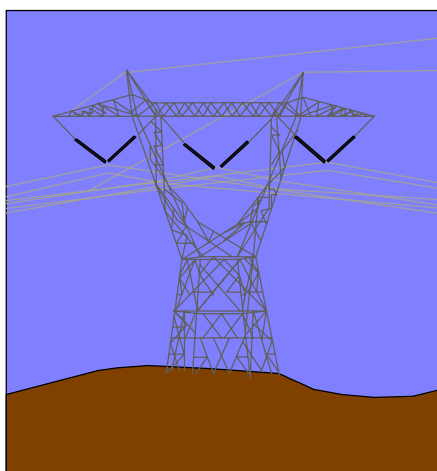
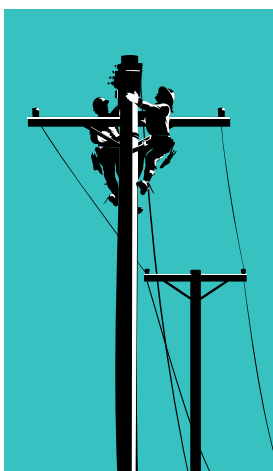

California Public Utilities Commission

SAFETY & RELIABILITY BRANCH UTILITIES SAFETY SECTION 2003 ELECTRIC SAFETY REPORT



*Promoting
system reliability
and safety for the
general public.*

July 2004

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MEMORANDUM

This annual report of Electric Safety presents an account of various activities carried out under the California Public Utilities Commission's (CPUC) electric safety program for the 2003 calendar year.

The CPUC has been entrusted with the safety jurisdiction over all electric and communication overhead and underground facilities in the state of California by Legislative mandate. It is responsible for enforcing safety regulations, inspecting and investigating all work affected by the statutes, and making necessary additions and changes to regulations for promoting the safety of utility employees and the general public. In addition, these standards promote improved reliability of electric service to the residents of California. The electric safety program consists of the administration of General Orders (G.O.) 95, 128, 165, and Public Utilities Code, Sections 315, 768, 8026 through 8038, and 8051 through 8057.

The State of California has the nation's largest electric and communication system. Therefore, it is important to maintain an adequate level of inspections and oversight to ensure that these systems are designed, constructed, operated, and maintained properly in accordance with the regulations for systems reliability and safety of the utility employees and the general public. The CPUC's Utilities Safety Section (USS) implements the safety program by carrying out accident investigations, follow up investigations, compliance inspections, review of utilities' reports and records, construction inspections, and special studies. This is especially important with an aging system.

ACKNOWLEDGMENT

Jadwindar Singh, Utilities Engineer, under the general direction of Zee Wong, Chief of the Consumer Protection & Safety Division's Safety & Reliability Branch, prepared this report. We acknowledge the assistance provided by USS staff, the utilities, and other agencies in furnishing the data necessary for this report.



I. INTRODUCTION

A. PURPOSE OF REPORT

The purpose of this report is to document administration of General Order (G.O.) 95, “Rules of Overhead Electric Line Construction”; G.O. 128, “Rules for Construction of Underground Electric Supply and Communication Systems”; and G.O. 165, “Inspection Cycles for Electric Distribution Facilities” for the calendar 2003 year as reported by utility companies and as accomplished by the USS staff. It also provides general information on utility companies and statistical data on incidents and investigations related to electric facilities and other safety activities during 2003.

B. CPUC’s RESPONSIBILITIES

The CPUC is granted the authority to inspect, make further additions or changes as deemed necessary for the purpose of system reliability, safety to employees and the general public under the Public Utilities (PU) Code Section 8037. Inspections and investigations are performed by USS staff to enforce G.O. 95, 128, and 165 regulations. An overview of each general order is listed below.

1. General Order 95

G.O. 95, “Rules for Overhead Electric Line Construction”, became effective July 1, 1942. Changes are noted in the order that reflect development of new materials and standards for line construction and changing operational practices. The latest edition is dated 1998.

The purpose of these rules is to formulate, for the State of California, uniform requirements for overhead electrical line construction. The application of these requirements will provide adequate service and secure safety to persons engaged in the construction, maintenance, operation or use of overhead electrical lines and to the general public.

The Commission also has the jurisdiction to regulate safety of cable and telephone corporations (PU Code Section 215.5 and 234). Inspection of CATV and telephone facilities has been integrated with the field inspection program conducted on electric and telephone pole facilities.

2. General Order 128

G.O. 128, “Rules for Construction of Underground Electric Supply and Communications Systems”, became effective December 12, 1967. The latest edition was issued in 1998.

The purpose of these rules is to formulate, for the State of California, uniform requirements for underground electrical supply and communication systems. The application of these requirements will provide adequate service and secure safety to all persons engaged in the construction, maintenance, operation or use of underground electric systems (including telephone and cable), and to the general public.

3. General Order 165

G.O. 165, “Inspection Cycles for Electric Distribution Facilities”, became effective March 31, 1997 and it is the latest edition.

The purpose of this general order is to establish minimum inspection cycles requirements for electric distribution facilities addressing the utilities’ inspections (including maximum allowable inspection cycle lengths), condition rating, scheduling and performance of corrective action, record keeping, and reporting in order to ensure safe and high quality electrical service.

G.O. 165 also implements the provisions of PU Code Section 364, which the California Legislature adopted when it enacted Assembly Bill 1890, Chapter 854, Statutes of 1996.

4. Incident Investigation & Customer Complaints

In addition to enforcing the above general orders, USS staff conducts investigations of reportable incidents from the utility companies. Section 315 of the Public Utilities Code provides that the Commission shall investigate the cause of accidents occurring upon the property of any utility. Reportable incidents, as updated in CPUC Decision (D.)98-07-097, Appendix B, are those which: “(a) result in fatality or personal injury rising to the level of in-patient hospitalization and attributable or allegedly attributable to utility owned facilities; (b) are the subject of significant public attention or media coverage and are attributable or allegedly attributable to utility facilities; (c) involve or allegedly involve trees or other vegetation in the vicinity of power lines and result in fire and/or personal injury whether or not in-patient hospitalization is required.” Incidents involving damage to property of the utility or others estimated to exceed \$20,000 that are attributable or allegedly attributable to utility owned facilities are investigated as well.

The USS staff also handles all safety related customer complaints pertaining to G.O. 95, 128, and 165. This may range from answering a telephone inquiry or correspondence, to conducting a formal investigation.



II. UTILITY COMPANIES UNDER THE JURISDICTION OF THE CPUC

The CPUC has been granted the authority by the Legislature to adopt and enforce G.O. 95, 128, and 165 requirements on investor owned utilities and municipalities. There are a number of investor owned power and communication utility companies providing service in California as well as utilities operated by municipalities and cooperatives.

A. POWER COMPANIES

1. Southern California Edison Company



Edison International's largest subsidiary is Southern California Edison Company (SCE). SCE provides service to more than 4.6 million customers in a 50,000 square mile area. SCE serves portions or all of California's central and southern counties.

2. Pacific Gas and Electric



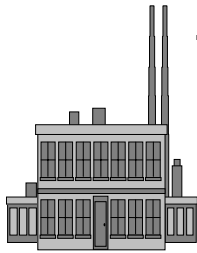
Pacific Gas and Electric (PG&E) is one of the largest investor-owned companies in the U.S. They provide electric service to about 5.2 million customers in California. Their service area spans 70,000 square miles, including portions or all of 49 counties out of California's 58 counties.

3. San Diego Gas and Electric



San Diego Gas and Electric (SDG&E) became a Sempra Energy company in 1998. They provide electric service for 1.3 million customers in San Diego and portions of southern Orange County. Their service area covers a total of 4,100 square miles in over 25 cities.

4. Other Investor Owned Companies



These companies also provide electric service to the people of California:

- Bear Valley Electric
- Mountain Utilities (formerly Kirkwood Gas & Electric)
- Sierra Pacific Power Company
- PacifiCorp

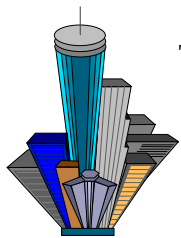
5. Electric Cooperatives



These electric co-operatives provide service to certain California customers:

- Surprise Valley Electrification Corp.
- Plumas-Sierra Rural Elect. Coop
- Anza Electric Cooperative
- Valley Electric Association, Inc.

6. Municipalities



These California municipalities provide electric service to their customers.

- Alameda
- Azusa
- Biggs
- Colton
- Gridley
- Imperial Irrigation District
- Lodi
- Los Angeles
- Needles
- Oroville-Wyandotte Irrigation District
- Pasadena
- Riverside
- Sacramento Municipal Utility District
- Santa Clara
- Anaheim
- Banning
- Burbank
- Glendale
- Healdsburg
- Lassen Municipal Utility District
- Lompoc
- Modesto Irrigation District
- Northern Cal. Power Agency
- Palo Alto
- Redding
- Roseville
- San Francisco
- Shasta Lake

- Southern Cal. Public Power Authority
- Trinity County
- Turlock Irrigation District
- Vernon
- Tri-Dam Project
- Truckee Donner Public Utility District
- Ukiah

B. COMMUNICATION COMPANIES

1. SBC (Southwestern Bell Telephone Co.)



SBC (previously Pacific Bell) has a total of 17.9 million access lines including residential, commercial, and others. The telephone service area covers approximately 51,000 square miles in California.

2. Verizon



In mid 2000, GTE formally changed their name to Verizon. Verizon provides telecommunication services in the states of California, Nevada and Arizona.

3. Others



There are many smaller telephone companies in California under the jurisdiction of the CPUC. These companies have overhead equipment that is inspected by the USS for compliance with G.O. 95.

C. CABLE TELEVISION

There are many cable television companies serving California cities. They range from local companies serving one city to larger companies that may serve several cities. A majority of the cable television companies are members of the California Cable Television Association (CCTA). CCTA represents over 250 cable television systems that provide cable television service to over 6 million California homes. The major cable television companies serving California are:

1. Adelphia



2. Charter Communications



3. Comcast Corporation



Formerly AT&T Broadband, Comcast is the nation's largest cable company with 21.5 million subscribers.

4. Cox Cable





III. ANNUAL ELECTRIC REPORT

The USS is entrusted to enforce the provisions of General Orders 95, 128, and 165. To do so, the USS conducts periodic inspection of both overhead and underground electric, communication and cable lines throughout the state. This involves both field inspection and document audit. Furthermore, the USS investigates accidents involving overhead and underground electric and communication lines as mandated by Public Utilities Code Section 315, to determine utilities' compliance with the General Orders. This section contains information and statistical data on the various electric related activities conducted by the USS during 2003.

A. GENERAL ORDER 95 INSPECTIONS



In 2003, USS staff engineers conducted G.O. 95 field inspections of overhead lines with utilities representatives' participation. The field inspections provide evidence on the quality of a utility's workmanship and maintenance programs. Staff engineers inspect many miles of pole lines and document G.O. 95 violations found during the inspection.

The field inspections are conducted over a three-day period. The visual survey is conducted on the first day and the actual inspections are conducted on the remaining two days. Typically, two staff engineers will use the first day of inspection to identify a specific area for the detailed inspections. They will do this by conducting a visual survey of two communities/cities that appears to have numerous G.O. 95 violations. The staff engineers will also contact the utility companies to request information such as circuit maps prior to conducting the visual survey.

During the detailed field inspection, the staff engineers record the violations found on the overhead electric system, which includes poles, conductors, and all overhead equipment. We

request the power, communication, and cable utilities to participate in these inspections. This expedites correction, as their personnel are also recording these violations.

In 2003, USS personnel were divided into two units where each unit was assigned specific counties to conduct G.O. 95 inspections in California. The following lists the counties each unit covered.

Northern Unit: Alpine, Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, Del Norte, El Dorado, Glenn, Humboldt, Lake, Lassen, Marin, Mendocino, Mariposa, Merced, Modoc, Monterey, Napa, Nevada, Placer, Plumas, Sacramento, San Benito, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Shasta, Sierra, Siskiyou, Solano, Sonoma, Stanislaus, Sutter, Tehama, Trinity, Yolo, Yuba, plus portions of Fresno, Inyo, Kern, Kings, Madera, Mono, Santa Barbara, Tulare and Tuolumne that are served by Pacific Gas and Electric.

Southern Unit: Imperial, Los Angeles, Orange, Riverside, San Diego, San Bernardino, Ventura, plus portions of Fresno, Inyo, Kern, Kings, Madera, Mono, Santa Barbara, Tulare and Tuolumne that are served by Southern California Edison and/or Los Angeles Department of Water and Power.

1. Utility Data

Utilities	Total Miles of Overhead Lines	Transmission Lines (miles)	Distribution Lines (miles)	Number of Poles
PG&E	116,170	18,488	97,682	2,274,980
SCE	72,800	12,300	60,500	1,500,000
SDG&E	8,602	1,741	6,861	232,163
PacifiCorp	3,061	741	2,320	66,907
Sierra Pacific	1,128	380	748	22,853
Bear Valley	202	29	173	8,100
Mountain	0	0	0	0
Grand Total	201,963	33,679	168,284	4,105,003

Table 1. Summary of each Utility's Overhead Equipment.

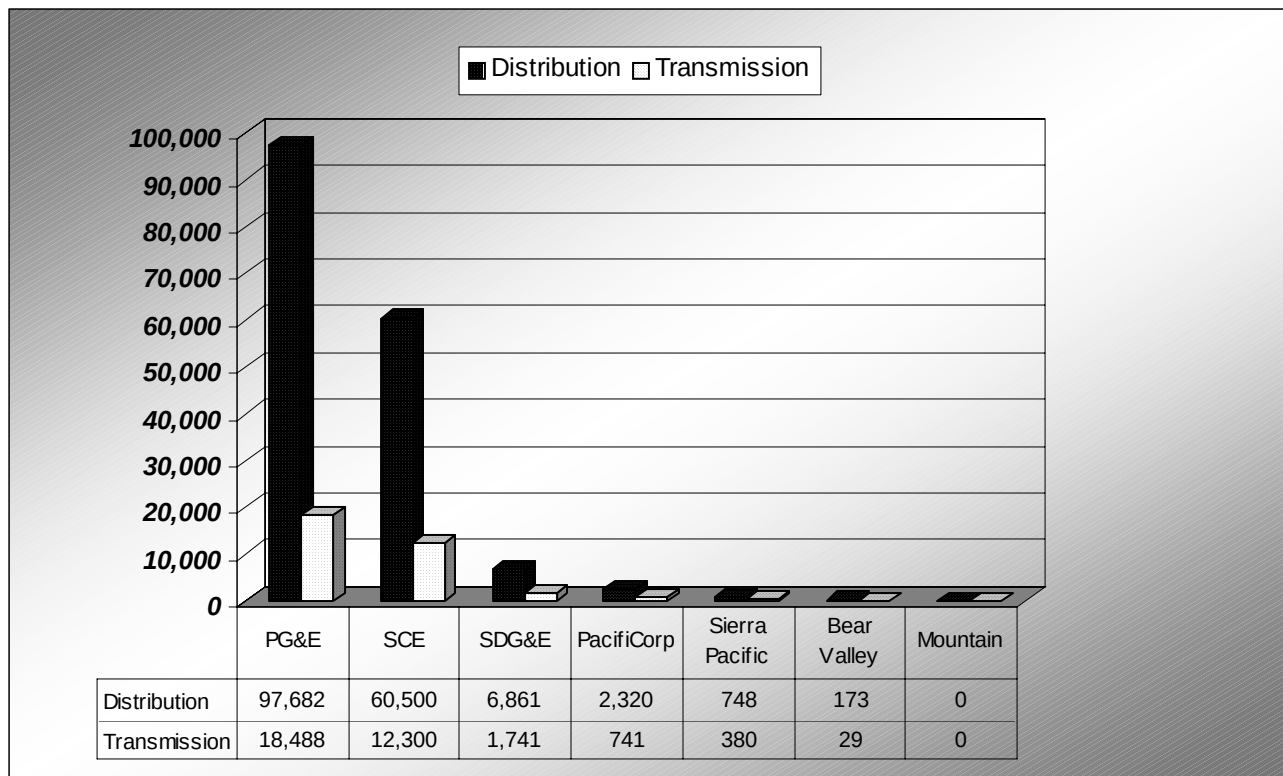


Figure 1. Miles of Overhead Transmission and Distribution Lines in California by Utility.

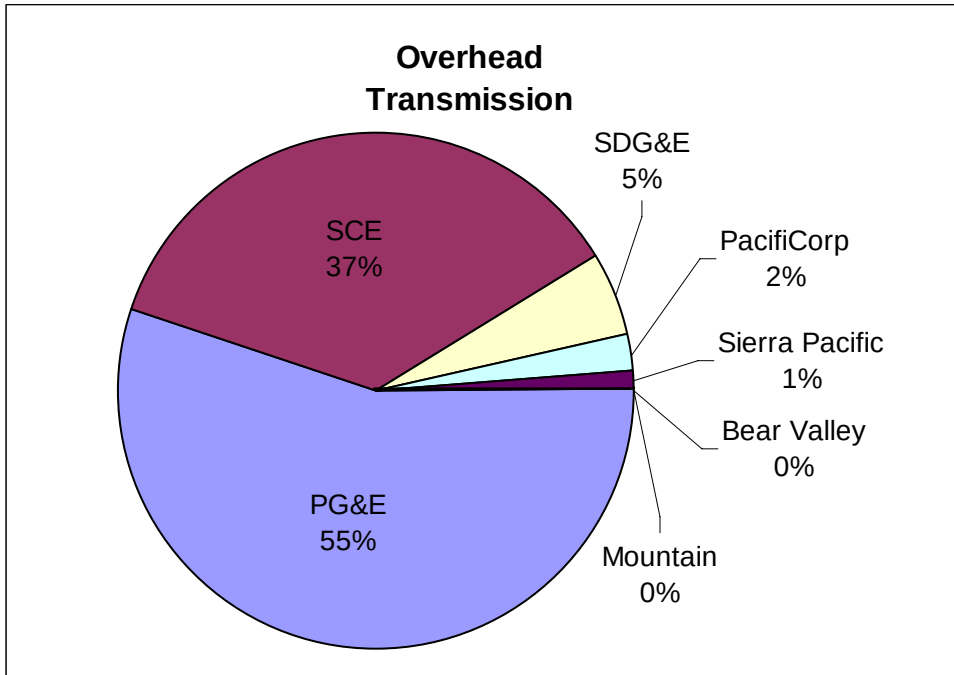


Figure 2.
Percentage of Overhead
Transmission Lines in
California by Utility.

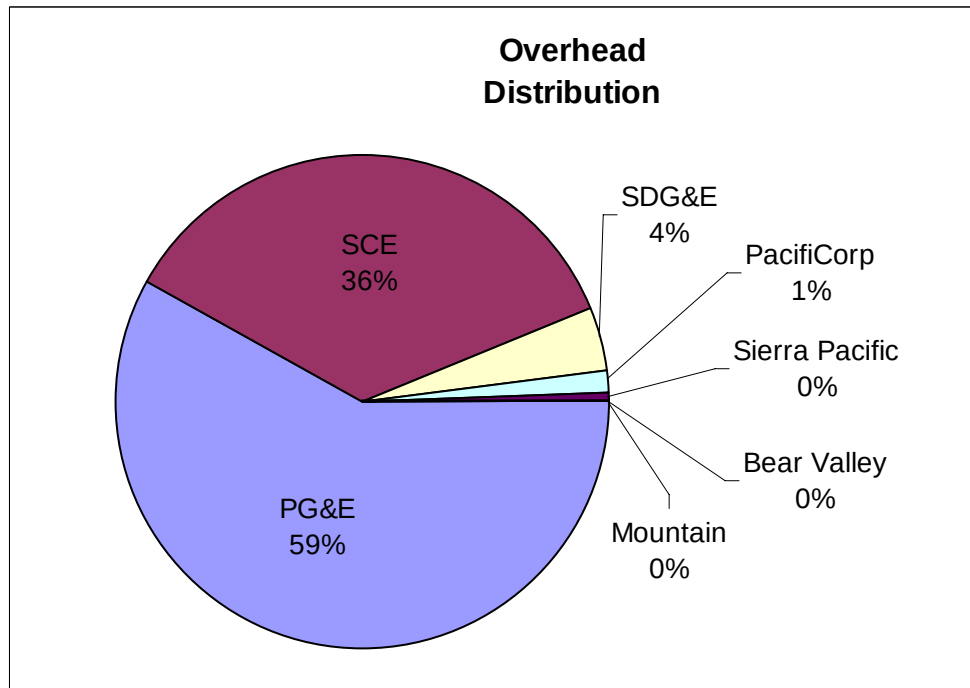


Figure 3.
Percentage of Overhead
Distribution Lines in
California by Utility.

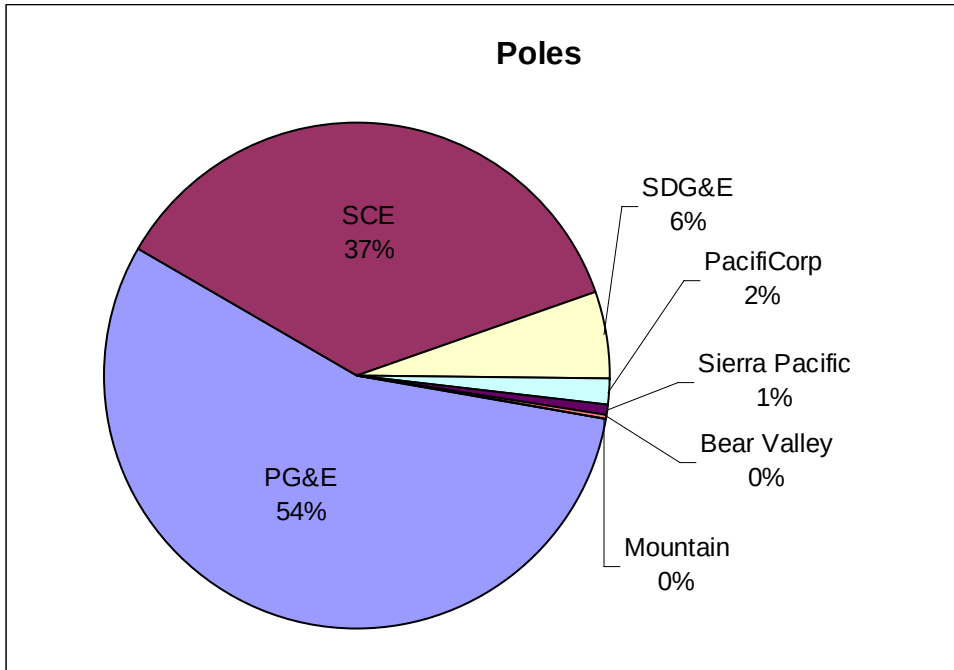


Figure 4.
Percentage of poles in California by Utility.

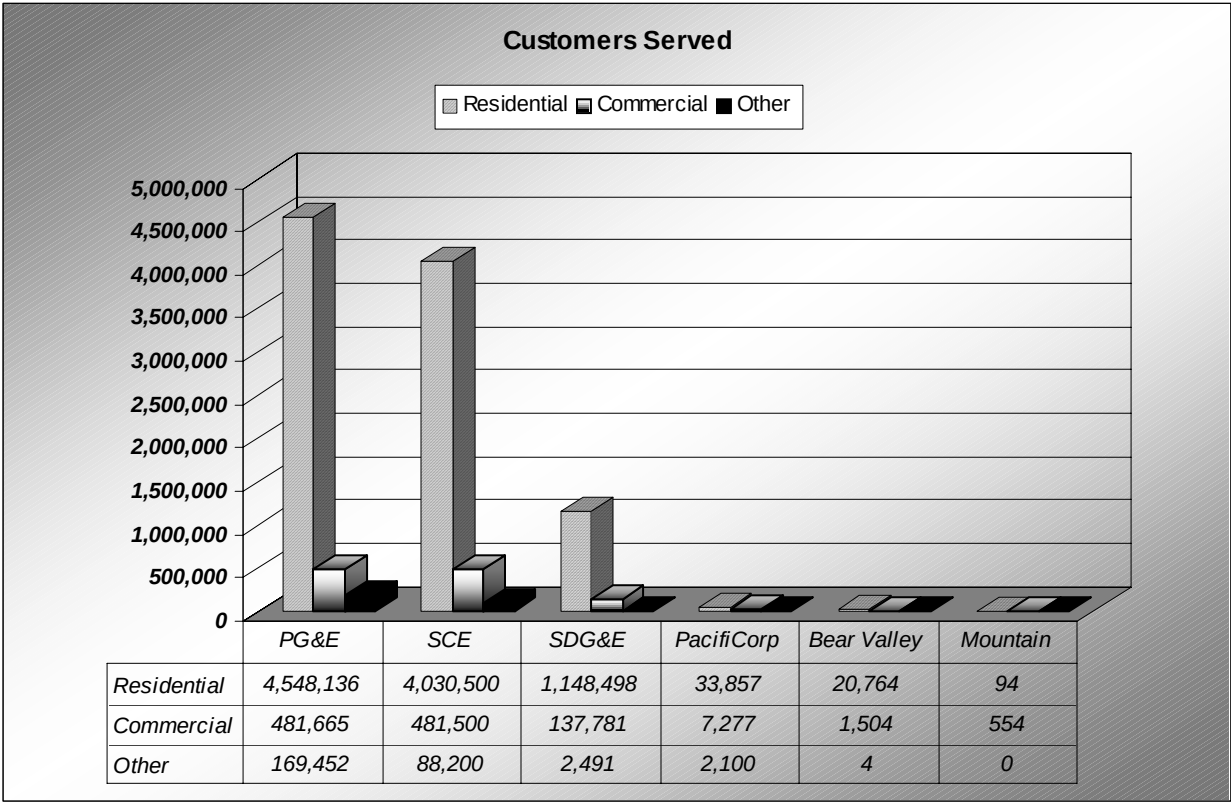


Figure 5. Number of California Customers served by each Utility.

2. USS Inspection Statistics

For the 2003 Year	Total
Number of Inspections	26
Number of Inspection Days	79
Number of Personnel Days	144
Number of Poles Inspected	3383
Total Number of Violations Cited (See Table 4 for a summary.)	6625

Table 2. Summary of the G.O. 95 Inspections Conducted

For the 2003 Year	Figures
Average Number of Inspection Days Per Week	1.52
Average Number of Personnel Days Per Inspection Week	2.77
Average Number of Violations Cited Per Inspection Day	83.9
Average Number of Poles Inspected Per Inspection Day	42.82
Average Number of Violations Per Pole	1.96

Table 3. Tabulation of G.O. 95 Inspection Data

Utility Company	Number of G.O. 95 Inspections	Total G.O. 95 Violations	Average Number of Violations Per Inspection
PG&E	11	649	59
SCE	7	496	70.9
SDG&E	2	63	31.5
Municipalities/Others	6	669	111.5
SBC	21	2045	97.4
Comcast	11	883	80.3
Adelphia	8	549	68.6
Verizon	5	547	109.4
Other Cable TV	11	724	65.8

Table 4. Summary of G.O. 95 Violations Incurred by the Utility Companies

B. GENERAL ORDER 128 INSPECTIONS



One staff engineer or inspector usually conducts General Order 128 underground facility inspections. The inspection areas are selected similar to G.O. 95 inspections. The staff engineer will also spend time reviewing the records required by G.O. 128 for an auditable and consistent program of inspection. The inspection lasts three days and usually occurs in one utility operating district. G.O. 128 inspections are conducted only with the electric utilities because communication utilities have fewer hazards associated with their facilities. However, if the staff engineer finds any problems with the communication facilities, he will notify the communication company to correct the problems.

The G.O. 128 inspector joins a qualified utility lineman who opens the equipment enclosures containing live or energized equipment. The live equipment may be contained inside an underground vault, a walk-in vault, or a subsurface enclosure such as a padmount. The inspector records notes about the violations and prepares a formal report afterwards. The report details the violations and directs the utilities to correct them. The records are maintained similar to G.O. 95 inspections.

1. Utility Data

Utilities	Total Miles of Underground Lines	Transmission Lines (miles)	Distribution Lines (miles)	Surface Mounted Structures	Underground Structures
PG&E	24,411	124	24,287	111,648	285,084
SCE	36,080	280	35,800	131,600	207,970
SDG&E	8,980	64	8,916	91,383	41,776
PacifiCorp	508	0	508	5087	229
Sierra Pacific	160	0	160	*	*
Bear Valley	52.6	0.6	52	600	10
Mountain	15	0	15	150	24
Grand Total	70,207	469	69,738	340,468	535,093

Table 5. Summary of the Utility Company's Underground Equipment. "*" Denotes statistic unavailable.

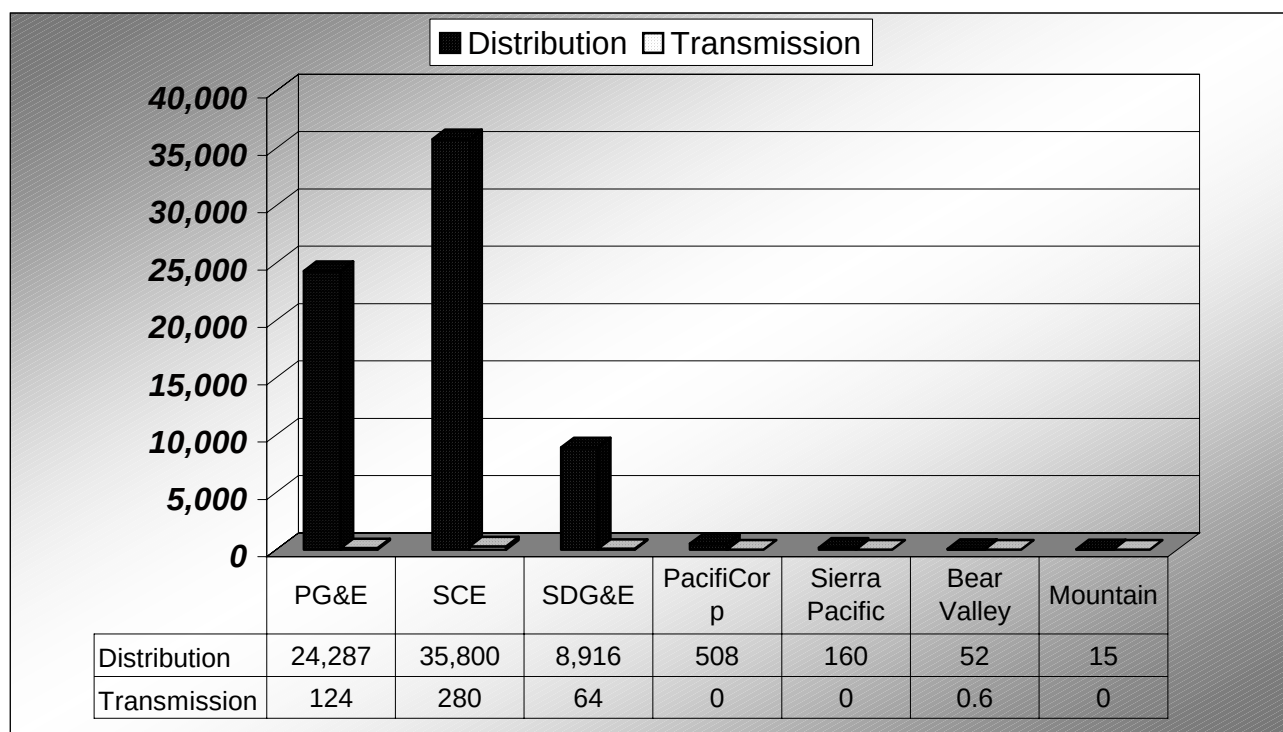


Figure 6. Miles of Underground Transmission and Distribution Lines in California by Utility.

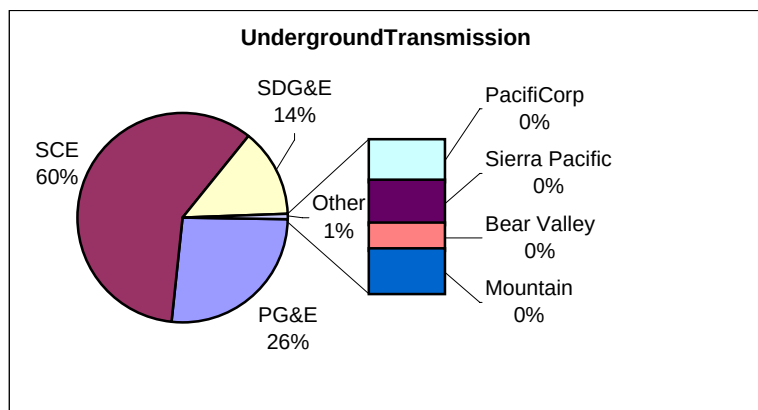


Figure 7.
Percentage of Underground
Transmission Lines in
California by Utility.

Figure 9.
Number of Surface Mounted
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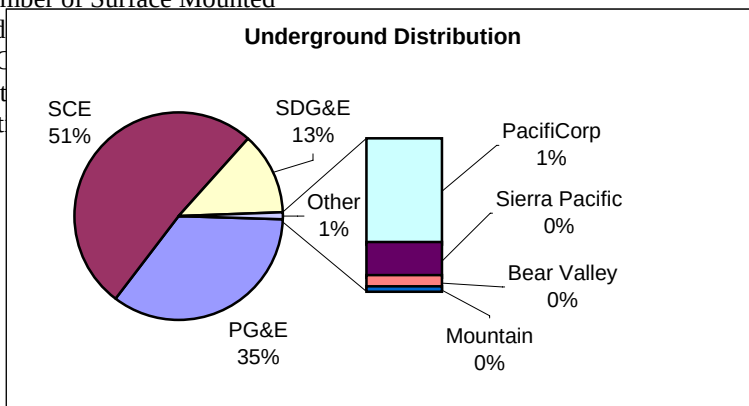
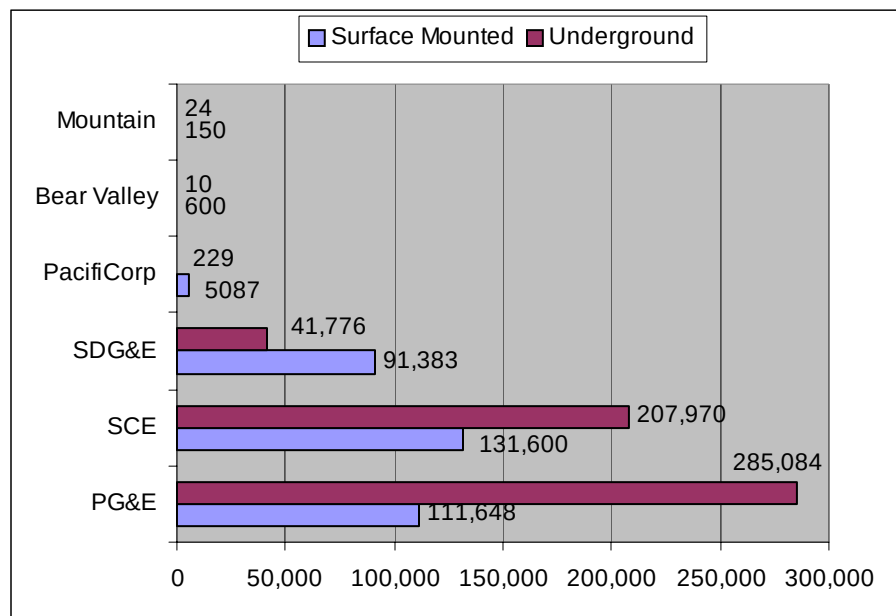


Figure 8.
Percentage of Underground
Distribution Lines in
California by Utility.



2. USS Inspection Statistics

For the 2003 Year	Total
Number of Inspections	14
Number of Inspection Days	56
Number of Personnel Days Used	80
Number of Structures Inspected	739
Number of Violations Cited (See Table 8 for a summary)	571

Table 6. Summary of the G.O. 128 Inspections Conducted

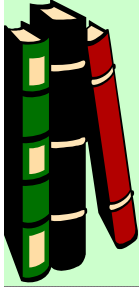
For the 2003 Year	Figures
Average Number of Inspection Days Per Week	1.08
Average Number of Personnel Days Per Inspection Week	1.54
Average Number of Structures Inspected Per Inspection Day	13.2
Average Number of Violations Cited Per Inspection Day	10.2
Average Number of Violations Per Structure Inspected	0.77

Table 7. Tabulation of G.O. 128 Inspection Data

Utility Company	Number of G.O. 128 Inspections	Total G.O. 128 Violations	Average Number of Violations Per Inspection
PG&E	10	226	22.6
SCE	1	90	90
SDG&E	0	-	-
Municipalities/Others	3	255	85

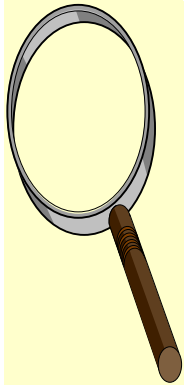
Table 8. Summary of G.O. 128 Violations Incurred by the Utility Companies

C. GENERAL ORDER 165 INSPECTIONS



General Order 165 became effective on March 31, 1997 for Pacific Gas & Electric, PacifiCorp, SDG&E, Sierra Pacific Power Company, and Southern California Edison. This General Order establishes minimum requirements for electric distribution facilities, regarding inspection (including maximum allowable inspection cycle lengths) scheduling and performance of corrective action, condition rating, record keeping, and reporting. The requirements of this order are in addition to the requirements of G.O. 95 and G.O.128 to maintain a safe and reliable electric system. These inspections are part of our regularly scheduled G.O. 95 and G.O. 128 inspections.

D. ELECTRIC INCIDENTS & CUSTOMER COMPLAINTS



The USS staff receives and investigates reportable electric incidents from regulated utility companies. Per Appendix B of D98-07-097, reportable incidents are those which (a) result in fatality or personal injury rising to the level of in-patient hospitalization and attributable or allegedly attributable to utility owned facilities; (b) are the subject of significant public attention or media coverage and are attributable or allegedly attributable to utility facilities, (c) involve or allegedly involve trees or other vegetation in the vicinity of power lines and result in fire and/or personal injury whether or not in-patient hospitalization is required. Incidents involving damage to property of the utility or others estimated to exceed \$20,000 that are attributable or allegedly attributable to utility owned facilities are investigated as well.

The electric utility companies are required to provide notice to the designated USS staff, via the USS Incident 1-800 number, within two hours of an incident. The notice shall identify the time and date of the incident, the time and date of notice to the Commission, the location of the incident, casualties which resulted from the incident, identification of casualties and property damage, and the name and telephone number of a utility contact person.

The designated USS staff is called the On-Call Engineer (OCE). The OCE is responsible for receiving reportable incidents from the utility companies and he or she is available to do so 24 hours per day. Each staff engineer assumes the OCE duties for an entire week several times per year. The OCE or a staff engineer may investigate incidents at any hour, including weekends. If it is determined that a G.O. violation was involved, staff prepares a report and recommends action against the utility.

In addition, the USS maintains a database of outages and accidents to note trends. If there is significant trending, the staff will investigate and work with utilities to correct the problem. The database has been very useful in noting trends about a manufacturer defect, lack of tree trimming, or lack of preventive maintenance. The Commission has initiated Order Instituting

Investigations (OIs) based on the results of USS's investigations. USS staff also handles customer complaints relating to G.O. 95 and 128 safety issues. In addition to investigating incidents reported by the utility companies, USS investigates customer complaints involving alleged violations of the General Orders.

For the 2003 Year	Total
Number of Incidents Reported	268
Incidents Involving Overhead Equipment	233
Incidents Involving Underground Equipment	35
Number of Incidents Investigated	268
Number of USS Engineers** (not including management)	18

Table 9. Summary of Incident Investigations & Customer Complaints for the USS.

** Average taken since the number of engineers varied throughout the 2003 year.

For the 2003 Year	Figures
Average Number of Incidents Reported Per Month	22.33
Percentage of Incidents Reported Involving Overhead Equipment	86.94%
Percentage of Incidents Reported Involving Underground Equipment	13.06%
Average Number of Incidents Investigated Per Month	22.33
Percentage of Incidents Investigated Per Incidents Reported	100%
Average Number of Incidents Investigated Per USS Engineer	14.88
Average Number of Incidents Reported Per OCE Week	5.15
Average Number of OCE Weeks Per USS Engineer	2.89

Table 10. Tabulation of Incident Investigation Data.

1. Overhead Equipment

The following table is a summary of leading causes of incidents in 2003 relating to overhead equipment:

Electric Incident Causes	Fatalities	Injuries	Damage	Media Attention
Aircraft	1	2	1	1
Animal	0	0	1	2
Booms/Cranes	0	1	0	2
Fire	0	0	2	3
Insulator Failure	0	0	0	1
Irrigation Pipe	0	0	0	0
Ladder	1	1	0	0
Line Failure	0	0	1	6
Metal Object	0	5	0	0
Natural Cause	0	0	1	1
Other Causes *	1	10	3	9
Splice Failure	0	0	1	0
Unknown	0	0	2	3
Vegetation	1	6	7	2
Vehicle	0	4	3	2
Working Overhead	2	15	0	0
Grand Total	6	44	50	34

Table 11. Summary of Leading Causes of Overhead Incidents reported to the CPUC Relating G.O. 95.

Note: Some incidents were reported under multiple criteria.

* “Other Causes” includes events such trespassing, suicide, & vandalism.

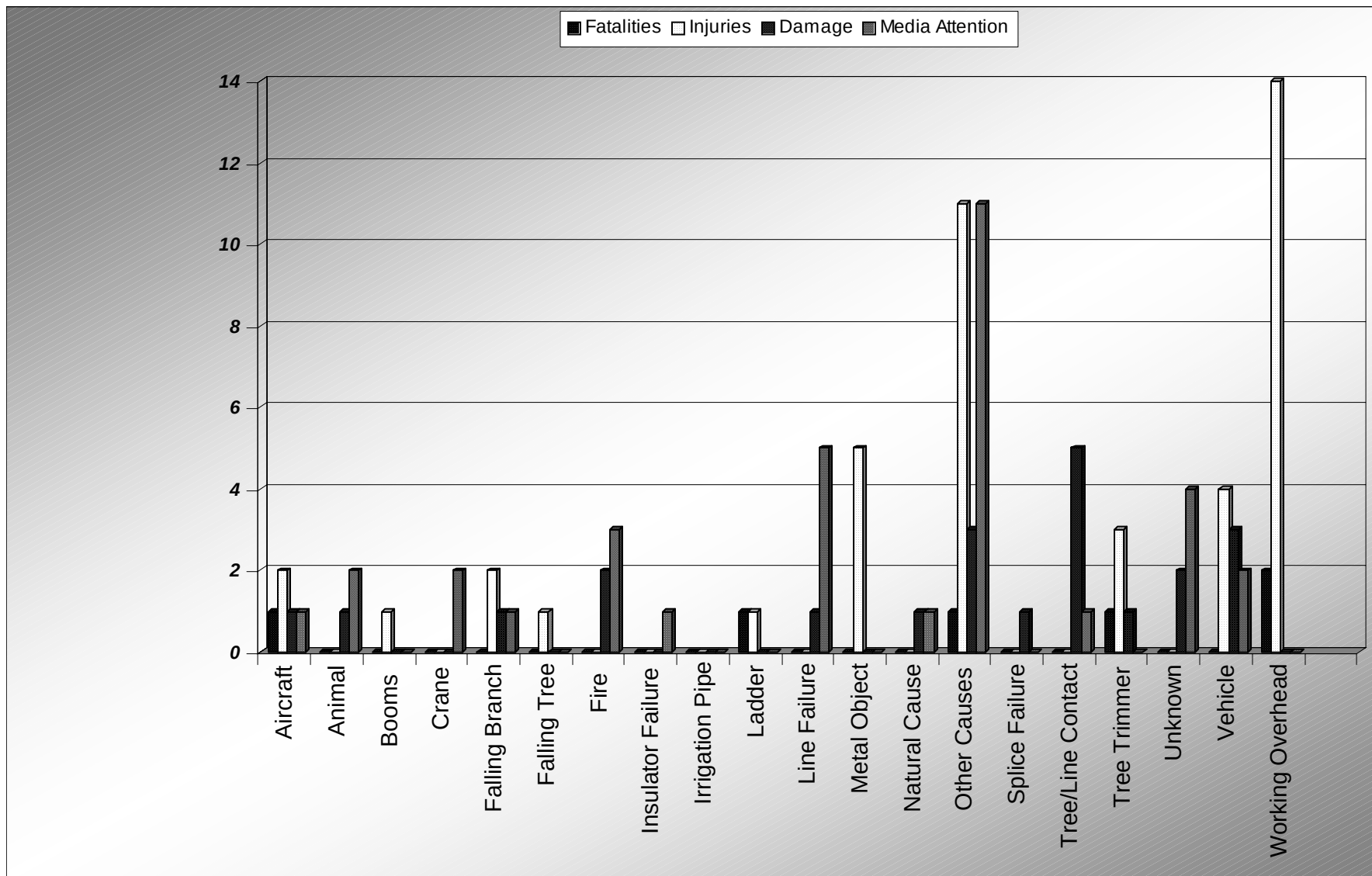


Figure 10. Graph of the Leading Causes of Overhead Incidents reported to the CPUC Relating G.O. 95.

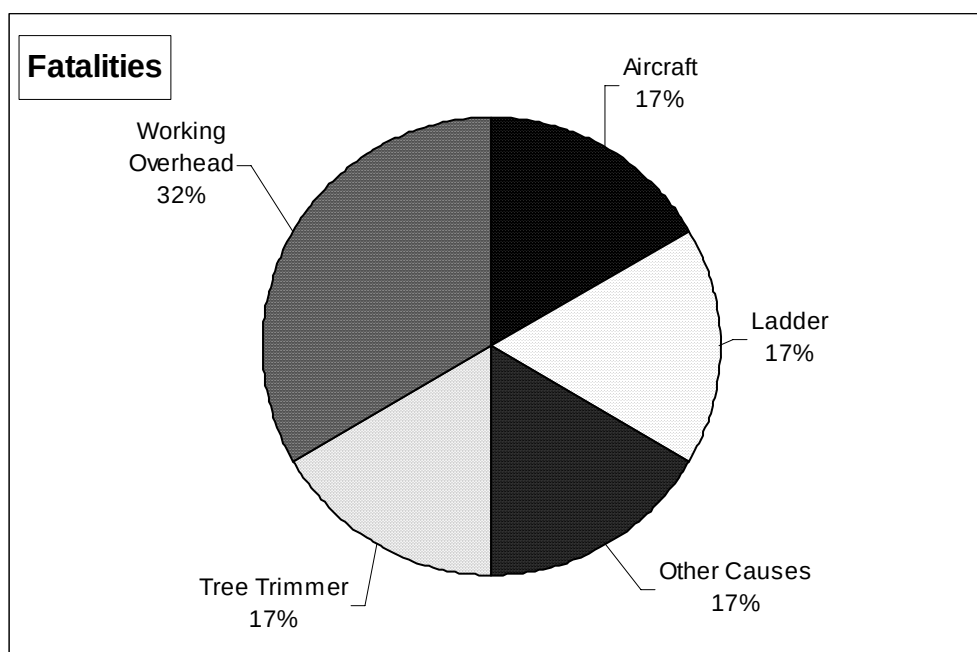


Figure 11. Percentage of Overhead Incidents Resulting in Fatalities.

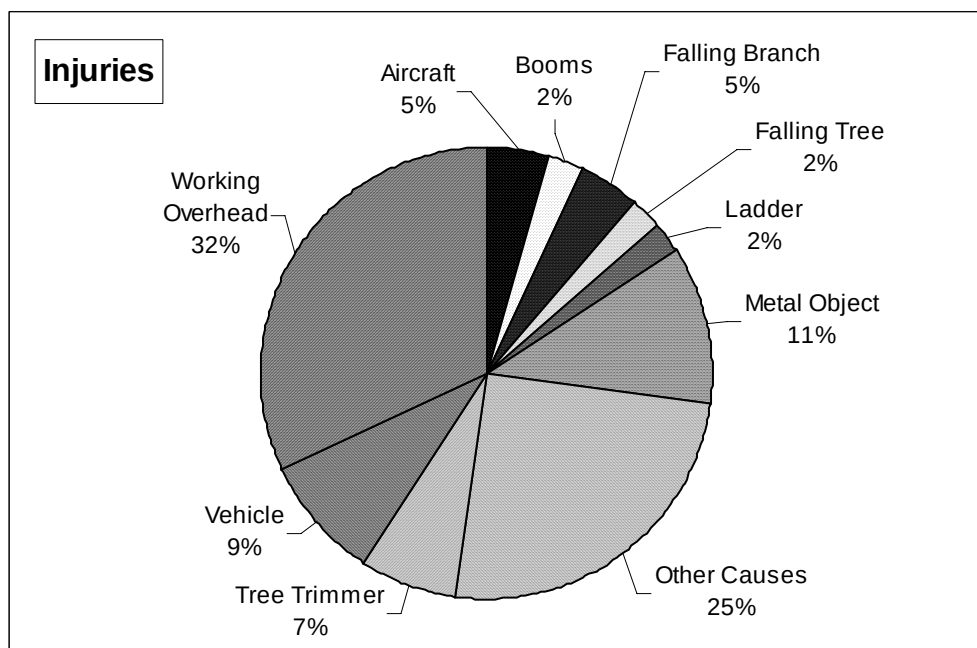


Figure 12. Percentage of Overhead Incidents Resulting in Injuries.

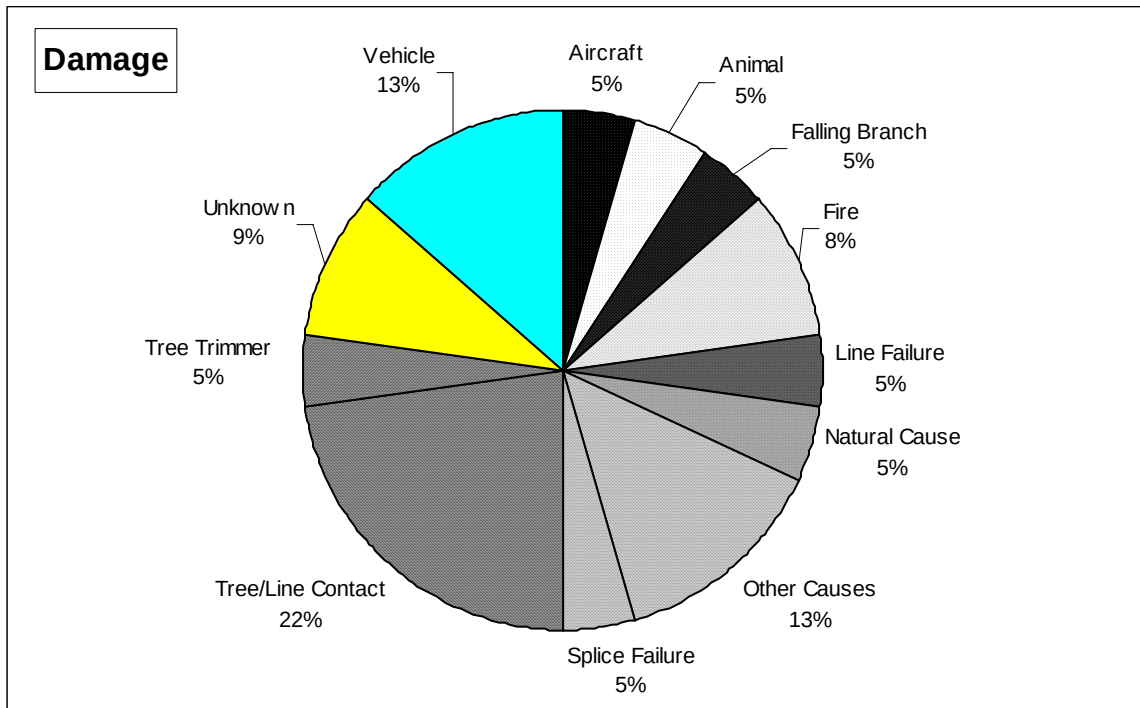


Figure 13. Percentage of Overhead Incidents Resulting in Damage.

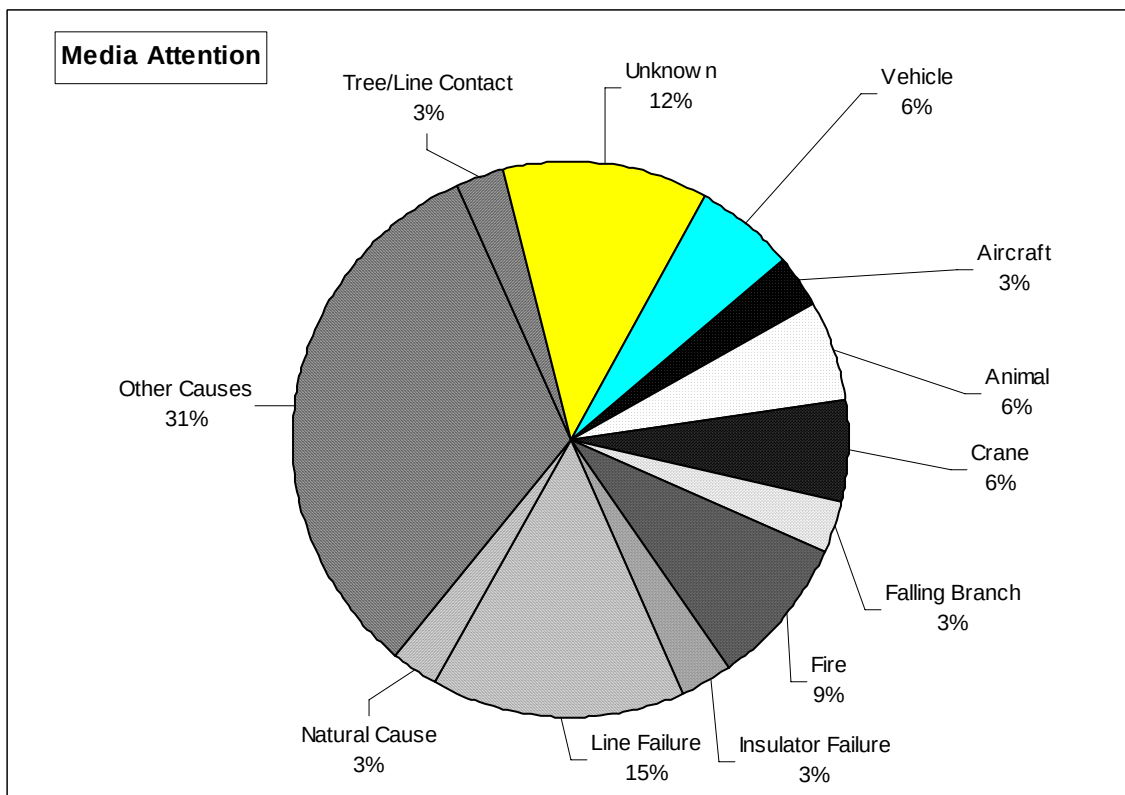


Figure 14. Percentage of Overhead Incidents Resulting in Media Attention.

2. Underground Equipment

The following table is a summary of leading causes of incidents in 2003 relating to underground equipment.

Electric Incident Causes	Fatalities	Injuries	Damage	Media Attention
Dig In	0	1	9	1
Switch Malfunction	0	1	1	2
Transformer Malfunction	0	2	1	4
Underground Cable Failure	0	1	0	13
Underground Splice Failure	0	0	0	2
Working Underground	0	3	1	0
Grand Total	0	8	12	20

Table 12. Summary of Leading Causes of Underground Incidents Relating to G.O. 128.

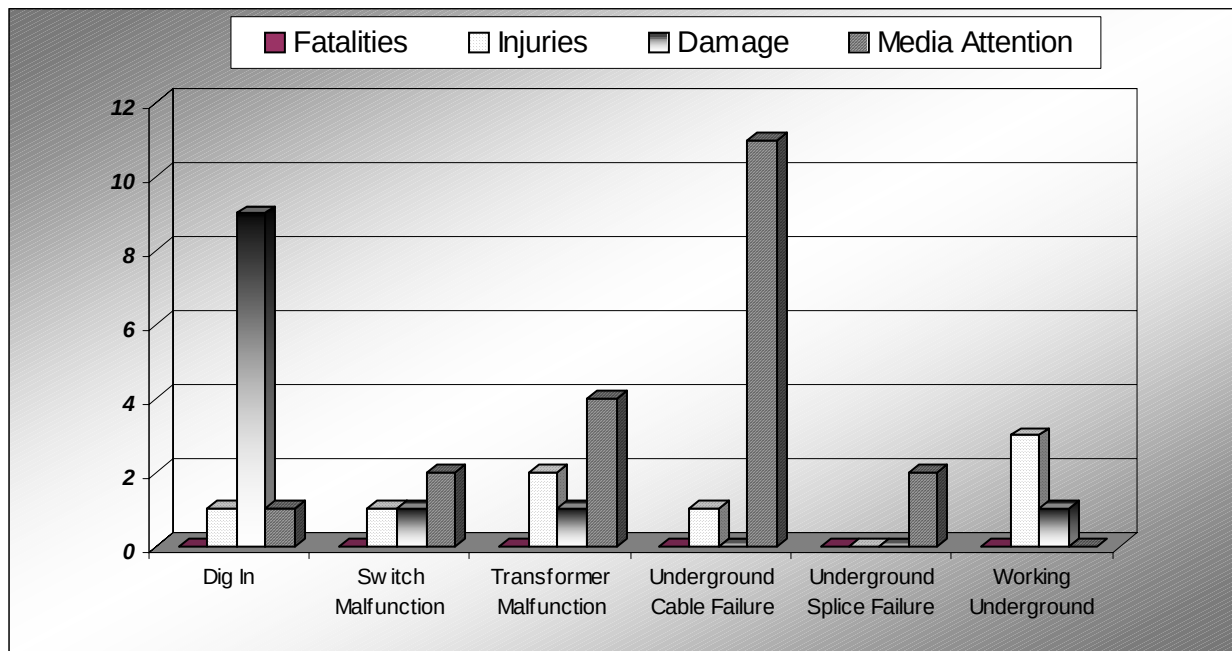


Figure 15. Graph of Leading Causes of Underground Incidents Relating to G.O. 128.

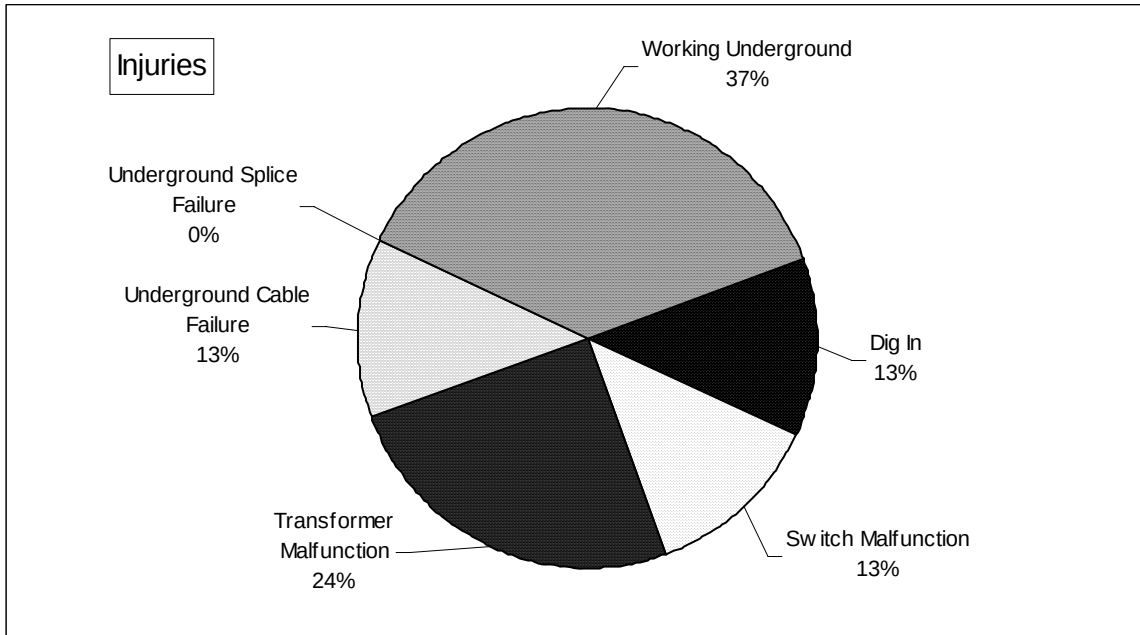


Figure 16. Percentage of Underground Incidents Resulting in Injuries.

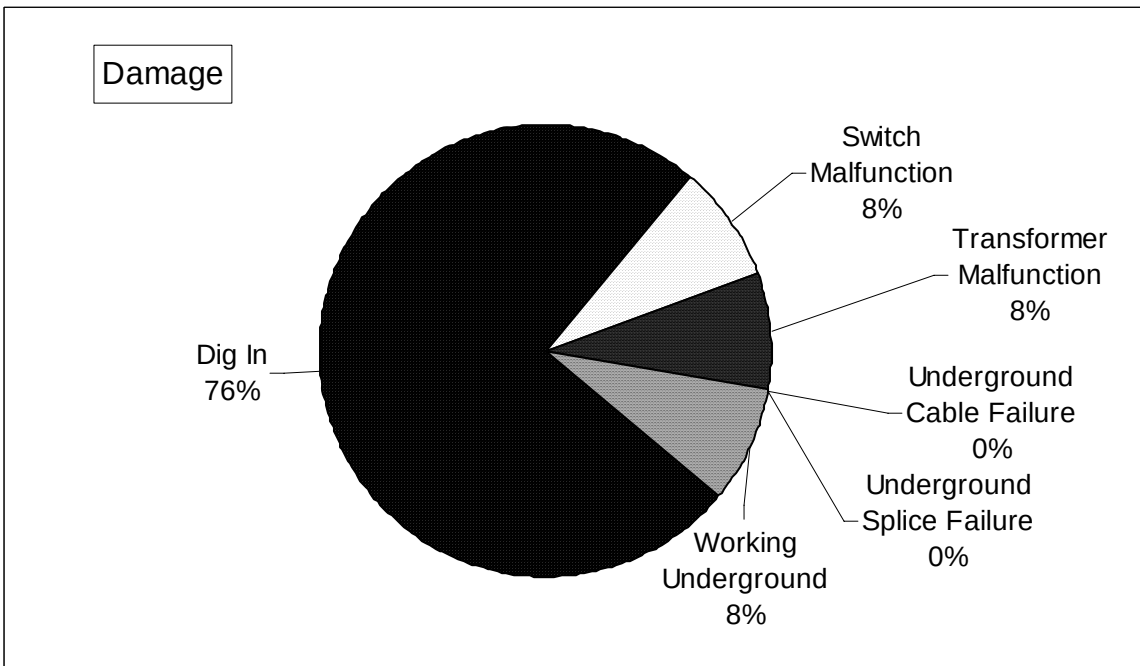


Figure 17. Percentage of Underground Incidents Resulting in Damage.

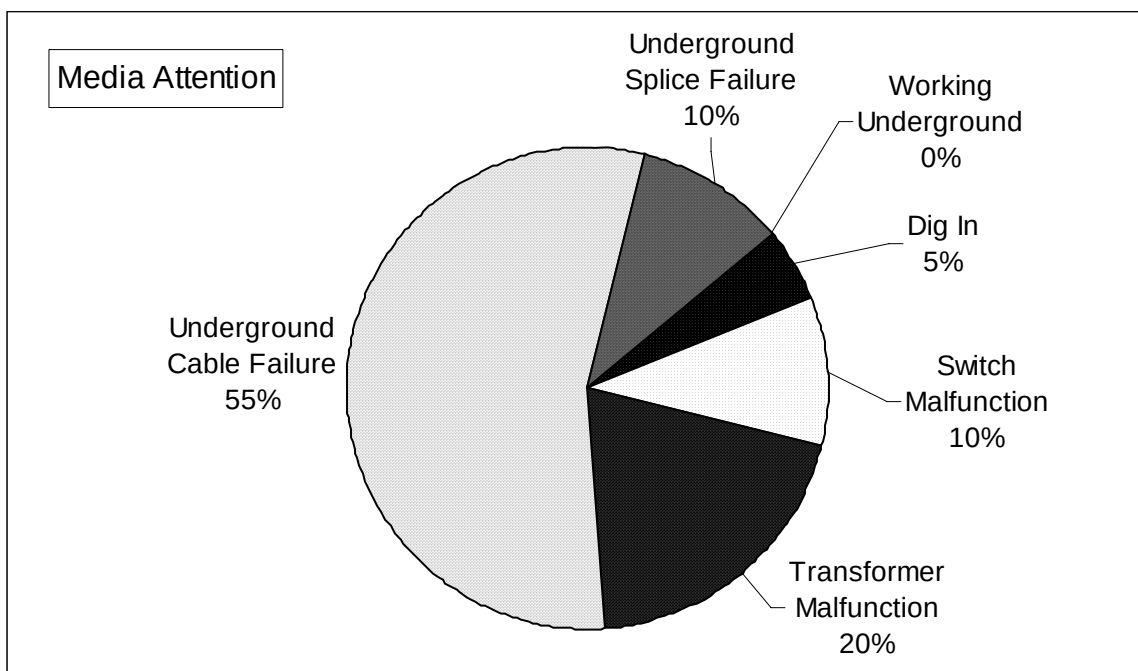


Figure 18. Percentage of Underground Incidents Resulting in Media Attention.



IV. ADDITIONAL INFORMATION

A. PUBLICATIONS

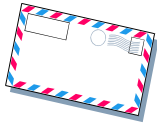
Copies of G.O. 95, 128, and 165 are available to the general public for purchase from the CPUC.

1. How to Order



Call or Write
the CPUC at...

Documents, California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
(415) 703-1713



California Public Utilities Commission (most documents available)
320 West 4th Street, Suite 500
Los Angeles, CA 90013
(213) 576-7003

2. G.O. 95, 128, and 165

G.O. 95: “Rules for Overhead Line Construction” book is available for purchase at \$20.00 each.

G.O. 128: “Rules for Construction of Underground Electric Supply and Communication Systems” book is available for purchase at \$5.00 each.

G.O. 165: “Inspection Cycles for Electric Distribution Facilities”, the first copy of the G.O. leaflet is free with additional copies at \$0.50 each.



General Order 95 and 128 may be viewed at the CPUC web site. The URL is:

http://www.cpuc.ca.gov/static/official+docs/i_go.htm