Application No.: Exhibit No.: Witnesses: A.25-06-Liberty-02 T. Fee G. Fowler A. Lykens E. Schwarzrock



(U 933-E)

Mountain View Fire Cost Recovery Application

Before the California Public Utilities Commission

Liberty-02: Ignition

Tahoe Vista, California June 20, 2025

Liberty-02: Ignition

Table Of Contents

		Section Page	Witness
I.	Execu	utive Summary 1	E. Schwarzrock
II.	The N	Mountain View Fire	T. Fee
	A.	The Fire Agency Investigation Was Not Sufficiently Thorough and Certain Conclusions in the Fire Agency Report Are Contradicted by the Evidence	
	В.	Shortcomings of the Investigation Aside, There is Evidence Consistent with the Ignition Having been Caused by Electrical Facilities and Such a Possibility Cannot be Ruled Out	
		1. Eyewitness Testimony Indicates the Mountain View Fire Likely Started Adjacent to Liberty's Distribution Lines	
		2. The Metallurgical Evidence Is Consistent with Conductor Contact and Separation	G. Fowler
		 Electrical Events Indicate that Liberty's Conductor Separated and Fell to the Ground Around the Time the Mountain View Fire Was First Reported	A. Lykens
	C.	Liberty's System Protection Scheme Operated as Expected in Response to the Electrical Events on the Day of the Ignition	

Liberty-02: Ignition

List of Figures

Figure	Page	
Figure 1: Origin Area of the Mountain View Fire	2	
Figure 2: Specific Origin Area Identified by Fire Agency Report, with the West and East		
Poles Marked	4	
Figure 3: 12:01 p.m. Photograph of Specific Origin Area After Ignition	5	
Figure 4: Simplified Illustration of Contact Points and Separation Location	9	

2 3

4

5

6

7

8

9

10

1

I.

Executive Summary

This testimony sets forth Liberty's analysis of the origin and cause of the Mountain View Fire that ignited on November 17, 2020, near the town of Walker, in Mono County, California. The fire was first reported at approximately 11:58 a.m. in a field alongside Highway 395 between the Mountain View Barbeque Restaurant and the Andruss Motel. The California Department of Forestry and Fire Protection ("Cal Fire") conducted an investigation into the origin and cause of the fire and its findings are set forth in an investigation report, referred to throughout this testimony as the "fire agency report."¹ As described in that report, Cal Fire concluded that the "most probable" cause of the fire was an energized conductor contacting the ground and igniting grassy fuels.²

In connection with the litigation arising from the Mountain View Fire, Liberty engaged an experienced wildland fire origin and cause expert to perform a technical peer review of the fire agency report and investigation. In his opinion, the fire agency investigation was not sufficiently thorough and did not meaningfully address conflicting witness statements. He notes that the ability of fire agency investigators to document and analyze fire movement indicators was limited due to rainfall in the area shortly after the ignition, and visual evidence of the early fire indicates the investigation likely identified an incorrect specific origin area.

Despite the investigation's limitations and shortcomings, the possibility that electrical facilities 18 caused the Mountain View Fire cannot be ruled out, and Liberty acknowledges there is evidence 19 consistent with such a conclusion. An eyewitness reported seeing sparking from electrical facilities at 20 Pole 266731 (the "West Pole") and fire igniting near the base of that pole. After the fire ignited, one of 21 Liberty's conductors was found separated and on the ground between the West Pole and Pole 40288 (the 22 "East Pole"), and post-incident examination of the conductor showed damage consistent with phase-to-23 phase contact at the area of separation. Liberty's system protection also recorded electrical events on 24 25 the circuit around the time of the reported ignition. Neither the fire agency investigation nor Liberty's own investigation identified significant evidence showing an alternate cause of the Mountain View Fire. 26

 $[\]frac{1}{2}$ The fire agency report for the Mountain View Fire is Appendix A to this testimony.

 $[\]frac{2}{2}$ See Appendix A at 21.

II.

The Mountain View Fire

The Mountain View Fire ignited shortly before noon on November 17, 2020, near the town of Walker in Mono County, California. A 911 caller first reported the fire at approximately 11:58 a.m., and the fire was first observed in a grassy field adjacent to an area of Highway 395 that runs east and west. Cal Fire investigated the origin and cause of the Mountain View Fire and issued a report. Based on fire spread indicators, evidence collected, and witness statements, the report concludes that the "most probable" cause of the fire was an energized conductor contacting the ground and igniting grassy fuels between the East and West Poles.³ The origin area of the fire is shown in Figure 1.



Figure 1: Origin Area of the Mountain View Fire

While my review identified certain shortcomings with the fire agency investigation and report, there is evidence consistent with a power line-caused ignition. Eyewitnesses to the ignition and early stage of the fire reported first seeing fire near the base of the West Pole closest to the Andruss Motel, as well as sparking from Liberty's electrical facilities. After ignition, the northern field (C phase)

<u>3</u> See Appendix A at 21.

conductor on the Topaz 1261 Circuit between the West and East Poles was found separated and lying in 1 the field near where the fire had ignited. Metallurgical examination of the conductors identified damage 2 consistent with phase-to-phase contact-specifically, fresh arc marks and melting of the steel core and 3 aluminum strands-at the point of separation. A protection device on Liberty's system recorded 4 electrical faults on the Topaz 1261 Circuit around the time of the ignition consistent with phase-to-phase 5 contact and the conductor separation. Specifically, the 1261 R2 Recloser—the nearest protection device 6 upstream of the area of ignition-recorded a phase-to-phase fault before intermittent phase-to-ground 7 faulting. This phase-to-ground faulting caused the recloser to operate and ultimately lock out to de-8 energize the line. In light of this evidence, Liberty acknowledges the possibility that its electrical 9 facilities were associated with ignition of the Mountain View Fire. 10

11A.The Fire Agency Investigation Was Not Sufficiently Thorough and Certain Conclusions in12the Fire Agency Report Are Contradicted by the Evidence

I was engaged to perform a technical peer review of the fire agency investigation of the 13 Mountain View Fire. Based on that review, I conclude that the investigation was not thorough and 14 reached certain incorrect conclusions. The fire agency report acknowledged other "possible causes" of 15 the fire that were not ruled out, but nevertheless found that "an energized conductor contacting the 16 ground" was "the most probable cause of the Mountain View fire."⁴ In my view, the fire agency 17 investigators did not conduct a sufficiently thorough investigation to rule out other potential causes of 18 the fire and, based on my peer review of their work, the cause of the fire should have been identified as 19 undetermined. The fire agency report notes that alternate ignition sources, such as arson or a 20 malfunctioning vehicle, remained possible causes, but investigators do not appear to have thoroughly 21 investigated alternate sources, notwithstanding the general origin area's proximity to a heavily trafficked 22 highway. I believe it is possible the investigators' initial observation that an electrical conductor had 23 separated and fallen to the ground resulted in expectation bias which impacted the investigation. 24

Properly identifying a specific origin area is a critical step in the wildland fire investigative process. It is only after identifying a specific origin area that investigators should seek to identify the cause of the ignition within that specific origin area. Here, the investigators did not conduct a broad enough search to accurately identify a specific origin area. The only area the investigators appear to have examined thoroughly was the area of the field where a section of damaged conductor was found

⁴ See Appendix A at 21.

lying on the ground adjacent to bleached rocks.⁵ The fire agency report indicates that investigators 1 mistakenly identified and focused on stains they thought were burn marks on rocks near this area and 2 indications of ignition, and failed to search for and consider further evidence. Smoke patterns on these 3 rocks, however, would have been indistinguishable between any arc flash and consumption of nearby 4 fuel by the fire, and were adjacent to vegetation that was consumed by the fire some time after its 5 ignition. Based on this, the fire agency report identified a specific origin area—a six feet by twelve feet 6 rectangular area near the end of the conductor and the burned rocks. This area is located between the 7 West and East Poles, just west of a parking turnout, as shown in Figure 2.⁶ This location, however, 8 appears unburned by an approaching flanking fire in photographic and video evidence captured by 9 eyewitnesses shortly after the fire began (Figure 3), further indicating that fire agency investigators did 10 not correctly identify the specific origin area of the fire. 11

Figure 2: Specific Origin Area Identified by Fire Agency Report, with the West and East Poles Marked



⁵ See Appendix A at 19.

⁶ See Appendix A at 20.



Figure 3: 12:01 p.m. Photograph of Specific Origin Area After Ignition

The fire agency investigation was complicated by environmental conditions, which impacted the 1 evidence available to fire agency investigators and, as a result, limited their ability to draw reliable 2 conclusions regarding the fire's origin and cause. High winds and rain in the area of origin following 3 ignition of the fire limited the quantity and availability of fire movement indicators that fire agency 4 investigators could analyze (though the rainfall aided fire suppression efforts, as described in *Liberty-04*: 5 *External Factors*).⁷ This rainfall occurred before fire agency investigators arrived on scene the day 6 following the ignition, and may have limited their ability to draw reliable conclusions from the 7 remaining markers. In standard wildland fire investigations, investigators meticulously identify, 8 document, and analyze a large number of fire movement indicators in and around the suspected general 9 area of origin to understand the fire's movement and progression, as well as to identify the specific area 10 where it originated. In contrast, the number of fire movement indicators that fire agency investigators 11 documented and analyzed for the Mountain View Fire was quite small, which limited their ability to 12 draw reliable conclusions regarding the fire's specific origin area. It is also notable that one of the 13 investigators assisting the fire agency investigation identified ignition points that appear to be outside 14 the specific origin area identified by the fire agency report. 15

⁷ See Appendix A at 17 ("Extremely high winds on Tuesday, November 17, 2020, and prolonged rainfall overnight had eliminated any fire ash indicators in the fire areas I observed.").

The investigators also failed to timely or thoroughly interview key witnesses. Early accounts by 1 eyewitnesses of the fire are conflicting in their description of the ignition's connection to electrical 2 facilities in the general vicinity where the ignition occurred. For instance, statements by certain 3 eyewitnesses suggested the fire started before the conductor separated and contacted the ground. One 4 eyewitness's testimony seemed to describe the field phase conductor separating and falling into the field 5 after the fire started. Another witness who described observing sparks fall from electrical equipment 6 from across Highway 395 testified that the fire started well before noon and that the conductors 7 remained in the air when the fire started. After later obtaining all of the relevant witness statements, the 8 investigators did not properly retest all possible hypotheses, or review phone records to establish a 9 timeline for the witness's observations. Particularly in light of potentially conflicting accounts, it is 10 critical for investigators to interview and document statements from all relevant eyewitnesses and 11 12 further develop evidence to help resolve the inconsistencies. Yet, based on my review of the investigation, the fire agency investigators failed to interview some witnesses, and did not thoroughly 13 14 interview others. For instance, investigators do not appear to have interviewed the witness making the initial 911 report, who did not reference electrical facilities in her report, or certain witnesses at the 15 nearby Mountain View Barbeque that captured key early photos and videos of the fire. 16

17B.Shortcomings of the Investigation Aside, There is Evidence Consistent with the Ignition18Having been Caused by Electrical Facilities and Such a Possibility Cannot be Ruled Out

Notwithstanding the shortcomings of the fire agency investigation, I cannot rule out the 19 possibility of an ignition associated with electrical facilities based on the available evidence. There is 20 evidence consistent with the ignition having been caused by electrical facilities. Eyewitnesses reported 21 seeing the fire ignite near the base of the West Pole—an area more consistent with being a specific 22 origin area based on my review of the evidence. After the ignition, one of Liberty's conductors was 23 found separated and on the ground, and I understand metallurgical examination identified damage 24 consistent with phase-to-phase contact at the area of separation. Liberty's electrical event records also 25 indicate electrical faults on the Topaz 1261 Circuit around the time of the ignition consistent with phase-26 to-phase contact and conductor separation. 27

28

1.

29

30

31

Evewitness Testimony Indicates the Mountain View Fire Likely Started Adjacent to Liberty's Distribution Lines

Multiple eyewitnesses reported first identifying the fire near the base of the West Pole. The caller who first reported the Mountain View Fire to 911 was located directly across

6

Highway 395 from the West Pole and described seeing flames that had just started, though there was no specific mention of electrical facilities. Another eyewitness—potentially the first to observe the Mountain View Fire—described hearing a noise, and turning to see sparks coming down from the West Pole and flames and sparks around the base of the pole. Additionally, four witnesses inside the nearby Mountain View Barbeque all reported seeing a small fire near the West Pole. Each of the witnesses stated that they identified the fire shortly after the Mountain View Barbeque lost power and they observed vehicles stop on Highway 395. One of those eyewitnesses also reported seeing a power line moving chaotically in the air while sparking and arcing.

Despite consistency in certain aspects of these witness observations, there also are inconsistencies in other respects. The eyewitness who observed sparks falling from the West Pole, for example, stated that all the power lines remained suspended in the air and reported first seeing the fire at about 11:30 a.m., though phone records produced later in the litigation suggest the time was likely around noon. Likewise, the witness who saw the power line chaotically moving also described seeing the conductor come down into the field, which could suggest the fire started before the conductor separation. Thus, some eyewitness accounts appear to suggest that the fire may have started before nearby Liberty facilities were damaged. Notwithstanding these inconsistencies, the eyewitness accounts of the incipient phase of the Mountain View Fire are broadly consistent with an ignition located adjacent to and possibly caused by Liberty facilities.

2.

The Metallurgical Evidence Is Consistent with Conductor Contact and Separation

I was retained by Liberty to perform a metallurgical analysis of material related to the Mountain View Fire. Following the fire, the field and center phase conductors between the West Pole and East Pole near the origin area of the fire, as well as the triplex between the West Pole and Service Pole, were removed for preservation, including both the conductors and splices that were present on lines. I performed a site inspection of the origin area on December 5, 2023, and attended an evidence examination of the preserved conductors at EAG Labs on December 7, 2023. I also understand that these conductors were the subject of earlier examinations at the Bureau of Land Management in September 2021 and January 2022, as well as destructive testing at EAG Labs in June 2023, and I reviewed photographs from these earlier examinations and testing. From my review of the metallurgical evidence, I conclude that it is consistent with the

field and center phase conductors coming into contact and arcing on the day of the Mountain View Fire, with the field phase subsequently separating and falling to the ground. The separation of the field phase conductor was caused by melting due to arcing.

The center and field phase conductors show evidence of recent arcing consistent with phase-to-phase contact on November 17, 2020. The area of contact was approximately mid-span between the West and East Poles, including at the location where the field phase conductor ultimately separated and fell to the ground.⁸ The field phase conductor exhibited arcing and melting on each end of the separation point. In particular, there was melting on every aluminum strand at all points of separation, including the steel core strand. The lack of oxidation and overall appearance of this evidence indicates that the damage is fresh and occurred shortly before the conductor was removed from the field. The center phase conductor also exhibited areas of arcing. The most pronounced area aligns with the location of the field phase conductor separation, indicating that the two conductors came into contact. Unlike the field phase conductor did not separate or fall to the ground, though some of the individual aluminum strands separated due to arcing and melting. The center and field phases did not exhibit evidence of old arcing.

The west end of the field phase conductor also exhibited discoloration, likely due to the ground fire. The evidence indicates the west side of the field phase conductor contacted another metal wire—likely the bare neutral wire associated with the triplex conductor between the West Pole and a service pole to its north and a guy wire supporting the West Pole. The east end of the field phase conductor exhibited mechanical damage. The conductor east of the separation point was de-energized due to the separation and apparently fell to the ground in a gravel parking area, where I understand it was driven over by multiple vehicles.

⁸ The conductor's point of separation was approximately 135 feet, 8 inches from the West Pole.



Figure 4: Simplified Illustration of Contact Points and Separation Location

Although a metallurgist retained by plaintiffs in the civil litigation suggested the field phase conductor separated due to fatigue,⁹ that conclusion is not supported by the metallurgical evidence. In particular, fatigue results in striations and beachmarks that are clearly identifiable on the fracture surface.¹⁰ Yet no striations or beachmarks were present on the ends of the strands of the field phase conductor, and my review of the evidence showed no sign of separation due to fatigue. A fatigue separation also is unlikely in light of the strength of the materials comprising the ACSR and forces on the conductor between the East and West Poles. The strength of the ACSR conductor far exceeded the applied forces, and the strength of the steel core alone is more than sufficient to support the conductor for a span between the West and East Poles, even during windy conditions such as on November 17, 2020.

⁹ Fatigue is a progressive mode of crack growth that occurs in small increments due to cyclic stresses of sufficient magnitude and duration.

¹⁰ Russell A. Lund & Shahram Sheybany, "Fatigue Fracture Appearances" ASM Handbook, Vol. 11 (Metals Handbook article).

My metallurgical review of the evidence is consistent with the center and field phase conductors coming into contact and arcing, resulting in separation of the field phase conductor.

3.

1

2

3

4

5

6

7

8

9

10

11 12

13

14

15

16

Electrical Events Indicate that Liberty's Conductor Separated and Fell to the Ground Around the Time the Mountain View Fire Was First Reported

As detailed more fully below in Section C, post-incident analysis of Liberty's electrical event records from the 1261 R2 Recloser—the closest upstream protective device to the facilities near the area of origin—indicates that at approximately 11:55 a.m. on November 17, 2020, the 1261 R2 Recloser recorded a phase-to-phase fault followed by a series of ground faults. These electrical events recorded on the Topaz 1261 Circuit are consistent with the center and field phase (B phase and C phase) conductors between the West and East Poles coming into contact and arcing, with the field phase (C phase) then separating and falling to the ground. These events occurred three minutes before the Mountain View Fire was first reported by a 911 caller from across Highway 395. I understand the 911 caller indicated that the fire looked like it had just started and was moving fast, but did not make any reference to power lines or a cause.

C. <u>Liberty's System Protection Scheme Operated as Expected in Response to the Electrical</u> <u>Events on the Day of the Ignition</u>

Review of electrical event records indicates that Liberty's system protection scheme operated as 17 expected in response to faults on the Topaz 1261 Circuit on November 17, 2020. As described in more 18 detail in *Liberty-03: Prudence of Operations*, the Topaz 1261 Circuit originates at an NV Energy 19 substation in Nevada and Liberty's facilities begin at the California-Nevada border. Liberty's portion of 20 the Topaz 1261 Circuit was protected by two line reclosers, referred to as the 1261 R1 and 1261 R2 21 Reclosers. The 1261 R1 Recloser was located near the border and the beginning of Liberty's facilities 22 on the Topaz 1261 Circuit. The 1261 R2 Recloser was the nearest upstream line recloser between the 23 1261 R1 Recloser and the West and East Poles. Following the fire, electrical event records were 24 downloaded from the reclosers and analyzed by Liberty. 25

Liberty's protection system functioned properly to interrupt the fault current and de-energize the portion of the circuit past the 1261 R2 Recloser once the field phase (C phase) conductor separated and fell to the ground between the East and West Poles, as noted in Section II.B.3 above. At approximately 11:55:08 a.m., the 1261 R2 Recloser recorded a 295-amp phase-to-phase fault between the center and field phases (B phase and C phase). This fault cleared without exceeding time-current curve settings and therefore did not prompt operation of the 1261 R2 Recloser. Approximately two seconds later, the 1261 R2 Recloser began detecting a series of phase-to-ground faults on the field phase (C phase) as the
broken conductor contacted the ground in the field. Ground faults are by nature chaotic with respect to
their fault currents, due to the fact that the energized conductors are moving and the earth is a poor
conductor. The 1261 R2 Recloser was in normal operating mode at the time, which provides for three
reclose operations before locking out, as described further in *Liberty-03*. At approximately
11:55:43 a.m., thirty-two seconds after the initial ground fault, the 1261 R2 Recloser operated and
locked out, de-energizing the Topaz 1261 Circuit downstream of the 1261 R2 Recloser.

Liberty's system protection also quickly responded to activity on the circuit earlier in the day on 8 November 17, 2020. Specifically, the 1261 R2 Recloser recorded a B phase to C phase fault around 9 9:48 a.m.¹¹ Because work was being performed on the circuit at that time, the 1261 R2 Recloser 10 operated in response to that fault to de-energize the line downstream of that location and did not attempt 11 12 to reclose and re-energize the line.¹² In response, field personnel patrolled the Topaz 1261 Circuit downstream of the 1261 R2 Recloser to the end of the line, including the subject span between the East 13 14 Pole and West Pole. As a precaution, field personnel removed slack from a stretch of the Topaz 1261 Circuit located northwest of the West and East Pole. These fifteen spans were in "hot arms" due to the 15 ongoing reconductoring work. At approximately 10:41 a.m., the 1261 R2 Recloser was closed to restore 16 power to Liberty customers.¹³ 17

¹¹ A limited earlier outage occurred at 8:35 a.m. upstream of the 1261 R2 Recloser. No fault was recorded, but a cutout was found open.

¹² The 1261 R2 Recloser did not attempt to reclose following this fault because "hotline tag" settings were active at the time due to the reconductoring work being performed on the circuit that morning.

¹³ In coordination with field personnel performing the reconductoring work, the "auto" or normal setting was selected when the 1261 R2 Recloser was closed. See *Liberty-03: Prudence of Operations* for a more detailed discussion of Liberty's system protection and operating procedures. Subsequent review of recloser records following the fire also identified a transient phase-to-phase fault recorded by the 1261 R2 Recloser at approximately 10:53 a.m. on November 17, 2020. The fault current was of insufficient magnitude and duration for the recloser to operate and the fault self-cleared.

Appendix A

(APPENDIX A IS CONFIDENTIAL IN ITS ENTIRETY AND HAS BEEN OMITTED FROM THE PUBLIC VERSION)