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, or where the burden, expense, or intrusiveness of the request clearly outweighs the likelihood that the information sought will 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 or non-disclosure agreement, unless such information is so highly market sensitive that it would create a risk of competitive and financial harm to SDG&E, and where that information can otherwise be obtained without disclosure.

11.   SDG&E objects to any request that states that it is ongoing or that requires subsequent, supplemental information.

12.   SDG&E objects to any requests that purports to require SDG&E to provide information or produce documents on behalf of third parties, including for "affiliates," "parents," "successors," "predecessors," or "assigns" or other entities not under the control of SDG&E.

13.   SDG&E objects to the instructions to the extent it purports to require SDG&E to identify responsible individual(s) when the work product belongs to SDG&E.

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.

III.   OBJECTIONS TO INSTRUCTIONS

1.   SDG&E objects to the instructions to the extent it purports to require the individual(s) responsible for providing the response and/or designate the proper witness to cross-examine concerning the response. The responses reflect SDG&E's responses as a Company to the requests and not the work of any one individual.

2.   SDG&E objects to the instructions to the extent that it states that the requests are ongoing in nature or require subsequent, supplemental information

Subject to the foregoing general objections and express reservations, SDG&E responds as follows:

1. On Page 35 of Exhibit (Ex.) SDG&E-05, SDG&E stated that:

SDG&E's wildfire risk model results in a 1-in-20-year event, or a 5 percent annual probability of a potential $1.7 billion financial loss…. To estimate the point in which any incremental wildfire liability will exceed the Company's present insurance coverage of $1.5 billion, SDG&E's wildfire risk model results in a 5.33 percent probability in any given year of a $1.5 billion or greater financial loss. The average of the scenarios where potential wildfire liabilities exceeds the present insurance coverage results in an approximate average loss of $3.68 billion for these scenarios.

a. Please provide the risk analysis and calculations supporting the probabilities and estimated financial losses asserted in the quote above.

b. Please explain—in words and in formulae—the theory behind the SDG&E's wildfire risk model supporting the estimated risks of wildfire above.

c. Please provide the abovementioned SDG&E's wildfire risk model, the relevant inputs which produced the abovementioned outputs of probabilities and estimated financial losses.

d. Please identify the person or persons who developed the SDG&E's wildfire risk model and provide their qualifications, including resumes and curriculum vitae.

e. Explain in full and complete detail how SDG&E validated the wildfire risk assessment model, including what historical data SDG&E was used for said verification.

   i   Provide all workpapers, models, and similar information used to validate the wildfire risk assessment model.

f. Explain in full and complete detail how SDG&E determined that the wildfire risk assessment model can predict the frequency and consequences of wildfires as stated in SDG&E-05?

   i   Please provide the documentation showing the validation and the tested predictive capability of the wildfire risk model.

   ii   Please identify the personnel who validated SDG&E's wildfire risk model and/or test its predictive power and provide their qualifications, including resumes and curriculum vitae.

SDG&E Response 1:

a) **Objections:** SDG&E objects to this request on the grounds set forth in General Objections Nos. 2, and 3. Subject to the foregoing objections, SDG&E responds as follows.

The risk analysis was performed using Microsoft Excel and @Risk software. This is consistent with the risk modeling performed for other significant risks at SDG&E. As part of the risk analysis, Monte Carlo simulations were used in two stages – the first to estimate the likelihood of a major fire, and the second to estimate the consequence of a major fire. Wildfire risk is based on rare events due to coincidental phenomenon or a multitude of factors (e.g. wind, dryness, impact to equipment and vegetation, availability of fire suppression resources, etc.), which make it more challenging to predict and requires one to think of the chance of a wildfire in terms of probabilities and ranges of possible outcomes. A large amount of uncertainty prevents predicting with complete confidence when such a phenomenon will coincide in the future.

Given these constraints, a brief outline of the methodology is as follows. A series of probability distributions were identified and used to help forecast the likelihood of a major fire occurring in a given year. Because SDG&E considers its wildfire risk to be continually evolving, the modelling focuses on current situations, rather than the future. The probability of such an event occurring in the future could be impacted by further wildfire mitigation efforts and/or other factors. The distributions were created by considering historical facts, then enhancing that data with current situational information, such as impacts from climate change, impact from system hardening and operational work that SDG&E has performed, the amount of fuel in fire areas, the amount of exposure to SDG&E equipment, and added uncertainty. The distribution gives a range of possible likelihoods of major fires. One reason why Monte Carlo simulations are used is because they can illuminate the amount of uncertainty and the range of outcomes associated with that uncertainty. A series of 10,000 values were created using the above method. The average of the entire distribution indicates, for next year, the likelihood of a major fire from an ignition associated to SDG&E equipment to be about 6%.

Similarly, a probability distribution was identified to represent the consequences of different sized fires, if one were to occur. This distribution type is known as Gamma in @Risk. The parameters of the Gamma distribution were chosen to approximate the damage from the 2007 San Diego fires, adjusted for inflation. The 95th percentile of the consequence distribution is approximately $5 billion. This means that 95 percent of fires will have a financial consequence of less than $5 billion, with 5% have a financial consequence of more than $5 billion.

The risk analysis combined the two modeling outputs (likelihood and consequence) by traversing the list of 10,000 likelihood probabilities one at a time. Each time a likelihood

value was drawn, a random number was then created to test if a major fire occurred. For example, assume Year 1 had a likelihood value of 0.05. A random number between 0 and 1 was created in Microsoft Excel, and that random number was then compared to 0.05. If the random number was less than 0.05 the analysis assumed at least one major fire occurred in that year. Another probability distribution was then utilized to determine how many major fires occurred that year. The math to determine the number of major fires in that year is max(1, poisson(1)). For each major fire that occurred in that year in accordance with the modeling, a new random number from 0 to 1 was created and used to sample from the consequence distribution. When the random number is closer to 0 than 1, the amount of financial consequence would be a lower value, and vice versa. As an illustration, if the number 0.5 was created, the consequence would have been $2.1 billion.

The risk analysis performed that logic 10,000 times, tracking the consequence results each year. In other words, the risk modeling ran 10,000 simulations asking: (1) did a fire occur, yes or no; and (2) if yes, how large of an impact did that fire have (i.e., what was the consequence). Over 90% of the years had a consequence of 0. The list of 10,000 pieces of data can then be used to perform various statistical summaries such as averages, medians, and all the results posed in the question above.

b) **Objections:** SDG&E objects to this request on the grounds set forth in General Objections Nos. 2, and 3. Subject to the foregoing objections, SDG&E responds as follows.

Please refer to the response to a) above.

c) **Objections:** SDG&E objects to this request on the grounds set forth in General Objections Nos. 2, 3, and 10. Subject to the foregoing objections, SDG&E responds as follows.

Please refer to the response to a) above.

d) **Objections:** SDG&E objects to this request on the grounds set forth in General Objections Nos. 5 and 13. Subject to the foregoing objections, SDG&E responds as follows.

SDG&E's wildfire risk assessment model is a model crafted by SDG&E. The primary personnel performing the risk analysis were the Quantitative Risk & Controls Manager, a Senior Risk Analyst, and the Fire Program Manager. The analysis was also reviewed by others, including the Director of Fire Science & Climate Adaptation and representatives from the Legal department. Concentric Energy Advisors utilized the results of that model to analyze risks to investors.

e) **Objections:** SDG&E objects to this request on the grounds set forth in General
Objections Nos. 2, 3,4, and 10. Subject to the foregoing objections, SDG&E responds as
follows.

Consistent with the objections above, the term "validation," is vague, ambiguous and
requires a legal conclusion. All complex models contain some margin of error. Rather
than attempting to consider if they are "valid," a model should be considered for its
"usefulness" and, to a lesser extent, the amount of identifiable error they have. A useful
model is one that assists in decision-making, helps lead to further analysis, identifies
missing data, raises questions, and so on. The wildfire risk assessment model meets these
goals for the reasons listed below.

SDG&E created the model, consistent with guidance from the CPUC, to help understand
the range of uncertainty involved in a complex and dynamic situation. It recognizes that
the limitations inherent in that approach. The model's horizon is limited to the present.
In other words, SDG&E specifically built the risk model to analyze the wildfire risk for
only the present year; under the assumption that the model will evolve and potentially be
updated in the future. Future enhancements will take into account such things as new
data, updated fire science research, completion of wildfire risk mitigation programs, more
mature climatological studies, and other improvements. The uncertainty in the model
might be considered significant, as discussed in the response to a) above. Although,
according to the modeling results, the average likelihood of a major wildfire in 2019 is
6%, the 90% confidence interval of likelihoods ranges from 2.8% to 10.5%.

Next, determining the amount of identifiable error is difficult with rare events. Error
testing can occur in several ways, but can be summarized in one of three ways: a) at the
end of the relevant time period, observing the difference predicted and actual events; b)
during the relevant time period, observing if events occur at a rate statistically more or
less frequent than the model predicted; and c) by establishing highly correlated proxies
that assist in detecting the error. For a), because the model is only considered an estimate
for the current year, SDG&E needs to wait for the year to complete a review. But even
then, a wildfire occurring this year wouldn't invalidate the model; as the model predicts
up to a 10% chance this year. For b), as of the end of June 2019, there is no sign yet that
the frequency of wildfires exceeds a reasonable statistical outcome prior to the passing of
the full year. For c), identifying proxies to estimate model error is difficult because the
inputs into wildfire typically require many phenomena to occur simultaneously. There is
no generally accepted proxy for a large wildfire that will help estimate error in the
models. Currently, many parties are attempting to collect metrics to help identify
proxies, but to this date, the answers remain unsatisfactory for model calibration and
largely rely on post-event results rather than triggers/predictors to them.

In short, SDG&E calibrated the model to try to ensure that it matched available data and
accepted theories regarding wildfire. SDG&E believes that its wildfire risk model is a

reasonable approach, given the rarity of the event, the uncertainty of the elements involved, and the purpose for which it was built.

f) **Objections:** SDG&E objects to this request on the grounds set forth in General Objections Nos. 2, 3, 10, and 13. Subject to the foregoing objections, SDG&E responds as follows.

With respect to "frequency," a brief overview of calibration is necessary to consider if the results are too low or too high, and to make adjustments. Concerning likelihood, no major fire has been associated to SDG&E equipment since 2007; a nearly 11-year period. SDG&E has made major strides in the prevention of major wildfires associated to its equipment since 2007, with further improvements each year. To consider if the likelihood estimate is too low, one can observe that recent fire history does not support a value significantly larger than the range given above (confidence interval between 2.8% and 10.5%), especially considering that SDG&E has been lowering wildfire risk during that 11 years. In the case of the model overestimating likelihood, it is possible that, with a large enough passage of time, it may be determined the actual value turns out to be less frequent than a 6% likelihood would imply. But that analysis cannot be performed until time has passed and would need to account for different future models as they are updated with new information.

Concerning "consequence," SDG&E considered if the values used were appropriate. Historical fires in San Diego county suggest that the financial consequence can exceed a few billion dollars. The consequences are not set too high because SDG&E has been associated to wildfires that have occurred in the 90% confidence interval. In addition, certain catastrophic fires across California in recent years had financial consequence that were well beyond that amount. For example, fires, such as Tubbs and Camp fires, burned not only the interface between wildland and community, but also entire communities.

That said, SDG&E does not believe the consequence level is too low because SDG&E has analyzed recent high consequence fires and believes that the financial consequences for several of them exceed what would be a likely outcome in SDG&E's service territory. This determination is based upon a review of the conditions present for each of those fires. It is SDG&E's opinion that recent fires, such as Tubbs and Camp, were as destructive as they were primarily due to the type of (older) home construction for affected homes, and because of those homes' proximity to overhanging vegetation.

Those characteristics in other parts of California differ in important ways from SDG&E's service territory. Of particular note, in SDG&E service territory there is a lack of large communities – specifically of older construction – directly adjacent or within forested land. For instance, the largest communities in SDG&E's service territory where homes are adjacent to a forest canopy have less than a tenth of the number of homes as the town of Paradise.

Accordingly, SDG&E believes the consequence values in its risk modeling are appropriate, and accurately capture the countervailing dynamics at play. It, on the one hand, reflects the large consequence from all wildfires in California over the past 30 years, while being consistent with the fact that the most destructive fires would be unlikely to occur in San Diego or Orange counties.

2. On Page 36 of Ex. SDG&E-05, SDG&E discussed the losses an investor can expect given the probability of wildfire liabilities at the levels stated on Page 35 of Ex. SDG&E-05.

   a. What was the **total recorded** SDG&E's wildfire liabilities from the 2007 wildfires (e.g. Witch, Guejito, and Rice fires, etc.), in 2019 dollars?

   b. What was the **recorded** cost of SDG&E's wildfire liability borne by shareholders related to the 2007 wildfires (e.g. Witch, Guejito, and Rice fires, etc.), in 2019 dollars?

   c. What is the **total estimated annual** SDG&E's wildfire liabilities related to future wildfires, as of the day of this data request?

   d. What is the **estimated annual** cost of SDG&E's wildfire liability borne by shareholders related to future wildfires, as of the day of this data request?

   e. Please provide documentation supporting the estimated costs of wildfire liabilities in part c and part d of this question.

SDG&E Response 2:

Objections: SDG&E objects to this request on the grounds set forth in General Objections Nos. 3 and 7. Subject to the foregoing objection, SDG&E responds as follows.

a) The **total recorded cost** for SDG&E's 2007 wildfires $2.4 billion of which $1.9 billion was reimbursed by insurance and third-party settlements.

b) The **recorded** costs recorded for SDG&E's wildfire liability borne by the shareholders related to the 2007 wildfires was $416 million.

c) For purposes of accounting, the total estimated annual SDG&E's wildfire liabilities related to future wildfires, as of the day of this data request, is $0. In accordance with generally accepted accounting principles (GAAP), SDG&E would not record a liability until a probable loss or obligation results from an event or transaction that has occurred.

d) Per response above in c), SDG&E has not recorded nor estimated any wildfire liability related to future wildfires.

e) Not applicable.