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

PG&E Data Request No.:	OEIS_004-Q014		
PG&E File Name:	WMP-Discovery2023_DR_OEIS_004-Q014		
Request Date:	May 4, 2023	Requester DR No.:	P-WMP_2023-PG&E-004
Date Sent:	May 9, 2023	Requesting Party:	Office of Energy Infrastructure Safety
DRU Index #:		Requester:	Colin Russell Lang

SUBJECT: REGARDING PG&E'S USE OF DOWNED CONDUCTOR DETECTION (DCD) AND PARTIAL VOLTAGE DETECTION (PVD)

QUESTION 014

a. Provide any analysis completed on reliability impacts due to DCD, including:
   i. The number of outages that occurred due to DCD in 2022 and 2023
   ii. The number of outages broken down by cause (based on ignition drivers listed in Table 6 of the QDR) that occurred due to DCD in 2022 and 2023
   iii. Criteria used for DCD enablement (if applicable)
   iv. The number of total customer minutes interrupted from DCD outages
   v. Any mitigations PG&E is using to reduce reliability impacts from DCD implementation, including lessons learned from any piloting

b. Provide any analysis completed on reliability impacts due to PVD, including:
   i. The number of outages that occurred due to PVD in 2022 and 2023
   ii. The number of outages broken down by cause (based on ignition drivers listed in Table 6 of the QDR) that occurred due to PVD in 2022 and 2023
   iii. Criteria used for PVD enablement (if applicable)
   iv. The number of total customer minutes interrupted from PVD outages
   v. Any mitigations PG&E is using to reduce reliability impacts from PVD implementation, including lessons learned from any piloting

c. When evaluating outages due to EPSS, are DCD and PVD outages included as part of that evaluation?
   i. If so, what is the number of additional outages caused by PVD and DCD respectfully in 2022?
   ii. If not, how does PG&E account for and track any associated reliability and safety impacts from DCD and PVD implementation, and how does that inform changes to the two programs?

ANSWER 014

a. Data as of May 4th, 2023 for 2022-2023 DCD Outages:

i. 17 outages have occurred with DCD settings enabled.

ii. The table below matches outage causes to the Ignition Drivers used in Table 6 of the 2022 Q4 Quarterly Data Report.

Outage Cause	QDR Table 6 Ignition Driver	DCD Events
3rd Party	3rd party facility	1
Company Initiated	Protective Device Operation	5
Equipment Failure/Involved	Recloser	2
	Transformer	1
	Relay	1
Unknown Cause	Unknown	7
Grand Total		**17**

iii. DCD is an additional protection element as part of EPSS. PG&E will enable DCD on capable devices when EPSS is enabled to help detect lower current fault conditions.

iv. 4,732,936 Minutes.

v. DCD outages and circuits are already considered in our existing EPSS Reliability program. Specific to DCD, PG&E is adding more DCD capable devices on circuits to, where feasible, increase sectionalization of DCD protection that will reduce outage size and restoration patrol areas while maintaining the ignition reduction benefit. Furthermore, in cases of unknown cause DCD outages, or with multiple DCD outages on a single device, our engineering and system protection team may conduct specific reviews of the protection settings of these devices.

b. Data as of May 4th, 2023 for 2022-2023 Partial Voltage Force Outages (PVFO):

i. 33 outages have occurred from PVFO.

ii. The number of outages broken down by cause (based on ignition drivers listed in Table 6 of the QDR) that occurred due to PVFO in 2022 is shown below.

Outage Cause	QDR Table 6 Ignition Driver	PVFO Events
3rd Party	3rd party facility	1
Animal	Animal contact	5
Company Initiated	Other	1
Equipment Failure/Involved	Conductor	2
	Fuse	1
	Jumpers	3
	Splice	2
	Transformer	1
Unknown Cause	Unknown	12
Vegetation	Vegetation contact	5
Grand Total		**33**

iii. Partial Voltage Force Out is a manual action taken by a distribution control center operator in response to more than one partial voltage alarms detected at the fuse level or above.

iv. 9,488,701 minutes

v. These circuits are included in the scope of PG&E's existing EPSS Reliability Mitigation programs. In addition, PG&E's PV alarm configuration is designed to prevent nuisance alerts from transient conditions by sending the distribution control center operator a PV alarm when multiple meters aggregating to a fuse level indicate a partial voltage condition, and further we will clear PV alarms if normal voltage returns.

c. Yes. A "DCD outage" is an EPSS outage. PG&E also evaluates PVFO outages, even though these are manual actions taken as part of a defense in depth strategy and not the result of an EPSS device operating automatically.

i. See our responses to subparts a and b above.

ii. Not applicable.