

**PACIFIC GAS AND ELECTRIC COMPANY  
Wildfire Mitigation Plans Discovery 2022  
Data Response**

PG&E Data Request No.:	OEIS_004-Q04		
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PG&E Witness:		Requester:	Kevin Miller

**SUBJECT: LESSONS LEARNED FROM PAST CATASTROPHIC FIRES**

**QUESTION 04**

How has PG&E changed its mitigation plans to address lessons learned from past catastrophic fires?

- a. Include page numbers in the 2022, 2021, or 2020 WMP for discussion of each of the following applied lessons and a description of such changes:
  - i. 2017 – Railroad Fire, Atlas Fire, Cascade Fire, Redwood Fire, and Nuns Fire
  - ii. 2018 – Camp Fire
  - iii. 2019 – Camino Fire, Bethel Island Fire, and Kincade Fire
  - iv. 2020 – Zogg Fire
  - v. 2021 – Dixie Fire and Fly Fire

**ANSWER 04**

Our wildfire mitigation initiatives and programs are developed based on numerous inputs including, but not limited to, feedback from internal and external experts, benchmarking with other utilities, detailed data such as weather and ignition data, actual experience with and results from initiatives and programs, and lessons learned from wildfires. Thus, it is not always possible to ascribe the initiation of or changes to a program or initiative based on a single factor, such as lessons learned from a wildfire. For purposes of answering this data request, we are identifying initiatives or programs that were impacted by lessons learned from the wildfires identified and that were discussed in our Wildfire Mitigation Plans (WMP). The list identified for each fire(s) may not be comprehensive but is representative of the kinds of mitigation changes that were informed by lessons learned.

After the 2017 North Bay Fires<sup>1</sup>, we implemented a number of programs to understand and mitigate wildfire risk based in part on lessons learned from the North Bay Fires including:

Program or Initiative	WMP Citation
Initiating the Community Wildfire Safety Program (CWSP)	2019 WMP, p. 12
Updating risk modeling	2019 WMP, pp. 21-28
Initiating the Enhanced Vegetation Management (EVM) Program	2019 WMP, pp. 70-76
Installing weather stations and high-definition cameras for situational awareness	2019 WMP, p. 4
Initiating the Wildfire Reclosing Disable Program	2019 WMP, pp. 47-49
Starting targeted system hardening	2019 WMP, p. 61 <sup>2</sup>
Evaluation of pole materials	2019 WMP, p. 64
Updating Fire Potential Index	2019 WMP, pp. 88-89
Establishing bill and service modifications and disaster relief to support customers	2019 WMP, pp. 100-101, 125
Public Safety Power Shutoff (PSPS) program on a limited number of distribution and transmission circuits	2019 WMP, pp. 4, 6
Creating the Wildfire Safety Operations Center	2019 WMP, pp. 43, 93

These programs were intended to reduce wildfires resulting by coordinating our wildfire mitigation efforts with first responders, customers and communities, developing and utilizing risk modeling tools, reducing vegetation caused ignitions, increasing our situational awareness of wildfire conditions, and adopting PSPS as a last resort to mitigate wildfire potential during certain events.

In addition to continuing these wildfire programs or initiatives, as a result of the 2018 Camp Fire, we initiated or expanded the following programs or initiatives:

Program or Initiative	WMP Citation
Initiating Safety and Infrastructure Protection Team (SIPT)	2019 WMP, p. 6, 51-52
Continuing refinements to risk modeling	2019 WMP, pp. 21-22

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- <sup>1</sup> The North Bay Fires include the Railroad Fire, Atlas Fire, Cascade Fire, Redwood Fire, and Nuns Fire.
  - <sup>2</sup> 2019 WMP, p. 61 (this reference refers to the program starting in 2018 in coordination with the 2017 RAMP Report).

Program or Initiative	WMP Citation
Significantly expanding the EVM Program and other vegetation management programs, such as the use of LiDAR	2019 WMP, pp. 3, 41-42, 71-80
Initiating enhanced inspections for transmission and distribution facilities under Wildfire Safety Inspection Program (WSIP)	2019 WMP, pp. 3, 40-41, 52-60
Significantly expanding system hardening	2019 WMP, pp. 3, 41
Significantly expanding weather station and high definition camera installation	2019 WMP, pp. 3, 42, 91-92.
Significantly expanding the PSPS program to include more distribution and transmission facilities in High Fire Threat District (HFTD) areas	2019 WMP, pp. 4, 6
Adding Supervisory Control and Data Acquisition (SCADA) capabilities to allow for remote reclose blocking in all HFTD areas	2019 WMP, pp. 5-6
Initiating numerous PSPS mitigation strategies such as sectionalizing devices, resilience zones, and customer support	2019 WMP, pp. 43-44, 96
Initiating program to replace non-exempt overhead line equipment in HFTD areas	2019 WMP, p. 69
Focusing on increasing available and qualified personal to perform vegetation management work	2019 WMP, pp. 81-83

The 2019 Camino, Bethel Island, and Kincade Fires were evaluated by our Electric Incident Investigation (EII) Department for lessons learned and changes to our internal processes and procedures. With regard to how information from these fires was reflected in our wildfire programs and initiatives, and described in our WMP, ignition data generally was used for risk modeling and ascertaining the main drivers for ignition probability. See 2020 WMP, pp. 3-7 to 3-12; 3-30 to 3-33; 4-10 (describing Outage Producing Wind and Fire Potential Index modeling using ignition data); 5-279 to 5-282. In addition, ignition data was used to continue to refine our wildfire programs and mitigations. See e.g. 2020 WMP, p. 5-125 (describing how ignition data is used to evaluate and refine system hardening program). In addition, as a result of lessons learned, particularly from the Kincade Fire, we have initiated the removal of idle facilities (2020 WMP, pp. 5-131 to 5-132; 2022 WMP, p. 538) and the failure modes analysis informed the development of our Wildfire Transmission Risk Model (2022 WMP, pp. 149-158). Finally, as a result of our continued analysis of all fires in PG&E's service territory (not just HFTD Tiers 2 and 3) for our 2022 WDRM v3, our probability models consider both primary and secondary overhead distribution voltages (2022 WMP, pp. 128-148) and our Wildfire Consequence Model now considers fire propagation and consequence in all "burnable" locations within PG&E's service territory (2022 WMP, pp. 159-167).

Similarly, the 2020 Zogg Fire was reflected in ignition data that was used to further refine our wildfire modeling and risk analysis. See 2021 WMP, pp. 132-133, 155-157. In addition, lessons learned from the Zogg fire informed our 2020 PSPS Protocols as we explained in the 2021 WMP:

Based on a further analysis of the propensity of tree-related outages and the tree overstrike exposure near the Zogg Fire ignition point, we proposed to modify the 2020 PSPS Protocols to include the 70th percentile or above Tree Overstrike Potential areas. We presented this analysis in an April 20, 2021 tree overstrike workshop hosted by the CPUC. Based on this analysis, locations with a Tree Overstrike Potential in the 70th percentile or above will be directly considered when evaluating potential PSPS events.<sup>192</sup> For reference and clarity, we found that at the 70th percentile value, a 2 x 2 km grid cell contains approximately 10,000 ft of overstrike or approximately 10,000 ft of timber measured from the point of the trees that could first impact our conductors to the top of the trees that could impact our conductors. Additionally, the 70th percentile and above grid cells capture approximately 92% of the tree overstrike potential in the HFTD. The amount of overstrike in feet increases as the percentile increases.<sup>3</sup>

Finally, the Dixie and Fly Fires, as well as significant and dramatic changes in wildfire risk resulting from climate change, informed our decisions to implement the Enhanced Powerline Safety Setting (EPSS) program as well as our plan to underground 10,000 miles of overhead distribution lines. In addition to using the data from the Dixie and Fly fires, as well as other 2021 fires, to continue to refine and improve our ignition probability and risk modeling, as described above for the 2019 and 2020 fires, lessons learned from the Dixie and Fly Fires helped inform:

Program or Initiative	WMP Citation
Ongoing evaluation of wildfire mitigation programs and initiatives based on wildfire data and significant changes in wildfire risk	2022 WMP, pp. 2, 49
Initiating the EPSS program	2022 WMP, pp. 6-7, 730-739
Initiating our 10,000 miles of undergrounding program	2022 WMP, pp. 6, 523-535

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<sup>3</sup> 2021 WMP, p. 980.