CALIFORNIA PUBLIC UTILITIES COMMISSION
Safety and Enforcement Division
Wildfire Safety and Enforcement Branch

Incident Investigation Report

Report Date: April 17, 2023

Incident Number: E20210802-01 (Fly Fire)

Regulated Utility Involved: Pacific Gas & Electric Company (PG&E)

Date and Time of the Incident: July 22, 2021 at 1715 hours

Location of Incident: Approximately 300 feet west of [redacted]. Quincy, Plumas County, CA ([redacted])

Fatality/Injury: None/None

Property Damage: Unknown. (Not provided due to the Fly Fire merging with the Dixie Fire, and statistics not being tracked separately for the Fly Fire.)

Regulated Utility Facilities Involved: Ganser 1101 12kV Distribution Circuit

I. Summary

On July 22, 2021, at approximately 1715 hours the Fly Fire ignited near [redacted]., Quincy, Plumas County, California (the Incident Area). The Fly Fire most likely originated from a white fir tree (Subject Tree) falling onto the 12kV distribution conductors of the Ganser 1101 circuit. By July 25, 2021, the Fly Fire had reportedly consumed 4300 acres, was 5% contained, and had merged with the Dixie Fire and the spread and containment for the Fly Fire was no longer tracked. The United States Forest Service (USFS) was the Fire Authority for the Fly Fire. On August 2, 2021, the USFS removed portions of the Subject Tree and electrical facilities with PG&E's assistance. That day, PG&E filed an incident report pursuant to the California Public Utilities Commission's (Commission or CPUC) media reporting criterion.

The Safety and Enforcement Division's (SED) investigation of the Fly Fire included review of PG&E's maintenance records, vegetation management inspections of the Incident Area, and a site visit on August 7, 2021. PG&E's records included a vegetation management patrol conducted approximately two weeks prior to the Fly Fire igniting. SED determined that PG&E could not have reasonably identified the white fir tree as a potential hazard or as a tree in need of removal as part of its recent vegetation management inspections. SED finds that PG&E's actions related to the Fly Fire incident did not result in violations of the Commission's General Orders.[1]

[1] This finding does not pre-judge or impact SED's investigation of the Dixie Fire, as this report is focused on events prior to the fires merging.

A. Rules and Requirements Involved

General Order 95, Rule 35 – Vegetation Management states in part:

> *When a supply or communication company has actual knowledge, obtained either through normal operating practices or notification to the company, that dead, rotten or diseased trees or dead, rotten or diseased portions of otherwise healthy trees overhang or lean toward and may fall into a span of supply or communication lines, said trees or portions thereof should be removed.*

Based on the information available to SED and the review of the PG&E's records and actions taken before and after the fire, SED finds no violations of California Public Utilities Commission's General Orders.[2]

B. Witnesses

	Name	Title
1.	Will Dundon	CPUC Lead Investigator
2.	Samuel Mandell	CPUC Investigator
3.	Hassan Jahami	CPUC Investigator
4.	[redacted]	PG&E Incident Investigator
5.	[redacted]	PG&E Incident Investigator
6.	[redacted]	PG&E Claims Adjustor

C. Evidence

	Source	Title
1.	PG&E	Initial Incident Report, 08/02/2021
2.	PG&E	20-Day Report, 08/30/2021
3.	CPUC	Site Visit Observation Report, 08/07/2021
3.	CPUC	Data Request SED-01 (DR-1), 02/04/2022
3.	PG&E	Data Request Response to DR-1, 03/04/2022 (Tranche 1)
4.	PG&E	Data Request Response to DR-1, 04/01/2022 (Tranche 2)
5.	PG&E	Data Request Response to DR-1, 04/29/2022 (Tranche 3)
6.	PG&E	Data Request Response to DR-1, 05/02/2022 (Tranche 4)
7.	PG&E	Data Request Response to DR-1, 05/27/2022 (Tranche 5)
8.	CPUC	Data Request SED-02 (DR-2), 07/01/2022
9.	PG&E	Data Request Response to DR-2, 08/01/2022 (Tranche 1)
10.	PG&E	Data Request Response to DR-2, 09/02/2022 (Tranche 2)
11.	PG&E	Data Request Response to DR-2, 09/09/2022 (Tranche 3)
12.	CPUC	Data Request SED-03 (DR-3), 10/25/2022
13.	PG&E	Data Request Response to DR-3, 11/18/2022

[2] SED did not review the United States Forest Service's (the Fire Authority for this fire) Fire Report as part of this investigation because the Fire Report was not complete at the time this investigation report is issued. SED also did not review PG&E's Event Analysis Report as PG&E has claimed the Event Analysis Report is subject to an attorney-client work product privilege. PG&E shared a summary of the events and corrective actions taken as a result of the incident with SED.

II. Background

The Fly Fire began on July 22, 2021 at approximately 1715 hours near [redacted]., Quincy, Plumas County, CA (Incident Area). The incident most likely originated from a white fir tree (Subject Tree) falling on the conductor span between PG&E poles 100389433 (Pole 433) and 100389434 (Pole 434) on the Ganser 1101 12kV distribution circuit (Subject Circuit). The National Wildfire Coordinating Group website, (InciWeb), reported that as of July 25, 2021, the Fly Fire had consumed 4300 acres and was 5% contained. As of July 25, 2021, the Fly Fire merged with the Dixie Fire and InciWeb stated it would not provide further updates on the Fly Fire separately from the Dixie Fire. Because the Fly Fire merged with the Dixie Fire, the final size of the Fly Fire is undeterminable. The Incident Area is in Tier 2 High Fire Threat District (HFTD). Figure 1 shows a satellite view of the Incident Area and the approximate pole locations in the vicinity of the Subject Tree.

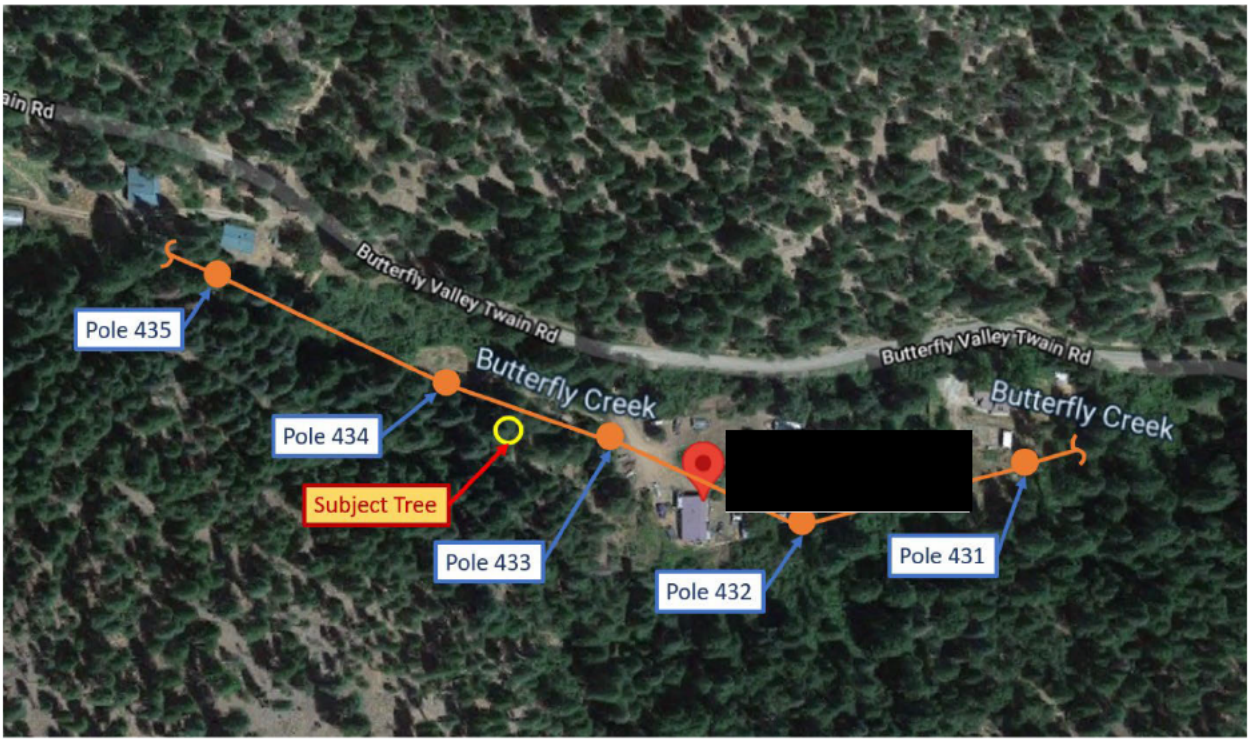

Figure 1: Map of Incident Area[3]

SED reviewed the weather data reported by PG&E's nearest weather station,[4] and the weather data recorded by two nearby Remote Automatic Weather Station (RAWS).[5] The weather in the table below summarizes the data recorded by these stations within one hour of the ignition of the Fly Fire.

[3] Satellite image via Google Earth, dated August 2019. Markups added by SED.
[4] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 44. March 4, 2022.
[5] https://mesowest.utah.edu/. Accessed March 13, 2023.

Name of Station	Distance from Incident Area	Elevation[6]	Temp.	Relative Humidity	Wind Speed	Wind Gust
PG&E Bucks Lake Rd.	4.11 miles	3,443 ft	90.7°F	11.21%	6.96 mph	18.92 mph
QYRC1	2.5 miles	3,652 ft	94°F	10%	2 mph	17 mph
CHAC1	2.75 miles	4,478 ft	91°F	11%	16 mph	24 mph

On July 25, 2021, PG&E assisted the United States Forest Service (USFS) in collecting two SmartMeters located on Butterfly Valley Twain Road. USFS did not indicate to PG&E that electrical facilities were suspected in the cause of the fire at this time.[7] On August 2, 2021, USFS asked for PG&E to support them in moving and examining a white fir (the Subject Tree) that was resting on PG&E's lines on the Ganser 1101 Circuit.[8] At this point, PG&E became aware that utility facilities could have been involved in the ignition of the fire, and on August 2, 2021, PG&E reported the incident to the California Public Utilities Commission under the media criterion.

III. Fire Authority Report

SED requested a copy of the USFS Fire Report through a Freedom of Information Act (FOIA) request to the United States Department of Agriculture (USDA), the parent agency of USFS. As of the date of preparing this investigation report, the USDA confirmed to SED that the USFS Fire Report for the Fly Fire was not yet complete, and therefore was not available for SED's review. Once the USFS's Fire Report becomes available to SED, if additional information becomes available that would modify SED's findings in this report, SED may re-open this investigation and take further actions as it deems appropriate.

IV. SED Review and Analysis

A. Event Timeline

SED reviewed the timeline of events reported by PG&E in the 20-Day report. SED additionally requested data about faults experienced by the circuits' protection devices, and a timeline of events and actions taken by the Distribution Operator of the Subject Circuit preceding the fire.

1. Incident Timeline on the Day of the Incident (July 22, 2021)

On July 22, 2021, at 1650 hours, the Distribution Operator for the Ganser 1101 12kV distribution circuit observed alarms for a fault current on the circuit. However, the faults did not meet the nearest line recloser's (LR 2424) minimum-to-trip (MTT) threshold for the length of time that would cause LR 2424 to open, so the alarms were not sustained. SmartMeter data collected after

[6] Elevation of the Incident Area is approximately 3,300 ft.
[7] Pacific Gas and Electric Company. "Data Request Response to DR-3", Response to Question 2. November 18, 2022.
[8] Pacific Gas and Electric Company. "Electric Incident Report Form for PG&E Incident EI2 l 0722B", (20-Day Report). August 2, 2021.

the start of the Fly Fire indicated that Fuse 1797 likely opened the circuit at the Incident Area at approximately 1650 hours deenergizing 20 customers at this time.[9] PG&E could not confirm this time estimate exactly because USFS collected Fuse 1797 and PG&E has not had access to examine it.[10] However, since fuses do not send digital alarms to the Distribution Operator, and LR 2424 did not sustain an alarm state, the Distribution Operator did not de-energize the line.[11]

On July 22, 2021, at approximately 1655 hours,[12] the Distribution Operator then saw that SmartMeters downstream of the detected fault near the Incident Area had powered down.[13] At 1703 hours, due to the SmartMeters having powered down, the Distribution Operator had a PG&E troubleman dispatched to the Incident Area to gather more information so that the Distribution Operator could make the decision to deenergize the line or not.

InciWeb records the approximate start time of the Fly Fire at 1715 hours.

Fault logs from LR 2424 indicate a fault at 1753 hours and again at 1802 hours. These faults did not sustain for long enough to trigger the recloser to open.[14]

Based on SmartMeter data collected after the start of the Fly Fire, PG&E estimated that Fuse 18101 #1 opened[15] at 1802 hours.[16] PG&E reports that 98 additional customers experienced an outage at this time.[17]

The PG&E troubleman dispatched by the Distribution Operator was evacuating his home due to the Dixie Fire, which had begun on July 13, 2021, when he was dispatched. The troubleman was 2.5 miles away from the Incident Area when he received the call. At approximately 1808 hours, the troubleman observed smoke near the Fly Fire Incident Area from his home and called the Distribution Operator to de-energize the line.

See Figure 2 for a satellite view of the affected area of the Subject Circuit and relevant electrical facilities.

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[9] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 25. May 27, 2022.
[10] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 11. September 2, 2022.
[11] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 16. September 9, 2022.
[12] PG&E reports that this five-minute time delay is due to the internal process where SmartMeters verify a sustained outage before powering down.
[13] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 16. September 9, 2022.
[14] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 22. May 2, 2022.
[15] Multiple physical fuses often share the same name, but then have a sub-designation. In this case, there were two fuse devices that collectively are referred to as Fuse 18101, and individually are Fuse 18101 #1 and Fuse 18101 #2. Fuse 18101 #1 blew, and Fuse 18101 #2 did not blow. Each numbered fuse serves a different phase of electricity.
[16] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 11. September 2, 2022.
[17] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 25. May 27, 2022.

Figure 2: Map of Subject Circuit and Relevant Protection Devices[18]

The Distribution Operator remotely opened LR 2424 at 1810 hours, which de-energized the Subject Circuit downstream of LR 2424, but Fuse 1797, which is downstream of LR 2424 had already opened at 1650 hours and de-energized the Subject Circuit at the Incident Area. PG&E reports that opening LR 2424 caused 105 additional customers to experience an outage, for a total of 223 customers.[19] At 1921 hours, the USFS requested PG&E de-energize power lines three miles west of the USFS station located at 39696 Highway 70 in Quincy, which corresponds to approximately the Incident Area at [redacted]. By 1942 hours, a PG&E troubleman was dispatched to the area, and at 1945 hours the troubleman confirmed both the Caribou #2 60kV Transmission Circuit and Ganser 1101 12kV Distribution Circuit in the area had been de-energized.

2. Timeline of Events Following the Day of the Incident

On July 23, 2021, PG&E performed grounding and switching activities on the Ganser 1101 Circuit and its protective devices outside the Incident Area in response to the Fly Fire. PG&E was not allowed into the Incident Area due to USFS restricting access at this time.

On July 24, 2021 the following events took place:

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[18] Satellite image via Google Earth, dated July 2022. Markups added by SED.
[19] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 25. May 27, 2022.

1. A PG&E troubleman conducted a patrol of the Subject Circuit outside of the Incident Area and found that Fuse 18101 #1 had blown. This fuse was on the source side of the single-phase tap-line which feeds the Butterfly Valley Twain Road PG&E customers. The troubleman collected both Fuse 18101 #1 and Fuse 18101 #2 as evidence.[20]
2. At 1403 hours the troubleman completed the patrol of the Subject Circuit upstream of the Incident Area between LR 2424 and Switch 3089 and reported no damage to PG&E electrical assets. USFS authorized the re-energization of the section of the Ganser 1101 Circuit from LR 2424 downstream to Switch 3089.
3. At approximately 1407 hours, LR 2424 was closed, and the 88 customers who had lost their power had it restored.[21]

On July 25, 2021, PG&E joined USFS on a visit to the Incident Area and assisted USFS in collecting two SmartMeters from [redacted] and [redacted] Butterfly Valley Twain Road.[22]

On July 28, 2021, a PG&E troubleman collected two more SmartMeters from 38005 Highway 70 and [redacted], outside of the Incident Area. These SmartMeters were sent to PG&E's Applied Technology Services (ATS) laboratory in San Ramon to retrieve data from the devices.[23]

On August 2, 2021 the following events took place:

1. PG&E assisted USFS in moving and examining a white fir tree (the Subject Tree) which was resting on PG&E's conductors on the Ganser 1101 Circuit.
2. PG&E filed an Electric Incident Report with the CPUC's Safety and Enforcement Division (SED) concerning the Fly Fire due to the fire gaining significant Media attention.

On August 4, 2021, PG&E assisted USFS in collecting electrical facilities as evidence from three spans of the Ganser 1101 Circuit in the Incident Area including: conductors, cross arms, insulators, fuses, and a SmartMeter at [redacted]. At that time, USFS released the Incident Area to PG&E.

On August 5, 2021, the following events took place:

1. PG&E conducted an observational visit to the Incident Area to photograph the site and evidence not collected by USFS.
2. PG&E advised USFS to collect a service line left at the site with a USFS evidence tag.
3. A PG&E troubleman transferred custody of Fuse 18101 #1 and #2 to Fire Cause Analysis (FCA), a third-party fire investigation specialist PG&E contracts with.
4. A PG&E contractor completed a LiDAR scan of the Incident Area.

On August 6, 2021, USFS collected the service line with a USFS evidence tag from the site.

[20] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 1. April 29, 2022.
[21] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 25. May 27, 2022.
[22] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 1. April 29, 2022.
[23] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 1. April 29, 2022.

On August 7, 2021, SED conducted its site visit of the Incident Area with PG&E personnel. Additional evidence that was not collected by USFS was collected by PG&E and FCA at that time.

On August 8, 2021, a PG&E troubleman collected nine more SmartMeters from customers on Butterfly Valley Twain Road and transported the 11 SmartMeters collected by PG&E (excluding the three SmartMeters collected by USFS) to ATS in San Ramon.

On August 9, 2021, PG&E closed and energized Switch 3089, which restored power to 17 additional customers and on August 20, 2021, PG&E closed and energized Fuse 18101, which restored power to an additional 40 customers.[24] These actions restored power to the majority of customers who experienced outages due to the Fly Fire, but 78 customers remained without power.

On August 25, 2021, PG&E downloaded data from the SmartMeters at ATS in San Ramon.

On August 30, 2021, PG&E filed the 20-Day Report concerning the Fly Fire to SED.

On September 2, 2021, PG&E restored power to six customers, three of whom had had their power deenergized on August 25, 2021, due to pole replacement work performed in response to the Fly Fire. Later that day, Fuse 1797 was closed and restored power to 27 additional customers. At this time, 48 customers remained without power.

On September 9, 2021, PG&E closed Fuse 3491 which restored power to 28 customers, and on September 12, 2021, closed Switch 67849, which restored power to one more customer.

On October 25, 2021, the Dixie Fire, and by extension the Fly Fire which had merged with the Dixie Fire, was contained.[25]

On November 5, 2021, PG&E closed Fuse 79151 and competed restoration and re-energization of the remaining 19 customers on the Ganser 1101 Circuit.[26]

On November 18, 2021, USFS met with PG&E at ATS to download the data from SmartMeters collected by USFS.[27]

B. Field Observations

SED conducted a single site visit to the Incident Area on August 7, 2021. An investigator from the SED's Electrical Safety and Reliability Branch (ESRB) and an investigator from the Wildfire Safety and Enforcement Branch (WSEB) were present for PG&E's collection of the remaining evidence not collected by USFS.

1. Site Visit Observation Report

On Saturday, August 07, 2021, at 0830 hours, SED investigators Samuel Mandell and Hassan Jahami met with PG&E investigators [redacted], [redacted] and [redacted] at the

[24] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 25. May 27, 2022.
[25] CAL FIRE website, accessed January 30, 2023. https://www fire.ca.gov/incidents/2021/7/13/dixie-fire/
[26] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 25. May 27, 2022.
[27] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 1. April 29, 2022.

utility's yard in Quincy, CA for a site visit. Additional attendees of the site visit included: a line crew, a vegetation management crew, a team of arborists, contractors from Exponent (a third-party investigator for the utility), Fire Cause Analysis (a contracted fire investigation team), and plaintiffs' representatives. The entire group then traveled north on Highway 70 to [redacted] (Incident Area).

USFS previously collected the conductor and part of a tree that had fallen on the conductors from the Incident Area. PG&E could not answer with certainty at the time but believed that a PG&E crew member had removed the conductor for USFS. The entire area of evidence collection by USFS occurred between poles 431 and 436, as they were referred to by the personnel on site. Figure 1 above shows the layout of the poles as referred to during the site visit. The conductor USFS collected was two spans from poles 432 to 434.

When SED viewed the evidence collection area, SED observed two fuses that had been previously collected by PG&E from an upstream fuse cutout. The distribution in the Incident Area was two single phases of 12kV. The two fuses came from a pole south on Highway 70, and SED observed that only one of them had operated. Figure 3 and Figure 4 show the two fuses.

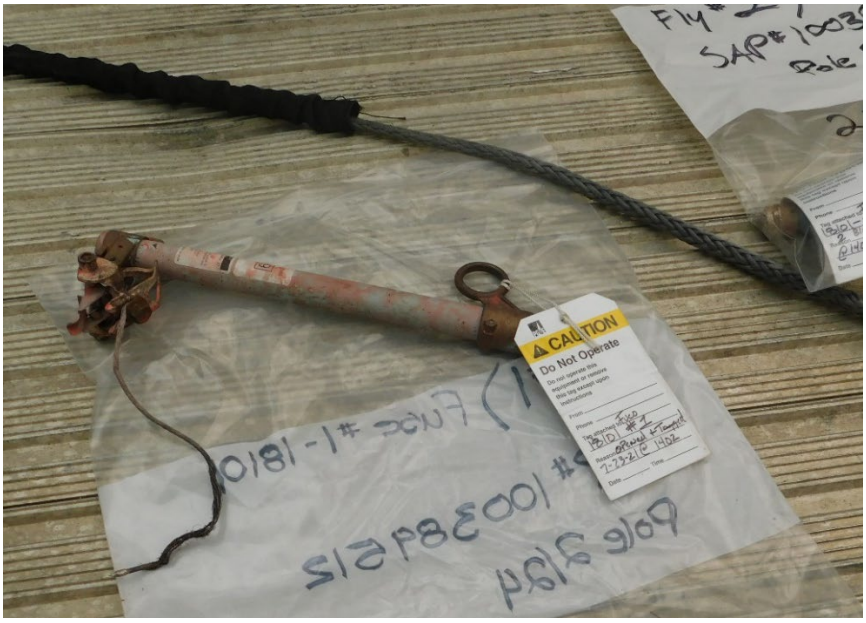

Figure 3: Blown fuse upstream from Incident Area.

Figure 4: Second fuse does not appear to have blown.

At the site visit, PG&E collected the conductor that spanned between poles 431 and 432. The conductor appeared to be 7/1 Aluminum Conductor Steel Reinforced cable (ACSR). SED did not observe any visible arcing damage on the section of the conductor PG&E collected. The coiled conductor PG&E collected is shown below in Figure 6. In addition, PG&E collected a transformer and a SmartMeter from pole 435, shown in Figure 6 and Figure 7.

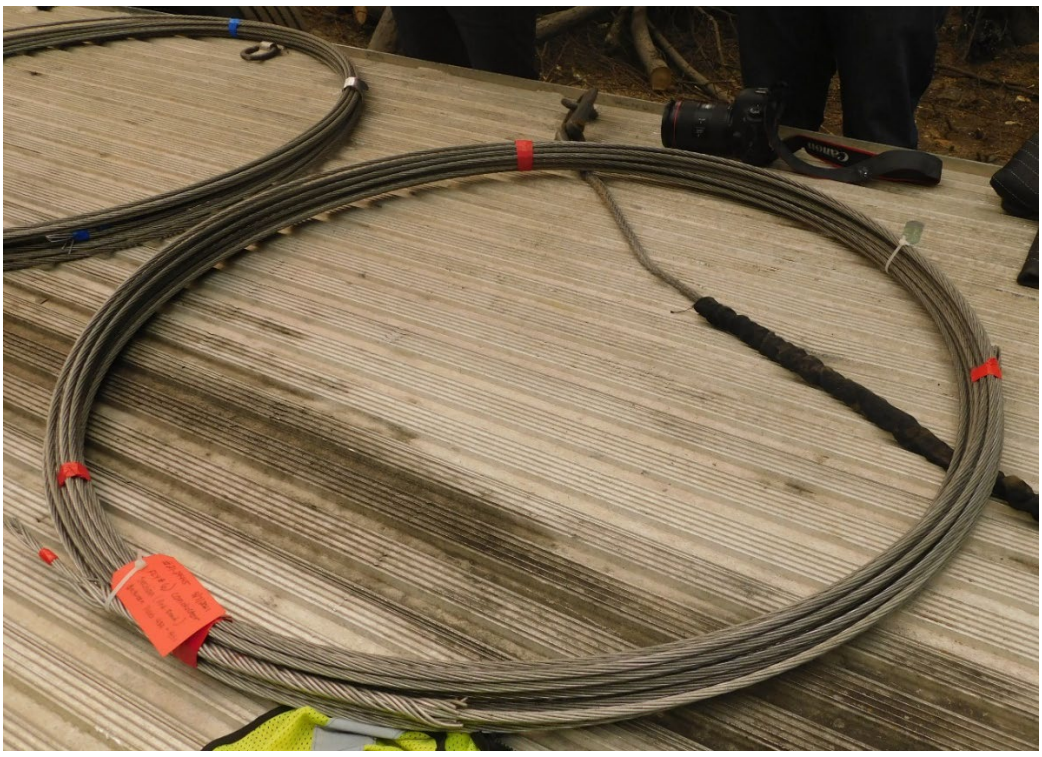

Figure 5: Two spans of conductor from pole 431 to pole 432.

Figure 6: Transformer from pole 435.

Figure 7: SmartMeter from pole 435.

PG&E also collected the remaining conductor from pole 434 to pole 436 as shown in Figure 8. PG&E returned to pole 432 and removed the transformer on that pole. The only apparent damage to the transformer on pole 432 were scorch marks where it was mounted to the pole, and bird guards on the insulator bushings were melted as shown in Figure 9.

Figure 8: Conductor from poles 434 to 436.

Figure 9: Transformer from pole 432.

Pole 434 was almost entirely destroyed by the Fly Fire. At pole 433, the pole top that held the primary conductor had been collected as evidence by USFS. There were some pole remains left at the base of 433 that appear to be from a crossarm. PG&E collected the pieces of the pole into evidence. See Figure 10 and Figure 11 for photos of these remains.

Figure 10: Remains of pole 434.

Figure 11: Crossarm remains from base of pole 433.

After collecting evidence from the poles around the site, PG&E moved to collect the remains of the tree that USFS found on the conductors at the Incident Area. The Subject Tree was located on a hill south of the distribution lines. The entire area showed signs of burn from the Fly Fire. There were multiple holes where trees and root systems had burned out and were still smoldering. The tree that fell was on a steep portion of the hillside. SED observed that some roots, on the uphill side, broke underground and the tree tipped down the hill.

USFS cut the Subject Tree into three portions. The first portion of the Subject Tree was still connected to roots in the ground and was approximately 9 feet 3 inches from the bottom of the root ball to the cut. Measuring 26 inches from the cut, or 7 feet 1 inch from the base of the root

ball, the circumference was approximately 48 inches. The circumference was taken at approximately breast height. The diameter of where the Subject Tree was cut was 13 inches by 15 inches (elliptical in shape). SED was not able to get a direct measurement to the lines from the base of the Subject Tree because it was on a hillside overlooking the distribution lines. SED measured from the base of the tree down the hill to approximately the center line on the distribution lines and found it was approximately 68 feet 3 inches. Figure 12 and Figure 13 below show this first portion of the Subject Tree.

Figure 12: Base of Subject Tree (looking uphill).

Figure 13: Base of Subject Tree (looking downhill).

USFS moved the second portion of the Subject Tree up the hill. The thicker end of the tree was measured to have a diameter of approximately 13 inches by 15 inches, matching the cut on the base. This second portion of the Subject Tree was measured to be approximately 42 feet 5 inches, bringing the total length of the Subject Tree left at the site to 51 feet 5 inches. The length of the treetop taken by USFS was unknown, so SED was unable to measure the full length of the Subject Tree during the site visit. PG&E cut the trunk into two pieces to transfer the remaining portion of tree.

Figure 14: Middle section of the Subject Tree, before being cut for transport.

At approximately 1430 hours, PG&E decided to also collect into evidence a tree that broke while USFS had been at the location of the fire. At this time, it does not appear the second tree was involved in the ignition of the Fly Fire.

C. Analysis of Utility Procedures and Actions

1. Protection Devices on the Subject Circuit

SED reviewed the timeline of faults detected by the Subject Circuit and the operation of protective devices. Although LR 2424 (the closest recording protection device to the Incident Area) recorded multiple faults in its fault log on July 22, 2021, none of the faults were sustained for long enough to trip open the circuit.[28]

Fault logs from LR 2424 show a Phase A to Ground fault at 1650 hours on July 21, 2021 with a peak magnitude of 305 amps, which lasted less than a tenth of a second.[29] The MTT for line to ground faults was set to 70 amps for LR 2424, and according to the Time Current Curve (TCC) for the recloser, a 305 amp line to ground fault would have to be sustained for approximately 1.5 seconds to trigger the line recloser to open.[30]

[28] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 23. May 27, 2022.
[29] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 22. May 2, 2022.
[30] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 10. August 1, 2022.

At 1651 hours, fault logs from LR 2424 show a Phase C to Ground fault with a peak magnitude of 236 amps, which lasted less than one quarter of a second.[31] According to the TCC curve for line to ground faults for LR 2424, a 236 amp fault would have to be sustained for approximately 2.5 seconds to trigger the line recloser to open.[32]

At 1753 hours, fault logs from LR 2424 show a Phase A to Phase C fault with a peak magnitude for Phase A of 238 amps and a peak magnitude for Phase C of 243 amps, which lasted less than one second.[33] The MTT for line to line faults was set to 200 amps, and according to the TCC curve for the recloser, an approximately 240 amp fault would have to be sustained for approximately 9 seconds to trigger the line recloser to open.[34]

At 1802 hours, fault logs from LR 2424 show a Phase A to Phase C fault again with a peak magnitude for Phase A of 224 amps and a peak magnitude for Phase C of 226 amps, which once again did not sustain the fault for long enough to trigger the recloser to open, even though the peak magnitude exceeded the MTT. [35]

PG&E stated that they are not aware of any facts establishing that the protection scheme did not work as designed on the Subject Circuit.[36] Based on the information available to SED at the time of preparing this report, SED agrees with PG&E's assertion. On the day of the incident, the first fault on the Subject Circuit occurred at approximately 1650 hours and likely caused Fuse 1797, which is located extremely close to the Incident Area, to open. The line reclosers upstream (including LR 2424) were set to not open for transient faults, and since the faults were not sustained faults, they did not open. This operation is functioning as designed since it reduces the number of customers who might experience an outage due to a fault. The fuse isolates the deenergized section to only the portion downstream of the fuse, whereas a line recloser further upstream would deenergize more customers if it were the device to open the circuit.

Due to recent increased wildfires in the state resulting from energized power lines, the protection scheme on the Subject Circuit, which prioritizes keeping customers' power on rather than shutting off the power to ensure electrical faults do not spark fires, is being changed in high-risk areas. Enhanced Power Safety Settings (EPSS) increases the sensitivity of the settings on protection devices, such as line reclosers, so that electrical faults with durations less than 1 second open the circuit at the recloser where these settings are enabled. These more sensitive settings can lead to more customers experiencing outages, but it can also lead to less fire ignitions by energized power lines. PG&E's EPSS program began on July 28, 2021, six days after the start of the Fly Fire.

[31] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 22. May 2, 2022.
[32] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 10. August 1, 2022.
[33] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 22. May 2, 2022.
[34] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 10. August 1, 2022.
[35] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 22. May 2, 2022.
[36] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 23. May 27, 2022.

2. PG&E Vegetation Management

PG&E is required to perform routine Vegetation Management (VM) patrols of its facilities in Tier 2 and Tier 3 High Fire Threat Districts (HFTD) once per year per General Order (GO) 165. The most recent routine VM patrol conducted in the Incident Area prior to the Fly Fire was conducted between July 6 and July 8, 2021, two weeks prior to the start of the fire.[37] Additional inspections were also conducted for the Catastrophic Event Memorandum Account (CEMA) for the relevant portion of the Subject Circuit. The most recent CEMA patrol conducted prior to the Fly Fire was conducted on April 8, 2021, 3 months prior to the start of the fire.[38]

In 2020, PG&E established an Enhanced Vegetation Management (EVM) program which requires additional vegetation inspections, prioritized by risk, along the utility's facilities. The Incident Area was not identified for the 2021 EVM program due to its lower risk priority than other areas and therefore was not subject to the additional EVM inspection program in 2021.[39]

3. Analysis of the Vegetation Management Patrols

During the routine VM patrol performed in July 2021, PG&E identified six trees in the same span as the Subject Tree (between Pole 100389433 and Pole 100389434) in need of trimming. Three of the six trees identified in 2021 were white fir trees, similar to the Subject Tree. PG&E states that neither the routine VM patrol performed in July 2021, nor the CEMA patrol performed in April 2021 identified the Subject Tree for either removal or trimming.[40] PG&E's vegetation inspections and patrols only identify and note trees that pose a potential hazard; they do not document trees as being healthy or take note of trees that do not pose a potential hazard. For this reason, inspection and patrol records of the Incident Area do not indicate that PG&E inspectors found the Subject Tree to be healthy and not pose a potential hazard.

SED reviewed the inspection records from the vegetation management patrols and inspections provided by PG&E. SED specifically looked for white fir trees, similar to the Subject Tree, in the Incident Area to verify PG&E's statement that the Subject Tree was never identified as a hazard tree in previous vegetation management inspections. SED found four white fir trees near the Incident Area which were identified in PG&E VM patrols between 2018 and 2021. However, the locations and approximate sizes of the four white fir trees did not match the Subject Tree. See Figure 15 for a map of the trees identified.

[37] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 13. May 27, 2022.
[38] Pacific Gas and Electric Company. "Data Request Response to DR-1", Response to Question 14. May 27, 2022.
[39] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 14. August 1, 2022.
[40] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 7. September 2, 2022.

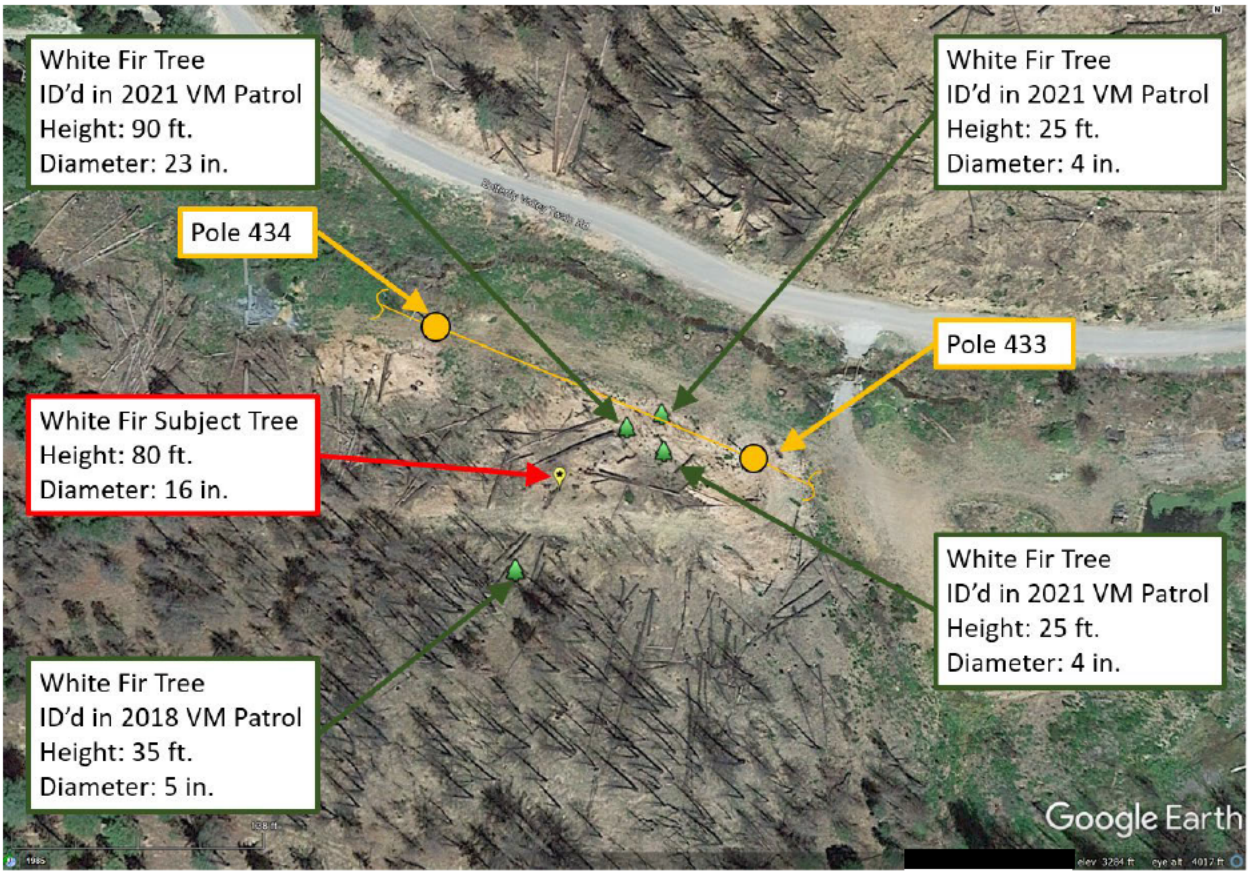

Figure 15: Location of White Fir Trees Identified in PG&E Vegetation Management Inspections, and the Location of the Subject Tree in Relation to the Incident Span.[41]

To the extent that SED is aware, the Subject Tree was never identified by a PG&E inspection as a potential hazard needing vegetation management or abatement before the Subject Tree fell on the utility's conductors.

4. Analysis of Arborist Findings

PG&E hired an arborist who visited the site on the August 2, 2021 and August 4, 2021 site visits, including during the collection of parts of the white fir tree. SED requested the report made by PG&E's arborist, but PG&E responded that the arborist was not asked to and did not prepare a written report.[42] However, PG&E provided a short summary of the arborist's findings. Based on PG&E's summary of the arborist's findings, the arborist's impressions were that the white fir had uprooted and fell into the line.[43] In addition, PG&E's summary of the arborist's findings indicate that the arborist observed the exposed root ball of the tree following the uprooting and

[41] Satellite image via Google Earth, dated July 2022. Markups added by SED. Note that this satellite image was taken after the Fly Fire.
[42] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 5. August 1, 2022.
[43] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 5. August 1, 2022.

observed what looked like signs of rot in the root ball, which may have contributed to the uprooting.[44]

Because SED's investigation is focused on a utility's compliance with Commission General Orders and not the cause of the fire, SED relies on the fire authority or the utility to evaluate the condition of trees that may be the cause of the fire. SED does not retain an independent arborist to review the cause of a fire. At the time of preparing this report, SED was not able to review the Fire Authority's report, which may contain an analysis from a USFS contracted arborist. When SED is able to review the Fire Authority's report, SED may revise the findings of this report based on new information that may become available. However at this time, based on PG&E's summary of the arborists' statements, it appears that the rot in the root bulb, which may have caused the tree to fall would not have been visible from a vegetation management patrol.

PG&E provided the following photos (see Figure 16 and Figure 17) of the Subject Tree's stump taken by PG&E incident investigators during the August 2, August 4, August 5, and August 7, 2021 site visits to the Incident Area.

[44] Pacific Gas and Electric Company. "Data Request Response to DR-2", Response to Question 5. August 1, 2022.

Figure 16: Photo of the Subject Tree stump on the hillside looking towards the electrical conductor span.

Figure 17: Close up of Subject Tree base of stump.

V. Conclusion

Based on the evidence reviewed in this investigation, SED does not find PG&E in violation of the Commission's General Orders. PG&E's electrical protection devices worked as designed, and PG&E performed inspections and patrols at the appropriate intervals and completed the maintenance work reviewed by SED in a timely manner. GO 95 Rule 35 provides that a utility who has "actual knowledge" of "dead, rotten or diseased trees" or "dead, rotten or diseased portions of otherwise healthy trees" should remove those trees, or portions thereof. Based on the information available to SED, it appears that PG&E could not have known or identified the Subject Tree as a potential hazard based on the location of the rot in its stump prior to the start of the Fly Fire. Therefore, SED finds that PG&E is not in violation of GO 95 Rule 35.

Because the USFS's Fire Report was not yet complete at the time this report was issued, SED may re-open the investigation if additional information becomes available that would modify SED's findings in this report. In that case, SED may take further actions if appropriate.