PACIFIC GAS AND ELECTRIC COMPANY
Wildfire Mitigation Plans
Rulemaking 18-10-007
Data Response

PG&E Data Request No.:	CalAdvocates_057-Q03		
PG&E File Name:	WildfireMitigationPlans_DR_CalAdvocates_057-Q03		
Request Date:	June 10, 2021	Requester DR No.:	CalAdvocates-PGE-2021WMP-23
Date Sent:	June 15, 2021	Requesting Party:	Public Advocates Office
PG&E Witness:		Requester:	Alan Wehrman

The following questions relate to PG&E's 2021 Wildfire Mitigation Plan – Revised, submitted June 3, 2021.

QUESTION 03

Figure PG&E-Revision Notice-4.5-2 on p. 158 of PG&E's Revised 2021 WMP demonstrates little to no correlation between outage events and ignition events from 2015 through 2020.

Section 4.2.A.f on pp. 74-76 of PG&E's Revised 2021 WMP discusses its Outage Producing Winds model, which is one of the models PG&E uses to determine when and where it should de-energize lines to prevent a potential ignition. This model is trained on outages.

Given that proactive de-energizations, aka Public Safety Power Shutoffs, are designed to prevent ignitions during high-risk conditions, please explain PG&E's reasoning for training its Outage Producing Winds model on outages, when PG&E has demonstrated that there is little correlation between outages and ignitions.

ANSWER 03

Before responding to this data request, several clarifications are necessary. First, as described in detail in the 2021 WMP, there are important differences between operational and planning models. *See e.g.* Revised 2021 WMP, p. 130. Thus, the fact that some inputs such as outages may not be used in one type of model (e.g., planning) does not mean that the data is not appropriate to use in another type of model (e.g., operational).

Second, the portion of the Revised 2021 WMP cited by Cal Advocates in this data request is addressing the issue of why ignition data was used to train the 2021 Wildfire Distribution Risk Model (*i.e.*, a planning model) rather than outage data. On p. 157, we explained:

> The use of ignition data to train the model also assumes that other events would not result in a model better able to predict future ignitions. Considering the causal chain of events leading up to an ignition, the possible candidate data sets are equipment failures, outages, wire-down events, and ignitions. Training the model on only the higher frequency

events such as failures or outages could lead the model to predict the locations with the highest probability of these events while missing the subset of locations for which these events would become ignitions. As can be seen in Figure PG&E-Revision Notice-4.5.2 below, these events on not proportional. None of the other events align with the middle chart in red that shows the frequency of ignitions from 2015 to 2018.

Third, the statement that there is "little to no correlation between outage events and ignition events from 2015 through 2020" does not appear on p. 158 of the Revised 2021 WMP.

With these clarifications in mind, the data presented in the 2021 WMP show that winter storms are responsible for large increases in outage activity; however, due to the state of the fuels (e.g., high fuel moisture, winter grass crop) in winter the ignition probability is low. When one evaluates wind-related outages during the summer into the fall before winter storms return, there is a correlation between outages and ignitions. For example, the days with highest frequency of ignitions in the past have occurred during offshore wind events where outage activity was also several times above background level. The October 8 and 9, 2017 wind event that resulted in several catastrophic wildfires is a clear example. There were over 2 dozen fire ignitions during that wind event. The next highest ignition day in PG&E history is October 27, 2019, where near 2 dozen ignitions also occurred outside of the PSPS footprint where >900,000 customer meters were proactively de-energized. Many of these ignitions occurred in the Tier 1 High Fire Risk Area where PSPS is not applied and no catastrophic fires occurred. Had PG&E not deenergized >900,000 customers in the Tier 2 and Tier 3 High Fire Risk Areas, we believe the number of ignitions would have exceeded the October 8 and 9, 2017 as the October 2019 event was even stronger.

We must remain cognizant that execution of PSPS events drives down ignitions on the highest risk days and has influenced the ignition data since the PSPS program began in 2018. Therefore, we also train the Outage Producing Wind (OPW) Model on damages and hazards that are found in post-PSPS events. We know that an increase in outage activity from wind can cause an arc or a spark that can ignite a fire. We know the severe consequences this can have by analyzing a case like October 8 and 9, 2017, where a significant increase in outages resulted in a significant increase in ignitions.

For the PSPS application, which is an operational model with a narrower time frame than the annual planning models, training the OPW Model on outages instead of ignitions adds benefits to the OPW Model by expanding the dataset from only hundreds of ignitions per year to over 30,000 outages per year. This increases the predictive skill of the OPW Model used for PSPS. In addition, the OPW Model can learn wind-outage relationships that occur outside of the traditional fire season, so those lessons can be applied during fire season.

Since one must consider the state of the fuels for PSPS as well, we do not execute PSPS events solely on the OPW Model. We combine the OPW Model with the Fire Potential Index (FPI) Model to provide that context. PSPS is generally considered when there is a high probability of outages combined with a high probability of large fires.

Winter storms, for example, typically have a high probability of outages due to wind and a low probability of large fires, which do not require PSPS execution.

For a more detailed discussion of the models that are used for PSPS events, including inputs and model validation, see Section 4.2.A of the Revised 2021 WMP.

In addition, recognizing that modeling is a complex area, PG&E would be more than happy to arrange a meeting with Cal Advocates to further explain our modeling approaches for both planning and operational models.