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

PG&E Data Request No.:	SPD_003-Q004		
PG&E File Name:	WMP-Discovery2023_DR_SPD_003-Q004		
Request Date:	April 12, 2023	Requester DR No.:	SPD_PG&E_2023_003
Date Sent:	April 19, 2023	Requesting Party:	Safety Policy Division
DRU Index #:		Requester:	Kevin Miller

SUBJECT: DATA REQUEST SPD_PG&E_2023_003 DUE 4.19.2023

QUESTION 004

Based on WSPS' initial review of the wildfire ignitions and general understanding of PG&E's undergrounding program, it appears that undergrounding would have prevented only 87% of CPUC-reportable ignitions in the HFTD area between 2020-2022 primarily due to the impact of secondary and service conductor ignitions. Additionally, SPD noted ten CPUC-reportable ignitions in PG&E territory during 2022 which were related to undergrounding. [The data used is the fire ignition data stored here: Wildfire and Wildfire Safety (ca.gov). Please note, WSPS is still cleaning the data and determining the best methodology to analyze the data.]

a. Provide the justification for the 99% mitigation effectiveness value for undergrounding reported in the Wildfire Mitigation Plan. Explain how secondary, service conductor, and underground ignitions are accounted for in the 99% mitigation effectiveness.

b. Provide the percentage of CPUC-reportable ignitions in the HFTD that undergrounding would be expecting to remediate, accounting for secondary and service conductors.

c. Provide a description of each CPUC-reportable ignition related to undergrounding that occurred in 2022 and describe how PG&E's undergrounding approach would or would not mitigate this ignition.

d. SPD's general understanding is that ignitions from secondary conductors and service drops are accounted for in the methodology for calculating the effectiveness for both covered conductor and EPSS, but this risk does not appear to be accounted for in the same way for undergrounding. Explain the difference in the methodology for how the 99% mitigation effectiveness for undergrounding is calculated as compared to the 64% mitigation effectiveness for covered conductor and 65% effectiveness for EPSS.

e. Explain how the mitigation effectiveness is applied to the risk calculation (such as that approach used in PGE_2023_WMP_R0_Section_642_Atch01) and contrast this approach to the approach used for covered conductor and EPSS.

f. Provide the number of CPUC-reportable ignitions related to HFTDs in secondary and service conductors for each year starting in 2014 onward.

ANSWER 004

a) In the 2022 WMP discovery process, we provided a data response that showed how PG&E estimated the effectiveness of undergrounding in reducing ignitions (WMP-Discovery2022_DR_CalAdvocates_028-Q04). As PG&E explained in that data request:

PG&E's estimate of the effectiveness of undergrounding in reducing ignitions is based on subject matter expertise. We validated this estimation using the ignition rate per mile for overhead and underground circuits respectively.

Based on 2015-2021 historical CPUC-reportable ignitions and the system circuit miles, the effectiveness of undergrounding is approximately 95-96% from an ignition rate perspective as indicated in Table 1 below. However, Table 1 does not fully represent wildfire risk reduction as an ignition is different than wildfire frequency or consequences. Based on the 2015-2021 dataset, no underground ignition resulted in a fire greater than 10 acres, further substantiating underground represents an even lower wildfire risk than overhead facilities.

As such, we determined that the CPUC-reportable ignition data information is consistent with subject matter expert estimations of 99%. The reportable ignition data considered includes the ignitions associated with secondary and service conductors.

Table 1: Underground v. Overhead Effectiveness	System			HFTD		
	Ignitions	Circuit Miles*	Annual Ignition Per 1K Miles	Ignitions	Circuit Miles*	Annual Ignition Per 1K Miles
Underground	43	27,722	0.19	5	2,895	0.25
Overhead	3,091	80,662	5.47	921	25,219	5.22
UG Effectiveness = 1 – UG/OH			96%			95%

*circuit mileage as of 7/28 data pull, may vary from figures provided in Q3

b) Our current workplan is to underground primary conductor. At this time, we do not underground lateral secondary lines and service conductors. As noted in part a, we assume that undergrounding is 99% effective at reducing ignitions on the distribution primary lines where the undergrounding has taken place. However, as part of the undergrounding projects, we will overhead harden remaining secondary and service lines by replacing open-wire secondary, gray services, and tree-connects with the current standard covered aerial conductor. PG&E has also recently started to apply "breakaway" connectors to our standard construction system-wide to help mitigate any residual risk on the service and secondary wire. While the exact wildfire risk mitigation benefit associated with these enhancements to the lateral secondary and service lines has not been quantified, it will provide some enhanced wildfire mitigation value to the lateral secondary and service lines touched by the undergrounding program.

c) We understand this question as a request for ignitions related to undergrounding work conducted in 2022. PG&E has not identified any ignitions related to our undergrounding work in 2022.

d) The effectiveness in mitigating wildfire risk from services and secondary lines for the three mitigations referenced (OH Hardening / Covered Conductor, Undergrounding, and EPSS) is actually very similar. OH Hardening and Undergrounding both result in the same hardening or replacement of services and secondary lines as described in the response to subpart b above. Separately, EPSS provides limited coverage for potential ignition risks on services and secondary lines because these assets are downstream of a service transformer. By being downstream of a service transformer, the service and secondary lines are not "seen" directly by the system protection devices which are programmed with EPSS settings. There are cases where an issue with a service or secondary line may be "seen" by the protection device and trigger an EPSS deactivation, but in most cases a fault on a service or secondary line downstream of the transformer will not trigger a de-energization by a protection device programmed with EPSS settings. Therefore, all three mitigation activities are focused on reducing ignition risk on the higher-risk primary distribution lines and do not quantify meaningful mitigation of ignition potential on services and secondary lines.

e) The method for calculating risk reduction based on mitigation effectiveness for EPSS and for Covered Conductor is the same. The risk reduction calculation is based on the effectiveness applied to various sub-drivers at each location and based on the workplans at each location. This is aggregated as part of attachment *"WMP-Discovery2023_DR_SPD_003-Q004Atch01.xlsb."*

f) Since 2014, we have identified a total of 142 CPUC-reportable ignitions in HFTDs related to secondary and service conductors. Please reference the following table for the number of CPUC-reportable ignitions by year.

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Secondary	7	11	20	21	10	1	12	8	4	2
Service	0	1	2	8	2	4	12	8	9	0