ENERGY SAFETY DATA REQUEST: OEIS- EUP-24-05
SDG&E RESPONSE

Date Received: July 5, 2024
Date Submitted: July 19, 2024

I. GENERAL OBJECTIONS

1. SDG&E objects generally to each request to the extent that it seeks information protected by the attorney-client privilege, the attorney work product doctrine, or any other applicable privilege or evidentiary doctrine. No information protected by such privileges will be knowingly disclosed.

2. SDG&E objects generally to each request that is overly broad and unduly burdensome. As part of this objection, SDG&E objects to discovery requests that seek "all documents" or "each and every document" and similarly worded requests on the grounds that such requests are unreasonably cumulative and duplicative, fail to identify with specificity the information or material sought, and create an unreasonable burden compared to the likelihood of such requests leading to the discovery of admissible evidence. Notwithstanding this objection, SDG&E will produce all relevant, non-privileged information not otherwise objected to that it is able to locate after reasonable inquiry.

3. SDG&E objects generally to each request to the extent that the request is vague, unintelligible, or fails to identify with sufficient particularity the information or documents requested and, thus, is not susceptible to response at this time.

4. SDG&E objects generally to each request that: (1) asks for a legal conclusion to be drawn or legal research to be conducted on the grounds that such requests are not designed to elicit facts and, thus, violate the principles underlying discovery; (2) requires SDG&E to do legal research or perform additional analyses to respond to the request; or (3) seeks access to counsel's legal research, analyses or theories.

5. SDG&E objects generally to each request to the extent it seeks information or documents that are not reasonably calculated to lead to the discovery of admissible evidence.

6. SDG&E objects generally to each request to the extent that it is unreasonably duplicative or cumulative of other requests.

7. SDG&E objects generally to each request to the extent that it would require SDG&E to search its files for matters of public record such as filings, testimony, transcripts, decisions, orders, reports or other information, whether available in the public domain or through FERC or CPUC sources.

8. SDG&E objects generally to each request to the extent that it seeks information or documents that are not in the possession, custody or control of SDG&E.

9. SDG&E objects generally to each request to the extent that the request would impose an undue burden on SDG&E by requiring it to perform studies, analyses or calculations or to create documents that do not currently exist.

10. SDG&E objects generally to each request that calls for information that contains trade secrets, is privileged or otherwise entitled to confidential protection by reference to statutory protection. SDG&E objects to providing such information absent an appropriate protective order.

II. EXPRESS RESERVATIONS

1. No response, objection, limitation or lack thereof, set forth in these responses and objections shall be deemed an admission or representation by SDG&E as to the existence or nonexistence of the requested information or that any such information is relevant or admissible.

2. SDG&E reserves the right to modify or supplement its responses and objections to each request, and the provision of any information pursuant to any request is not a waiver of that right.

3. SDG&E reserves the right to rely, at any time, upon subsequently discovered information.

4. These responses are made solely for the purpose of this proceeding and for no other purpose.

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III. RESPONSES

QUESTION 1

Please provide information requested as it pertains to Electrical Undergrounding Plan (EUP) reliability modeling.

Below are several scenarios for a limited model of Outage Program Risk. For each scenario, please comment on the expected time it would take SDG&E to develop the model and any major concerns with using said model for EUP purposes. For each case, if there is a significant difference in the difficulty of performing the separate, collective, and ablation analyses, please specify which analyses are more difficult and why. If there is a difference at the system and portfolio level for any of the listed scenarios, please explain why. If there are any significant differences in the development of the PSPS (Public Safety Power Shutoff) and Fast Trip models and settings for any scenario, please indicate which cases and explain why.

a. A model that examines a mitigation on a single isolatable circuit segment at a time and computes likelihoods of PSPS/Fast Trip activation and the consequences of PSPS/Fast Trip activation to customers on that segment alone based purely on back casting historical data.
b. The same as (a) but using projected weather/climate factors.
c. A model that examines a single mitigated isolatable circuit segment at a time and computes likelihoods of PSPS/Fast Trip activation being called on that isolatable circuit segment and the consequences of PSPS/Fast Trip activation on that isolatable circuit segment and 'downstream' customers based purely on back casting historical data.
d. The same as (c) but using projected weather/climate factors.
e. Same as (a), but also includes likelihood of the segment being de-energized due to a PSPS/Fast Trip activation event on an upstream circuit segment.
f. Same as (e) but using projected weather/climate factors.
g. Same as (c), but also includes likelihood of the segment being de-energized due to an upstream PSPS/Fast Trip activation event.
h. Same as (g) but using projected weather/climate factors.
i. Same as (e) but also considering all other proposed EUP Projects.
j. Same as (f) but also considering all other proposed EUP Projects.
k. Same as (g) but also considering all other proposed EUP Projects.
l. Same as (h) but also considering all other proposed EUP Projects.
m. A model with similar levels of granularity, specificity, and accuracy as the WDRM (Wildfire Distribution Risk Model)
n. Is there a modeling gap between Scenario (l) and (m)? If so, please explain what factors or features are absent in scenario (l).

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RESPONSE 1

General Statement regarding Question 1: PSPS risk is currently available in the WiNGS Planning model. Adaptation to EUP requirements, specifically the Separate, Collective, and Ablation analyses could present significant difficulties and delay or impede any SB 884 application process depending on interpretation of the guidelines and requirements. As suggested in SDG&E's reply comments addressing the Draft Electrical Undergrounding Plan Guidelines, Section 2.7.5 Core Capability 1: Collective, Separate, and Ablation Analyses could be accommodated via a comprehensive report that could be produced in weeks rather than an extensive model architecture change that could take over a year to complete. Below is an excerpt from the reply comments stated above:

To streamline the reporting for WMP and SB 884, SDG&E requests that the Collective, Separate, and Ablation analyses use a similar framework as Table 1 in Section 1.1.1 of SDG&E's 2025 WMP Update or a format that SDG&E deems appropriate and effective. See the screenshot below as an example:

Table 1: Top 5% Wildfire Risk Circuits/Segments/Spans

Risk Rank	Feeder ID	Segment ID	Wildfire Risk Score	PSPS Risk Score	Wildfire / PSPS Ratio	% of Total Wildfire Risk in Top 5%
1	237	237-30R	7.01E-03	1.25E-04	55.88	9.09%
2	909	909-805R	6.99E-03	6.57E-05	106.30	9.06%
3	222	222-1401R	6.76E-03	1.51E-04	44.85	8.77%
4	524	524-69R	5.36E-03	1.03E-04	52.26	6.95%
5	222	222-1364R	4.57E-03	3.01E-04	15.17	5.93%
6	448	448-11R	3.07E-03	3.53E-04	8.71	3.99%
7	217	217-983R	2.95E-03	4.80E-05	61.41	3.82%

NOTE: Fast Trip models are currently not part of the WiNGS Planning model. Question 1 answers reflect SDG&E's PSPS outage program.

a. Within the WiNGS Planning model, PSPS Likelihood of Risk Event (LoRE) and PSPS Consequence of Risk Event (CoRE) attributes are calculated for a single isolatable segment. Attributes are also available for PSPS LoRE calculated for a single isolatable circuit segment in conjunction with its upstream segments. PSPS CoRE is also available as an attribute for a single isolatable circuit segment in conjunction with its downstream segments. The anticipated time to adapt these variables to SB 884 requirements is expected to take less than 6 months. This timeline is contingent on finalizing the requirements for the Collective, Separate, and Ablation analyses.

b. Projected weather/climate factor standards are still in flux with the CPUC and are expected to be determined in the coming months. Upon adoption of a climate change

scenario, development for the inclusion of the climate change scenario into the PSPS model is expected to take greater than 1 year based on current workloads and priorities. This timeline is contingent on finalizing the requirements for the Collective, Separate, and Ablation analyses.

c. Within the WiNGS Planning model, PSPS LoRE is available as an available for isolatable circuit segments. PSPS CoRE is available as an attribute for isolatable circuit segments in conjunction with their downstream segments. The anticipated time to adapt these variables to SB 884 requirements is expected to take less than 6 months. This timeline is contingent on finalizing the requirements for the Collective, Separate, and Ablation analyses.

d. As stated in Question 1b, projected weather/climate factor standards are still in flux with a CPUC expected in the coming months. Upon adoption of a climate change scenario, development for the inclusion of the climate change scenario into the PSPS model is expected to take greater than 1 year based on current workloads and priorities. This is contingent on finalizing the requirements for the Collective, Separate, and Ablation analyses.

e. PSPS LoRE is available as an attribute calculated for isolatable circuit segments in conjunction with each segment's maximum upstream PSPS likelihood. The estimated time to adapt the WiNGS Planning PSPS model to proposed EUP requirements is expected to take less than 6 months. This is contingent on finalizing the requirements for the Collective, Separate, and Ablation analyses.

f. As stated in Question 1b, projected weather/climate factor standards are still in flux with the CPUC and are expected to be determined in the coming months. Upon adoption of a climate change scenario, development for the inclusion of the climate change scenario into the PSPS model is expected to take greater than 1 year based on current workloads and priorities. This is contingent on finalizing the requirements for the Collective, Separate, and Ablation analyses.

g. The anticipated timeline to complete this requirement is less than 6 months as the described functionality is currently part of the WiNGS Planning model. This timeline is contingent on finalizing the requirements for the Collective, Separate, and Ablation analyses.

h. As stated in Question 1b, projected weather/climate factor standards are still in flux with a CPUC expected in the coming months. Upon adoption of a climate change scenario, development for the inclusion of the climate change scenario into the PSPS model is expected to take greater than 1 year based on current workloads and priorities. This is

contingent on finalizing the requirements for the Collective, Separate, and Ablation analyses.

i. A timeline cannot be speculated at this time. SDG&E does not currently have proposed EUP projects. In the future, we will review EUP projects in conjunction with PSPS models.

j. A timeline cannot be speculated at this time. SDG&E does not currently have proposed EUP projects. In the future, we will review EUP projects in conjunction with PSPS models.

k. A timeline cannot be speculated at this time. SDG&E does not currently have proposed EUP projects. In the future, we will review EUP projects in conjunction with PSPS models.

l. A timeline cannot be speculated at this time. SDG&E does not currently have proposed EUP projects. In the future, we will review EUP projects in conjunction with PSPS models.

m. SDG&E does not use the WDRM. That model is specific to PG&E.

   SDG&E does expect the EUP model to share similar levels of granularity, specificity, and accuracy as the WiNGS Planning model.

n. SDG&E cannot speculate as to a response at this time, due to the fact that we currently do not have EUP projects as well as the current ambiguity in the requirements for the Collective, Separate, and Ablation analyses.

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QUESTION 2

Please provide information requested as applicable as it pertains to Hybrid projects.

a. In PG&E's May 29th, 2024 comments on draft guidelines, PG&E described a "hybrid" approach or "hybrid distribution hardening" as "a circuit segment that is hardened using a combination of covered conductor, undergrounding, and/or line removal with remote grid" ."[1] Please confirm whether or not SDG&E has similar recommended definitions or provide a corresponding SDG&E-specific definition with any changes.
b. Does SDG&E have a similar approach where a circuit segment is hardened using a combination of covered conductor, undergrounding, and/or line removal with remote grid?
c. In SDG&E's aggregation of potential hybrid distribution hardening, is there a definitive list of alternative mitigations that could potentially be included in a designated percentage of non-undergrounding work?
d. If SDG&E currently has or anticipates any "hybrid distribution hardening" projects as defined above, can SDG&E elaborate on how and why a circuit segment would become a hybrid distribution hardening project? Please explain the process of scoping such a project and provide an example that illustrates how and why other mitigations were chosen over undergrounding.
    d1 Is the reason for using an alternate mitigation always due to a better cost/risk performance, a physical limitation (such as a river crossing or granite), a combination of both, or some other factor? Please explain.
    d2 Is there a distinction between how an alternative mitigation will be recorded on the EUP if the alternate mitigation is included because of cost/risk performance versus a physical limitation?
e. Provide a .xlsx document that details undergrounding and "hybrid" projects from a recent workplan(s) covering at least 3 years of planned work. Provide the name of the planning document(s) and the years it covers. For each isolatable circuit segment included in the workplan(s) report information in the table below:

Field Name	Description	Unit/Datatype
Total Circuit Segment Miles	Length of isolatable circuit segment before mitigation	Miles
Total Constructed Miles	Number of miles of new infrastructure to be energized	Miles
Total Miles Undergrounded	Number of miles of underground infrastructure to be energized	Miles
Overhead Removed	Number of miles of overhead line deenergized upon completion	Miles
Covered Conductor Installed	Number of miles of covered conductor to be installed	Miles

[1] 2024 PG&E's Comments on Draft Guidelines page 21

Other Mitigations	Provide brief description of other mitigation efforts or devices installed that are associated with this project	Text
Justification for Alternate Mitigation	Provide brief description for each hybrid project including the reason undergrounding ~~was~~ not used on entire circuit segment and alternate mitigations ~~were~~ chosen (e.g. better cost/risk performance, physical limitations, or any other reasons).	Text
Other Mitigations Miles	Add a field for each alternate mitigation to be used and indicate the number of miles of overhead line it will be applied to or replace	Miles
Total Un-Mitigated Circuit-Miles on Circuit Segment	Number of miles of original, un-mitigated, circuit segment line after completion of project	Miles
Subprojects	Number of total subprojects created within this Project.	Integer
Underground Subprojects	Number of undergrounding subprojects	Integer
Covered Conductor Subprojects	Number of covered conductor subprojects	Integer
Secondary Lines	Will secondary distribution lines be undergrounded as part of this project?	Boolean
Service Lines	Will service lines be undergrounded as part of this project?	Boolean

f. Provide a general cost comparison, per mile replaced, of each individual mitigation option (e.g. underground and covered conductor).
g. For the anticipated projects, how many isolatable circuit segments are typical on a given circuit?
h. Are there instances of projects, in any phase, in which only a portion of the circuit segment is undergrounded without required overhead hardening work or wildfire mitigation improvements on the remainder of the overhead section(s) of the circuit segment?
i. Does SDG&E believe seeking rate recovery through an alternate regulatory process, such as the GRC, for non-undergrounded portions would affect an undergrounding project? If so, please provide specific details and examples on how seeking rate recovery through an alternate regulatory process, such as the GRC, for non-undergrounded portions would affect an undergrounding project. Is there a potential for construction delays, and if so, how long would these delays last? Are there scenarios where SDG&E would have to return to a circuit segment to construct overhead hardening portions separately?

RESPONSE 2

a. SDG&E's model does not include projects with multiple mitigations. The WiNGS Planning model proposes a single grid hardening mitigation for each isolatable circuit segment.

   During the scoping phase of a project, a desktop feasibility study is conducted to examine in detail the environmental and logistical limitations for mitigations proposed by the WiNGS Planning model. For instance, if a proposed undergrounding mitigation proves to be too costly for particular sections of a segment, then SDG&E may evaluate an alternative mitigation strategy (including but not limited to covered conductor, line removal, or additional sectionalizing depending on engineering and SME recommendations) for those areas. In addition to being an uncommon occurrence, instances of dual mitigation in SDG&E's SUG program (to the extent they exist) are typically a small percentage of the total circuit segment.

b. SDG&E proposes to harden individual circuit segments with a single mitigation type. See Response to 2.A.

c. Given the engineering considerations in question, a "definitive list" would include every possible line configuration that provides any wildfire risk reduction over an unmitigated line configuration. Such a list has not been prepared for this purpose at this time.

d. In the scoping stages, SDG&E does not propose to configure any project as a "hybrid" approach as defined in Q2.a unless the desktop feasibility study yields definitive results that indicate that a single mitigation type is not possible. Changes from the WiNGS Planning Model recommendation and initial scoping documentation are typically expected only after survey and initial designs are completed. As stated above, in cases where undergrounding mitigation proves infeasible or inefficient for particular sections of the segment, SDG&E will evaluate an alternative mitigation strategy for these problematic areas.

d.1. Use of an alternative mitigation strategy for a portion of a segment can be driven by a variety of factors including cost-effectiveness, physical limitations, land rights or easement issues, and others.

d.2. See Above.

e. Please see attached spreadsheet titled "SDGE Response OEIS-EUP-24-05.xlsx." Please note that SDG&E has not had any "hybrid" projects, as explained in SDG&E's response to 2a above. Accordingly, this spreadsheet only includes 100% undergrounding projects.

f. Undergrounding: $2.3 M

   Covered Conductor: $1.5M

   Remote Grid: Cost is per-site, and SDG&E has not yet deployed such a system and has therefore not determined a cost per mile of mitigation caused by the use of this system.

g. The number of isolated circuit segments is determined by the position of sectionalizing equipment and the number of customer meters in the physical geography of the service territory.

h. Yes

i. SDG&E aims to scope work appropriately to be both cost efficient and avoid delays where possible and would aim to continue to use a scoping process to stay on track taking into account applicable regulatory processes. At this time, SDG&E cannot speculate how a dual process might impact our efforts.

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QUESTION 3

Please provide information requested as it pertains to SDG&E-designated 'subprojects.'

a. PG&E defines subproject as the product of dividing a circuit segment that has passed Screen 3 (Project Risk Analysis) into smaller projects for construction. Does SDG&E have a similar definition of "subproject" or use a similar convention with a different name? Please describe how SDG&E employs the use of "subprojects" or any similar concept. If a different name is used, please define it.
b. When a circuit segment is scoped for an underground project and broken down into smaller sections. Do those smaller sections, or subprojects, receive a unique identifier? If so, please describe the details of that tracking system.
c. For the purposes of this program, is there a requirement that every sub-project consists of line undergrounding or an alternate mitigation? Is it possible that a subproject would only include line maintenance, equipment replacement, or other line improvements that may not, by themselves, be considered a wildfire mitigation alternative?
d. Would all undergrounding work within a project, one isolatable circuit segment, be consolidated into a single subproject, or could there be multiple undergrounding subprojects within a single circuit segment?
e. Would a subproject always consist of one contiguous line segment, or could a subproject include multiple, disconnected sections? For example, could one subproject consist of covered conductor installation on miles 2-3, and miles 6-7 of a circuit segment?
f. In an underground project which has a continuous section to be undergrounded, would it be likely (or even possible) that this continuous undergrounded section would be broken into subproject(s)? If so, is there a minimum or maximum length of the subproject?
g. In a "hybrid distribution hardening" project," which has discontinuous sections to be undergrounded, would each of the discontinuous undergrounded portions always be recorded as a separate subproject?
h. Would there be cases where "hybrid distribution hardening" subprojects would be created? For example, could one subproject have 4 miles of undergrounding and 1 mile of covered conductor on a 10-mile circuit? Alternatively, would this hypothetical project be split into multiple subprojects based on mitigation type?
i. Provide details on how risk apportioning is handled for a project with multiple mitigation types. Is the apportionment assigned before or after normalization? Does SDG&E combine the risk reduction and reliability improvements for each mitigation separately from each other? Can SDG&E provide normalized values per mile for each mitigation before blending into overall circuit segment values?
j. Does SDG&E anticipate any problems with reporting the subprojects with respect to the Cost-Benefit Analysis defined through CPUC proceeding R.20-07-013?

RESPONSE 3

a. SDG&E creates "Projects" within each circuit segment that is proposed in the new-to-be-installed configuration. Each such "Project" has a unique name, which is recorded in the Project ID. For example, a potential project is named "ESH C0222 B SUG" where ESH indicates the program management organization within SDG&E, C0222 indicates the circuit, B indicates the new isolatable segment, and SUG indicates the program, in this case Strategic Undergrounding.

b. Yes. These sections are identified by Circuit Number plus Letters indicating the new isolatable segment that will be created in the underground configuration. This information is called the Project ID, and is recorded in SDG&E's Systems of Record. This Project ID is correlated to a single unique project number in SDG&E's SAP system.

c. For the Purposes of the Strategic Undergrounding Program, every project must consist of line undergrounding or an alternative mitigation of similar scope. A subproject cannot consist of only maintenance or repair or other, non-mitigation improvements.

d. Typically, a single isolatable segment is planned, designed, and constructed as a single project, but there may be exceptions where a single project is constructed as one or more phases due to non-engineering project constraints such as land rights acquisition.

   These divisions are designated by the addition of a phase number after the segment letter. For example, a single isolatable segment called ESH C0220 U SUG was contracted for construction as ESH C0220 U SUG and ESH C0220 U2 SUG due to a land rights concern.

e. Both configurations are possible and regularly employed. The decision to configure projects in this manner is related to the positioning of sectionalizing equipment, location of customer meters, and other non-engineering factors.

f. It is likely that a continuous section will be broken into several projects. While there is not an explicit minimum or maximum, the total length of segments planned as individual projects is governed by the position of sectionalizing equipment based on SDG&E's engineering standards, schedule for the engineering and construction effort, and facility of contracting for construction.

g. No. The decision to group discontinuous sections as one subproject is determined by the position of sectionalizing equipment.

h. No. SDG&E would make individual subprojects based on the mitigation type. It is possible that there is a limited amount of work on an alternative mitigation type in order to facilitate connection to the next segment.

i. To the extent that this question is asking about apportioning for projects with multiple mitigation types, SDG&E's model does not include projects with multiple mitigations of this kind. SDG&E proposes a single mitigation for each isolatable circuit segment. See SDG&E's Responses to Question 2 for additional information.

j. SDG&E currently quantifies risk at the circuit segment level. The circuit segment risk is then used to prioritize construction projects, which are subsequently broken into different job packages. There are no risk scores quantified at the job package level as these groupings are designated in the design process after risk is quantified.

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QUESTION 4

Please provide information requested as it pertains to SDG&E project and sub-project IDs.

a. Suppose an isolatable circuit segment currently has an undergrounding project planned for development on it. If this isolatable circuit segment is modified, for example by installation of a new device which splits it into multiple isolatable circuit segments, how does SDG&E track the ~~P~~project which previously was slated for installation?
    a1 Does the project become split into multiple new projects?
    a2 Do the subprojects inside that isolatable circuit segment get renamed, redeveloped, reassigned, or otherwise changed?
    a3 How would the above change if an Isolatable Circuit Segment was modified in some other substantial way, e.g. by new construction, removal of a recloser, or substantial restructuring of the Isolatable Circuit Segment?
b. Does completing an undergrounding project ever cause a change to the underlying isolatable circuit segment, i.e. change the customers and/or general geographic area served by the Isolatable Circuit Segment, either by splitting the isolatable circuit segment into multiple new isolatable circuit segments or by otherwise changing the topology?
    b1 If so, how frequently does this cause a change of this type, e.g. every time, most times, rarely, never? What factors affect the likelihood of this type of change?
    b2 Do the answers to either of the questions in c1 change when we distinguish between fully undergrounding (100% UG), “hybrid” projects (>80% UG), and other projects (<80% UG)?

RESPONSE 4

a. In the event that this hypothetical situation occurred, where an isolatable segment was further divided by the installation of new sectionalizing equipment that causes the segment to be further divided into multiple isolatable segments, SDG&E would identify the newly created segment in the same manner as if the sectionalization had occurred at any other time.

a.1. The section closest to the source point for that circuit retains the original designation, and the subsequent (new) sections are identified (Named) in accordance with SDG&E's naming convention.

a.2. See above.

a.3. If substantial changes occur to an Isolatable Circuit Segment such that the Segment is no longer consistent with the original configuration proposed for undergrounding, SDG&E would reconsider the Segment, and, if warranted, further divide or combine that Segment and other adjacent Segments appropriately to the physical configuration of the devices either present or to be installed.

b. Yes, conversion to underground regularly changes the geographic position of the facilities and sectionalizing equipment.

b.1. This type of change occurs on most, but not all, undergrounding projects. Factors include design considerations and land rights acquisition, including positioning of facilities so that underground facilities are located in roadways and drivable areas for maintenance and inspections (where overhead facilities can be located in remote locations subject to aerial access).

b.2. No. Please see SDG&E's Responses to Question 2 for additional information on hybrid projects.

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END OF REQUEST