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

PG&E Data Request No.:	MGRA_011-Q32		
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Request Date:	March 4, 2021	Requester DR No.:	WMP-2021 MGRA PGE DataRequest 5
Date Sent:	March 9, 2021	Requesting Party:	Mussey Grade Road Alliance
PG&E Witness:		Requester:	Joseph Mitchell

Regarding PG&E's Outage Producing Wind (OPW) model:

QUESTION 32

Please provide details of and justification for the use of a genetic growth algorithm for the OPW model (PG&E WMP p. 75).

ANSWER 32

Outage nodes are created to relate historical outages to nodes and then the nodes to POMMS grid cells. The geographic area of a node is a function of distribution line mile density, with approximately 50 overhead line miles per node. Spatially contiguous nodes of similar line miles per node were created by PG&E Data Scientists and PG&E GIS analysts using a genetic growth algorithm. Further background information on the algorithm is available at the following link: https://pro.arcgis.com/en/pro-app/latest/tool-reference/spatial-statistics/learnmore-buildbalancedzones.htm . Alternative OPW Model formulations were evaluated, including circuit level models and circuit-cell level models. Due to the high variability of lengths of PG&E's approximately 3,300 circuits, the circuit models were found to be less granular compared to the node-cell model approach for the longer circuits which are spreading the weather information over too large of an area, and too small for the shorter circuits, with insufficient observation of outages to train the model. In other words, the justification for the nodes is to allow OPW to be trained with sufficient outages in each node, allow OPW to be compared across the territory, and to attain a more precise spatial relation of the weather and outage information.