Application No.:	18-09-002
Exhibit No.:	SCE-01A-Amended
Witnesses:	B. Chiu D. Daigler P. Herrington M. Jocelyn L. Letizia D. Tessler T. Tran

SOUTHERN CALIFORNIA EDISON®

An *EDISON INTERNATIONAL*® Company

(U 338-E)

Amended Prepared Testimony in Support of Southern California Edison Company's Application for Approval of Its Grid Safety and Resiliency Program - Annotated

Before the

Public Utilities Commission of the State of California

Rosemead, California
November 2, 2018

Table IV-8
Breakdown of Contact from Object and Equipment/Facility Failure Related Faults (Distribution Voltage Infrastructure in HFRA from 2015-2017)[85]

	~~Previous~~		Current	
Suspected Initiating Event	**~~Count~~**	**~~Percentage~~**	**Count**	**Percentage**
Contact From Object	~~895~~	~~31.75%~~	973	31.84%
Equipment/Facility Failure	~~1,354~~	~~48.03%~~	1,459	47.74%
Other	~~571~~	~~20.26%~~	624	20.42%
Total	**~~2,819~~**	**~~100.00%~~**	**3,056**	**100.00%**
Contact From Object	**~~Count~~**	**~~Percentage~~**	**Count**	**Percentage**
Animal	~~250~~	~~8.87%~~	272	8.90%
Balloons	~~152~~	~~5.39%~~	167	5.46%
Other	~~48~~	~~1.70%~~	51	1.67%
Vegetation	~~238~~	~~8.44%~~	256	8.38%
Vehicle	~~207~~	~~7.34%~~	227	7.43%
Total	**~~895~~**	**~~31.75%~~**	**973**	**31.84%**
Equipment/Facility Failure	**~~Count~~**	**~~Percentage~~**	**Count**	**Percentage**
Capacitor Bank	~~8~~	~~0.28%~~	9	0.29%
Conductor	~~145~~	~~5.14%~~	163	5.33%
Crossarm	~~39~~	~~1.38%~~	43	1.41%
Fuse	~~98~~	~~3.48%~~	104	3.40%
Insulator	~~24~~	~~0.85%~~	26	0.85%
Other	~~111~~	~~3.94%~~	117	3.83%
Splice/Clamp/Connector	~~138~~	~~4.90%~~	154	5.04%
Transformer	~~791~~	~~28.06%~~	843	27.59%
Total	**~~1,354~~**	**~~48.03%~~**	**1,459**	**47.74%**

SCE then mapped the fire ignition data, including information regarding the cause of each fire (where known), to the cause codes in ODRM. This process allowed SCE to connect data regarding the frequency of faults of different types to data regarding the frequency of fires associated with those fault types. From this analysis, SCE extrapolated the likelihood that a given type of fault could be associated with a fire ignition event.

[85] Note, this table presents data related to faults. *See* Table III-5 for data associated with fires. SCE-01A (A. 18-09-002) was based on incomplete ODRM source data. It did not include the last 2½ months of 2017 (10-13-2017 through 12-31-2017). This table now reflects the additional data. As shown, the percentages do change when not rounded, but when rounded and shown as an integer then no change would be visible to the percentages. The impact is minimal for two reasons, (1) the additional 2 ½ months of fault data added were not significant in quantity and (2) the additional 2 ½ months of fault data added has a similar distribution to the initial data.

The results showed that contact from object faults have a higher probability of being associated with a fire event: this broad category accounted for less than one-third of total faults in SCE's system (32 percent) but was associated with more than one-half (53 percent) of the suspected wildfire initiating event types. This pointed to a potential opportunity for significantly reducing wildfire risk by focusing on measures that prevent contact-related faults. Vegetation-related CFO faults provides a specific example. In the 2015-2017 period, the ODRM fault analysis shows that there were ~~2,819~~ 3,056 faults per year on the distribution system in HFRA; ~~238~~ 256 of these, or eight percent, were identified as vegetation-related CFO faults. In that same period, fire data analysis shows that there were approximately 132 fires associated with the distribution system in HFRA;[86] for 22 of these, or 16.7 percent, vegetation contact was identified as the suspected initiating event. Note that these numbers do not include fires that are still being investigated and for which the suspected origin and cause are still undetermined. Thus, all else equal, there was a relatively greater likelihood that a vegetation-related fault was ultimately associated with a fire event.

(2) Risk Analysis: Mitigation-to-Fault Mapping

The next step in the risk analysis performed by SCE was a mapping of specific mitigation alternatives to the types of faults that can be avoided upon deployment. This analysis relied on engineering subject matter expertise to identify how much of each general fault type—contact from object, equipment/facility failure, and other—would be mitigated by a specific mitigation measure. It focused on three key mitigation measures: (1) re-conductoring with bare conductor sized to meet current design standards; (2) re-conductoring with covered conductor sized to meet current design standards; and (3) relocating distribution lines underground. For example, all three of these mitigation measures were identified as effective at mitigating the splice/connector/tap subtype of equipment failure faults. Two of these three mitigation measures (covered conductor and underground conversion) were identified as

[86] This figure is approximate since some fires during this period are still under investigation.