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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.

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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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The following questions are being asked of all three major IOUs and are an attempt to provide insight into the relationship between utility risk prioritization and "risk-spend efficiencies". They are constructed in a manner intended to minimize burden, but nevertheless may require certain calculations be re-run with selected or filtered data. While adherence to the "three-day" response time is applicable to this phase of the proceeding, MGRA is willing to provide clarification and discuss technical issues, potentially including alternative proposals.

III. RESPONSES

QUESTION 1:

Does your utility rank individual circuits in the HFTD in terms of wildfire ignition risks?

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 1:

Yes, SDG&E has historically used its Wildfire Risk Reduction Model (WRRM) to prioritize circuits based on their wildfire ignition risk. In addition to that, SDG&E is currently working on updating its methodologies to further enhance the granularity of the assessments and update inputs and methods of calculating risk.

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QUESTION 2:

Does your utility use a wildfire risk ranking to prioritize circuits in the HFTD for remediation and improvements, and if so, which measures (hardening, enhanced vegetation management, etc.)?

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 2:

Yes, as mentioned in response to Question 1 above, SDG&E has historically used WRRM and its data components to prioritize circuits for remediation and improvements. WRRM was first used to establish a prioritized list of hardening activities for FiRM by identifying and targeting the assets with the highest failure rates. More recently, WRRM data was used to develop a prioritized list of circuits to guide the fuels management work. As mentioned above, methodologies for circuit prioritizations are currently evolving and will be further refined to support more use cases to make operational and investment decisions in the future.

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QUESTION 3:

Does your utility track multiple wildfire risk prioritizations per circuit, broken into individual risk, or calculate an aggregate risk score?

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 3:

The WRRM model calculates risk scores at the asset level but is also utilized to aggregate risk calculations to a circuit level.

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The following questions assume that a circuit risk ranking (or rankings) is in place. If your utility does not prioritize circuit remediation based on risk, no response is necessary and you can move to the next section.

QUESTION 4:

Please provide a tabular listing of HFTD circuits in descending order of internal risk ranking, with the highest risk circuit listed first. If there is a numerical risk score associated with each circuit, include it as a second column. In the event that multiple internal risk scores are used by utilities to prioritize remediation of different wildfire risks independently, please provide additional tables showing the HFTD circuits sorted in descending order of risk for each applicable risk metric and include applicable score as a second column.

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 4:

SDG&E uses two tools to calculate risk and create circuit rankings: the WRRM model and the WRRM Ops model. The WRRM model looked at a plausible worst case scenario of a Santa Ana wind condition for every circuit to develop the risk ranking. This output was utilized by the FiRM program (and now by the PSPS mitigation engineering team) to develop a circuit priority for planning purposes. Attached is the most updated version of the model output.

Circuit Ranking for 2018-2021				
Circuits	Risk Number	Rank		
440	4.5	1		
1215	5.8	2		
449	6.5	3		
442	7.95	4		
444	11.6	5		
211	11.85	6		
73	12.9	7		
909	13.1	8		
441	15.15	9		
210	15.25	10		
75	15.8	11		
240	16.8	12		
974	17.4	13		

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Circuit Ranking for 2018-2021				
Circuits	Risk Number	Rank		
236	17.4	14		
220	17.4	15		
907	18.75	16		
1166	19.65	17		
239	20.3	18		
1250	20.95	19		
357	21.05	20		
351	21.25	21		
356	22.25	22		
524	22.35	23		
182	22.8	24		
411	23	25		
233	23.9	26		
599	24.15	27		
231	24.8	28		
354	25.25	29		
205	25.6	30		
RB1	26	31		
788	26.75	32		
1234	27.15	33		
1235	27.55	34		
260	29.15	35		
209	29.7	36		
204	30.05	37		
859	30.2	38		
504	30.9	39		
234	31.85	40		
522	32.55	41		
206	32.7	42		
246	35.25	43		
283	35.85	44		
243	36.3	45		
300	39.15	46		
244	39.45	47		
198	40.2	48		
591	43.05	49		
202	44	50		

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Continuing, the following questions will require a recalculation of risk scores and risk-spend efficiencies as listed in Table 21-26 for two sets of data: Set 1: Calculation is limited to using only 50% of the HFTD circuits having the HIGHEST internal risk ranking. Set 2: Calculation is limited to using only 50% of the HFTD circuits having the LOWEST internal risk ranking. In the event that different internal circuit risk rankings are used to prioritize different remediations, apply the above using the ranking most applicable to the Initiative Activity (Column 1).

QUESTION 5:

Provide a table with recalculated risk scores and risk spend efficiencies (Table columns I and J), including only HFTD circuits having the HIGHEST internal risk ranking (Set 1) for the following Initiative Activities:

- Table 23 17-1. Updates to grid topology to minimize risk of ignition in HFTDs System Hardening, Distribution
- Table 23 17-2. Updates to grid topology to minimize risk of ignition in HFTDs Surge Arrestor, Distribution
- Table 25 15. Remediation of at-risk species Enhanced Vegetation Management
- Table 26 5-1 PSPS events and mitigation of PSPS impacts Distribution

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9.

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QUESTION 6:

Provide a table with recalculated risk scores and risk spend efficiencies (Table columns I and J), including only HFTD circuits having the LOWEST internal risk ranking (Set 2) for the following Initiative Activities:

- Table 23 17-1. Updates to grid topology to minimize risk of ignition in HFTDs System Hardening, Distribution
- Table 23 17-2. Updates to grid topology to minimize risk of ignition in HFTDs Surge Arrestor, Distribution
- Table 25 15. Remediation of at-risk species Enhanced Vegetation Management
- Table 26 5-1 PSPS events and mitigation of PSPS impacts Distribution

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9.

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QUESTION 7:

Table 10 contains 95th and 99th percentile wind conditions, defined as circuit mile days with wind gusts over the specified percentile. Please describe in some detail how these numbers are derived. For instance, in your analysis, do you calculate:

- circuit miles for wind speeds above the Xth percentile on that particular circuit given wind speeds at nearest weather station using data from that weather station, or
- circuit miles when wind speeds at the nearest weather station exceed the Xth percentile over the entire wind speed history of the entire weather station network, or
- some other method to calculate the circuit mile days?

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 7:

The percentiles used in Table 10 of SDG&E's 2020 WMP were calculated using data from Santa Ana wind events through the entire period of record for each weather station. To arrive at the final numbers in Table 10, the peak wind gusts for every Santa Ana wind day from 2015-2019 were obtained. From there, an analysis was done to determine whether the 95th and 99th percentiles were reached. Since each weather station is associated with nearby circuit segments, the line miles of each segment were calculated, then summed if the 95th and 99th wind gust thresholds were reached.

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QUESTION 8:

Have known instances of "fault induced conductor slap" (FICS) been observed? If so, provide a table of incidents, including circuits and locations.

Reference: https://wildfiremitigation.tees.tamus.edu/faqs/how-power-lines-cause-wildfires

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 8:

SDG&E does not have information responsive to this request.

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QUESTION 9:

Have instances of near-simultaneous faults occurred on circuit segments up to a few miles apart within the past 5 years? If so, provide a table of incidents, including dates, circuits, locations, ID of nearest weather station, and wind speed at nearest weather station for each of the faults. Also include a column for any remedial actions taken afterwards.

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 9:

SDG&E does not have information responsive to this request.

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QUESTION 10:

With regard to Table 11, in 2019 SDG&E's ignitions as a result of conductor contacts dropped by approximately 4-fold over previous years. What corrective measures or changes to data collection criteria account for this drop?

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 10:

After studying the data, it is difficult to say what accounts for the significant drop in 2019 ignitions caused by foreign objects in line contacts. SDG&E saw 538 foreign object in line contacts in 2019, which is above the five year average of 501 contacts, but that only led to 4 ignitions, well below the average of 12.8. What this points to is a substantially lower ignition rate of .74% versus the average of 2.65%, which we would typically credit to enhancements in system protection, and our systems ability to detect and isolate faults quickly in order to reduce the heat generated by the fault, reducing the chance that fault becomes an ignition. However, SDG&E has had similar protection schemes in place since 2017, and it had not seen that type of significant decline before, and the same dramatic drop is not present in the equipment related ignition probability, which involve the same protection systems. In sum, SDG&E is unsure of the specific cause. SDG&E, however, believes that its protection initiatives will continue a long-term trend of reducing the ignition probability over time.

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QUESTION 11:

With regard to Table 12, please provide an updated table using number of PSPS inducing weather events rather than individual circuit de-energization decisions. This will ensure that data is more comparable to that provided by PG&E and SCE.

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 11:

Please see the updated version of WMP Table 12 below that changes circuit de-energization decisions to the total PSPS events. Please note that this table was updated by SDG&E in response to Wildfire Safety Division Data Request #1 on March 2, 2020.

PSPS characteristic	2015	2016	2017	2018	2019
Frequency of PSPS events (total)	0	0	5	5	4
Frequency of PSPS events (normalized)	0	0	0.0001	0.0001	0.0001
Scope of PSPS events (total)	0	0	230	295	177
Scope of PSPS events (normalized)	0	0	0.0020	0.0048	0.0042
Duration of PSPS events (total)	0	0	744,542	1,061,637	1,325,490
Duration of PSPS events (normalized)	0	0	7	17	30

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QUESTION 12:

With regard to the FPI Weather Component shown on page 22 of SDG&E's WMP, please confirm whether this table is in error, and if so whether this error represents a misprint in the table or a miscalculation of the FPI itself. The table's y axis represents dewpoint. In meteorology, the lower the dew point the lower the absolute humidity. However the table indicates that higher dewpoints are associated with higher fire risk. Note: If the table is in error and SDG&E submits an errata to WSD and parties, that would constitute a response to this data request.

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 12:

The table's y-axis represents dewpoint depression. The dewpoint depression is the difference between the temperature and the dewpoint temperature. An updated table is included below with the updated labeling. SDG&E will inform Wildfire Safety Division and parties of this errata in its WMP weekly update email and will coordinate with the Wildfire Safety Division on when to formally incorporate this updated table into its WMP.

Dewpoint Depression/ Wind	≤5 knots	6 to 10	11 to 16	17 to 22	23 to 28	≥29 knots
≥50ºF	4	4	4	5	5	6
40ºF to 49ºF	3	3	4	4	5	5
30ºF to 39ºF	3	3	3	4	4	5
20ºF to 29ºF	3	3	3	3	3	4
10ºF to 19ºF	2	2	2	2	2	3
<10ºF	0	1	1	1	1	2

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On pp. 22-23 of its WMP, SDG&E states that: "In 2020, SDG&E plans to operationalize and release an enhanced version of the FPI which further leverages the analytical capabilities of its high performing computing cluster, incorporating artificial intelligence into the Live Fuel Moisture Model and adding additional spatial and temporal resolution to the weather components."

QUESTION 13:

Please provide a technical description of SDG&E's planned new FPI, including how it differs from the existing FPI, especially in terms of the algorithms used.

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 13:

The algorithm to calculate SDG&E's FPI is not changing. The improvements to the FPI stem from how SDG&E generates the data inputs for the FPI. Historically, the weather inputs for the FPI were based upon point forecasts for a certain location across the service territory such as Ramona or Campo. The upgraded version will take a spatial average of forecast weather conditions across the impacted region forecast from our forecast models. This will generate higher quality forecast data inputs, ultimately giving SDG&E's meteorologists higher quality data to analyze while determining their FPI forecast.

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QUESTION 14:

Will the new FPI results use the same scale as the existing FPI so that the results are comparable?

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 14:

As discussed in the response to Question 13 above, the higher quality data inputs will not adjust the algorithm or the scale of the existing FPI.

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QUESTION 15:

Has SDG&E backtested the new FPI against the current FPI yet? If so please provide the results of this benchmark testing.

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 15:

As discussed in the response to Questions 13 and 14 above, since there will be no change to the algorithm or the rating of the FPI, no additional backtesting is necessary or has been conducted.

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QUESTION 16:

With regard to Table 1-1, are the "detailed" and "patrolled" normalizations per mile inspected or do they apply to the entire HFTD?

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 16:

With regard to the first set of data titled "Issues in HFTD/HFTD Circuit miles in 2019", the data provided shows the number of type 1, 2 or 3 issues found on transmission or distribution assets (both overhead and underground) divided by the total circuit mileage (both overhead and underground) within the HFTD (or FTZ for years before the HFTD was created).

The second set of data within the same row but titled "Issues/Total Circuit miles in 2019" for example provides the total number of type 1, 2 or 3 issues found on assets throughout the entire system divided by the total system miles.

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QUESTION 17:

With regard to Table 1-1, SDG&E saw a 10X drop in transmission Level 2 defects from 2016 to 2017. Please provide an explanation.

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 17:

For clarification, it is assumed that this question is regarding the lower quantity of level 2 findings in 2016 and 2017 as opposed to the decrease in findings from 2016 to 2017 as stated in the question, since the quantity of findings between 2016 and 2017 are similar. In response to this clarification, the majority of the Level 2 findings are from the Type 2 inspections which represent detailed inspections. These detailed inspections are performed on every structure on a three-year cycle, so approximately 1/3 of all transmission structures have a detailed inspection completed on them each year. With this schedule, the quantity of findings will be highly dependent on the tielines patrolled that year due to factors associated with the tielines inspected. The age of the structures, hardware, conductor, and components will be a factor in the quantity of findings. Structures and hardware that have been replaced through wood-to-steel programs, tieline reconductor projects, insulator replacement programs, and single structure replacements through Corrective Maintenance programs will utilize new structures and hardware and will be subject to a complete field QA/QC inspection. If a tieline is on the schedule for a detailed inspection the subsequent year, the new structures and hardware used in construction in conjunction with the QA/QC inspection will result in minimal detailed inspection findings on that tieline. In addition, the geographic location of the structure and tieline will play a role in the quantity of findings. For example, locations close to the coast will be more susceptible to corrosion, so rusted components will be more in coastal, salt-rich environments in comparison to more inland locations.

Regarding Type 1, level 2 findings, it can be noted from the complete transmission system statistic (Issues/Total Circuit Miles) that the number of findings has a downward trend. For the FTZ or HFTD statistics, due to the low quantity of findings, minor variations in the number of findings will have an impact on these statistics. Type 3, level 2 findings for other inspections are similar, with the low quantity of findings having an impact on statistics. In addition, for Type 3 inspections, SDG&E has updated its structure light monitoring program through the addition of digital monitoring. This results in a decrease in the number of special patrols related to light monitoring which is one reason for a decrease in Type 3 findings.

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QUESTION 18:

With regard to Table 3, are the units used for FPI and RFW days or simply units?

OBJECTION:

SDG&E objects to this request on the grounds set forth in General Objection Nos. 2, 5, and 9. Subject to the foregoing objections, SDG&E responds as follows.

RESPONSE 18:

These units are not normalized, but simply the number of x as described in the row, take vegetation caused ignitions for example, that occurred on days with an elevated or greater FPI or a red flag warning days. Keep in mind that every red flag warning day is also an elevated or higher FPI day, so the elevated or higher FPI data is inclusive of the red flag warning day data.