

Michael J. Aguirre, SBN 060402, maguirre@amslawyers.com
Maria C. Severson, Esq., SBN 173967, mseverson@amslawyers.com
AGUIRRE & SEVERSON, LLP,
501 West Broadway, Ste. 1050, San Diego, CA 92101 (619) 876-5364

Catherine Janet Kisse-Sandoval, SBN 153839, Csandoval@scu.edu
Director, Institute for Insurance Law, Santa Clara University School of Law
500 el Camino Real, Santa Clara, CA 95053-0421 (408) 551-1902

Attorneys for Amici Alex Cannara and Gene Nelson

January 5, 2022

The Honorable William Alsup
United States District Court Judge, USDC for the Northern District of California

Re: Request to File Brief Regarding PG&E's Patterns of Criminal Thinking, Dangerous Short-cut Theories and Practices that Drive its Criminal Behavior and Public Safety Risk, Supporting a Determination of Whether PG&E Violated its Probation Conditions and Consideration of Probation Extension

Dear Honorable Judge Alsup:

Amici Alex Cannara and Gene Nelson, PG&E customers concerned about PG&E's poor public safety record, respectfully seek leave to submit this letter to the Court. This brief respectfully offers comments in response to PG&E's Response to Request for a Final Report, Dkt. No. 1519, and the PG&E Independent Monitor Report of November 19, 2021, Dkt. No. 1524-1. This brief discusses patterns of criminal thinking, theories, and practices by PG&E that have contributed to PG&E's safety hazards. *Amici* respectfully suggest these patterns, including PG&E's failure to take responsibility for its actions including causing death and destruction during its federal criminal probation, support extending PG&E's probation term and adopting additional conditions and recommendations as part of PG&E's sentencing.

Amici also respectfully recommend this Court proceed with the hearing scheduled for January 10, 2022 to present evidence regarding whether PG&E violated its probation by its conduct that sparked the Kincade and Zogg fires. Determining whether PG&E repeatedly violated the first condition of its probation—commit no other federal, state, or local crimes—is important to respect for this Court, federal criminal law, federal criminal probation, and to the protection of the public. This Court’s determination that PG&E has violated its probation would also be important considerations in the state law criminal cases by Sonoma and Shasta County against PG&E, the consideration by the U.S. Attorney’s Office in the Eastern District of California and several California counties about whether to charge PG&E with committing federal and state crimes for starting the Dixie Fire, and to PG&E’s regulators, Board of Directors, officers and employees, shareholders, and the public.

I. INTRODUCTION

This brief respectfully: (1) highlights patterns of criminal thinking evident in PG&E’s conduct and attempts to justify or excuse its criminal actions that led to death and destruction during its federal criminal probation; (2) discusses theories and patterns of conduct still practiced by PG&E that have contributed to PG&E’s safety hazards, leading up to and following the San Bruno Natural Gas explosion, PG&E’s conviction and sentencing to probation, and its probation violations, wildfires, and dangerous practices that persist in the fifth year of PG&E’s federal criminal probation; and (3) recommends steps for this Court’s consideration as a remedy to protect public safety and rehabilitate felon PG&E.

The Monitor’s Final Report identified “the six most salient challenges PG&E faces going forward”:

1. Retaining a core leadership team, in the wake of near constant turnover in recent years.
2. Continuing to improve records integrity, which has been an issue for PG&E for many years and remains a central challenge.

3. Continuing to improve contractor management, because contractors are a critical workforce base, including on the wildfire mitigation front.
4. Adhering to commitments to invest in long-term safety projects, including undergrounding efforts for electrical distribution lines and the repair and replacement of at risk electrical equipment, and sustaining completion dates and not letting them slide.
5. Improving planning and execution of wildfire mitigation efforts.
6. Ensuring the employment of resources to improve wildfire safety does not result in cannibalization of gas safety teams and results that have been achieved during recent years.

Amici respectfully submit these comments to highlight several patterns of criminal thinking exhibited in PG&E's theories, practices, and justifications. As stated in *Amici's* briefs Dkt. 1228, pp. 16-20, and Dkt. 1236, pp. 36-40, PG&E appears to be engaging in criminal thinking errors recognized by federal courts and federal criminal probation including Victimstance, Superoptimism, Indolence, Entitlement, and Power Orientation. PG&E may also be engaged in other patterns of criminal thinking, recognition, and correction of which may deter the corporation from continuing to commit crimes. *Amici* respectfully suggest extending PG&E's federal criminal probation is warranted to address PG&E's apparent ongoing criminal thinking patterns, including its refusal to take responsibility for its dangerous and deadly behavior. *Amici* recommend that as part of the ethics training required in federal criminal probation, this Court order PG&E's Board of Directors and Executive Officers to undergo testing and training to recognize and end criminal thinking errors.¹ Doing so would address the roots of PG&E's repeated crimes, enhance respect for law, and protect the safety of all Californians affected by PG&E's pattern of criminal conduct. *Amici* strongly propose PG&E's Board of Directors implement the recommendation to require training to identify and stop criminal thinking errors. The CPUC should consider ordering PG&E's Board and Executive Officers to undergo training

¹ See e.g. United States Court, Post Conviction Risk Assessment (PCRA), https://www.uscourts.gov/sites/default/files/overview_of_the_post_conviction_risk_assessment_0.pdf (June 2018) (discussing the tests administered to federal convicts to identify patterns of criminal thinking and requiring training through courses to recognize and end criminal thinking that leads to criminal behavior).

to recognize and end criminal thinking errors to protect public safety and end PG&E's repeated violations of the California Public Utilities Code attendant to PG&E's criminal conduct.

This brief also highlights several dangerous "short-cut" theories and practices PG&E engages in that drive its dangerous behavior. These theories and practices include:

- 1) Overreliance on Visual Inspection, Downplaying the Role of Records, Age, and Internal Inspection
- 2) Poor Record Keeping, Maintenance, Dissemination, Analysis, and Usage
- 3) Inappropriate Adherence to Industry Standards Developed for other Regions, Time-periods, and Conditions
- 4) Poor Information Sharing, Disclosure, Management, and Analysis

PG&E's short-cuts and practices demonstrate that the death, destruction, and danger it created in numerous fires including the Zogg, Kincade, Dixie, and other fires were not the result of a "mistake" or "good faith judgment," but the product of PG&E's theories and practices. The Monitor's Final Report recognized that PG&E has not completed all projects required in its federal criminal probation such as improving its record keeping and recommended attention to those probation condition projects going forward. (Dkt. 1524-1, p. 28, 32, 34, 38, 49).

Recognizing PG&E's short-cut theories and practices that drive danger will be important in the consideration of criminal charges against PG&E for the Zogg and Kincade fires, and the investigation of the Dixie Fire. The persistence of these dangerous short-cut theories and practices at PG&E merit the extension of PG&E's federal criminal probation to protect public safety and reform felon PG&E.

II. PG&E's Criminal Thinking Endangers Public Safety

PG&E's repeated attempts to vilify law enforcement agencies, this Court, its federal criminal probation officer, and counties that have indicted PG&E for felony and misdemeanor crimes for "criminalizing" PG&E's fire-starting behavior,² reflects PG&E's criminal thinking

² PG&E's Final Report, Dkt. No. 1519, p. 8; PG&E's Comments on Final Report, Dkt. No. 1535, p. 5.

and failure to take responsibility for its behavior. As this Court recognized during its January 3, 2022 hearing, PG&E has failed to accept responsibility for its crimes, including those committed during federal criminal probation. Neither did PG&E express remorse at the January 3, 2022 hearing or in its final report or responsive briefs. Instead, PG&E castigated those who would hold it accountable for committing crimes, casting itself as a victim that should be left to act according to its own judgment.

“Victimstance” is a criminal thinking pattern that attempts to shift blame to others.³ PG&E admonishes the Court that “(v)ilifying them [PG&E employees] and threatening to criminalize the exercise of professional judgment or the making of honest mistakes serves neither safety nor fairness, and instead severely detracts from PG&E’s efforts to bring the skills of the best and brightest to bear on stopping wildfires.” (Dkt. 1519, p. 8). PG&E repeats this plea in its response to the Monitor’s Final Report, arguing the “vilification and criminalization of good-faith operational judgments and mistakes—despite (as the Monitor recognizes) sincere efforts and substantial progress on PG&E’s part—fosters fear and cynicism that PG&E is actively trying to stave off, is profoundly destabilizing to PG&E’s leaders, employees, and contractors, and is fundamentally counterproductive to the shared goal of promoting safety.” (Dkt. 1538, p. 5).

PG&E’s failure to recognize it is charged with committing long-standing crimes codified in state statute belies its plea against the criminalization of such behavior. This Victimstance reflects criminal thinking that fostered criminal conduct and led to death, and destruction. Proceeding with the Section 12 hearing on January 10, 2022 to determine whether PG&E violated its federal probation is important to fostering responsibility and accountability by recidivist felon PG&E, to the consideration of additional charges that may be brought regarding the Dixie Fire, and to PG&E’s regulators, shareholders, its Board, and to public safety.

³ Brian Loebig, Criminal Thinking Therapy Resource, <https://www.criminalthinking.net/about-us/>

To find a probation violation, the alleged crime does not need to be proved “beyond a reasonable doubt;” “it is sufficient if the proof of the conduct, viewed reasonably, satisfies the court that a violation has occurred.”⁴ The U.S. Attorney’s Office has ample evidence of a reasonable basis to believe that PG&E violated the multiple criminal laws for which PG&E was indicted by Shasta and Sonoma Counties. The underlying facts for each crime are not significantly in dispute. Rather, PG&E seeks to argue its conduct was not criminal because its actions that led to the Zogg and Kincade fires were a “mistake” or exercise of its professional judgment. PG&E does not explain how its conduct could be both a mistake and a good faith exercise of professional judgment. Neither does it explain what mistakes it alleges occurred that caused the Zogg or Kincade fires, nor does it detail what it alleges to be its good faith exercise of professional judgment.

The U.S. Attorney has ample evidence that the Zogg and Kincade fires were not “mistakes,” but were products of PG&E’s theories, policies, and practices that constituted reckless conduct. PG&E’s failures to follow its own decommissioning policies and its failure to heed the lessons of the Sawmill and Camp Fire regarding low-cycle fatigue,⁵ indicate that PG&E’s conduct leading to the Kincade Fire was reckless and inconsistent with good faith professional judgment. Similarly, so too was PG&E’s failure to follow-up its procedures and remove the tree of concern that led to the Zogg Fire after it was marked for removal on August 23, 2018 (See, PG&E docket 1323, p. 4). PG&E has produced no evidence that the two

⁴ § 26:13. Standard of proof, Law of Probation & Parole § 26:13 (2d).

⁵ CPUC Incident Investigation Report, October 27, 2021, pp. 30-31, <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/safety-and-enforcement-division/investigations-wildfires/public-sed-investigation-report-on-pge-2019-kincade-fire.pdf>. “Fatigue failure refers to when a material fails after experiencing a large number of repeated stresses. Low-cycle fatigue failure generally refers to when fatigue failure occurs in under 1000 cycles.” *Id.* at n. 66. See also CPUC, Safety and Enforcement Division, SED Incident Investigation Report for 2018 Camp Fire with Attachments, CAMP 0604, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/wildfire/staff-investigations/i1906015-appendix-a-sed-camp-fire-investigation-report-redacted.pdf?sc_lang=en&hash=FC40497355B496C4BE040275A72A43B4 (“Even on days where wind speeds are low (as little as 2 mph), the forces exerted by wind may be sufficient to excite cyclic conductor motion, a key factor in the creation of progressive damage via fatigue or wearing of tower components and hardware.”)

subsequent inspectors were given the location of that tree or engaged in any close inspection of that tree, indicating that those assessments were not a good faith judgment about the tree of concern. The Zogg Fire was a consequence of PG&E's patterns of conduct and short-cut theories that relied on reviewing trees from a distance. This is reckless conduct, not a mistake or good faith. The evidence is sufficient to support this Court's finding that PG&E violated the first condition of its probation which prohibits the commission of other federal, state, or local crimes.

This Court has done yeoman's work in supervising PG&E's federal criminal probation. State courts cannot be relied on to take over that role as California law allows a felon to choose whether to accept probation or pay a fine. PG&E Corporation cannot go to jail under state or federal law. It is unlikely that PG&E will select state criminal probation in lieu of paying fines for any convictions for crimes charged from the Zogg or Kincade fires, or any future state charges related to the Dixie Fire. Federal criminal charges have not yet been filed against PG&E for the Dixie Fire.

PG&E's federal criminal probation stemming from the 2010 San Bruno natural gas explosion is the pending forum for criminal probation. *Amici* respectfully encourage this Court to consider PG&E's patterns of criminal thinking and its dangerous short-cuts and practices that have fostered dangerous and deadly convictions in determining whether to extend PG&E's probation term and in its determination about whether PG&E violated this probation.

A. PG&E is Charged with Violating Several Longstanding Crimes and its Probation

PG&E fails to recognize that longstanding California law classifies as a crime conduct PG&E is charged of committing by Sonoma County and Shasta County for the 2019 Kincade Fire and the 2020 Zogg Fire, respectively. Based on the Sonoma and Shasta County indictments, PG&E's Probation Officer alleges that "(t)here is probable cause to believe that the company under probation violated the general condition of probation that they not commit another federal, state or local crime." (PG&E Dkt. No. 1513, pp. 3-4.)

PG&E is charged with violating multiple criminal statutes of the California Penal Code including charges of: involuntary manslaughter (§192(b)); recklessly causing fire with great bodily injury (§452(a)); recklessly causing fire to inhibited structure (452(b)); recklessly causing fire of structure or forest (§452(c)); recklessly cause fire to property of another (§452(d)); recklessly causing fire, aggravating factors (452.1(a)(1)); and special allegation arson, state of emergency (454(A)). PG&E is also charged with violating multiple criminal statutes of the Health and Safety Code, including reckless emission of air contaminants (§42400.3); negligent emission of air contaminants (§42400.1); negligent emission of air pollution (42400.1(a)); throwing flaming or glowing substances (§13001); and burning lands of another (Public Resources Code §4421). PG&E is also charged with violating multiple criminal statutes of the Public Resource Code including failure to maintain firebreak (§4292); failure to maintain clearance (§4293); unlawful fire on property of another (§4221); and negligent causing a fire by device (§4435).

There is no debate about whether each of these counts charges a crime under California law. Criminalization of such conduct under California statutes is not at issue. The question is whether the facts indicate the elements of each count of the charged crimes are met.

The facts in the Zogg Fire and Kincade Fire case are not in substantial dispute. PG&E's demurrer to the environmental crimes charged for the Kincade Fire was not sustained after the judge rejected PG&E's arguments that although PG&E started the fire, "(t)he fire emitted the contaminants," and "PG&E itself did not emit air contaminants." Interpretation of the word "emit" in the statute making negligent emission of air contaminants or air pollution a crime will be addressed in the Sonoma County Kincade Fire court proceedings. For the remaining counts relating to each fire, the prosecution will need to prove PG&E committed each crime.

To convict for involuntary manslaughter, the prosecution must prove the defendant: 1) had a legal duty to the person who died; 2) failed to perform that legal duty; 3) the defendant's

failure was criminally negligent and; 4) the defendant's failure caused the person to die.⁶ PG&E has a legal duty under longstanding California law to operate safely including California Public Utilities (CA PU) Code 451 which requires utilities to "furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities...as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public." CA PU Code ¶ 399.2(a)(1) requires each electrical corporation to provide service in a safe manner.

Criminal negligence for involuntary manslaughter involves more than ordinary carelessness, inattention, or mistake in judgment. A corporation acts with criminal negligence when: 1) It acts in a reckless way that creates a high risk of death or great bodily injury; and 2) A reasonable person would have known that acting in that way would create such a risk.⁷

PG&E depicts its conduct that led to fires, death, and destruction as "good-faith operational judgments and mistakes" (PG&E's Final Report, Dkt. No. 1538, p. 5) or "exercise of professional judgment or the making of honest mistakes" (PG&E's Final Report, Dkt. No. 1519, p. 8). PG&E's conduct that led to the Zogg and Kincade fires is not merely a mistake of fact such as picking up the wrong black umbrella nearly indistinguishable from another in an umbrella stand. PG&E has not detailed what alleged "mistakes" its employees or contractors made or explained why that such conduct should be characterized as a mistake and not the result of PG&E's policies, practices, and theories.

The facts indicate PG&E's dangerous conduct that led to the Zogg and Kincade fires was not a "mistake," but a direct result of PG&E policy and practice. PG&E's theories that drive its practices such as primarily relying on visual inspection, failure to share information (even within PG&E), failure to learn from past problems and incidents, poor record-keeping, running

⁶ Butte County, People's Statement of Factual Basis in Support of the Pleas and Sentencing Statement, PG&E Dkt. 1220-1, June 17, 2020, p. 90.

⁷ *Id.*

equipment to failure, poor inspections, and other short cuts produced the conditions that led to the Zogg, Kincade, Dixie, Camp, Wine Country, and other fires during PG&E's federal criminal probation. PG&E has not demonstrated its conduct represents good faith or an appropriate exercise of "professional judgment."

B. PG&E's Dangerous Theories, Policies, and Practices Resulted in the Zogg Fire

PG&E's theories, policies, and practices—not a mistake—led to the Zogg Fire. PG&E has yet to explain why its policies and practices about removing or trimming vegetation after it was marked for such action (to the extent it has any such documented policies and practices) were not followed for the Girvan Circuit where the Zogg Fire occurred in 2020. PG&E admits that its contractor marked the Zogg Fire tree of concern for removal on August 23, 2018 (See, PG&E docket 1323, p. 4, Exhibit H-5.1, the "Carr Fire Daily Report," identifying for removal in the "PI" tab at rows 6274 and 6275 the Gray Pines of interest in the Zogg Fire). PG&E redacted the comment section of rows 6274 and 6275 and the visible cells on the Excel sheet do not indicate why the inspector believed that Gray Pine should be removed.

Those entries classified the Gray Pines between poles 59 and 60 as Priority 2 (P2), indicating that the work identified should be completed within thirty days (*See* Hearing Transcript, Dkt. 1292, describing PG&E's 30-day standard to work on P2 trees). Despite the P2 marking for removal within sixty days, the Gray Pine of interest was not cut down before it fell on an uninsulated PG&E powerline, causing the Zogg Fire in October 2020. That fire killed four people, caused severe injuries, burned several structures and forest lands, killed, or injured domestic animals, and caused air pollution and hazardous emissions.

PG&E has not explained why the tree of concern was not removed by October 2018 as its designation for removal required, or why its policies (if any) for follow-up from a removal designation were not followed. PG&E admitted to this Court its databases do not communicate with its vegetation management contractor databases. (Dkt.No. 1323-14, Exhibit N-2, p. 78, lines

1-5). PG&E relies on Excel spreadsheets sent from subcontractors to PG&E that indicate inspection determinations (trimming, removal, etc.). In the Zogg Fire area, for example, PG&E admitted in docket 1337, p.11, that the exhibits PG&E produced in Dkt. 1323-H indicate that PG&E's contractor identified Gray Pine trees for vegetation management work through marking on Excel spreadsheets, though that work was never completed.⁸ PG&E has failed to explain its negligent lack of follow-through that left that Gray Pine in place.

PG&E has produced no evidence of any system used to ensure that inspection determinations are timely executed. PG&E also admits that the area of interest had not received a separate Catastrophic Event Memorandum Account (CEMA) patrol in 2019, as was required to visually inspect for dead and dying trees in the highest-risk portions of its distribution lines. (Dkt. No. 1265 at 24, 31, 32; Dkt. 1277, p. 12-13).

Instead, PG&E asks this Court and Shasta County to find PG&E's failure to initiate new removal designations during two subsequent vegetation patrols of the Girvan lines indicates a professional difference of opinion about whether the tree of concern in the Zogg Fire should be removed, not recklessness. This argument ignores the fact that the subsequent patrols did not appear to have inspected the tree of concern, but only walked by trees from a distance under the powerlines.

Those subsequent patrols appear to have examined the trees on the Girvan line where the Zogg fire started from a distance, missing the more than four-foot-high chasm in the tree of concern visible from the side and uphill. According to the Shasta County investigator's report, the "cause of the Zogg Fire was determined to be a gray pine falling in a southerly direction, striking the powerlines owned and operated by Pacific Gas & Electric Company (PG&E)."⁹ "The

⁸ See Dkt. 1323-H, Exhibit H-5.1, "PI" tab at rows 6274 and 6275 (indicating that crews identified two Grey Pines for work in the area where the Zogg fire ignited). See also Dkt. 1323, Exhibit H-6.1, "Tree Data" tab at rows 12158 and 12159, and Exhibit H-7, Mountain G "Carr Fire Daily Report," identifying Gray Pines on the "Tree Data" tab at rows 12158 and 12159.

⁹ The People of the State of California v. PG&E, No. 21-06622, Complaint-Criminal, Felony, Sept. 24, 2021 [hereinafter, *Shasta County Indictment Against PG&E*]; Shasta County District Attorney's Office Bureau of

tree had decay and a significant cavity at the base of the tree that would have predisposed it to a downward slope failure.”¹⁰ “Decay was observed in the center of the tree. The cavity and absence of supporting roots on the cavity side would have been visible from the sides and uphill, even if briefly viewed. The roots of the cavity are excessively large, which was evidence they had developed over a long period of high mechanical stress.”¹¹

If any of PG&E’s patrols had gotten close to the Zogg Fire tree of concern, the gaping cavern at the back of the tree would have been obvious and an immediate safety concern. PG&E’s inspection policies and practices led to a superficial, long-distance survey of the Girvan Circuit trees, and lack of follow-up after the August 2018 inspection removal designation.

In Dkt. 1515, p. 27, PG&E stated its inspectors conduct a “Level 1” or “Limited Visual” assessment, which is “the most common, practical, and recognized assessment used by utilities.” “When the results of a Level 1 inspection suggest a closer inspection of an individual tree is required, they conduct or call for a Level 2...which requires a 360 degree inspection of the tree.” (*Id.*) PG&E argues this practice is consistent with the International Society of Arboriculture (ISA) Utility Tree Risk Manual. This contention fails to analyze whether this international standard is appropriate for conditions in PG&E’s service territory including the longstanding drought and bark beetle infestation spreading in California.¹²

PG&E’s Final Report states it had developed a “goal to shift to 360-degree visual assessments of potential strike trees in overhead distribution miles in HFTDs...to identify

Investigation, Crime Report # 20GC0847AH1, Investigator, Alex Houston, Sept. 24, 2021, at 2 [hereinafter *Shasta County Crime Report*].

¹⁰ *Shasta County Crime Report*, *supra* note 1, at 2.

¹¹ *Id.* at 3.

¹² See, NOAA, National Integrated Drought Information System, DROUGHT STATUS UPDATE FOR CALIFORNIA-NEVADA, Oct. 15, 2021, <https://www.drought.gov/drought-status-updates/drought-status-update-california-nevada-8#:~:text=the%20region%20continues%20to%20be%20100%25%20in%20drought%2c,central%20california%20experiencing%20the%20greatest%20intensification%20of%20drought;Damon%20Arthur,%20Drought%20And%20Bark%20Beetle%20Kill%20Millions%20Of%20Trees,%20Increase%20Wildfire%20Risk%20In%20North%20State%20Forests,REDDING%20RECORD%20SEARCHLIGHT,July%206,%202021,updated%20July%2011,%202021,https://www.redding.com/story/news/2021/07/06/drought-bark-beetle-wildfire-risk-california-forests/7879061002/>.

potential integrity issues, such as signs of defect, disease or any other visible condition that contributes to the tree’s likelihood of failure and ability to strike overhead conductors.”¹³ PG&E has not announced any plans to execute this goal and is likely to seek ratepayer funds to complete such inspections. This shift in goals comes too late for the Zogg, Dixie, and many other fire victims.

The arborist hired by PG&E’s contractor, CN Utility Consulting Inc., to survey the vegetation near the Girvan line in October 2018 does not recall inspecting the Gray Pine of interest that later caused the Zogg Fire (PG&E Dkt. 1300-1, p. 4). PG&E proffered no evidence that it gave the precise location of the Zogg Fire tree of interest to that arborist or the person who conducted the next patrol. Neither has PG&E alleged it directed those arborists to closely inspect trees that had been previously designated for removal, but not yet removed, such as the tree of concern in the Zogg Fire.

PG&E Chief Executive Officer (CEO) Patti Poppe recorded a video and written message that attributed PG&E’s failure to remove the tree that caused the Zogg Fire within two years of its marking to “professional differences” between arborists.¹⁴ Ms. Poppe stated that “(b)etween October 2018 and last year’s Zogg Fire: Two trained arborists walked this line and independent of one another determined the tree in question could stay.”¹⁵ She added “(a)rborists, specifically, are trained professionals and sometimes, just like doctors or architects, they can have professional differences. There will be debates about the facts around the tree that started the Zogg Fire. Professional debate in the service of doing what is right and continuously improving.”¹⁶

¹³ PG&E Dkt. 1519, p. 25.

¹⁴ PG&E, *PG&E Disputes Shasta County Criminal Charges Related to 2020 Zogg Fire*, PG&E CURRENTS, Sept. 24, 2021, <https://www.pgecurrents.com/2021/09/24/pge-disputes-shasta-county-criminal-charges-related-to-2020-zogg-fire/>.

¹⁵ *Id.*

¹⁶ *Id.*

PG&E's course of conduct is analogous to a homeowner getting an appraisal based on a full inspection that indicates the structure is unsound and needs to be torn down. Instead of getting a second opinion based on a full house inspection, PG&E's actions are like getting the second and third opinion of other appraisers based on a walk through the neighborhood by inspectors who did not have the home's address and never enter the subject home. An opinion about the neighborhood without an inspection of the house would not be a reliable basis to determine the home was sound, nor would it constitute a professional difference of opinion about the house. PG&E's review of the trees near the Girvan line without a detailed inspection of the tree of interest previously marked for removal is indicative of reckless conduct, not a difference in professional judgment.

Neither is reliance on the short-cut of seeing green leaves on a tree sufficient to ensure that a tree does not pose a danger to electric lines and the public. PG&E's arborist stated that the photograph of the tree of concern in the Zogg Fire "has a green canopy, indicating that the tree is able to take in nutrients through its roots and distribute them to its canopy." (PG&E Dkt. 1300-1, p. 4). A tree can appear to have a green canopy but still be suffering from disease (Dkt. 1515, pp. 26-27). Healthy neighboring trees can supply a dying tree with nutrients that prolong green leaves even when a tree is suffering from disease, fungus, or massive injury.¹⁷ Observance of green leaves on a leaning tree from a distance does not excuse failure to closely inspect a tree previously marked for removal.

PG&E's attempt to characterize the subsequent patrols as a professional difference of opinion over the tree of concern that started the Zogg Fire ignores the fact that it doesn't appear that the subsequent patrols inspected that tree. The Zogg Fire is a reckless product of PG&E's theories, practices, and conduct, not a mistake or exercise of professional judgment.

¹⁷ See Peter Wohlleben, *THE HIDDEN LIFE OF TREES: WHAT THEY FEEL, HOW THEY COMMUNICATE—DISCOVERIES FROM A SECRET WORLD*, 2016, pp. 159.

C. The Kincade Fire was Sparked by PG&E’s Unprofessional Conduct and Reckless Practices

The CPUC’s Kincade Fire Incident Investigation Report (attached as Exhibit A) determined that PG&E’s configuration of the Incident Tower’s jumper cables and insulator strings after disconnecting the line from PG&E’s transmission system “allowed that equipment to have a greater range of movement than other configurations on its system, thereby making it vulnerable to the low-cycle fatigue that gradually weakened the jumper cable to the point that the jumper cable failed during the October 23, 2019 wind event.”¹⁸ The CPUC emphasized that “CAL FIRE had previously informed PG&E of its findings regarding the Sawmill Fire, the cause of which was similar to the Kincade Fire,” low-cycle fatigue.¹⁹ The CPUC determined that “(i)t is reasonable to conclude that PG&E was not only aware of the high wind conditions that are present in the Geysers Plant region, but also that PG&E’s equipment in the area was susceptible to fatigue failure induced by high wind events.”²⁰ Despite PG&E’s knowledge that low-cycle fatigue previously caused the Sawmill Fire, the manner in which it decommissioned and maintained the energized high-power line that caused the Kincade Fire left that line susceptible to low-cycle fatigue.

The CPUC’s Kincade Incident Investigation report concluded the “configuration that PG&E used at the Incident Tower after 2006 is not permitted by PG&E’s own manuals and procedures. Therefore, PG&E did not configure the lines in accordance with its own procedures and consequently did not configure the equipment on the Incident Tower in a manner that enabled the furnishing of safe and adequate service.”²¹ PG&E’s work on that high-power line did not meet its duty to provide safe service. Such conduct is the opposite of professional-level work.

¹⁸ CPUC Incident Investigation Report, October 27, 2021, pp. 30-31, <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/safety-and-enforcement-division/investigations-wildfires/public-sed-investigation-report-on-pge-2019-kincade-fire.pdf>. “Fatigue failure refers to when a material fails after experiencing a large number of repeated stresses. Low-cycle fatigue failure generally refers to when fatigue failure occurs in under 1000 cycles.” *Id.* at n. 66.

¹⁹ *Id.* at p. 31 (citing CAL FIRE Report, Kincade Fire, p. 42).

²⁰ *Id.*

²¹ *Id.*

Neither was PG&E's conduct that led to the Kincade Fire simply a mistake. After improperly securing the cable during the decommissioning process, PG&E relied on visual inspection of that line. The CPUC found that "(i)t is unlikely that the signs of fatigue stress weakening the incident jumper cable would have been visible via a visual inspection, since it occurred within the shoe and splice."²² "The promulgation of any fatigue cracks in the cables, the extent of corrosion in the interior strands of the cable, and the resultant impact of those factors on expected service life would probably not be determinable without removing the cables from service for a more thorough examination."²³ The failure to detect low-cycle fatigue on that transmission line was the foreseeable product of PG&E's inspection methods, and its improper decommissioning and maintenance, not merely a mistake.

D. PG&E's Criminal Thinking Patterns Propagate Danger

PG&E seeks to characterize its longstanding dangerous theories and practices, even those that led to death, injury, widespread property destruction, environmental, and public health harms as "honest mistakes" or matters of professional judgment. PG&E's arguments ignore the corporation's role in the development, knowing practice, and defense of dangerous theories and practices.

PG&E's Final Report and its conduct throughout its federal criminal probation fail to be self-critical about why its theories and practices are driving dangerous conduct. As the U.S. Attorney's Office Brief recognized, even when PG&E acknowledges it has more work to do, it offers no concrete plans to address those failings. (United States Response to PG&E and Monitor Final Reports, Dkt. 1537, p. 3, lines 18-21.)

²² *Id.* at p. 27.

²³ *Id.*

PG&E's behavior reflects patterns of criminal thinking including inappropriate "superoptimism" that supports the belief that the criminal can get away with their conduct.²⁴ An attitude of invulnerability" in criminal thinking superoptimism "develops due to escaping the physical, psychological, and legal consequences of habitual criminality," leading the criminal to "convince themselves that they will escape consequences."²⁵ PG&E asks this Court to believe it will address its numerous failings that create high fire risk, even where it presents no feasible plan to do so. PG&E invites this Court, the State, prosecutors, regulators, and the public to indulge in more than magical thinking, it asks for tolerance of criminal thinking.

PG&E's conduct and argument are consistent with criminal thinking the Arizona District Court categories as reflecting cognitive immaturity. Through "Mollification, Making Excuses," the criminal blames "their behavior on external sources and use rationalizations and self-justification to avoid responsibility for their actions...In failing to assume responsibility for their decisions and behavior, they are eliminating potential avenues of change and intervention, which in the end only serves to protect the criminal lifestyle."²⁶ While stating it accepts CalFire's findings that PG&E started the Kincade and Zogg fires, PG&E fails to take full responsibility for its decisions and behavior that led to those and other fires.

PG&E's conduct also reflects criminal thinking patterns of "Cognitive Indolence" or "Lazy Thinking," evidenced by its many short-cuts. "People who habitually commit crime are as lazy in their thinking they are in their actions and take the path of least resistance, although this path is fraught with pitfalls and booby traps. They have probably taken many short-cuts,

²⁴ District of AZ (2015), Understanding and Targeting General Criminal Thinking Adapted from the Psychological Inventory of Criminal Thinking Styles, developed by Glenn Walters; Walters (2013) Also adapted from Kroner & Morgan (2013), [hereinafter *Understanding and Targeting General Criminal Thinking*] <https://www.caep.uscourts.gov/sites/caep/files/Understanding%20and%20Targeting%20General%20Criminal%20Thinking%20Styles.pdf>.

²⁵ *Id.*

²⁶ *Id.* at 2.

knowing full well that these short-cuts may eventually lead to disaster.”²⁷ As discussed below, PG&E engages in many short-cut patterns that foment disaster and danger.

E. Recommended Criminal Thinking Error Training for PG&E’s Board and Executive Officers

Amici respectfully renew their recommendation that this Court order PG&E’s Board of Directors and its Executive Officers to undergo training to identify and stop patterns of criminal thinking that lead to dangerous conduct. (Dkt. 1228, pp. 16-20, and Dkt. 1236, pp. 36-40). PG&E’s Board of Directors should undertake this suggestion to educate Board members and PG&E’s Executive Officers about criminal thinking errors and initiate affirmative measures to end that conduct. If PG&E were an individual sentenced to prison, it likely would have taken courses to identify criminal thinking errors and received behavioral therapy tools to change their thinking and actions.²⁸ PG&E, the corporation, needs the training an individual criminal defendant would have received in prison to break the cycle of criminal thinking that endangers public safety.

A motion to extend PG&E’s probation is appropriate to supervise PG&E while it seeks to complete the Court’s orders. PG&E’s recurring patterns of criminal thinking and its reckless short-cut theories and dangerous practices support a finding of probation violation. The following portions of the brief highlight dangerous short-cut theories and practices that bring into relief the need for extending PG&E’s probation and adopting other measures to protect public safety and rehabilitate PG&E.

///

///

///

²⁷ *Id.*

²⁸ See U.S. Dept. of Justice, Federal Bureau of Prisons, First Step Act, Approved Programs Guide, Feb. 2021, https://www.bop.gov/inmates/fsa/docs/2021_fsa_program_guide.pdf.

III. PG&E Dangerous Short-Cut Theories and Practices

A. Dangerous PG&E Short-Cut Theory and Practice No. 1: Overreliance on Visual Inspection, Downplaying the Role of Records, Age, and Internal Inspection

PG&E relies on its long-standing erroneous theory that visual inspection is sufficient to foster safe operation and protect public safety. Visual inspection is a short-cut method that is often insufficient to detect defective conditions. Throughout its federal criminal probation, PG&E has clung to this theory, even when evidence pointed to its shortcomings.

The CPUC's Kincade Incident report found the low-cycle fatigue in PG&E's decommissioned line would not have been detectable through a visual inspection.²⁹ Equipment age, exposure to conditions such as wind, installation and maintenance records must also be considered. PG&E has also underused assets such as its metallurgical laboratory which could detect conditions such as wear in hanger plates.³⁰ PG&E should be engaging in more metallurgical and other detailed analysis to examine, revamp, and recalibrate its maintenance and replacement plans.

PG&E's reliance on visual observation of tree leaves and crowns from a distance is another example of PG&E's over-reliance on limited visual inspections. (See Dkt. 1515, p. 27). When coupled with lack of information sharing such as the location of trees previously marked for removal but not yet removed, dangerous conditions fester. PG&E noted the inspectors who reviewed the Girvan Circuit prior to the Zogg Fire "do not recall the Douglas Fir in question, but they inspected trees like the Douglas Fir within striking distance of the line and looked for these

²⁹ CPUC Kincade Fire Incident Investigation Report, *supra* note 16, at 27.

³⁰ See Dkt. 1313, p. 27 ("PG&E's Applied Technology Services Lab studied and reported on substantial hanger plate wear. Hanger plates are used on utility towers to attach C-hooks, which in turn attach to insulator assemblies, and hold energized conductors away from metal utility towers. The Applied Technology Services Lab reports and shows photographs of hanger plate holes that should have been round but were instead keyhole shaped. This distorted shape and excessive wear results from decades of metal-on-metal friction as the C-hook hung on the hanger plate and swayed in the wind. The report also raises concern about cracking inside the metal plate, a condition that would not be apparent from visual inspections on which PG&E appears to primarily rely.")

various symptoms that might indicate root disease.” (*Id.*) If PG&E had tasked its subsequent inspectors with checking on trees previously marked for removal and shared data about the prior inspection, doing so would have called attention to the Zogg Fire tree of concern and led to a closer inspection that would have revealed the four-foot chasm undermining that tree’s integrity.

PG&E’s undue reliance on limited visual inspection is a major contributing factor to the wildfires it has caused during its federal criminal probation. Metallurgical and spot internal inspections should be conducted more often to detect wear trends not detectable through external visual inspection. Inspections must also be coupled with better record keeping.

**B. Dangerous PG&E Short-Cut Theory and Practice No. 2:
Poor Record Keeping, Maintenance, Dissemination, Analysis, and Usage**

“Traceable, verifiable, accurate, and complete records are essential for ensuring public safety,” the Monitor’s Final Report stated. (Dkt. 1524-1, at 30). Yet, throughout its probation, PG&E vigorously resisted suggestions to require it to assemble, maintain, and consider records and asset age in its maintenance, operation, and planning. PG&E’s lawyer, Mr. Orsini, at the May 28, 2020 hearing (Dkt. 1212, p. 33, lines 7-11), attempted to explain why it believed that information about asset age was not important for PG&E to obtain or consider. “Asset age is not the primary motivator or even one of the key motivators of the maintenance of these systems. This is a condition-based inspection program. It’s looking at the specific condition that exists. That is the industry standard,” Orsini argued.

Amici observed in Dkt. 1313, p. 26, “(w)hether or not maintenance and operation based on condition inspection, with no regard to asset age is or is not the industry standard, is not the relevant question. Rather, the issue is whether PG&E’s operation and maintenance comply with applicable law including CA PU Codes 451, 8386(a), Public Resources Code Section 4293, GO 95, FERC FAC-003-4, and the conditions of PG&E’s probation.” In a criminal case, at issue is

whether PG&E's maintenance system, including its limited retention and use of records or consideration of asset age, is reckless, supporting the elements of the charged crime.

This Court imposed Probation Condition No. 9 (Apr. 29, 2020, Order Modifying Conditions of Probation, Dkt. 1186) which requires PG&E to record the age of critical electric transmission tower components in High Fire Threat Districts (HFTDs); to make conservative assumptions where age is unknown; to implement a program to determine the expected useful life of critical components; and incorporate that information into its risk-based asset management programs. The Monitor reported progress in complying with this condition, but highlighted the need for continued dedication to this records project in 2022 and beyond PG&E's federal criminal probation term.

The Monitor's team identified significant record-keeping issues which will require sustained attention. ((Dkt. 1524-1, at 30). The Monitor's July 26, 2019 Letter to the Court (Dkt. 1089) highlighted substantial numbers of missed trees and recordkeeping issues within PG&E's Enhanced Vegetation Management (EVM) program. The Monitor expressed concern about PG&E's continued use of paper records which "can result in inaccuracies when information is migrated to electronic records due to transposition errors" and confound data analysis. (*Id.* at 37-38). Accuracy is also lacking in PG&E's records. The Monitor found "PG&E records do not always accurately reflect the existence and/or location of its assets" and many records are missing (*Id.* at 38-39).

In its Final Report, the Monitor observed "(m)uch more progress is required, both quickly and over a sustained period of years, as detailed below." (Dkt. 1524-1, p. 21). Despite improvements, PG&E's records are still not sufficiently reliable, the Monitor concluded. (*Id.* at 31).

PG&E's Board of Directors and regulators should ensure continued priority to improving PG&E's record management and it. Its reliance on visual inspection methods should be

reviewed and integrated with record-keeping analysis. PG&E's poor recordkeeping and analysis should also be considered as a factor in the Zogg and Kincade fires. PG&E's failure to fully comply with its probation condition orders regarding record-keeping support a motion for extension of PG&E's federal criminal probation.

**C. Dangerous PG&E Short-Cut Theory and Practice No. 3:
Inappropriate Adherence to Industry Standards Developed for
Other Regions and Time-periods, and Conditions**

PG&E continued to adhere to "industry standards" developed for other regions or conditions without analyzing whether PG&E standards should evolve to address conditions in its service territory. Following the 2018 Camp Fire, PG&E argued that its condition-based inspection program reflected industry standard (Dkt. 1212, p. 33, lines 7-11). PG&E did not adopt inspection standards appropriate to the risks and conditions it faces in PG&E's service area until this Court ordered PG&E to consider asset age and other factors.

Similarly, PG&E defended its survey of trees from a distance, as it did in the Girvan Circuit patrols prior to the Zogg Fire, arguing that reflected industry standards. Dkt. 1515, p. 27, Rather than hewing rigidly to standards such as International Society of Arboriculture (ISA) Utility Tree Risk Manual, PG&E should annually consider whether its standards are appropriate for the conditions it faces such as drought, bark beetle infestations, and wind. PG&E has shifted some its standards during its federal criminal probation and the annual requirement of a Wildfire Mitigation Plan starting in 2019. PG&E announced a goal of shifting to 360-degree tree inspections in HFTDs but has announced no concrete plans or timetable to do so. Standards review and prompt shift in PG&E practices is critical to protecting public safety and to PG&E's rehabilitation.

///

///

**D. Dangerous PG&E Theory and Practice No. 4:
Poor Information Sharing, Disclosure, Management, and Analysis**

Throughout its federal criminal probation PG&E has failed to share information promptly and appropriately with this Court, the public, regulators, PG&E Employees, contractors, and subcontractors. PG&E did not inform this Court about its 543,560 Cellon-treated poles at risk of collapse, more than 200,000 of which are in HFTD areas. *Amici* informed this Court about that threat in its July 2, 2021 letter brief. Those poles are at high risk of failure or collapse due to dry rot and can lead to catastrophic electrocution, fire, or other dangers.

PG&E's response to the spike in power that led to the Dixie Fire revealed its operational and informing sharing and management failures that sparked the largest single wildfire in California. PG&E's systems indicated there was a brief fault, likely a surge of amperage (amps) when the tree of concern hit the Bucks Circuit Line. (Dkt.1474, p. 12, lines 7-14). PG&E rated the Bucks circuit with an elevated risk ranking to 11 out of 3,635. (PG&E Dkt. 1474, p. 4, lines 21-24). PG&E has presented no evidence that it shared that risk ranking with its employees including its NDDC operators who have the authority to turn the power off using the supervisory control and data acquisition (SCADA) system. (See PG&E Docket 1474, p. 2, lines 19-21, "Distribution operators have authority to de-energize distribution circuits). Neither did PG&E present evidence that it incorporated the risk ranking into the SCADA system.

PG&E's failure to share critical information even within PG&E appears to have influenced the decisions of two NDDC operators to keep the power flowing through the Bucks Circuit, despite evidence of a fault. PG&E's Troublemaker reported to NDDC Operator # 2 at 14:43 p.m. "So I went to 805...I looked up the hill. There's a fuse blown. I can tell there's at least one fuse blown at...17773." (PG&E 1474-12, p. line 11-14). If PG&E has made information available to NDDC Operator # 2 through its SCADA system that the Bucks Circuit was the 11th highest risk circuit in PG&E service territory, that data might have encouraged the NDDC Operator to turn off the power to that circuit before it started a fire. This Court, the Eastern District of California, and the

counties examining the Dixie Fire should consider whether PG&E's failure to share crucial information with its own employees was reckless conduct that lit the fuse for the Dixie Fire.

The Monitor's Final Report faults PG&E for failure to use the information generated by the recently created Asset Failure Analysis Team. (Dkt. 1524-1, p. 36). That team identified an ignition risk from a decayed cross-arm but PG&E did not fix it prior to starting a fire on June 16, 2021, even though the repair work was permitted and ready for construction in April 2020 (which was already late). (*Id.*) At the time of PG&E's Preliminary Ignition Investigation Report about that fire, "there were 1290 open notifications on the same circuit associated with common ignition drivers, of which 886 were past due and 256 were due within six months." (*Id.*) The Monitor observed "until more is done by PG&E with the information in such reports, that is, actually addressing these risks in the field, PG&E's equipment will continue to cause unnecessary ignitions." (*Id.*) The Monitor's observation underscores the need to not only generate information and analysis, but to share it and use it appropriately to protect public safety.

Lack of information sharing also played roles in the Zogg Fire as PG&E has not demonstrated it shared information about the 2018 inspection that marked the Zogg Fire tree of concern for removal with any subsequent inspectors or patrols. Such information sharing should have spurred more detailed inspections and follow-up and could have averted disaster.

PG&E vigorously resisted the proposed probation conditions to improve PG&E's information management (see Dkt. 1293), arguing that PG&E had made operational and personnel changes sufficient to improve its information and record-keeping management. PG&E's information sharing practices should be consider as a factor supporting findings of reckless conduct regarding the Zogg and Kincade fires and the allegations of probation violation. Improving information gathering, analysis, dissemination, and use should be a priority for PG&E's regulators, Board of Directors, executives, and this Court.

///

IV. CONCLUSION

To protect public safety and promote felon PG&E's rehabilitation, *Amici* urge this Court to hold the probation violation hearing scheduled for January 10, 2022, and determine whether PG&E violated its probation conditions. Such a determination is important to maintain respect for the federal criminal probation laws and process. The Court's finding of probation violations after the January 10 hearing will also inform Sonoma and Shasta counties' criminal proceedings against PG&E. State and federal prosecutors considering legal action including criminal indictments following the Dixie Fire which PG&E ignited would also benefit from this Court's decision about PG&E's probation violations.

Amici further respectfully recommend the U.S. Attorney's Office propose extending PG&E's federal criminal probation.

Amici share this Court's disappointment that PG&E has not take full responsibility for its conduct that has led to death, injury, and destruction during its federal criminal probation. PG&E persists with criminal thinking that drives criminal conduct and danger to the public. *Amici* respectfully recommend extending PG&E's federal criminal probation as appropriate to protect public safety from a recidivist felon that pled to 85 felonies for the Camp Fire, has been indicted for dozens of felonies for the Kincade and Zogg fires, and is under investigation for its conduct that led to California's largest single wildfire.

Respectfully submitted,

/s/ Michael J. Aguirre, /s/ Maria C. Severson
Aguirre & Severson, LLP

/s/ Catherine Sandoval,
Director, Institute for Insurance Law, SCU Law

Attorneys for *Amici*,
Alex Cannara and Gene Nelson

ATTACHMENT A

**CALIFORNIA PUBLIC UTILITIES COMMISSION
Safety and Enforcement Division
Electric Safety and Reliability Branch**

Incident Investigation Report

Report Date: October 27, 2021

Investigator: Matthew Yunge

Incident Number: E20191024-01

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

Date and Time of the Incident: October 23, 2019 at 21:20 hours

Location of Incident: Unit 9/10 of the Calpine Geysers Facility, Sonoma County. Lat/Long:
38.795793, -122.767179

Fatality/Injury: 4 injuries, 0 fatalities

Property Damage: News reports dated January 13, 2020 provide an estimated property damage amount of \$385 million. CAL FIRE reports 374 structures destroyed.

Regulated Entity Facilities Involved: Geysers #9 Lakeville 230 kV Line

Violation: Yes

I. SUMMARY

On October 23, 2019, a jumper cable on the Geysers #9 Lakeville 230 kV Line broke and arced upon failure. The broken jumper cable also arced upon contact with its associated tower (Tower 001/006). At approximately 21:20 hours, on October 23rd, PG&E became aware of an outage on its Geysers #9 Lakeville 230 kV transmission line.¹ In response to the Kincade Fire, the California Department of Forestry and Fire Protection (CAL FIRE) arrived at the Incident Site at 21:42 hours and noted that there was a broken jumper cable on Tower 001/006 of the Geysers #9 Lakeville line.

¹ Note that unless mentioned otherwise, all times presented are in 24-hour time.

A. Rules and Other Requirements Violated

General Order (GO) 95, Rule 31.1 Design, Construction and Maintenance states in part:

“Electrical supply and communication systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service.

For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the design, construction, or maintenance of communication or supply lines and equipment.”

GO 95, Rule 31.6 Abandoned Lines states in whole:

“Lines or portions of lines permanently abandoned shall be removed by their owners so that such lines shall not become a public nuisance or a hazard to life or property. For the purposes of this rule, lines that are permanently abandoned shall be defined as those lines that are determined by their owner to have no foreseeable future use.”

GO 95, Rule 44.3 Replacement states in whole:

“Lines or parts thereof shall be replaced or reinforced before safety factors have been reduced (due to factors such as deterioration and/or installation of additional facilities) in Grades “A” and “B” construction to less than two-thirds of the safety factors specified in Rule 44.1. And in Grade “C” construction to less than one-half of the safety factors specified in Rules 44.1. Poles in Grade “C” construction that only support communication lines shall also conform to the requirements of Rules 81.3A. In no case shall the application of this rule be held to permit the use of structures or any member of any structure with a safety factor less than one.”

California Public Utilities Code Section 451 states in part:

“Every public utility shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities, including telephone facilities, as defined in Section 54.1 of the Civil Code, as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public.”

B. Witnesses

	Witness Name	Title
1	Matthew Yunge	CPUC Utilities Engineer
2	Andie Biggs	CPUC Utilities Engineer
3	Nathan Sarina	CPUC Senior Utilities Engineer
4	Gary Uboldi	CAL FIRE Investigator
5	Kyle Steis	CAL FIRE Investigator
6	Shawn Zimmermaker	CAL FIRE Investigator
7	Charlie Laird	CAL FIRE Investigator
8	Jim Nolt	Consultant for CAL FIRE
9	Chris Van Cor	CAL FIRE Deputy Chief
10	Omid Sarvian	PG&E Event Specialist
11	Peter Modlin	Counsel for Calpine
12	Ben Wylly	Counsel for PG&E
13	Allison Kempf	Counsel for PG&E

C. Evidence

No.	Source	Description
1	CPUC	Photographs collected on site visits
2	PG&E	20-day report
3	PG&E	Responses to SED-001-Kincade Fire
4	PG&E	Responses to SED-002-Kincade Fire
5	PG&E	Responses to SED-003-Kincade Fire
6	PG&E	Responses to SED-004-Kincade Fire
7	PG&E	Responses to SED-005-Kincade Fire
8	PG&E	Responses to SED-006-Kincade Fire
9	PG&E	Responses to SED-007-Kincade Fire
10	PG&E	Responses to SED-008-Kincade Fire
11	PG&E	Responses to SED-009-Kincade Fire
12	PG&E	Responses to SED-010-Kincade Fire
13	PG&E	Responses to SED-011-Kincade Fire
14	Calpine	Responses to SED Data Request #1
15	Mesowest	Weather Station Information
16	CalFire	19CALNU019376 Kincade Report

II. BACKGROUND

The Safety and Enforcement Division (SED) and CAL FIRE investigated the electric safety incident in which a jumper cable failed on Tower 001/006 (Incident Tower) of the Geysers #9 Lakeville Line (Incident Line). The goal of SED's investigation was to identify whether there were any violations of the Commission's General Orders, Public Utilities Code, and related requirements under the Commission's jurisdiction. The goal of CAL FIRE's investigation was to determine the cause of the fire, as well as whether the fire was the result of violations of the Public Resources Code, and Title 14 of the California Code of Regulations. SED conducted field observations of evidence collection and reviewed PG&E's operations and maintenance procedures and relevant records.

The incident occurred on Tower 001/006 (Incident Tower) in the Geysers geothermal power generating facility in the Macayamas Mountains, on the Geysers #9 Lakeville 230 kV Line (Incident Circuit or Incident Line). The Incident Tower is located near Geysers Power Company (GPC) Unit 9/10 (called "Fumarole"), which has been inactive since 2001.² SED's field visits are summarized below:

- On October 26, 2019, SED conducted an initial site visit.
- On November 1, 2019, SED visited the Incident Site to attend CAL FIRE's removal of evidence.
- On November 10, 2019, SED visited the CAL FIRE facility in Santa Rosa to view evidence.
- On November 13, 2019, SED staff accompanied PG&E as PG&E collected evidence from the Incident Site.³
- On January 17, 2020, SED accompanied PG&E as it performed work on Tower 001/009 of the Incident Line.

SED submitted eleven (11) data requests totaling 140 questions to PG&E. The questions included requests for inspection records, inventory of equipment on Tower 001/006, internal

² November 20, 2019 GPC response to CPUC data request SED-001-Kincade Fire-Geysers Power Company, Question 3.

³ For list of evidence collected see December 10, 2019 PG&E response to CPUC data request SED-002-Kincade Fire, Question 8.

communications, Public Safety Power Shut-off (PSPS) criteria, etc. SED also submitted one data request to GPC.

SED's investigation focused on PG&E's implementation of PSPS, the inspection history of the Incident Tower, the weather at the time of the incident, the configuration of the jumper cables on the Incident Tower, as well as the Incident Jumper Cable's mode of failure.

The Incident Tower, as well as the conductors and jumper cables on that tower, were installed in 1973 by PG&E.⁴ The Incident Tower carries two circuits, the Incident Line and the Geysers #12 Fulton Line as shown in Figure 1.⁵ The Incident Line runs north ending at the Incident Tower and is connected to the eastern arms of the Incident Tower, which are on the side of the Incident Tower closest to Unit 9/10.⁶ The jumper cable that failed was connected to the topmost arm (of three) of the Incident Tower.⁷ The Geysers #12 Fulton Line runs parallel to the Incident Line but continues northward past Unit 9/10 as shown in Figure 2.⁸

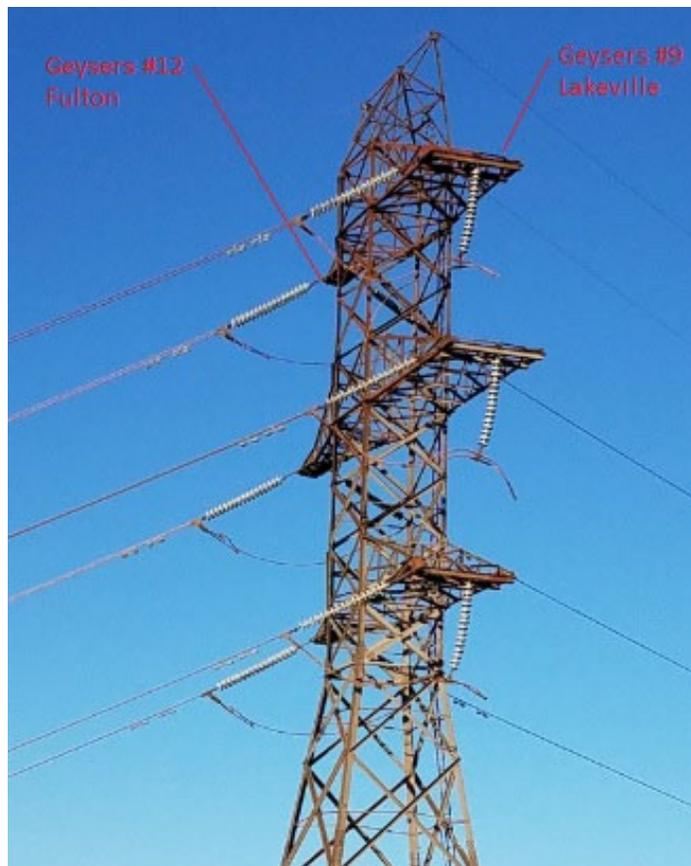
⁴ November 26, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 34.

⁵ December 23, 2019 PG&E Incident Report Form.

⁶ See October 26, 2019 Observation Reports of Matthew Yunge and Andie Biggs.

⁷ See October 26, 2019 Observation Reports of Matthew Yunge and Andie Biggs

⁸ See October 26, 2019 Observation Report of Andie Biggs.



**Figure 1: View of the Incident Tower immediately prior to evidence removal.
Photograph is taken from the grounds of GPC Unit 9/10.**

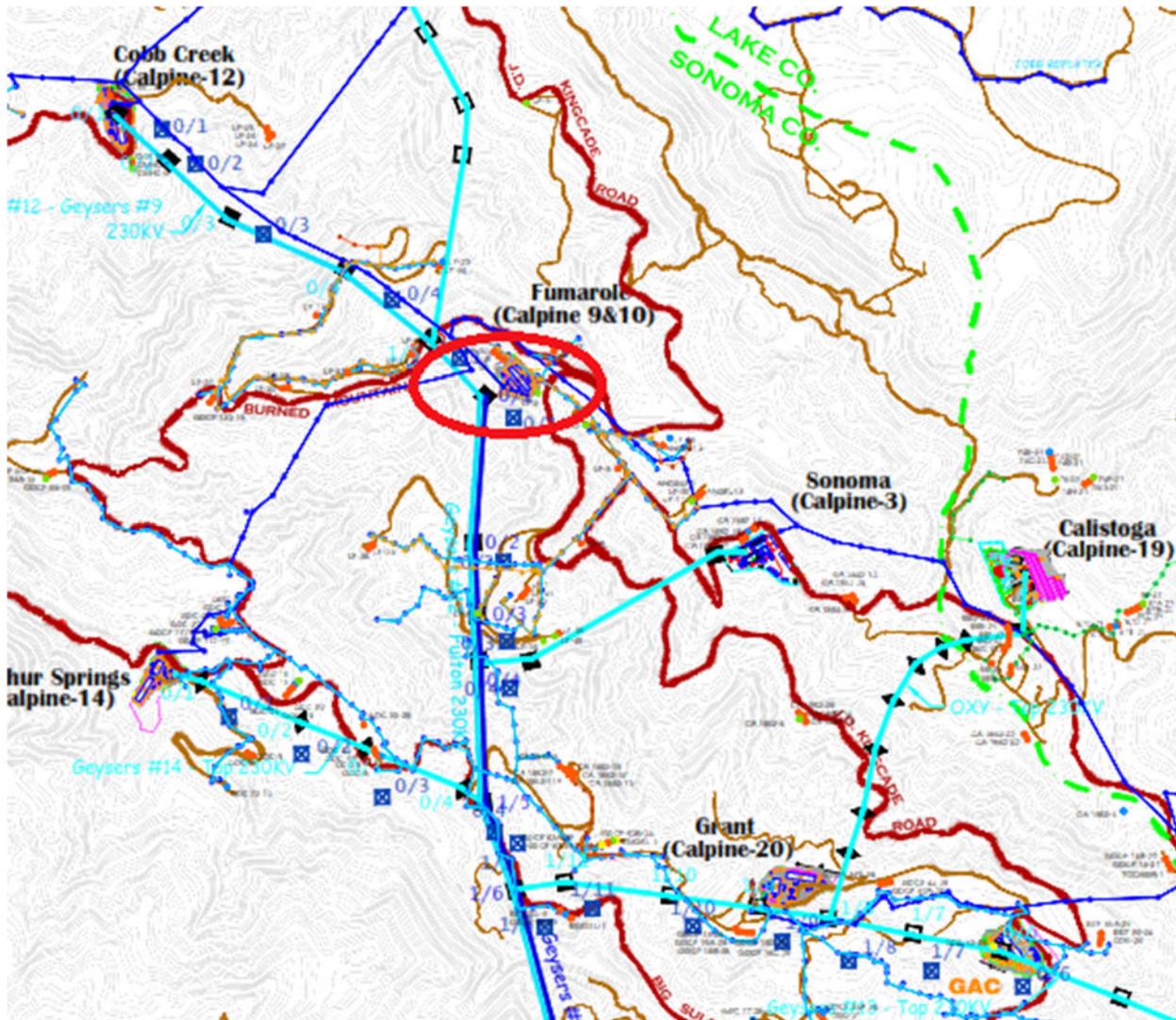


Figure 2: Map indicating incident location (circled) and Incident Line. The dark blue line approaching from the south and terminating at “Calpine 9&10” is the Incident Line. The blue line that is parallel to the Incident Line and continues running northwest past Unit 9/10 is the Geysers #12 Fulton Line.

III. SED Review and Analysis

A. Timeline Summary of the incident

On October 23, 2019, at 08:24 hours, PG&E notified GPC, a subsidiary of Calpine Corporation, that a Public Safety Power Shutoff (PSPS) event would begin between 12:00 hours and 14:00 hours of the same day. At 11:10 hours, PG&E notified GPC that distribution lines 1144 and 1146 would be de-energized.² Although PG&E de-energized the selected distribution lines near the

² November 20, 2019 GPC response to CPUC data request SED-001-Kincade Fire-Geysers Power Company, Question 1.

Incident Site, its transmission lines (including the Incident Line) remained energized. At 21:20 hours, PG&E received a Supervisory Control and Data Acquisition (SCADA) alarm that there was a line-to-ground fault on the Incident Line.¹⁰ Video captured by the Barham N camera near Santa Rosa, CA on the ALERTWildfire camera network show what appears to be a fault, followed by an ignition at approximately 21:20 hours and 30 seconds.¹¹ According to CAL FIRE, the approximate start time of the Kincade Fire was 21:27 hours.¹² CAL FIRE confirmed with Northern California Power Authority (NCPA) that NCPA detected a phase to ground fault at 09:19 hours on October 23, 2019.¹³ This chain of events supports the conclusion that the fault on the Incident Tower caused the Kincade Fire.

B. Field Review

For purposes of this Report, the Incident Tower and the nearby GPC Unit 9/10 are referred to as the “Incident Site” and are shown in Figure 3. The Incident Site is accessible by automobile via Kincade Road in Sonoma County.

¹⁰ December 23, 2019 PG&E Amended 20-day Report.

¹¹ <https://www.youtube.com/watch?v=nb2m8KKuwk>

¹² <https://www.fire.ca.gov/Incidents/2019/10/23/kincade-fire/>

¹³ CAL FIRE Report, p5.



Figure 3: Google Earth view of the Incident Site. Incident Tower (shown with pin) located immediately southwest of GPC Unit 9/10. Road to the east is Kincade Road.

At the time of the incident, the highest measured wind gust speed within a 10-mile radius of the Incident Tower was 63 miles per hour (mph). This was recorded by weather station PG305, which is located about 2.2 miles south of the Incident Tower.¹⁴ Other weather stations in the incident area recorded wind gust speeds of approximately 30 mph or lower. At 00:20 on the night of the incident, CAL FIRE measured wind speeds of 35 mph from the North, North/east direction at the incident location.¹⁵ Figure 4 below is a map of nearby weather stations, including station PG305 and the Incident Tower location.¹⁶ Figure 5 shows ten weather stations which recorded the highest wind gust speeds around the Incident Site.¹⁷

¹⁴ December 10, 2019 Attachments to PG&E response to CPUC data request SED-001, Question 7, Bates Number PGE-KINC-CPUC-00000000189-216.

¹⁵ CAL FIRE Report Attachment 6.5, p1.

¹⁶ SED map based on information in December 10, 2019 Attachments to PG&E response to CPUC data request SED-001, Question 7, Bates Number PGE-KINC-CPUC-00000000189-216.

¹⁷ SED chart based on information in December 10, 2019 Attachments to PG&E response to CPUC data request SED-001, Question 7, Bates Number PGE-KINC-CPUC-00000000189-216.

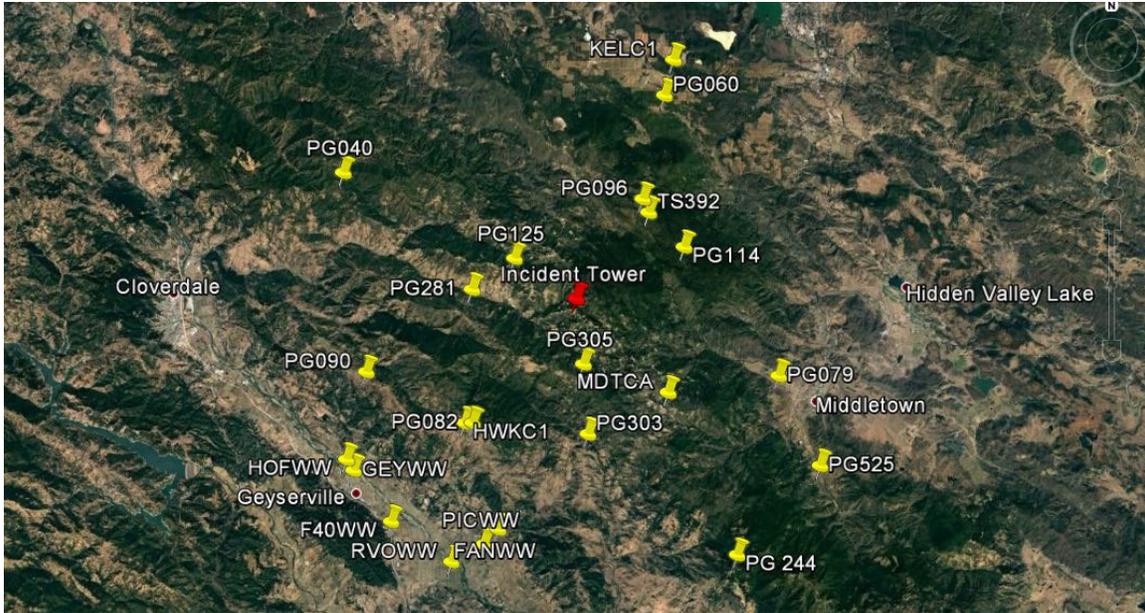


Figure 4: Map of Incident Site and nearby weather stations. Distance from Incident Site to weather station PG303 is approximately 4.6 miles.

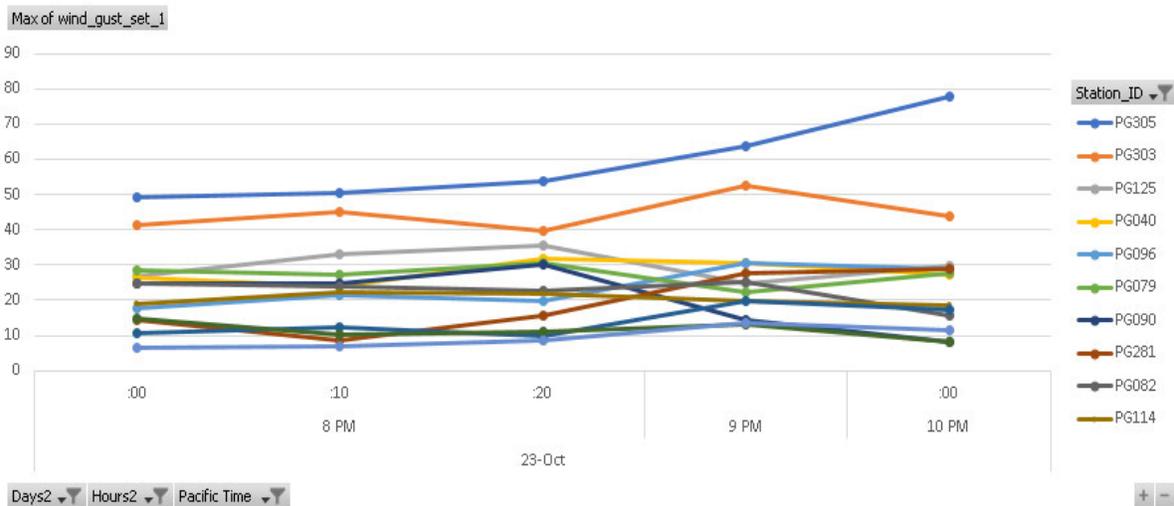


Figure 5: Wind gust speed of the 10 weather stations within 10 miles of the Incident Site that recorded the highest wind gust speeds at the time of the incident. (vertical axis indicates wind gust speeds in miles per hour)

CAL FIRE notes in its report that the Geysers area experiences stronger weather conditions compared to the surrounding areas in Sonoma County and Lake County. CAL FIRE also notes that weather conditions and the local topography are the predominate factors that contribute to large fires in the Geysers area.¹⁸

¹⁸ CAL FIRE Report, p41.

CAL FIRE secured the Incident Site and access to the equipment at the Incident Site beginning October 23, 2019 at 21:42 hours until November 3, 2019 at approximately 17:00 hours.¹⁹ On October 26, 2019, SED staff visited the Incident Site. SED met CAL FIRE investigators at the Incident Site and examined the location, including nearby PG&E equipment and GPC facilities. SED noted that the topmost jumper cable on the side of the tower closest to Unit 9/10 was broken and still hanging from the tower as shown in Figure 6.

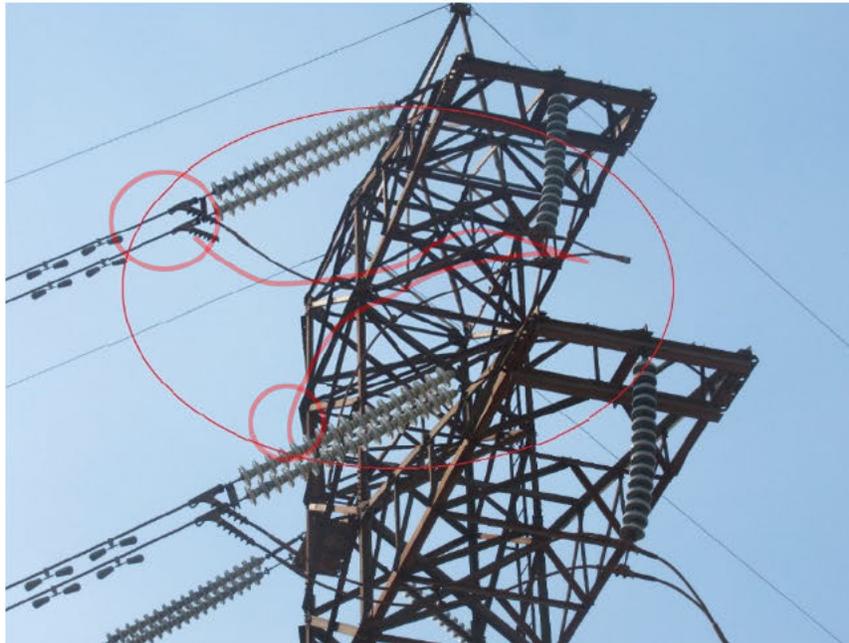


Figure 6: Broken jumper cable on Incident Tower, taken prior to evidence removal. Note that only one strand of the jumper cable's two stands is broken. The other strand is still attached to its shoe.

On November 1, 2019, SED visited the Incident Site to attend CAL FIRE's removal of evidence. During that process, SED observed PG&E personnel remove a tower arm from the middle level of the tower as well as jumper cables and insulator strings. PG&E replaced the insulator strings with new insulator strings in a different configuration than what was present during the time of the incident (see Figure 7 below). SED took note of the failed jumper cable. SED documented the damage at both ends of the failure point as well as signs of arcing damage/residue on the shoe of the failed jumper cable and on the spacing bar of the failed jumper cable. SED also noted multiple locations on the removed tower arm that had signs of arcing. CAL FIRE collected a portion of the tower arm that had sustained arcing damage, the incident jumper cable, and the

¹⁹ January 31, 2020 PG&E response to CPUC data request SED-001-Kincade Fire, Question 1.

insulator string attached to the incident jumper cable. That evidence was sent to a CAL FIRE facility in Santa Rosa.

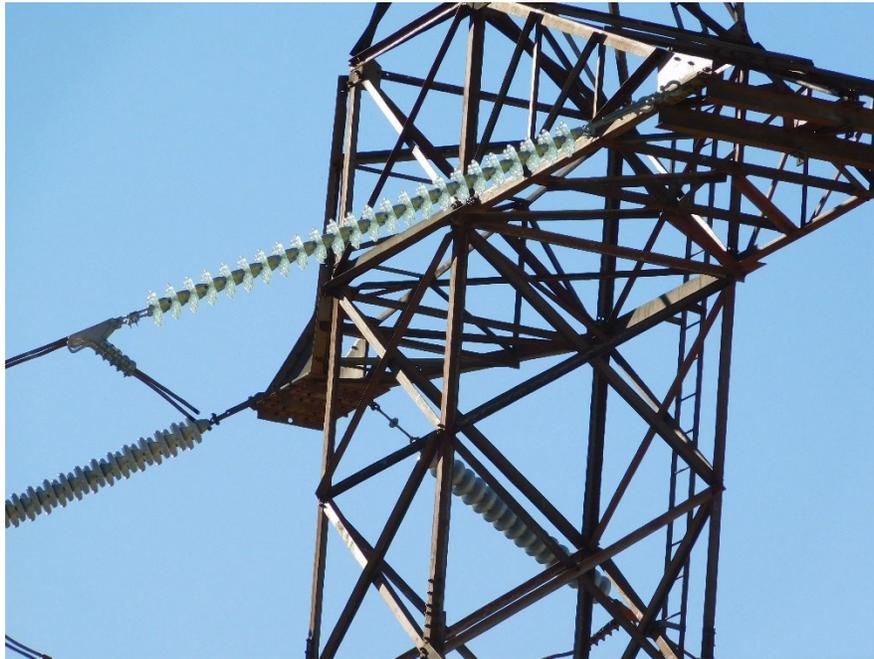


Figure 7: Installation of new insulator strings.

On November 10, 2019, SED went to the CAL FIRE facility in Santa Rosa and further investigated the evidence that CAL FIRE had collected on November 1, 2019.

On November 13, 2019, SED accompanied PG&E as PG&E collected evidence from the Incident Site. Physical evidence was collected by a contractor retained by PG&E. PG&E collected the sections of the tower arm that CAL FIRE did not collect and had left at the Incident Site. SED noted that the bolt holes in that section of the tower arm showed signs of wear as shown in Figure 8.



Figure 8: Bolt hole on tower arm collected by PG&E on November 13, 2019.

On January 17, 2020, SED accompanied PG&E as PG&E performed work on towers located approximately 0.63 miles south of the incident location on the Incident Line. PG&E reconfigured the jumper cables of Tower 001/009 of the Incident Line such that the Incident Line, from Tower 001/009 to 001/006, would be de-energized and isolated from the rest of the Incident Line. PG&E took this action because it determined that the Incident Line did not carry any electrical load between Tower 001/009 and Tower 001/006 and should be removed from service.²⁰

C. Analysis

1. Service History

The jumper cables on the Incident Tower are all-aluminum and were installed in 1973 by PG&E.²¹ The configuration of the jumper cables at the time of the incident was that for each of the Incident Line's three phases, two separate conductors were attached to their own strain

²⁰ December 20, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 40.

²¹ November 26, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 34.

clamps, also called “shoes” (see Figure 9). From there, the span conductors exit the shoe and are attached to jumper cables via a non-tension connector. The two jumper cables are then joined together and connected to a suspended string of insulators.²²

The failure point of the jumper cable was in the exit portion of the shoe shown in Figures 10 and 11. The two ends of the jumper cable on each side of the failure point showed different types of damage. The end of the broken jumper cable that is not in the shoe shows signs of arcing damage and appears to be melted and smoothed over as shown in Figure 12. On the other hand, the ends of the aluminum strands inside the shoe were jagged, with no signs of melting as shown in Figure 11. The lack of apparent melting implies that the portion of the jumper cable inside the shoe did not suffer arcing damage. CAL FIRE also found an additional wire failure inside the jumper cable splice. The wire failure in the splice showed signs of fatigue fracture and arc damage.²³



²² For ease of discussion, this Report will refer to the jumper cables, the connectors, and the portions of the span conductor inside the shoes as “jumper cables.” The side of the shoes where the span conductors entered the shoe will be referred to as the “entrance” and the portion of the shoe that leads toward the splices and suspended insulator strands will be referred to as the “exit.”

²³ CAL FIRE Report Attachment 20, p3.

Figure 9: Configuration of the jumper cables and insulators on the Incident Line.²⁴

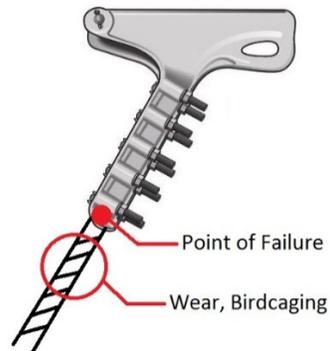


Figure 10: Depiction of the failure point of the incident jumper cable. Device that the cable is attached to is a strain clamp or “shoe”.

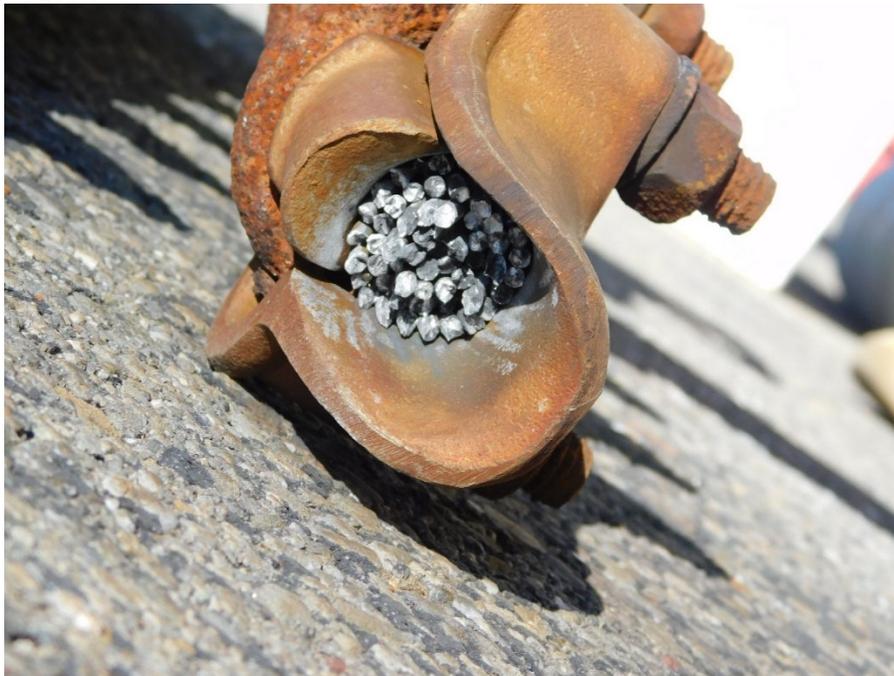


Figure 11: View of the failure point. This segment is still inside the shoe.

²⁴ December 10, 2019 Attachment to PG&E response to CPUC data request SED-001-Kincade Fire, Question 60, “PGE-KINC-CPUC-00000000475.pdf.”



Figure 12: View of the failure point. This is the side of the failure point that was hanging in the air prior to evidence removal.

Additionally, the incident jumper cable showed slight signs of bowing or bird-caging at the points near the exit of the shoe. This was noticed not just on the incident jumper cables but also on the other phases' jumper cables for the Incident Line. It is possible that this bird-caging is indicative of fatigue stress on the jumper cables and may have weakened the structural integrity of the jumper cables.



Figure 13: Shoes of the failed jumper cable. Note slight caging on cable that has not failed.



Figure 14: Signs of caging on intact jumper cables removed from the Incident Tower.

Service History/Configuration of Tower 001/006 of Geysers #9 Lakeville 230kV Line

The Incident Line ended at the Incident Tower and was not connected to GPC Unit 9/10 when the incident occurred.²⁵ The Incident Line originally served Unit 9/10 by connecting Unit 9/10 to Tower 001/006 and delivering that power to Circuit Breaker 222 at PG&E’s Lakeville Substation, as shown in Figure 15.²⁶ In 2001, GPC “mothballed” (ceased generating power) at Unit 9/10.²⁷ In 2005, GPC notified PG&E that Unit 9/10 had been inactive for years and requested that Unit 9/10 be disconnected from the Incident Line.²⁸ PG&E disconnected Unit 9/10

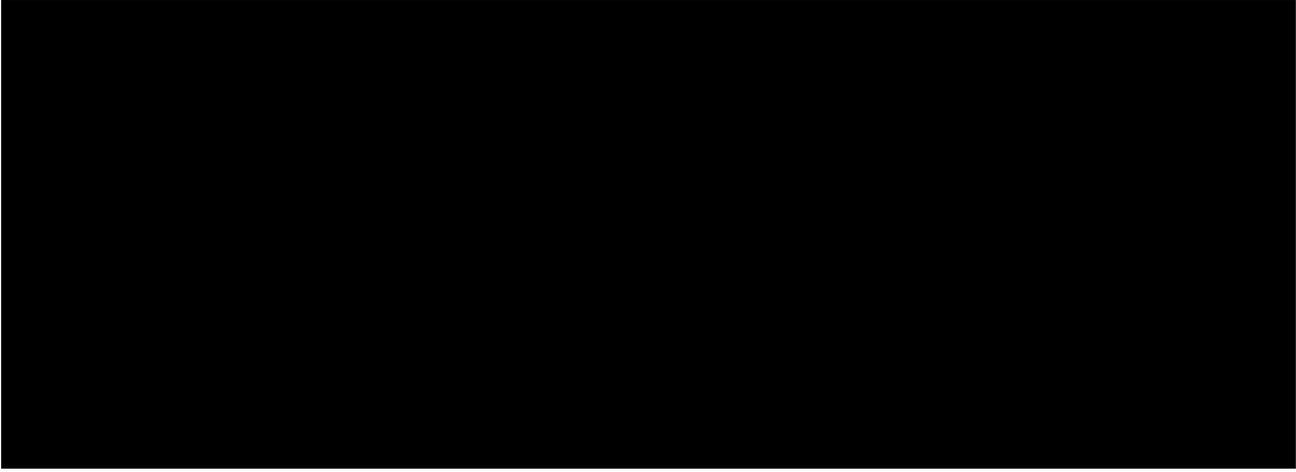
²⁵ March 26, 2020 PG&E response to CPUC data request SED-005-Kincade Fire, Question 1.

²⁶ March 26, 2020 PG&E response to CPUC data request SED-005-Kincade Fire, Question 1.

²⁷ November 20, 2019 GPC response to CPUC data request SED-001-Kincade Fire-Geysers Power Company, Question 3.

²⁸ March 26, 2020 PG&E response to CPUC data request SED-005-Kincade Fire, Question 7.

from the Incident Tower in May 2006 by removing the facilities between the jumper cables on Tower 001/006 and Unit 9/10.²⁹



After the Incident, PG&E chose to remove the jumper cables at Tower 001/009 on January 17-18, 2020. This de-energized the Incident Line from Tower 001/009 to Tower 001/006 while leaving the conductors in place.³⁰ On March 6, 2020, PG&E stated that the reason for removing the jumper cables at Tower 001/009 was that there was no need for the section of the Incident Line between 001/006 and 001/009 to remain electrically connected to the rest of the Incident Line.³¹ After Unit 9/10 was disconnected from the Incident Line in 2006, the nearest source of power feeding into the Incident Line was GPC Unit #3, (“Sonoma PP”) which connected to the rest of the Incident Line at Tower 001/009.³² See Figures 2 and 15 for representations of Unit 3 and its connection to the Incident Line.

2. PSPS and De-energization

The incident occurred during the October 23, 2019 PSPS event and as discussed below, PG&E de-energized select distribution lines near the Incident Site, but the transmission lines remained energized. The Commission’s General Orders, Decisions, and Public Utilities Code do not provide specific guidance on what conditions require electric transmission lines to be de-energized. Per Resolution ESRB-8 and Decision (D.)12-04-024, the Commission may review a

²⁹ March 26, 2020 PG&E response to CPUC data request SED-005-Kincade Fire, Question 3.

³⁰ March 6, 2020 PG&E response to CPUC data request SED-004-Kincade Fire, Question 3.

³¹ March 6, 2020 PG&E response to CPUC data request SED-004-Kincade Fire, Question 3.

³² December 20, 2019 PG&E response to CPUC data request SED-002-Kincade Fire, Question 4.

decision by the utilities to shut off power.^{33, 34} While this investigation did not include a review of the entire PSPS event that PG&E initiated on October 23, 2019, it did review the PSPS event to the extent that the PSPS event is related to the incident.

In evaluating PG&E's conduct regarding the October 23, 2019 PSPS event, SED found that PG&E's protocols provide significant amounts of leeway for subjective judgement in determining the final scope of a PSPS footprint and in determining which circuits within that footprint would be de-energized.³⁵ For example, PG&E determined that GPC's distribution system would be subject to PSPS, but not the transmission lines in the same area. For this reason, SED only evaluated PG&E's determination of the *initial* PSPS scope.

PG&E uses five criteria to determine if a transmission line that is in the geographic footprint of a PSPS event needs to be de-energized. These include:

- I. The presence of open Priority Code A tags;
- II. The line's status as "idle";^{36, 37}
- III. An expected wildfire risk score greater than 10 units;
- IV. More than a low risk of vegetation coming into contact with the line during a weather event (for 60 and 70kV lines);
- V. A maximum potential consequence score greater than 1,000 units.³⁸

When planning for the October 23, 2019 PSPS event, PG&E determined that the Incident Line did not meet any of the five criteria listed above.³⁹

³³ D.19-05-042, p. 5.

³⁴ ESRB-8, p. 35.

³⁵ November 26, 2019 Attachment to PG&E response to CPUC data request SED-001-Kincade Fire, Question 29, PGE-KINC-CPUC-00000000109-110.

³⁶ June 12, 2020 PG&E Response to CPUC data request SED-007-Kincade Fire, Question 1.

³⁷ PG&E classified transmission lines as "idle" for purposes of determining the initial transmission scope if the complete circuit was disconnected and did not carry any load.

³⁸ February 13, 2020 PG&E response to CPUC data request SED-003-Kincade Fire, Question 23.

³⁹ February 21, 2020 PG&E response to CPUC data request SED-003-Kincade Fire, Question 22.

There were no open Priority Code A tags on the Incident Line as of October 23, 2019, addressing PG&E’s criteria I.⁴⁰ The only open work tag for the Incident Tower was a priority E, which involved repainting the Incident Tower in order to address rust issues.⁴¹ PG&E’s criteria IV is not applicable as the Incident Line operates at 230 kV. Below is a table from PG&E’s procedures that indicates the timeframes in which safety conditions must be corrected. Priority A conditions are the most severe and Priority F conditions are the least severe.

Priority Code	Priority Description
A	The condition is urgent and requires immediate response and continued action until the condition is repaired or no longer presents a potential hazard. SAP due date will be 30 days to allow time for post-construction processes and notification close-out.
B	Corrective action is required within 3 months from the date the condition is identified. The condition must be reported to the transmission line supervisor as soon as practical.
E	Corrective action is required within 12 months from the date the condition is identified.
F	Corrective action is recommended within 24 months from the date the condition is identified, (due beyond 12 months, not to exceed 24 months). Requires Director approval.

Figure 16: Table of PG&E’s Priority Codes and associated descriptions of those codes.⁴²

SED reviewed PG&E’s documentation for the potential consequence score to determine if the Incident Line should have been included in the initial scope of the October 23, 2019 PSPS event per PG&E’s criteria listed above. The consequence score is an output from a model made by REAX Engineering (REAX Model). This model generates a maximum consequence score based on how much land would be expected to be burned and the associated residential structure density of the area. [REDACTED]

SED reviewed PG&E’s documentation for the wildfire risk score to determine if the Incident Line should have been included in the initial scope of the October 23, 2019 PSPS event per

⁴⁰ November 26, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 12.

⁴¹ November 26, 2019 PG&E response to CPUC data request SED-001, Question 12.

⁴² April 2, 2019 PG&E response to CPUC data request SED-002, Question 36, PG&E-CAMP-CPUC-0000019356.

PG&E's criteria III. [REDACTED] This score is calculated from the outputs of the REAX Model, the Operability Assessment model (OA model), and the Fire Potential Index (FPI) model.⁴⁵ The OA model gives a probability of failure of a transmission structure at a given wind speed, given the structure's design, age, and nearby environmental factors. With regards to the October 23, 2019 PSPS event, the probability of failure provided by PG&E's OA model was 0.000000094% or 1/1,063,829,787 with 45 mph gusts.⁴⁶ Based on highest wind gust speeds measured by nearby weather station PG305 (assuming 63 mph) the probability of failure based on the OA model was 0.00154% or 1/64,935.

Based on SED's review detailed above, SED finds no violation of Commission Decisions or Resolutions regarding PG&E's determination to exclude the Incident Line from the initial scope of the October 23, 2019 de-energization event.

3. Inspections

General Order 165 establishes the requirements for electric distribution and transmission lines regarding inspections to ensure safe and high-quality electrical service. PG&E's procedures require that overhead transmission assets be patrolled annually.⁴⁷ Detailed Inspections are required every five years.⁴⁸ These inspections are in line with the inspection intervals used for the Incident Tower. PG&E's 2014 detailed inspection of the Incident Tower found no issues.⁴⁹ Similarly, PG&E did not note any issues in its latest detailed inspection of the Incident Tower completed in July 2019.⁵⁰

⁴⁵ February 13, 2020 PG&E response to CPUC data request SED-003-Kincade Fire, Question 24.

⁴⁶ December 20, 2019 Attachment to PG&E response to CPUC data request SED-001-Kincade Fire, Question 19, "PGE-KINC-CPUC-00000001072."

⁴⁷ April 2, 2019 PG&E Electric Preventative Maintenance Manual, PGE-CAMP-CPUC-0000019391.

⁴⁸ April 2, 2019 PG&E Electric Preventative Maintenance Manual, PGE_CAMP_CPUC-0000019382.

⁴⁹ December 20, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 16, "PGE-KINC-CPUC-00000000645".

⁵⁰ December 23, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 44, "PGE-KINC-CPUC-00000000140-142".

PG&E inspected the Incident Tower as part of its Wildfire Safety Inspection Program (WSIP) in February 2019 and May 2019.⁵¹ PG&E conducted a drone inspection on the Incident Tower on May 11, 2019. During that inspection, PG&E inspectors used an incorrect inspection template, thus erroneously finding that the tower was non-steel, and submitted “N/A” when prompted about the condition of the jumpers.⁵² On June 18, 2019, PG&E re-reviewed the photographs from the May 11th inspection as part of a routine review of forms on which no conditions were reported. PG&E determined in its June 18, 2019 re-review that the Incident Tower was missing a danger sign.⁵³

A climbing inspection occurred on February 6, 2019 of the Incident Tower.⁵⁴ The February 6th inspection form indicates that the inspector found issues with the prevalence of rust on the tower itself.⁵⁵ The inspector also noted a small crack in one of the concrete stubs of the Incident Tower.⁵⁶ However, the inspector found no issue with the jumper cables or insulators on the Incident Tower.⁵⁷ Under the field “Jumper in poor condition” the inspector’s input was “no.”⁵⁸ In reviewing photographs taken from the May 11, 2019 inspection of the Incident Tower, SED noted that the bowing present in the jumper cables on the Incident Line-side of the tower during the Incident Site visit was also present during the May 11, 2019 inspection as shown in Figure 17.

⁵¹ November 26, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 13.

⁵² December 10, 2019 Attachment to PG&E response to CPUC data request SED-001-Kincade Fire, Question 64, “PGE-KINC-CPUC-00000000534.”

⁵³ November 26, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 57.

⁵⁴ November 26, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 12.

⁵⁵ December 10, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 64, “PGE-KINC-CPUC-00000000546.”

⁵⁶ December 10, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 64, “PGE-KINC-CPUC-00000000543.”

⁵⁷ December 10, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 64, “PGE-KINC-CPUC-00000000550.”

⁵⁸ December 10, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 64, “PGE-KINC-CPUC-00000000550.”



Figure 17: Jumper cable and shoe from May 11, 2019 drone inspection. Note signs of caging/bowing near shoe closer to the camera.⁵⁹

When PG&E removed the insulators from the topmost arm of the Incident Tower on November 1, 2019, the insulators were in good condition. The insulators, which are shown in Figure 18, appeared to have arcing residue, presumably from the incident.⁶⁰



Figure 18: Insulator string that was attached to incident Jumper Cable. The grey spots on the ceramic “skirt” are the arcing residue.

⁵⁹ December 10, 2019 PG&E response to CPUC data request SED-001-Kincade Fire, Question 60, “PGE-KINC-CPUC-00000000504”.

⁶⁰ See photographs from SED visit of November 1, 2019 site Visit.

4. Equipment Configuration

SED noted the unusual configuration of the jumper cables on the Lakeville-side of the Incident Tower. Typically, in transmission system applications, string insulators are used in configurations that limit swinging motions to an extent. For example, in one configuration, by being attached “in line” to a span, a tension insulator string can be held in place by the tension of the conductor span on one end and a tower arm on the other. In a second configuration, an insulator string can be vertically suspended while supporting a passing span. In the second case, the tension of the supported span helps to limit the movement of the suspension insulator string.

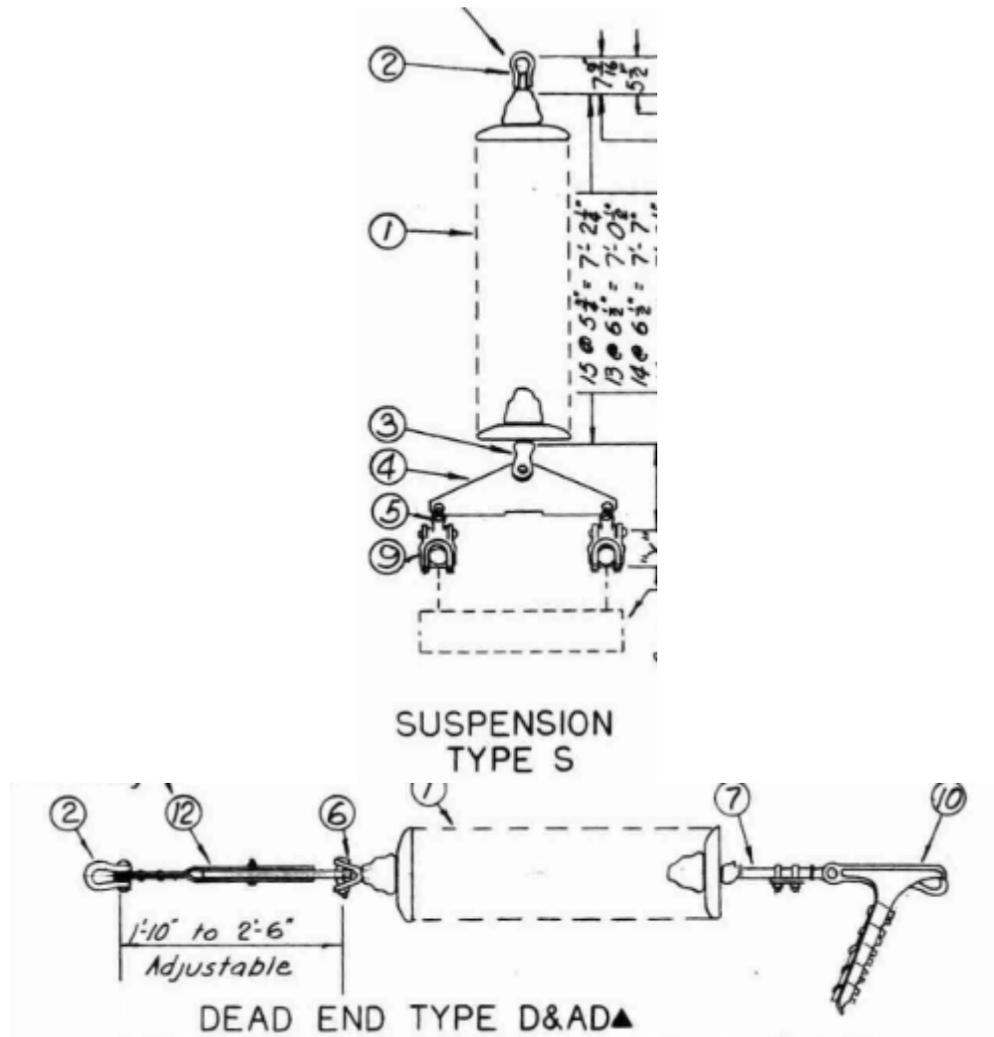


Figure 19: Design drawings of suspension and dead end type insulator configurations⁶¹

⁶¹ January 31, 2020 Attachment to PG&E response to CPUC data request SED-001-Kincade Fire, Question 2, PGE-KINC-CPUC-00000001669.

Design drawings provided by PG&E and shown in Figure 19 above, illustrate the use of a “jumper string” configuration at the Incident Tower that uses a weight to limit the movement of the insulator string.^{62,63} There are also items that were not on the tower at the time of the incident that are marked on a 1985 structure data sheet from PG&E. These include the aforementioned “hold down weights” and the “hold down shackles” that are used to attach the weights to the jumper cable assemblies.⁶⁴

Regarding the Incident Tower, there was nothing that limited the movement of the bottom end of the Lakeville-side suspended insulator strings. Under windy conditions, the bottom of the insulator string was free to swing without impediment, thereby causing the jumper cables to bend to the point that the jumper cable failed from fatigue stress.

5. Failure Analysis

A fracture evaluation of the incident jumper cable indicates that the cause of the fracture was mainly low-cycle fatigue.^{65,66} Microscopic examinations show that the jumper cable bore fatigue-induced striations and aluminum deposits that were likely caused by fretting between the wires.^{67,68} In instances where indicators of low-cycle fatigue were not found, the fractures were obscured by either fretting damage or damages caused by the final overload.⁶⁹ Additionally, the fracture evaluation found a fractured wire within the splice approximately eight inches away

⁶² January 31, 2020 Attachment to PG&E response to CPUC data request SED-002-Kincade Fire, Question 1, PGE-KINC-CPUC-00000001686.

⁶³ January 31, 2020 Attachment to PG&E response to CPUC data request SED-001-Kincade Fire, Question 2, PGE-KINC-CPUC-00000001672.

⁶⁴ March 6, 2020 PG&E response to November 21, 2019 Attachment to PG&E response to CPUC data request SED-001-Kincade Fire, Question 3.

⁶⁵ CAL FIRE Report Attachment 20, p1.

⁶⁶ Fatigue failure refers to when a material fails after experiencing a large number of repeated stresses. Low-cycle fatigue failure generally refers to when fatigue failure occurs in under 1000 cycles.

⁶⁷ CAL FIRE Report Attachment 20, p3.

⁶⁸ Fretting refers to wear induced by small motions of tightly fitting components.

⁶⁹ CAL FIRE Report Attachment 20, p3.

from the main fracture that occurred at the shoe.⁷⁰ CAL FIRE's evaluation mentioned that it is likely that more evidence of fatigue exists inside the splice.⁷¹

It is unlikely that the signs of fatigue stress weakening the incident jumper cable would have been visible via a visual inspection, since it occurred within the shoe and splice. The promulgation of any fatigue cracks in the cables, the extent of corrosion in the interior strands of the cable, and the resultant impact of those factors on expected service life would probably not be determinable without removing the cables from service for a more thorough examination.

6. Area Fire History

CAL FIRE states in its report that the Kincade Fire bears many similarities to the Sawmill Fire.⁷² CAL FIRE notes that low-cycle fatigue failures of PG&E equipment caused both incidents. Additionally, CAL FIRE notes that high winds were a factor in the mechanical failure that led to the Sawmill Fire. Lastly, CAL FIRE states that the findings for the cause of the Sawmill Fire were communicated to PG&E with the expectation that PG&E would take measures to prevent similar failures from occurring on their equipment that is exposed to similar conditions.⁷³

The Sawmill Fire was also investigated by SED. The Sawmill Fire occurred on September 25, 2016 at the Geyser Plant which is within three miles of the Kincade Fire Incident Site. SED concluded on February 23, 2018 that the fastening hardware that attached a bond wire to a pole had failed in a manner that allowed that bond wire to contact one of the energized lines. At the time when SED closed its investigation, CAL FIRE indicated that the Sawmill Fire was still under investigation.

IV. DISCUSSION OF VIOLATIONS/CONCLUSIONS

A. Line Abandonment

GO 95, Rule 31.6 states:

“Lines or portions of lines permanently abandoned shall be removed by their owners so that such lines shall not become a public nuisance or a hazard to life or property. For the purposes of this rule, lines that are

⁷⁰ CAL FIRE Report Attachment 20, p. 3.

⁷¹ CAL FIRE Report Attachment 20, p. 4.

⁷² CAL FIRE Report, p. 41.

⁷³ CAL FIRE Report, p. 42.

permanently abandoned shall be defined as those lines that are determined by their owner to have no foreseeable future use.”

As previously noted, after PG&E disconnected the Incident Line from Unit 9/10, the jumper cables on the Lakeville side of the Incident Tower were still connected to the Incident Line and remained energized.⁷⁴ PG&E stated that when it disconnected the Incident Line from Unit 9/10 in 2006, it had no information regarding any potential future use of Unit 9/10.⁷⁵ PG&E had no foreseeable use for the section of the Incident Line which formerly served Unit 9/10 and runs from Tower 001/009 to Tower 001/006, and should have removed those additional facilities. In January 2020 PG&E removed the jumper cables at Tower 001/009, de-energizing the section from Tower 001/009 to Tower 001/006 but did not physically remove the conductor spans.

Furthermore, PG&E Utility Standard TD-1003S “Management of Idle Electric Transmission Line Facilities” states that:

“Idle overhead transmission facilities that have no foreseeable future use must be categorized and handled according to the following requirements:

- The facilities must be designated PA [permanently abandoned].
- They must be removed.”⁷⁶

As defined in Utility Standard TD-1003S, PA stands for “permanently abandoned.” Also, for this standard, idle transmission facilities are “Facilities that are not currently being used to serve transmission load or generation facilities but may have a potential future use by the Company.”⁷⁷

GO 95, Rule 31.6 does not differentiate between energized and de-energized lines, so long as these spans have no foreseeable future use they should be removed. Therefore, PG&E is in violation of GO 95, Rule 31.6 for improperly abandoning facilities starting in May 2006 and continuing until the span’s removal in 2020.

⁷⁴ See Figure 9.

⁷⁵ March 26, 2020 PG&E response to CPUC data request SED-005-Kincade Fire, Question 7.

⁷⁶ June 12, 2020 Attachment to PG&E response to CPUC data request SED-007-Kincade Fire, Question 1, PGE-KINC-CPUC-00000006176-6177.

⁷⁷ June 12, 2020 Attachment to PG&E response to CPUC data request SED-007-Kincade Fire, Question 1, PGE-KINC-CPUC-00000006180.

B. Design for Safe, Proper, Adequate Service

GO 95, Rule 31.1 states:

“Electrical supply and communication systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service.”

In evaluating compliance with GO 95, Rule 31.1, SED considered whether PG&E acted in accordance with its own best practices and procedures in constructing and configuring the equipment attached to the Incident Tower. If configuration of equipment on the Incident Tower was not in compliance with PG&E’s own procedures and if there is insufficient justification for the deviation from those procedures, then SED would determine that PG&E did not construct the equipment (when detaching from GPC Unit 9/10) on the Incident Tower with regard given to being able to provide safe, proper, and adequate service.

SED evaluated whether there was an issue with the design or construction of the equipment on the Incident Tower. SED noted that the design of the Lakeville-side jumper cables and insulator strings as they were prior to the incident was unusual. As can be seen in Figure 9, unlike typical span conductors, the ends of the jumper cables on the incident Circuit side of the Incident Tower were not secured to two fixed points (or points that were relatively stable by being under tension). Instead, the jumper cables were attached to the ends of suspension insulators that were hanging freely from the Incident Tower arm.

Typically, in transmission system applications, string insulators are used in configurations that limit swinging motions to an extent. In one configuration, by being attached “in line” to a span, a tension insulator string can be held in place by the tension of the conductor span on one end and a tower arm on the other. In a second configuration, an insulator string can be vertically suspended while supporting a passing span. In the second case, the tension of the supported span helps to limit the movement of the suspension insulator string.

Utilities can also use post insulators, which are rigid insulators. PG&E's Transmission Engineering documents illustrate the use of post insulators for overhead conductors.⁷⁸ A configuration using post insulators would be less likely to move in high wind conditions compared to the freely hanging configuration used at the Incident Tower.

Lastly, a review of SED's Camp Fire Report shows that in some cases PG&E uses hold-down anchors to limit the movement of an insulator string.⁷⁹ In this case PG&E noted that an anchor broke at Tower 27/221 of the Caribou-Palermo Transmission Line. This meant that the insulator string was freely hanging. PG&E noted this and created a work order to rectify the hazard. While the configuration of the Incident Tower differs from the configuration mentioned in the Camp Fire Report, PG&E's previous notes illustrate that freely hanging suspension insulators that are capable of a full range of motion on one end are a potential hazard.

PG&E's engineering standards and guidance documents do not reference the configuration used for the incident Jumper Cable after it was disconnected from GPC Unit 9/10. Specifically, PG&E stated in response to an SED data request asking about the configuration of the incident Jumper Cable as it existed at the time of the May 2019 drone inspection:

*"Based on a review of its records, PG&E understands that there are no engineering standards, design drawings or guidance documents that reference the specific Tower 001/006 jumper configuration or that recommend or discourage this specific configuration."*⁸⁰

With regards to the incident, there was nothing that limited the movement of the bottom end of the Lakeville-side suspended insulator strings. As noted in CAL FIRE's report, the original configuration of the Incident Tower secured the jumper cables and insulator strings in place and prevented excessive movement of that equipment.⁸¹ By configuring the Incident Tower's jumper cables and insulator strings in the manner shown in Figure 9 after disconnecting GPC Unit 9/10 from PG&E's transmission system, PG&E allowed that equipment to have a greater range of

⁷⁸ June 12, 2020 Attachment to PG&E response to CPUC data request SED-009-Kincade Fire, Question 1, PGE-KINC-CPUC-00000006271.

⁷⁹ SED Camp Fire Report, CAMP-00014 – 00015.

⁸⁰ June 26, 2020 PG&E response to CPUC data request SED-009-Kincade Fire, Question 3.

⁸¹ CAL FIRE Report, p39.

movement than other configurations on its system, thereby making it vulnerable to the low-cycle fatigue that gradually weakened the jumper cable to the point that the jumper cable failed during the October 23, 2019 wind event.⁸²

Additionally, CAL FIRE had previously informed PG&E of its findings regarding the Sawmill Fire, the cause of which was similar to the Kincade Fire.⁸³ It is reasonable to conclude that PG&E was not only aware of the high wind conditions that are present in the Geysers Plant region, but also that PG&E's equipment in the area was susceptible to fatigue failure induced by high wind events.

The configuration that PG&E used at the Incident Tower after 2006 is not permitted by PG&E's own manuals and procedures. Therefore, PG&E did not configure the lines in accordance with its own procedures and consequently did not configure the equipment on the Incident Tower in a manner that enabled the furnishing of safe and adequate service.

C. Health and Safety

California Public Utilities Code Section 451 states in part:

“Every public utility shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities, including telephone facilities, as defined in Section 54.1 of the Civil Code, as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public.”

SED finds that PG&E did not furnish and maintain its facilities in a manner that promoted the safety and health of its patrons and the public, in violation of California Public Utilities Code Section 451.

PG&E left abandoned equipment energized for thirteen years even though that equipment provided no benefit or convenience to the public. Additionally, the configuration of the Lakeville #9-side jumper cables is not recommended by PG&E's own procedures. By leaving the Incident Tower's Lakeville #9-side jumper cables on the towers in a non-standard configuration, PG&E

⁸² CAL FIRE Report, pp. 39-40.

⁸³ CAL FIRE Report, p. 42.

acted in a manner that increased the risk of an electric incident occurring. PG&E also took no action to remediate the configuration of these jumper cables while the incident span was not providing service between 2006 and November 1, 2019.

Because PG&E left abandoned energized equipment and failed to remediate an imprudent configuration of the Incident Tower's jumper cables, SED finds that PG&E failed to adequately furnish and maintain its equipment and facilities in a manner necessary to promote the health and safety of its patrons and the public, thus in violation of Public Utilities Code Section 451.

VI. CONCLUSION

Based on the evidence reviewed, SED's investigation has identified three (3) violations of Commission General Orders and regulations and the California Public Utilities Code by PG&E:

- PG&E failed to configure the jumper cables and insulator strings at the Incident Tower in a manner that is permitted by its own procedures and policies; and in doing so configured its equipment in a manner that does not enable the furnishing of safe and adequate service. Therefore, it is a violation of **GO 95, Rule 31.1**.
- PG&E failed to remove an abandoned line; therefore, it is a violation of **GO 95, Rule 31.6**.
- PG&E abandoned energized equipment and failed to remediate an imprudent configuration of the Incident Tower's jumper cables, and thereby failed to adequately furnish and maintain its equipment and facilities as is necessary to promote the safety and health of both its patrons and public; therefore, it is in violation of **PU Code Section 451**.

If SED becomes aware of additional information that could modify SED's findings in this Incident Investigation Report, SED may re-open the investigation. If so, SED may modify this report and take further actions as appropriate.