

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

In the Matter of)
)
PUBLIC UTILITIES COMMISSION)
OF THE STATE OF HAWAII)
)
Proposed Revisions to Rules for)
Overhead Electric Line Construction)
in the State of Hawaii.)
_____)

Docket No. 1734.
Order No. 2345

Before: A. J. Vivas, Jr.
S. Kon
J. B. Fernandes

Chairman
Commissioner
Commissioner

APPEARANCE:

For the Public Utilities Commission
Department of the Attorney General
By Tom L. Peterson, Esq.
Deputy Attorney General

Counsel

REVISED GENERAL ORDER NO. 6

This matter was formally initiated by the PUBLIC UTILITIES COMMISSION OF THE STATE OF HAWAII on November 22, 1966, whereupon the Staff was directed to prepare complete and independent revisions to Commission's General Order No. 6, as amended, covering Rules for Overhead Electric Line Construction in the State of Hawaii.

Proposed revised rules and regulations were submitted to the Commission, and copies thereof circulated to the telephone and electric utilities and all interested parties, and all were given the opportunity to submit data, views, comments and arguments, verbally or in writing.

Pursuant to the provisions of Chapters 6C and 104, Revised Laws of Hawaii 1955, as amended, public hearings were duly advertised and held on each of the major islands of the State of Hawaii, as follows:

Kaunakakai, Molokai -----	November 16, 1966
Kahului, Maui -----	November 16, 1966
Hilo, Hawaii -----	November 17, 1966
Lihue, Kauai -----	November 18, 1966
Honolulu, Hawaii -----	November 22, 1966

The Commission, at its quorum meeting held March 23, 1967, having considered the final draft of the proposed revised rules and regulations and the entire record in this Docket, was of the opinion and found that the

Order No. 2345

adoption of the proposed rules and regulations, as revised, is consistent with the law and will not adversely affect the operations of the utilities and should be approved and adopted in the public interest.

IT IS, THEREFORE, HEREBY ORDERED: That the Rules and Regulations attached hereto as Appendix A are hereby adopted by the PUBLIC UTILITIES COMMISSION OF THE STATE OF HAWAII and made a part of its REVISED GENERAL ORDER NO. 6, REVISED RULES FOR OVERHEAD ELECTRIC LINE CONSTRUCTION, effective ten (10) days after filing of said Revised General Order No. 6 in the Office of the Lt. Governor of the State of Hawaii.

This Revised General Order No. 6 supersedes General Order No. 6, Docket No. 1178, adopted June 12, 1953; Amended General Order No. 6, Docket No. 1500, adopted September 21, 1962; and Second Amended General Order No. 6, adopted June 20, 1963 in their entirety, including all attachments, appendices and references in all cases to General Order No. 95 of the California Public Utilities Commission and deviations and variances appertaining thereto.

The foregoing Order No. 2345 is hereby ratified as the action taken by the Commission on March 23, 1967.

PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By /S/ A. J. VIVAS, JR.
A. J. Vivas, Jr., Chairman

By /S/ LORRIN W. DOLIM
Lorrin W. Dolim, Commissioner

By /S/ JOHN B. FERNANDES
John B. Fernandes, Commissioner

By /S/ SHOJI OKAZAKI
Shoji Okazaki, Commissioner

ATTEST:

I, Albert J. Vivas, Jr., Chairman of the Public Utilities Commission of the State of Hawaii, do hereby certify that the foregoing Revised General Order No. 6 is a full, true, and complete copy of the original on file in the office of the Commission.

/S/ A. J. VIVAS, JR.
Albert J. Vivas, Jr., Chairman

C E R T I F I C A T I O N

I, ALBERT J. VIVAS, JR., Chairman of the Public Utilities Commission of the State of Hawaii, certify to the following:

That REVISED GENERAL ORDER NO. 6, RULES FOR OVERHEAD ELECTRIC LINE CONSTRUCTION, was prepared by the Staff of the Commission and the Attorney General's office;

That pursuant to Chapters 6C and 104, Revised Laws of Hawaii 1955, as amended, notices of public hearings appeared as follows:

Honolulu Star Bulletin -----	October 27, 1966
Honolulu Advertiser -----	November 1, 1966
Hawaii Tribune Herald -----	November 1, 1966
Maui News -----	November 2, 1966
Garden Island News -----	November 2, 1966

That copies of a direct notice dated October 31, 1966 were transmitted to all the electric and telephone utilities operating in the State of Hawaii;

That hearings were held as prescribed by law, as follows:

Kaunakakai, Molokai -----	November 16, 1966
Kahului, Maui -----	November 16, 1966
Hilo, Hawaii -----	November 17, 1966
Lihue, Kauai -----	November 18, 1966
Honolulu, Hawaii -----	November 22, 1966; and

That the Rules and Regulations in Docket No. 1734 were approved and adopted by the Commission at its quorum meeting held March 23, 1967 as Revised General Order No. 6.

/S/ ALBERT J. VIVAS, JR.
Albert J. Vivas, Jr., Chairman

Approved As To Form, November 27, 1968

/S/ ROY M. MIYAMOTO
Roy M. Miyamoto
Deputy Attorney General

Approved November 29, 1968

/S/ EDWIN H. HONDA
Edwin H. Honda
Director of Regulatory Agencies

Approved February 27, 1969

/S/ JOHN A. BURNS
John A. Burns
Governor, State of Hawaii

Filed in the Office of the Lt. Governor: February 27, 1969

Effective: March 9, 1969

DEPARTMENT OF REGULATORY AGENCIES
STATE OF HAWAII

TITLE VI - PUBLIC UTILITIES COMMISSION

RULES FOR OVERHEAD
ELECTRIC LINE CONSTRUCTION

PART I - CONTENTS

SECTIONS	PAGE
I GENERAL PROVISIONS -----	4
II DEFINITION OF TERMS AS USED IN THE RULES OF THIS ORDER -----	9
III REQUIREMENTS FOR ALL LINES -----	24
IV STRENGTH REQUIREMENTS FOR ALL CLASSES OF LINES -----	50
V DETAILED CONSTRUCTION REQUIREMENTS FOR SUPPLY LINES -	82
VI ADDITIONAL CONSTRUCTION REQUIREMENTS FOR TOWER LINES -----	189
VII DETAILED CONSTRUCTION REQUIREMENTS FOR TROLLEY LINES -----	193
VIII DETAILED CONSTRUCTION REQUIREMENTS FOR COMMUNICATION LINES -----	216
IX JOINT POLES OR POLES JOINTLY USED -----	263
X SUPPLY AND COMMUNICATION LINES IN LINE CROSSINGS OR CONFLICTS -----	272
XI SUPPLY LINES OR COMMUNICATION LINES CROSSING OVER RAILWAYS -----	277
APPENDICES -----	283

PART II - TABLES

TABLE NO.	RULE	TITLE	PAGE
1	37	Clearances of Wires Above Railroads, Thoroughfares, Buildings, Etc. -----	36
2	38	Clearances of Wires From Other Wires -----	43
2-A	39	Clearances of Wires From Signs -----	49
3	42	Grades of Construction -----	55
4	44.1	Safety Factors -----	59
5	48.1	Wood Strengths -----	63
6	49.1-C	Pole Setting Depth -----	68
7	49.3-B	Size and Material of Tie Wires -----	72
8	49.4-B	Conductor Sizes -----	75
9	49.6-B	Size and Strength of Guys Crossing Supply and Communication Conductors -----	79
10	54.8-B4	Clearances of Supply Service Drops of 0-300 Volts Above Buildings -----	140
11	54.8-C1	Radial Clearance Between Supply Service Drops and Communication Line Conductors -----	142
12	55.3-C	Insulator Flashover Voltages -----	154
13	56.8-C	Guy Insulator Flashover Voltages -----	163
14	59.3-B	Relative Sizes of Common Neutral System Line Conductors -----	184
15	84.8-D1	Radial Clearance Between Communication Service Drops and Line Conductors -----	243
16	86.8-C	Guy Insulator Flashover Voltages -----	254
17	App. B	Copper Wire-Bare, Solid -----	286
18	App. B	Copper Wire-Bare, Stranded and Solid -----	287
19	App. B	Copper Wire-Stranded and Solid, Double Braid Weatherproof -----	288

PART II - TABLES

TABLE NO.	RULE	TITLE	PAGE
20	App. B	Copper Wire-Stranded and Solid, Triple Braid Weatherproof -----	289
21	App. B	Galvanized Steel and Iron Wire-Bare, Solid -----	290
22	App. B	Copper Covered Steel, Strand, Solid and Composite -----	291
23	App. B	Aluminum Cable Steel Reinforced-Bare -----	292
24	App. B	Mechanical Characteristics of Galvanized Steel Strand -----	293
25	App. C	Stringing Sags for Communication Conductors in Grade F Construction -----	308
26	App. D	Replacement Ground Line Circumferences of Poles in Grade F Construction- Interexchange Lines -----	310
27	App. D	Replacement Ground Line Circumferences of Poles in Grade F Construction- Exchange Lines -----	312

SECTION CONTENTS

SECTION I

GENERAL PROVISIONS

<u>RULE</u>		<u>PAGE</u>
11.	PURPOSE OF RULES -----	5
12.	APPLICABILITY OF RULES -----	5
12.1	Construction and Reconstruction of Lines -----	5
	A. Service Drops -----	5
	B. Conductors -----	5
	C. Subordinate Element -----	6
	D. Replacement of Poles, Towers or Other Structures -----	6
12.2	Maintenance of Lines -----	6
12.3	Lines Constructed Prior to This Order -----	7
12.4	Reconstruction or Alteration -----	7
13.	SCOPE OF RULES -----	7
14.	LIMITING CONDITIONS SPECIFIED -----	7
15.	EXEMPTIONS OR MODIFICATIONS -----	7
16.	SAVING CLAUSE -----	8

DEPARTMENT OF REGULATORY AGENCIES
TITLE VI - PUBLIC UTILITIES COMMISSION

RULES FOR OVERHEAD
ELECTRIC LINE CONSTRUCTION

SECTION I

GENERAL PROVISIONS

11. PURPOSE OF RULES

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

12. APPLICABILITY OF RULES

These rules apply to all overhead electrical supply and communication lines which come within the jurisdiction of this Commission, located outside of buildings, as follows:

12.1 Construction and Reconstruction of Lines

The requirements apply to all such lines and extensions of lines constructed six months after the date the Public Utilities Commission of the State of Hawaii approves these modifications and shall become applicable also to such lines now existing or any portion thereof, whenever they are reconstructed.

The reconstruction of an element of a line requires that all elements subordinate to the reconstructed element meet the requirements of these rules. For the purpose of this order reconstruction will be construed to mean that work which in any way changes the identity of the pole, tower or structure on which it is performed excepting:

A. Service Drops

Service drops may be added to existing plant without necessitating changes in the circuit or line from which they originate.

B. Conductors

Conductors or circuits added to crossarms installed prior to March 1, 1929 will not be required to afford greater ground clearance than the ground clearance provided by conductors of the same or higher voltage classification which are already in place on such arms.

All other clearances with which such added conductors or circuits are concerned shall be in accord with these rules.

C. Subordinate Element

An element (such as a crossarm or a conductor) added to a pole, tower or structure shall meet all requirements of these rules but does not require any change in like elements already existing except where the added element is related in buck arm construction to an existing arm in which case all construction on the related arms shall meet the requirements of these rules. A crossarm, pole, tower or other structure to which any subordinate element is added shall meet the strength safety factor requirements specified in Rule 44.2.

D. Replacement of Poles, Towers or Other Structures

The replacement of poles, towers or other structures is considered to be reconstruction and requires adherence to all strength and clearance requirements of these rules. The clearances of the spans adjacent to the new support need not be changed but the new support shall be such that when the adjacent support is replaced the span between will meet all the provisions of this Order.

12.2 Maintenance of Lines

All lines and portions of lines shall be maintained in such condition as to provide safety factors not less than those specified in Rule 44.2. Lines and portions of lines constructed or reconstructed on or after the effective date of this Order shall be kept in conformity with the requirements of this Order.

The restoration of clearance originally established prior to the effective date of this Order, where the original clearance has been reduced by additional sagging or other causes, is not considered to be reconstruction and the reestablished clearance shall conform to the requirements of the rules in effect at the time the original clearance was established. The changing of clearance for any other purpose is reconstruction and clearances so changed shall comply with the rules of this Order applicable to reconstruction.

12.3 Lines Constructed Prior to This Order

The requirements of this Order, other than the safety factor requirements specified in Rule 12.2, do not apply to lines or portions of lines constructed or reconstructed prior to the effective date of this Order. In all other particulars, such lines or portions of lines shall conform to the requirements of the rules in effect at the time of their construction or reconstruction.

12.4 Reconstruction or Alteration

If, in its opinion, safety or public interest requires, the Commission may order reconstruction or alteration of existing lines.

13. SCOPE OF RULES

These rules are not intended as complete construction specifications, but embody only the requirements which are most important from the standpoint of safety and service. Construction shall be according to accepted good practice for the given local conditions in all particulars not specified in the rules.

14. LIMITING CONDITIONS SPECIFIED

The requirements specified in these rules as to spacing, clearance, and strength of construction are limiting conditions expressed as minimum or maximum values as indicated. In cases where two or more requirements establish limiting conditions, the most stringent condition shall be met, thus providing compliance with the other applicable conditions.

Greater strength of construction and more ample spacings and clearances than herein specified may be desirable in some cases and may be provided accordingly if other requirements are not violated in so doing.

15. EXEMPTIONS OR MODIFICATIONS

If, in a particular case or a special type of construction, exemption from or modification of any of the requirements herein is desired, the Commission will consider an application for such exemption or modification when accompanied by a full statement of conditions existing and the reasons why such exemption or modification is asked and is believed to be justifiable. It is to be understood that, unless otherwise ordered, any exemption or modification so granted shall be limited to the particular case or the special type of construction covered by the application.

16. SAVING CLAUSE

The Commission reserves the right to change any of the provisions of these rules in specific cases when, in the Commission's opinion, public interest would be served by so doing.

Compliance with these rules is not intended to relieve a utility from any statutory requirement.