

**PACIFIC GAS AND ELECTRIC COMPANY
Wildfire Mitigation Plans Discovery 2023
Data Response**

PG&E Data Request No.:	OEIS_001-Q009		
PG&E File Name:	WMP-Discovery2023_DR_OEIS_001-Q009		
Request Date:	April 5, 2023	Requester DR No.:	P-WMP_2023-PG&E-001
Date Sent:	April 10, 2023	Requesting Party:	Office of Energy Infrastructure Safety
DRU Index #:		Requester:	Colin Lang

SUBJECT: REGARDING PORTFOLIO LEVEL RISK ANALYSIS AND RISK SPEND EFFICIENCY

QUESTION 009

- a) Provide an example of how risks are aggregated to a portfolio, and if and how interdependencies between the risks are explicitly captured in the portfolio. Response should be provided in Excel. Also include the level of organization for the portfolio (e.g., asset, geographical or business unit)
- b) Are tail-risks calculated on a portfolio of risks? If so, provide an example.
- c) Are probability distributions and interdependencies used as inputs to outputs for the bowties used in PG&E's WMP submission (see examples present in Appendix B)? If so, provide an example using the bowtie charts presented in PG&E's Appendix B submission. As appropriate, response should be provided in Excel.
- d) Provide an example of how risk spend efficiency (RSE) deals with interdependent risks, and mutually exclusive risks. As appropriate, response should be provided in Excel.
- e) Is RSE calculated for both average and tail? If so, provide an example. Response should be provided in Excel.

ANSWER 009

- a) Based on the Wildfire Distribution Risk Model, which is based on circuit segments, circuit segments are aggregated to the enterprise wildfire risk model to calculate mitigation program benefits at the portfolio level. The tranches, in this case, are broken down by quintiles of likelihood of risk event (LoRE) and consequence of risk event (CoRE). Please see "WMP-Discovery2023_DR_OEIS_001-Q009Atch01.xlsm", which is PG&E's 2023-2026 wildfire bowtie used for the GRC, where we aggregated our distribution risk model to the LoRE and CoRE tranches to calculate risk at a portfolio level. This level of organization is based on the risk at the circuit protection zone level.
- b) Tail risks are captured as part of the enterprise risk assessment process and represented as probabilistic distributions of consequence.

- c) Yes, please see “WMP-Discovery2023_DR_OEIS_001-Q009Atch02.xlsm.” The inputs listed in Tab 6-Conseq are the probability distributions that feed into the bowtie analysis, and its outputs are shown in “WMP-Discovery2023_DR_OEIS_001-Q009Atch01.xlsm referenced in response to part a).
- d) Risk Spend Efficiency for EPSS includes the risk reduction tied to the wildfire risk but is interdependent with the Distribution Overhead asset risk, which increases due to the reliability impacts EPSS causes. The RSE would capture both the risk reduction of wildfire and increased risk of asset failure and reliability.
- e) The RSE is calculated as a representation of average, but the consequence values are scaled in a non-linear fashion to capture the tail risk. In accordance with D.18-12-014, PG&E calculates an RSE using the expected value of the MAVF, i.e., the expected value of the distribution of consequences after they have been converted to Scaled Units by the Scaling Function. PG&E does not separately calculate an RSE based on tail statistics (e.g. tail average). Instead, PG&E’s non-linear Scaling Function effectively amplifies the consequences of tail events such that the expected value of the MAVF will be higher compared to another risk which has the same average consequence in natural units but does not include similar tail events.