

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

PG&E Data Request No.:	CalAdvocates 022-Q003		
PG&E File Name:	WMP-Discovery2023_DR_CalAdvocates 022-Q003		
Request Date:	May 2, 2023	Requester DR No.:	CalAdvocates-PGE-2023WMP-22
Date Sent:	May 5, 2023	Requesting Party:	Public Advocates Office
PG&E Witness:		Requester:	Holly Wehrman

**QUESTION 003**

During the Q&A portion of the Grid Operation, Design, and Maintenance session of the WMP workshop held on April 27, 2023, a caller raised concerns about the feasibility of undergrounding in rocky and steep terrain and in wetlands. In response, PG&E stated that it was evaluating tools and techniques to perform undergrounding in those areas.

Regarding undergrounding in *wetland* areas:

- a) Please list and describe the current difficulties or obstacles to undergrounding in wetlands.
- b) What tools and techniques is PG&E evaluating to improve the feasibility of undergrounding in wetlands?
- c) What is PG&E's estimate of the current unit cost of undergrounding in wetlands?
- d) Please state whether the unit cost provided in response to part (c) is based on mileage of overhead circuits removed or mileage of underground circuits installed.
- e) Regarding the unit cost given in response to part (c) of this question, when does PG&E expect to be able to reduce the unit cost to less than \$3.0 million per mile?
- f) Of the WMP undergrounding projects that PG&E plans to execute in 2023-2024, do any involve installing a significant amount (greater than 0.1 miles) of underground conductor in wetlands?
- g) If the answer to part (f) is yes, please list each such project.

**ANSWER 003**

- a) To the greatest extent possible, PG&E avoids construction in federal or state jurisdictional wetlands and we have generally found relatively few locations where it is unavoidable to underground in a "wetland" area. PG&E will first seek to relocate our distribution circuits to a less sensitive environmental location. However, undergrounding across water crossings – streams, rivers, etc. is not uncommon due to the linear nature of electric distribution circuits and the linear nature of streams and rivers. When needing to underground across a water crossing (or a wetland, if it were to be necessary), the significant obstacles are not disrupting the waterway and avoiding water intrusion into our trench / conduit path. Because of this, PG&E generally uses existing boring technology (also referred to as Horizontal Directional

Drilling (HDD)) to drill significantly below ground (and under the waterway) to avoid impacts to the waterway (or wetland). In these cases where HDD is used, we have an environmental inspector and/or a biological monitor on site to ensure the construction is properly protecting the waterway or other sensitive environmental areas.

- b) See the response to subpart a).
- c) PG&E does not specifically track unit cost per terrain type by mile when undergrounding miles, and therefore does not have this available. The cost of installing conduit underground via boring (or HDD) varies significantly based on many factors including the depth of bore needed, the rock / geological makeup of the area (hard rock or “cobble” rock environments are more difficult to bore through), the accessibility of the boring site, etc. In some cases, boring can be performed at a lower cost per foot or per mile than traditional trenching installing but in other cases boring may cost significantly more on a per foot basis (but may be the only tool available, like for undergrounding across a water crossing). Due to this high variability, there is no standard unit cost for undergrounding under waterways.
- d) Not applicable, please see the response to subpart c). As noted in response to Question 2, subpart d) of this data request: all of PG&E’s unit cost data or forecasts related to Undergrounding are based on the underground primary distribution circuit miles installed.
- e) PG&E does not have an estimate of the total unit cost for undergrounding in wetlands (or across waterways). As noted in PG&E’s GRC System Hardening Underground Unit cost forecast by year (Table 4-11), PG&E expects to reduce total unit cost of the portfolio to less than \$3.0 million per mile in 2025. Those unit cost forecasts represent the average across the portfolio of all undergrounding work, meaning that some projects will still cost more than \$3 million per mile (including potentially hard rock or steep terrain projects) while others will be executed for less than the targeted unit cost (e.g. \$2.96 million per mile in 2025).
- f) PG&E does not track the terrain type by mile when undergrounding. As noted in response to subpart a), PG&E aims to avoid undergrounding in wetland terrain and the footage of undergrounding below water crossings tends to be relatively small in comparison to total project length.
- g) Not applicable. PG&E does not track the terrain type by mile when undergrounding miles.