land rights acquisition, and weather conditions. Of significance is that some of these non-staffing factors include time elements that are outside of SDG&E's control.

When considering the factors mentioned above, and also considering that pre-construction tasks can take 18-24 months, SDG&E believes that the forecasted range of covered conductor hardening miles identified in the 2021 RAMP for the 2022-2024 period is the appropriate range, even if additional existing staffing with the required skillsets were made available. SDG&E continues to update and evaluate data for use in the Test Year 2024 GRC.

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Request 10 (MGRA-36): If the SDG&E hardening program had funding increased by 20%, how much could it increase its deployment of covered conductor and undergrounding?

SDG&E Response (MGRA-36):

SDG&E objects to this request on the grounds that it calls for speculation and seeks a response based on studies, analyses and/or calculations that do not exist. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

SDG&E interprets this question to be asking *if* SDG&E's forecasted range of dollars in the 2021 RAMP for both the covered conductor and underground hardening programs were to be increased by 20%, how many additional miles of hardening could be accomplished.

As mentioned in SDG&E's replies to questions 34 and 35 above, SDG&E believes there are multiple factors besides funding and availability of staffing with the required skillsets that contributed to the forecasted mile ranges for covered conductor and underground hardening reflected in the 2021 RAMP for the 2022-2024 forecast years. As stated during the workshops, SDG&E believes these ranges are the most feasible when considering all factors, with one key factor that is applicable to this reply being operational constraints, i.e., the ability to implement these programs with minimal impacts on the service to customers.

SDG&E believes additional miles of hardening may be possible, however, non-financial and non-operational factors that need to be considered include:

- These types of projects typically involve 18 -24 months from initial identification to completion of construction (thus estimating minimal to no impact in 2022-2023 associated with an increased dollar forecast in those years).
- The ability to hire/train/contract the resources with the required skillsets could be a challenge given that other utilities are pursing significant amounts of similar work.
- Delays in the permitting process due to an increased workload on impacted external agencies.

SDG&E continues to update and evaluate data for use in the Test Year 2024 GRC.

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Request 11 (MGRA-37): SDG&E representatives stated during the September 8th workshop that the costs of upgrading equipment to support REFCL, combined with the cost of covered conductor, would approach or exceed the cost of undergrounding. Please provide workpapers and calculations supporting this statement.

SDG&E Response (MGRA-37):
SDG&E studied the implementation of REFCL at one substation in the HFTD for feasibility analysis. The key challenges in implementing the technology include balancing line-to-ground capacitance across all three phases of distribution circuitry, developing new protection schemes to identify and isolate the faults, reconfiguring circuits to remove all phase-neutral connected loads and equipment, and upgrading equipment to withstand the higher voltages that result from line-ground faults in the new configuration. The study showed that implementing REFCL at this substation would cost approximately $26.1 million and only provided coverage for three 12kV distribution circuits. These costs included:

1. $3.5 million in substation equipment
2. $11.4 million in overhead system upgrades
    a. Upgraded surge arrestors and transformers
3. $10.6 million in underground system upgrades
    a. Upgraded cable and transformers
4. $0.6 million for capacitor balancing units and other miscellaneous equipment

SDG&E's service territory contains approximately 135 distribution substations with 1,054 distribution circuits. The costs and effort required to install the substation equipment and re-configure the distribution circuits associated with implementing a REFCL program was deemed a less desirable approach than further developing SDG&E's existing and future protection technologies such as Falling Conductor Protection, Sensitive Ground Fault Protection, and Sensitive Profile Settings which are already deemed sufficient in identifying and isolating electrical equipment failures.

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The following questions are in regard to SDG&E's Excel Spreadsheet TURN DR6 Excel Responses.xlsx. MGRA is requesting a sensitivity analysis that will illustrate the comparative value of covered conductor versus undergrounding for the circuits that SDG&E has deemed to be in scope for hardening in the 2022-2024 time frame. MGRA acknowledges that for the suggested substitution of covered conductor for undergrounding and vice-versa, the requested calculations are for illustrative purposes and do not include feasibility or applicability of a particular mitigation for a given circuit segment.

Request 12 (MGRA-38): Provide a version of the "Updated Workpaper" tab shown in the TURN DR6 Excel Responses file in which all segments planned for covered conductor mitigation instead apply an undergrounding mitigation.

SDG&E Response (MGRA-38):

See Tab "Final_38" in the attached Excel file: MGRA DR6 Excel Response.xlsx

SDG&E believes that this request is comparable to an alternative analysis provided in the Wildfire risk RAMP chapter (Section VI: Alternatives). At the time of preparing the RAMP Report, the overall program-level analysis produced the following results:

Alternatives	**Scope**	**Total Risk Reduction**	**RSE**
Proposed	275 miles of UG 200 miles of CC	32.8%	100.35
Alternative 1: Underground	475 miles of UG	34.1%	85.11

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Request 13 (MGRA-39): Provide a version of the "Updated Workpaper" tab shown in the TURN DR6 Excel Responses file in which all segments planned for undergrounding mitigation instead apply a covered conductor mitigation.

SDG&E Response (MGRA-39):

See Tab "Final_39" in the attached Excel file: MGRA DR6 Excel Response.xlsx.

SDG&E believes that this request is comparable to an alternative analysis provided in the Wildfire RAMP chapter. At the time of preparing the RAMP Report, the overall program-level analysis produced the following results:

Alternatives	**Scope**	**Total Risk Reduction**	**RSE**
Proposed	275 miles of UG 200 miles of CC	32.8%	100.35
Alternative 2: Covered Conductor	475 miles of CC	21.1%	93.36