A Brief Introduction to Utility Poles

California Public Utilities Commission

Policy & Planning Division

April Mulqueen
Principal Author
POLICY AND PLANNING DIVISION

Marzia Zafar
Director
POLICY AND PLANNING DIVISION

July 31, 2014

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This paper will provide a brief overview of the rules applicable to utility poles, summarize recent events and Commission proceedings involving utility poles, and recommend opportunities for additional Commission action to protect safety and continuity of service in California.

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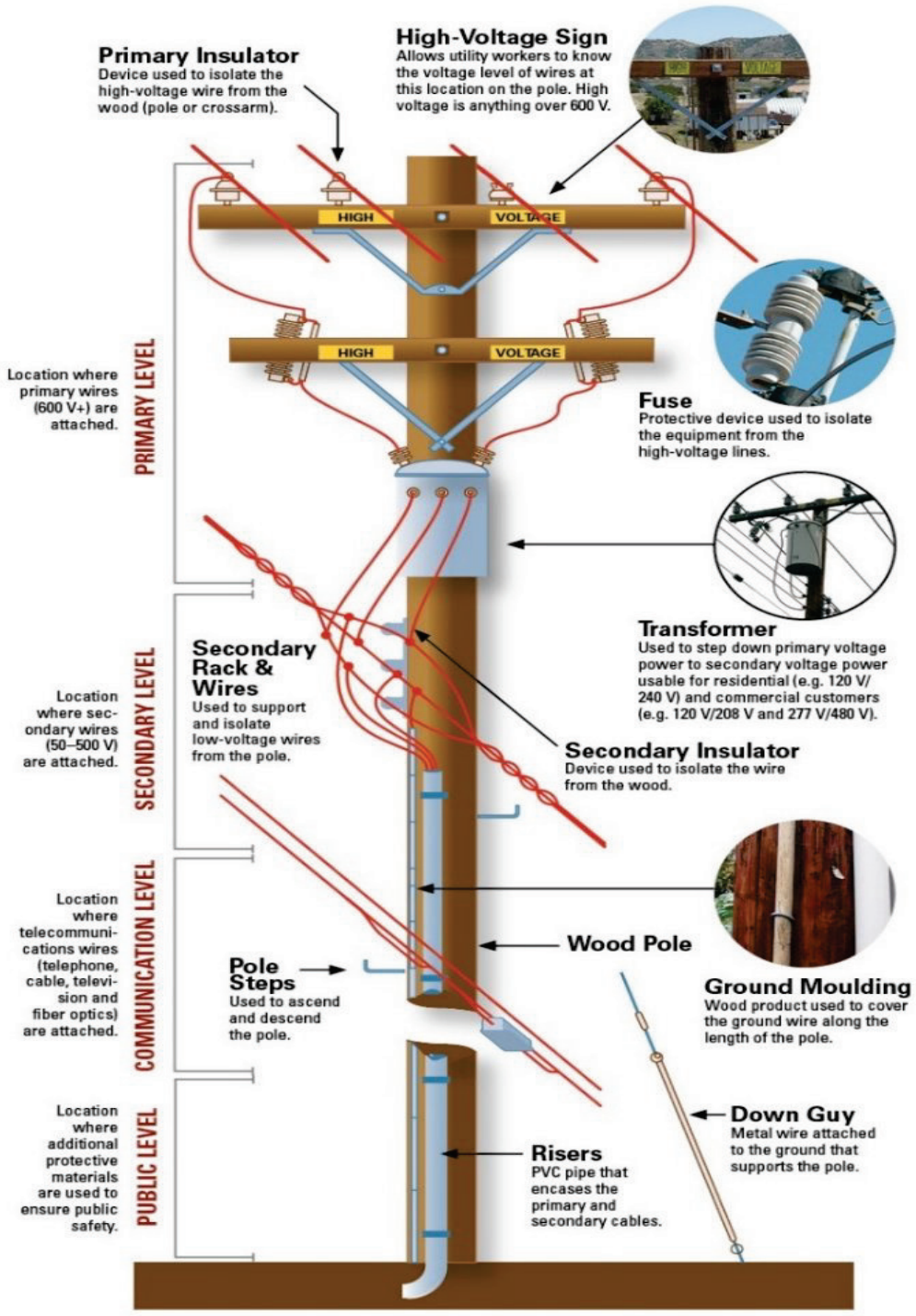

Figure 1: Utility pole diagram[1]

[1] http://inside.edison.com/g1212

Introduction

The first utility pole was placed in 1844, and carried only telegraph signals.

As of 2009, there were 4,228,920 utility poles in California, carrying communications lines, cable TV facilities, and 209,219 miles of electric transmission and distribution lines.[2] As California's population has grown, and Californians have consumed greater quantities of electricity and communications services, there has been a concomitant increase in the number and weight of facilities attached to utility poles.

In recent years, California has experienced blackouts and fires associated with utility poles, including:

1. The 2007 Fire Siege in Southern California. In October 2007, strong Santa Ana winds swept across Southern California and caused dozens of wildfires. Several of the worst wildfires were reportedly caused by downed power lines.
2. The 2011 Windstorm in Southern California Edison's (SCE) territory, during which more than 440,000 customers lost power after utility poles and attachments were knocked down in a windstorm.

In order to maintain the reliability of services dependent on utility poles, and to protect Californians from the risk of service interruption, electrocution, and fire from downed utility poles and electric lines, the California Public Utilities Commission (Commission) regularly reviews the safety rules applicable to utility poles and facilities attached to utility poles.

Commission Rules

California Public Utilities Code (PU Code) gives the Commission the authority to allow public utilities to use the utility poles, ducts, conduits, and rights of way of other public utilities, and the Commission requires investor-owned utilities (IOUs; i.e., PG&E, SCE, SDG&E) and incumbent local exchange carriers (e.g., Verizon, AT&T) to provide telecommunications and cable TV providers with access to their utility poles, ducts, conduits, and rights of way.[3]

Commission rules relating to the safe operation and maintenance of utility poles and their attachments are found in General Order 95 (GO 95), which contains rules related to overhead

[2] CPUC USRB Annual Report, 2009, at 25.
[3] This paper is only concerned with utility poles, therefore the Commission's authority over poles, ducts, conduits and rights of way will only be discussed insofar as it concerns utility poles.

line construction. GO 95's rules include standards for pole "loads," i.e., the weight and stress on utility poles from attachments and weather conditions (e.g., heat, wind), and inspection requirements for communications providers. General Order 165 (GO 165) contains inspection requirements for electrical distribution and transmission facilities. The Commission conducts regular audits to evaluate compliance with applicable safety rules.

In addition, Rule 20 governs the conversion of overhead electric facilities to underground facilities, a process known as "undergrounding," and Rule 32 governs the undergrounding of communications facilities. These General Orders, Decisions and Rules are discussed in further detail below.

I. Mandatory Access

PU Code Section 767 gives the Commission the authority to require that public utilities grant each other access to their utility poles, and to set rates, terms, and conditions[4] for this access. Section 767 provides in relevant part:

> Whenever the commission, after a hearing had upon its own motion or upon complaint of a public utility affected, finds that public convenience and necessity require the use by one public utility of all or any part of the conduits, subways, tracks, wires, poles, pipes, or other equipment, on, over, or under any street or highway, and belonging to another public utility, and that such use will not result in irreparable injury to the owner or other users of such property or equipment or in any substantial detriment to the service, and that such public utilities have failed to agree upon such use or the terms and conditions or compensation therefor, the commission may by order direct that such use be permitted, and prescribe a reasonable compensation and reasonable terms and conditions for the joint use.

In 1998, the Commission found that communications providers' access to utility poles was a necessary precondition to the development of competition in the local telecommunications market, and required that investor-owned utilities (e.g., PG&E, SCE) and incumbent local exchange carriers (e.g., Verizon, AT&T) provide facilities-based telecommunications and cable TV providers with access to their utility poles (i.e., joint usage).[5]

[4] Pole attachment rates are beyond the scope of this paper.
[5] D.98-10-058, at 2.

In May 2014, the Commission opened a Rulemaking, R.14-05-001, to consider whether the Commission should broaden its Mandatory Access rules to provide for access by Commercial Mobile Radio Service (CMRS) providers. The scope of the Rulemaking will include:

1) the specific amounts, formulas, or guidelines for CMRS pole attachment fees;

2) rules and standards to ensure that CMRS attachments are designed, constructed, and maintained in a manner that protects worker and public safety and the reliability of services with co-located facilities;

3) the definition of CMRS provider for the purpose of Mandatory Access rules; and

4) certification of any adopted amendments to the Commission's Mandatory Access Rules, in accordance with 47 U.S.C. 224(c).[6]

Joint usage is discussed further below in "Utility Poles and Private Contracts."

II. GO 95

GO 95 contains requirements for the design, construction, and maintenance of all overhead electric and communications facilities within the Commission's jurisdiction, including facilities belonging to co-ops, municipalities, and investor-owned utilities.[7] GO 95 is organized in sections as follows:

1) The design and maintenance of all lines (Section III);

2) Strength requirements and safety factors (i.e., the ratio of material strength to loads such as weight, temperature and wind) for all lines (Section IV);

3) Detailed construction requirements for: electric supply lines; tower and Extra High Voltage lines; trolley and railway lines; and communications lines (Sections V-VIII);

4) The inspection of communications lines (Section VIII);

5) Jointly owned and jointly used utility poles (Section IX);

[6] R.14-05-001, Order Instituting Rulemaking (May 8, 2014), at 25.

[7] The Commission has broad jurisdiction over the safety of utility company facilities and operations under Article XII of the California Constitution, and PU Code §§ 216, 701, 761, 768, 770, 1001, 8037 and 8056. The Commission has jurisdiction to regulate publicly-owned electric transmission and distribution facilities for the purpose of protecting worker and public safety under PU Code §§ 8002, 8037, and 8056.

6) Electric and communications lines that are in proximity to each other although attached to different utility poles (Section X); and

7) Electric and communications lines that cross over railroads (Section XI).

GO 95's specific rules include:

1) Grandfathering requirements, i.e., whether current or prior versions of GO 95 apply to facilities (Rule 12);

2) Requiring owners of electric supply lines to develop procedures for investigating major accidents and failures (Rule 17);

3) Notification, reporting, and resolution of safety hazards, including procedures for addressing safety hazards when a third party is causing the safety hazard, or when the owner of the hazardous facility cannot be identified (Rules 12.6, 18);

4) Requiring compliance with the most stringent requirement whenever two or more requirements might apply to a given situation (Rule 14);

5) Cooperation between parties on a jointly-owned or jointly-used pole regarding data used to determine compliance with strength requirements (Rule 44.4);

6) Advance notice and cooperation between parties when one party's construction may affect other facilities (Rule 31.4);

7) Cooperation with Commission staff and preserving evidence during investigations (Rule 19);

8) Vegetation management requirements to minimize the safety and reliability risk caused by trees and other vegetation coming into contact with electric or communications facilities (Rule 35; Appendix E);

9) Rules for jointly owned and jointly used poles including: consent requirements; types of poles ineligible for joint use; markings reflecting ownership and contact information; and the treatment of police and fire alarm circuits;

10) The treatment of abandoned lines (Rule 31.6);

11) Minimum clearances between electrical and communications facilities and, e.g., buildings, roads, signs, and other facilities (Rules 36-39; Section V; Section VI);

12) Minimum pole setting depths (Rule 49.1.C); and

13) Deferring GO 95 during emergency conditions including storms and natural disasters (Rule 12.5).

While GO 165 contains inspection requirements for overhead electric facilities, the inspection requirements for overhead communications facilities are contained in GO 95.

GO 95 requires three levels of inspection for overhead communications facilities:

1) Patrol inspection: a simple visual inspection of applicable communications facilities equipment and structures that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.

2) Detailed inspection: a careful visual inspection of Communication facilities and structures using inspection tools such as binoculars and measuring devices, as appropriate. Detailed inspections may be carried out in the course of other company business.

3) Intrusive inspection: involving the movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument readings.[8]

Records from patrol and detailed inspections must be retained for ten years, and records from intrusive inspections of wood poles must be retained for the life of the pole.[9]

GO 95 contains specific inspection intervals for communications facilities on joint use poles in high fire areas[10] of Northern and Southern California. In Northern California, patrol inspections are required every 2 years, and detailed inspections are required every 10 years; in Southern California, patrol inspections are required every year, and detailed inspections are required every 5 years.

In parts of California not considered high fire areas, GO 95 requires that communications providers develop their own procedures for patrol or detailed inspections, taking into account fire threat, proximity to electric lines, terrain accessibility, and location. Wood poles that support only communications facilities but which are located in proximity to electric lines in high fire areas of California must be subjected to intrusive inspections according to the schedule established in GO 165.

III. GO 165

GO 165 contains inspection requirements for electric distribution and transmission facilities, excluding those facilities contained in a substation.

GO 165 defines three levels of inspection:

[8] GO 95, Rule 80.1; GO 95 incorporates GO 165's definition of intrusive inspection.
[9] GO 95, Rule 80.1.
[10] For the purpose of GO 95 Rule 80.1, high fire areas are those designated as Threat Classes 3 or 4 in the Reax Map adopted in D.12-01-032 during Phase II of the Fire Siege Rulemaking, R.08-11-005.

1) Patrol inspection**:** a simple visual inspection of applicable utility equipment and structures designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business;

2) Detailed inspection: individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic testing, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded; and

3) Intrusive inspection: involving the movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument readings.

GO 165 also establishes the inspection schedule for each type of facility and the records retention requirements for each level of inspection.[11] The utility must retain records of patrol and detailed inspections for ten years, and must retain records of intrusive inspections for the life of the pole.[12]

Under GO 165, inspection schedules vary based on whether the facility is in an urban or rural area, and whether the facility is in a high fire area of Southern California. The Commission has found that it is reasonable to require less frequent inspections in Northern California because there is no history of catastrophic power line fires in Northern California, and Northern California lacks the Santa Ana windstorms that increase the risk of power line driven fires in Southern California.[13]

Utilities must perform patrol inspections on overhead facilities annually in urban areas and in designated high fire zones of rural Imperial, Los Angeles, San Diego, Orange, Riverside, Ventura, San Bernardino or Santa Barbara counties, and biennially in other rural areas. Utilities must also inspect the wooden utility poles themselves; once wooden poles have been in service for fifteen years, the utilities must conduct intrusive inspections on those poles within ten years. Once wooden utility poles have passed one intrusive inspection, GO 165 requires intrusive inspections every twenty years.[14]

[11] GO 165, at 2.
[12] GO 165, at 2.
[13] D.12-01-032, at 166.
[14] GO 165, Table 1.

IV. Commission Safety Audits

Every four to five years, and more frequently if significant problems are identified, the Commission audits electric utilities' overhead facilities for compliance with applicable safety rules. The audits typically last five days, and consist of field inspections and records reviews.

The Commission also audits communications providers' overhead facilities, on a five year cycle. Audits typically last five days, and consist of field inspections and records reviews.

V. Rule 20 and Rule 32

In 1967, the Commission issued Decision 73078, which required utilities to file tariffs for ratepayer-funded undergrounding of electric and communications facilities. As of 2007, undergrounding cost approximately $1 million per mile.[15] To qualify for 100% ratepayer funding, an electric or communications undergrounding project must involve one or more of the following:

1) an unusually heavy concentration of overhead lines;

2) a roadway that has a high volume of public traffic or is listed as an arterial street or major collector; or

3) a civic or public recreation area, or an area of unusual scenic interest.

Preventing fire risk is not a qualifying criterion for undergrounding. The Commission has found that general rate cases "…are a superior mechanism for selecting and funding fire-prevention measures compared to the ad hoc allocation of ratepayer funds for fire-prevention projects under Tariff Rule 20."[16]

Undergrounding projects that satisfy the qualifying criteria do not automatically receive ratepayer funding. In order to balance the benefits of undergrounding with ratepayer fairness, the Commission limits the amount of ratepayer money available for undergrounding, resulting in substantial waiting lists for fully ratepayer-funded undergrounding projects. PG&E undergrounds approximately 30 miles of overhead electric facilities each year at ratepayer expense,[17] and the waiting list is reportedly 40 years.[18]

[15] CPUC Undergrounding Program Summary, rev. 4-17-07.
[16] D.12-01-032, at 164.
[17] http://www.pge.com/myhome/addservices/electricundergrounding/

Undergrounding projects that do not meet the qualifying criteria may qualify for smaller ratepayer subsidy, approximately 20%-30%, and communities or property owners may request undergrounding projects with no ratepayer subsidy. In these situations, it is the property owner's responsibility to pay for the expense of undergrounding.

Utility Poles and Private Contracts

Due to the Mandatory Access policies discussed above, there are many parties—e.g., communications companies, cable TV providers-- with a right to place attachments on utility poles. In addition, entities such as municipalities and water companies may seek to attach facilities to utility poles despite not being covered by Mandatory Access rules. Parties help manage these relationships through private contracts, either as "joint owners" or renters.

Parties wishing to become joint owners may purchase an interest in a pole through the Northern California Joint Pole Association (NCJPA) or the Southern California Joint Pole Committee (SCJPC), which track ownership of and activity on jointly owned poles and invoice members for their activities. Many utility poles in California are subject to joint ownership arrangements; for example, the NCJPA has 40 members,[19] and SCE states that 70% of its poles are jointly owned.[20]

In addition to handling billing issues, the NCJPA and SCJPC establish procedures and protocols for aspects of joint pole ownership not addressed by GO 95. For example, the SCJPC Handbook contains procedures and protocols for, among other things:

1) Joint pole planning practice;
2) Pole replacement;
3) Transferring, rearranging, or changing facilities;
4) Removal, abandonment, or relinquishment of a pole;
5) Rights of way;
6) Correcting the record or cancelling a joint pole agreement; and

[18] http://www2.oaklandnet.com/Government/o/PWA/o/IO/s/UU/index.htm
[19] PGE 2014 GRC, Exh. PGE-4, Ch.6-7.
[20] SCE 2015 GRC, A.13-11-003, SCE Exh. SCE-03, Vol. 06, Pt. 2, at 8.

7) Identification of poles and attachments for record-keeping purposes.

Joint owners are responsible for performing their own pole loading calculations prior to placing attachments on a pole in order to ensure that the pole continues to meet GO 95 after placing an attachment.

"Renters" may lease space from a pole owner without purchasing an interest in the pole. Pole owners perform the necessary pole loading calculations to determine whether it is safe for a Renter to attach to a pole; SCE reports that it has 160 active renters on its poles.[21]

Recent Major Incidents Related to Utility Poles

In recent years there have been serious incidents caused by utility poles and attachments. Two recent incidents, and the responses subsequently taken by the Commission to reduce the risk of fire and outages caused by utility poles and their attachments, are discussed below.

I. 2007 Fire Siege

In October 2007, strong Santa Ana winds swept across Southern California and caused dozens of wildfires. Several of the worst wildfires were reportedly ignited by power lines. These included the Grass Valley Fire (1,247 acres); the Malibu Canyon Fire (4,521 acres); the Rice Fire (9,472 acres); the Sedgewick Fire (710 acres); and the Witch Fire (197,990 acres). The total area burned by these five power line fires was more than 334 square miles. During the Fire Siege, transportation was disrupted, and portions of the electric network, communications network, and community water sources were destroyed.[22]

In response to the Fire Siege, the Commission conducted investigations to identify whether specific parties, behaviors, or actions were responsible for the Fire Siege. In addition, the Commission opened a Rulemaking, R.08-11-005, to consider revising its rules to protect the public from the risk of fires related to overhead electric and communications lines. The Commission split the Rulemaking into two phases, with Phase 1 considering measures to reduce fire hazards that could be implemented prior to the 2009 fire season in Southern California, and

[21] SCE 2015 GRC, A.13-11-003, SCE Exh. SCE-03, Vol. 06, Pt. 2, at 8.
[22] D.12-01-032, at 5-6.

Phase 2 addressing measures that would take more time to consider and implement.[23] The Commission ultimately added a third Phase after Phase 2 deliberations raised additional issues.

The Investigations and Rulemaking are discussed below.

a) SED Investigation Report

In October 2008, the Commission's Safety and Enforcement Division (SED) issued an Investigation Report (Report) on one of the individual fires from the 2007 Fire Siege, the 4,521 acre Malibu Canyon Fire. The Report observed that on the morning of October 21, 2007, three wooden utility poles broke and fell to the ground, and the downed lines sparked the vegetation fire. The Report stated that the poles in question supported facilities belonging to SCE, Verizon Wireless, Sprint, and NextG Networks.[24]

The Report states that the poles should have been designed, loaded and maintained to withstand minimum wind speeds of 92.4 miles per hour, and that a weather station nine miles north of the incident site reported gusts of only 49 miles per hour.[25]

The Report concluded that: (1) the utility poles were not in compliance with GO 95; (2) if they had been in compliance with GO 95 they would have been able to withstand the wind gusts; and (3) that violations of GO 95 were the direct cause of the Malibu Canyon Fire.[26]

b) Formal Investigation

In January 2009, the Commission opened an Investigation into the Malibu Canyon Fire, I.09-01-018, finding that SED's Report:

> "…has presented us with sufficient evidence and good cause to commence a formal investigation to ascertain whether such violations have occurred, and if so, the proper remedy for such violations."[27]

While not making any findings in the Order Opening the Investigation, the Commission stated that it was concerned about the apparent lack of coordination with respect to construction and

[23] R.08-11-005, Assigned Commissioner's Ruling and Scoping Memo (January 6, 2009), at 2-3.
[24] I.09-01-018, Incident Investigation Report, October 21, 2008 (Attachment), at A-1.
[25] I.09-01-018, Incident Investigation Report, October 21, 2008 (Attachment), at A-6.
[26] I.09-01-018, Incident Investigation Report, October 21, 2008 (Attachment), at A-7.
[27] I.09-01-018, at 4.

maintenance between the Respondents (SCE, Verizon Wireless, Sprint, NextG Networks, and AT&T) with facilities on the affected poles.[28]

The Commission ultimately approved settlement agreements between SED and all Respondents. The settlements reveal instances of parties: placing attachments on poles after being denied permission by the pole owner; using SCJPC rules to evade compliance with GO 95; and failing to fully respond to Commission investigations. All Respondents agreed to pay millions in fines and conduct safety audits of their poles and perform repairs as necessary; the specific Settlement Agreements are discussed below.

NextG Networks Settlement

In the Settlement Agreement, NextG made numerous admissions, including:

1) NextG admitted placing attachments on a pole (Pole 252E) even though SCE denied the attachment request on the grounds that the weight of all the attachments would overload the pole and cause the pole to fail GO 95's safety standards;
2) NextG admitted that it placed attachments on Pole 252E based on its interpretation of SCJPC rules rather than GO 95 requirements, and acknowledged that SCJPC rules and agreements may not be used to avoid compliance with applicable laws and regulations;
3) NextG admitted that its communications with SCE about Pole 252E were inadequate; and
4) NextG admitted that it failed to preserve some evidence for Commission inspection, despite testimony indicating otherwise.[29]

In the NextG Networks Settlement Agreement, NextG agreed to pay a $14.5 million fine, with $8.5 million to be paid to California's General Fund and $6.0 million paid to a third party contractor who will conduct a safety audit of every utility pole in California that NextG owns or attaches facilities to.[30] The audit will begin in Malibu and Los Angeles County, and NextG must complete the audit and any required remedial work within three years of commencement.[31]

[28] I.09-01-018, at 4
[29] D.13-09-026, at 8-9
[30] D.13-09-026, at 10
[31] D.13-09-026, at 11

In addition, NextG states that it has implemented new protocols for all joint pole communications, new training on GO 95 requirements and SCJPC policies, and an auditable database for pole loading documentation.[32]

SCE Settlement

As part of the Settlement Agreement, SCE made numerous admissions, including:

1) SCE admitted that Pole 252E failed GO 95's safety standards as a result of NextG's attachments;
2) SCE admitted that it failed to prevent NextG from overloading joint poles in Malibu Canyon;
3) SCE admitted that it failed to address failures in record-keeping and construction when a newly-installed replacement pole failed GO 95's safety standards;
4) SCE admits that it violated Rule 1.1[33] in its communications with the Commission by: 1) not identifying pole overloading and termite damage as possible factors in the pole failures; 2) not providing SED with an accurate copy of an SCE employee's field notes; and 3) not admitting that not all relevant evidence had been preserved.[34]

SCE agreed to pay a $37 million fine, with $20 million paid to California's General Fund, and $17 million paid toward conducting a safety audit and remediation of its utility poles in the Malibu area.[35] SED also acknowledged that it may have impaired SED's investigation by not providing information, and agreed to seek to provide all relevant information in the future as well as develop an evidence retention protocol.[36]

Carrier Settlement

In the Settlement Agreement, AT&T Mobility, Sprint PCS, and Verizon Wireless (the Carriers) agreed to pay a $12 million fine, divided evenly among them, with $6.9 million paid to the California General Fund and $5.1 million paid into an Enhanced Infrastructure and Inspection Fund (EIIF) for the purpose of inspecting and repairing utility poles in SCE's service territory.

[32] D.13-09-026, at 10-11
[33] Rule 1.1 of the Commission's Rules of Practice and Procedure states that: Any person who signs a pleading or brief, enters an appearance, offers testimony at a hearing, or transacts business with the Commission, by such act represents that he or she is authorized to do so and agrees to comply with the laws of this State; to maintain the respect due to the Commission, members of the Commission and its Administrative Law Judges; and never to mislead the Commission or its staff by an artifice or false statement of fact or law.
[34] D.13-09-028, at 9
[35] D.13-09-028, at 10
[36] D.13-09-028, at 9

The EIIF will pay to upgrade all utility poles on a 3.38 mile stretch of Malibu Canyon Road to a minimum safety factor of 4.0,[37] and to conduct a safety audit of a statistically-valid sample of utility poles in SCE's service territory that carry power lines and at least one attachment from the Carriers.[38] EIIF funds will not pay for upgrades required as a result of the safety audit.

Although the Carriers made no admissions in the Settlement, they accept SED's position that SCJPC rules may not be used to avoid compliance with GO 95, and agree that they will address safety concerns even when raised outside of the 45-day deadline[39] for raising such concerns in the SCJPC Routine Handbook.[40]

c) Rulemaking R.08-11-005

The Commission opened this Rulemaking to consider revising its rules to protect the public from the risk of fires related to overhead electric and communications lines.

Phase 1

The Phase 1 Decision adopted specific measures to reduce the fire risk in Extreme and Very High Fire Threat Zones of Southern California before the start of the 2009 fire season, including:

1) Requiring communications providers to perform patrol inspections on their overhead facilities in Extreme and Very High Fire Threat Zones in Southern California by September 2010;
2) Clarifying GO 95's applicability to communications providers;
3) Incorporating the California Department of Forestry and Fire Protection's Fire Threat Map designating Extreme and Very High Fire Threat Zones in Southern California;
4) Replacing references to "tree trimming" with "vegetation management" in order to avoid disputes over what constitutes a tree;

[37] According to GO Rule 44.3, joint use wood utility poles must have a safety factor of 4.0 when constructed, but after construction must only be repaired or replaced before the safety factor falls below 2.67. Therefore, the poles along Malibu Canyon Road will have a higher safety factor than required under GO 95.
[38] D.12-09-019, at 8-9.
[39] SCJPC Rules permit a joint owner to proceed with construction if objection is not raised in particular manner, by returning a Notice of Intention, within 45 days. See SCJPC Routine Handbook 2012, Joint Planning Practice, Rule 3.
[40] D.12-09-019, at 9

5) Increasing vegetation clearances[41] in Extreme and Very High Fire Threat Zones in Southern California;

6) Clarifying that local conditions must be accounted for in the design, construction, and maintenance of facilities in high wind areas;

7) Adopted a new GO 95 Rule 18 establishing an auditable maintenance program and notification procedures;

8) Adopted a new GO 95 Rule 19 clarifying the need to cooperate with Commission investigations and preserve evidence;

9) Adopted a new GO 95 Rule 44.2 addressing safety issues associated with pole overloading; and

10) Amended GO 165 to increase inspection frequency in rural areas within Extreme and Very High Fire Threat Zones in Southern California.[42]

Phase 2

The Commission considered potential safety-enhancing measures that required longer deliberation in Phase 2. The Phase 2 Decision adopted additional revisions to the Commission's rules, including:

1) Requiring parties to correct, within 12 months, violations GO 95 that create a fire hazard in high fire threat areas of Southern California;

2) Establishing inspection cycles for communications providers' facilities;

3) Adopting additional vegetation management standards, including: applying vegetation management rules to overhead facilities located on state and federal land, and allowing investor-owned utilities and communications providers to recover fire-related costs from property owners who culpably obstruct vegetation management;

4) Requiring parties to share information necessary to calculate the load on any given utility pole, and perform fresh calculations whenever the load materially changes;

5) Requiring ownership markers on new and reconstructed communications facilities;

6) Permitting deviations from recommended minimum vegetation management intervals provided that specific factors were considered;

[41] "Clearances" refers to the minimum separation between vegetation and overhead facilities, designed to reduce the risk of service interruption or fire caused by vegetation coming into contact with the facilities.
[42] D.09-08-029, at 2-4.

7) Requiring investor-owned utilities in Southern California to submit fire prevention plans, and requiring investor-owned utilities in Northern California to determine whether there is a weather-driven fire risk in their territories and submit fire prevention plans accordingly; and

8) Allowing investor-owned utilities to shut off power to property owners who obstruct vegetation management.[43]

In addition, the Phase 2 Decision determined that a third Phase should be opened, as discussed below:

Phase 3

The Commission determined that a third Phase should be opened in order to consider the following issues raised but not resolved during Phase 2:

1) Incorporating modern materials and practices into GO 95;

2) Designating a new High Fire Threat District with new design and construction standards;

3) Developing a data-driven fire threat risk assessment and prevention plan for SED; and

4) Developing fire threat maps.[44]

Phase 3 is ongoing, and so far the Commission has adopted the following additional measures to guard against the risk of fire from overhead electrical and communications facilities:

1) Requiring that communications facilities be built with higher safety factors;

2) Requiring that utility poles and associated facilities be constructed to support the increased weight of workers and their equipment; and

3) Requiring that pole loading calculations be retained for the life of the utility pole.[45]

In addition, the Commission adopted a Fire Data Plan requiring investor-owned utilities to collect information on fires associated with overhead facilities and annually report this information to the Commission's Safety and Enforcement Division (SED). SED intends to analyze the data to identify trends and causal factors in power line fires and develop additional

[43] D.12-01-032, at 2-4
[44] D.12-01-032, at 4
[45] D.14-02-015, at 2

prevention measures.[46] Investor-owned utilities are required to submit their first report no later than April 1, 2015.[47]

II. 2011 Windstorm

On November 30, 2011 and December 1, 2011, powerful winds swept through SCE territory, knocking down utility facilities, uprooting trees, and causing prolonged power outages. Two-hundred forty-eight wood poles and 1,064 overhead electrical lines were affected. At one point, 226,053 SCE customers were without service, and a total of 440,168 customers lost power at some point during the event. Full restoration was completed on December 8, 2011, and there were no reported injuries or deaths due to this incident.

In response to the Windstorm, Commission staff conducted an investigation, and the Commission opened a formal Investigation and ordered SCE to conduct a study of its utility poles. In addition, SCE proposed a Pole Loading Program in its 2015 General Rate Case. The Investigations, Pole Loading Study, and Pole Loading Program are discussed in further detail below.

a) SED Investigation

In its Final Report on the Windstorm, SED determined that SCE and communications providers who jointly own poles in SCE's service territory violated GO 95 because at least 21 poles and 17 guy wires[48] were overloaded in violation of the safety factor requirements codified in GO 95, Rule 44.1. SED also found that SCE violated GO 95, Rules 17 and 19, for failing to adequately investigate the outages and pole failures and for failing to preserve evidence.[49]

SED recommended that SCE review and update its emergency preparedness and response polices, and that SED staff review GO 166 and recommend modifications as necessary to ensure that utilities are prepared to respond to future events.[50]

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[46] D.14-02-015, at 82
[47] D.14-02-015, at 99
[48] A "guy wire" is a wire or cable that runs from the pole to the ground at an angle, supporting the pole.
[49] SED Final Report on 2011 Windstorm, at 1
[50] SED Final Report on 2011 Windstorm, at 34. GO 166 contains Standards for Operation, Reliability, and Safety During Emergencies and Disasters.

b) Formal Investigation

In March 2014, the Commission opened an Investigation, I.14-03-004, to consider the results of SED's investigation and determine whether SCE violated any rules pertaining to the Windstorm.[51] While not making any findings in the Order Opening Investigation, the Commission stated that "…the SED Reports present us with a compelling showing that SCE violated applicable law."

Shortly after the Commission opened the Investigation, SEC and SED submitted a Joint Motion to approve a Settlement Agreement. In the Settlement Agreement, which has not been voted on, SCE admits that: 21 poles failed GO 95's safety factor requirements; 17 guy wires failed GO 95's safety factor requirements; and that SCE failed to preserve evidence as required by GO 95.[52] In addition, SCE agrees to pay an $8,000,000 penalty, with $5,000,000 to be paid into California's General Fund and $3,000,000 to be spent "…implementing programs to reduce the likelihood of poles becoming overloaded in SCE's service territory."[53]

In July 2014, the ALJ released a Proposed Decision (PD) approving the Settlement Agreements; the Commission will vote on the PD no sooner than August 14, 2014.

c) SCE Pole Loading Study

As part of its Decision in SCE's 2012 General Rate Case, the Commission ordered SCE to conduct a statistically valid sampling (Study) of SCE-owned and jointly-owned poles, to determine whether the pole loading complied with current legal standards. The Commission also ordered that, after receiving SCE's Study, SED should develop recommendations to ensure that SCE's poles are not overloaded in the future.[54]

SCE's Study, released on July 31, 2013, found that 22.3% of the 5,006 poles tested failed to meet current design standards.[55] Although the Study specified the types of failures discovered, e.g., buckling or bending failures, the Study did not seek to identify the causes for those failures, e.g., unauthorized attachments or flawed pole loading calculations. SCE states that

[51] The Investigation also considered whether SCE violated and rules pertaining to a 2011 electrocution which is not discussed in this paper.
[52] I.14-03-004, SED and SCE Joint Motion, at 4
[53] I.14-03-004, SED and SEC Joint Motion, at 5
[54] D.12-11-051, O.P. 17, 18
[55] A.10-11-015, SCE 2012 GRC, SCE Pole Loading Study, at 3

more poles might have passed if grandfathered poles had been evaluated according to the standards in place when they were installed, as permitted under GO 95.[56]

In November 2013, SED sent a letter to the Commissioners discussing SCE's Study and recommending the following changes in light of the Study's results:

1) SCE should conduct a wind analysis in its service territory, incorporate actual wind standards into its internal pole loading standards, and file the wind analysis in the Fire Siege Rulemaking, R.08-11-005;
2) SCE should conduct a pole loading analysis of every pole carrying SCE facilities, employing a risk management approach considering, at minimum, fire threat, the presence of communications facilities, and the number of overloaded poles in the area;
3) SCE should commence pole mitigation measures as soon as possible, and not wait until the pole loading analysis is complete; and
4) SCE should work collaboratively to ensure that all parties with facilities attached to poles are aware of other attachers' pole loading requirements, and that mitigation measures requiring cooperation between parties are conducted in a timely manner.[57]

d) Pole Loading Program

In addition to the rule changes, fines, and remedial measures approved by the Commission, SCE has proposed a Pole Loading Program (PLP) in its 2015 General Rate Case (GRC)[58] to identify and remediate overloaded poles and prevent poles in its service territory from becoming overloaded in the future.[59]

SCE cites a number of circumstances contributing to the problem of overloaded poles in its service territory, including: changes to design standards and technology; changes to areas designated "high wind;" increased demand on overhead structures; and gaps in the joint pole process.[60]

[56] A.10-11-015, SCE 2012 GRC, SCE Pole Loading Study, at 10
[57] SED Letter to Commissioners and Executive Director Clanon, November 7, 2013.
[58] Fewer parties have intervened in SCE's General Rate Case than in the Commission's Fire Siege Rulemaking, R.08-11-005. For example, neither the California Department of Forestry and Fire Protection nor joint pole owners/attachers such as municipal utilities and communications providers are parties in the General Rate Case, although they are active parties in R.08-11-005.
[59] A.13-11-003, SCE 2015 GRC, Exh. SCE-03, Vol. 6, Pt. 2, at 13
[60] A.13-11-003, SCE 2015 GRC, Exh. SCE-03, Vol. 6, Pt. 2, at 7-9.

SCE proposes to conduct fresh pole loading calculations on over 1.4 million poles in its service territory, beginning in the highest wind and fire risk areas. SCE estimates that this process will take 7 years. Poles failing GO 95 requirements or SCE's internal standards will be repaired or replaced; SCE states that it will notify fellow joint pole owners of their obligations to cover a share of the cost.[61]

As part of its PLP, SCE indicates that it will work with SED staff and members of the SCJPC to improve utility pole safety by reaching a consensus on a standard methodology for calculating pole loading, and by hosting a shared database for pole loading information.[62]

Conclusion and Recommendations

There are more than 4 million utility poles in California. It will never be possible for Commission staff to inspect every pole, so it is necessary that the Commission have robust procedures in place to ensure that utilities and communications companies are following Commission rules in order to ensure safe and reliable electric and communications services and minimize the risk of fire and service interruption.

In addition, as the facilities attached to utility poles increase in number, weight, and complexity in order to meet increased demand for evolving electric and communications services, another challenge will be to ensure that Commission rules keep up with changes in engineering best practices.

Recent incidents of fires and widespread power outages caused by overloaded utility poles may reveal opportunities for further action to protect safety and continuity of service for Californians, as follows:

I. Joint Pole Committees

The Settlements obtained in the Malibu Canyon Fire Investigation reveal that Southern California joint pole owners relied on SCJPC rules rather than GO 95 when coordinating new utility pole attachments, and that SCE failed to prevent a joint pole owner from overloading poles in Malibu Canyon.

[61] A.13-11-003, SCE 2015 GRC, Exh. SCE-03, Vol. 6, Pt. 2, at 13-14.
[62] A.13-11-003, SCE 2015 GRC, Exh. SCE-03, Vol. 6, Pt. 2, at 17

While parties did concede that SCJPC rules should not be used to evade compliance with GO 95, it should not have been necessary for SED to solicit acknowledgements that joint pole owners may not evade Commission rules through private contract, the primacy of GO 95 should have already been a part of standard practice. The fact that joint pole owners were prioritizing SCJPC rules in this one instance raises concerns that there may be other instances where joint pole owners are, knowingly or unknowingly, relying on SCJPC (or NCJPA) rules to evade compliance with GO 95 or other applicable safety rules.

Furthermore, the fact that SCE failed to prevent a joint pole owner from overloading a pole in this instance raises the question of whether joint pole owners possess sufficiently robust processes and tools to prevent other joint pole owners (and possible rogue attachers) from overloading or otherwise compromising the integrity and safety of utility poles and the facilities they carry.

a) Recommendation:

The Commission may wish to recommend that Commission staff begin an informal collaboration with California joint pole owners, as follows:

Commission staff could, with the help of NCJPA and SCJPC members, seek to determine whether there are other provisions in Joint Pole agreements which may, as interpreted in practice, adversely affect compliance with safety rules contained in GO 95, GO 165, and the PU Code. If additional provisions are identified, Commission staff could work informally with NCJPA and SCJPC members (and recommend amendments to Commission rules as necessary) to clarify the primacy of state safety rules relative to private contracts.

In addition, Commission staff could solicit comment from NCJPA and SCJPC members concerning the issue of unauthorized attachments on utility poles. For example, was the Malibu Canyon incident an outlier, or are unauthorized attachments a common problem? How do joint pole owners identify and respond to unauthorized attachments? Do unauthorized attachments pose a safety or reliability threat to the electric and communications networks? Commission staff would report its findings to the Commission and recommend formal proceedings if warranted.

II. SCE PLP

SCE proposed its PLP as part of its 2015 General Rate Case, which has a much more limited list of parties than the Commission's utility pole safety Rulemakings, e.g., the Fire Siege Rulemaking, R.08-11.005. Neither joint pole owners or attachers (e.g., communications providers, municipalities) nor the California Department of Forestry and Fire Protection are participating in the GRC or providing comment on SCE's PLP, placing the Commission in the position of evaluating a major safety program with no input from a significant class of parties who have participated in prior utility pole safety Rulemakings, may possess relevant information, and would potentially be required to pay a share of the cost.

In addition, SCE has proposed, as part of the PLP, to work with SCJPC and SED to develop a shared pole loading database and adopt standardized pole loading calculation methodologies. Although SCE's PLP explicitly contemplates a role for SED staff in helping develop these new safety measures, the measures themselves will be a matter of private contract between members of the SCJPC, and will not be part of GO 95.

The respective procedural footings of the SCE PLP and the Fire Siege Rulemaking reveal that the type of proceeding in which the Commission considers a utility pole safety proposal makes a significant difference in terms the availability of relevant parties' input, evidentiary record development, and whether any resulting safety program is a matter of enforceable statewide law or a matter of unenforceable informal agreement between parties.

a) Recommendation:

In order to ensure the fullest possible participation and record development when considering proposals to enhance utility pole safety, and to ensure that the Commission's rules reflect the latest, best practices, the Commission may wish to adopt standardized procedural treatment for utility pole safety proposals.

For example, if a utility proposes a utility pole safety program as part of a GRC, the Commission may wish to create a separate track within the GRC with workshops, briefings, and an expanded list of parties in order to consider the safety program. As an alternative, utility pole safety proposals could be removed from GRCs entirely and considered in separate safety-related Rulemakings.

When determining whether to consider a utility pole safety proposal as part of a GRC or as part of a separate Rulemaking, the Commission may wish to consider whether the proposal could or should reasonably be implemented in only one utility's service territory, and whether the proposal should be a matter of private contract or whether it should be implemented on a statewide basis with enforceable Commission rules. For example, the Commission may wish to consider proposals designed around unique conditions in one service territory (e.g., Santa Ana winds) in a GRC for the sake of speed, while considering other proposals with statewide applicability (e.g., rules governing the behavior of joint pole owners) in Rulemakings.

III. Pole Loading Study

SCE's 2013 Pole Loading Study raises some questions with respect to grandfathering and the incorporation of the latest engineering standards into Commission rules. As discussed above, the SCE Pole Loading Study revealed that 22.3% of poles sampled failed SCE's safety guidelines, which, according to SCE are in some cases "…more stringent than the minimum requirements contained in G.O. 95." SCE estimates that "…fewer poles in this study would have failed if grandfathered poles were assessed under the minimum standards contained in G.O. 95."[63]

Although the Commission has taken considerable steps to strengthen its safety and inspection rules in GO 95 and GO 165 in the aftermath of the Southern California Fire Siege and the 2011 Windstorm, "grandfathering" permitted under GO 95 means that safety standards continue to vary from one pole to the next. In addition, SCE indicates that its internal safety guidelines are sometimes more stringent than GO 95, suggesting that GO 95 might not incorporate the latest in industry best practices.

SCE's Pole Loading Study raises four questions:

1. Given that fewer poles would have failed the Study if they were assessed under the standards in GO 95 than under more stringent utility company rules, what lessons can the Commission infer about the adequacy of the current rules?

[63] SCE Pole Loading Study at 10

2. How many poles in the rest of California (i.e., those not in SCE's service territory) are compliant with safety rules, either GO 95, internal joint pole owner guidelines, or industry best practices?

3. Does grandfathering conceal the extent of pole safety issues when new attachments are added to a pole, or during Commission audits or investigations?

4. Does the Commission have robust, timely means of incorporating industry best practices into its rules?

a) Recommendation:

In response to the questions raised by the Pole Loading Study, the Commission may wish to consider the following:

(1) The Commission may wish to consider having PG&E, SDG&E, PacifiCorp, and other pole owners conduct Pole Loading Studies of a statistically-valid sample of poles in their service territories. In addition to the parameters required in the SCE Pole Loading Study, the new Pole Loading studies could identify: (1) the number of poles that fail under applicable GO 95 rules; (2) the number of poles that fail under the pole owner's internal engineering standards, if those are more stringent; and (3) for those poles that would have passed if they were evaluated according to GO 95 rather than according to the pole owner's internal engineering standards, determine whether those poles would have passed because they are grandfathered under GO 95 or because the pole owner's rules are more stringent than currently applicable GO 95 rules; and

(2) SED could then analyze the results from the Study in Recommendation (1) in a Staff Report to the Commission. The Staff Report could summarize the inferences that can be drawn from the Study concerning the safety of utility poles in California, and consider whether the Commission should open a Rulemaking addressing, *inter alia*, grandfathering and the incorporation of industry best practices into Commission rules.