

FOURTH ANNUAL REPORT

OF THE

Board of
Public Utility Commissioners

FOR THE

STATE OF NEW JERSEY

FOR THE YEAR

1913

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1914.

COMMISSIONERS

RALPH W. E. DONGES,* *President.*

THOMAS J. HILLERY,

WINTHROP MORE DANIELS,

ROBERT WILLIAMS.*

*By appointment of Governor Woodrow Wilson, Mr. Donges qualified May 1st, 1913, as the successor of Mr. Williams, whose term had expired.

In the Matter of Establishing Standards and Regulations, to Be Followed by Utilities Engaged in the Generation, Transmission, Sale or Distribution of Electricity and By All Utilities Owning or Using Poles and Wires.

ORDER.

The Board of Public Utility Commissioners having this day adopted Rules, Regulations and Recommendations for electrical supply utilities and for all utilities owning or using poles and wires, a copy of which Rules, Regulations and Recommendations is by reference thereto herein made part of this Order.

The Board of Public Utility Commissioners, after due hearing, hereby ascertains and fixes the Rules, Regulations and Recommendations referred to herein as establishing adequate and serviceable standards and reasonable regulations to be observed by such companies, and

HEREBY ORDERS that the Rules and Regulations so fixed shall be observed and followed by each and every utility engaged in the generation, transmission, sale or distribution of electricity or owning or using poles and wires.

The Rules and Regulations referred to herein shall be and have the full force and effect of an order of this Board, except in so far as the text of the copy of the Rules and Regulations is underlined. Where such text is underlined, the part so underlined should be regarded as the recommendations of this Board for the guidance of the utilities to whom said recommendations are applicable, which recommendations should, in the opinion of the Board, be observed and followed by such utilities.

This order shall become effective January first, nineteen hundred and fourteen.

Dated December 9th, 1913.

Rules, Regulations and Recommendations

For Electrical Supply Utilities and for all Utilities Owning or Using Poles or Wires.

- I. Each utility generating, transmitting, distributing or selling electricity for light, heat, power or other purposes, shall have and maintain its entire plant and system in such condition as will enable it to furnish safe, proper and adequate service.
- II. The construction of buildings, machinery and generating plant of the utility must be in accordance with the requirements of the "National Electrical Code" of the edition of 1913.
- III. The distribution system, including:
 - (a) Transmission lines;
 - (b) Sub-stations;
 - (c) Overhead system, poles, lines, transformers, etc.;
 - (d) Underground system, manholes, conduits, etc.;
 - (e) Street lighting system;
 - (f) Service wires and attachments;
 - (g) Meters, etc.

must be constructed in accordance with good standard practice. It is expected that all possible care will be exercised by each company to reduce the life hazard to which employees, customers and others may be subjected by the presence of overhead wires in the public streets and ways. It is also expected that each company will so conduct its affairs as to cause the least

possible danger or loss to other public utilities which make use of the streets and roads. Standard practice for electrical construction work is indicated in various specifications, the names of some of which are given below. The specifications referred to are not to be considered part and parcel of the rules and regulations, but are to be considered as indicative of good standard practice.

1st.—Specifications covering methods of overhead line construction for 2,300 volt distribution, and for street lighting circuits, and specifications for material.

2d.—Specifications covering methods of overhead line construction for secondary voltages, including pole wiring for street lighting work.

3d.—The specifications attached to "Inter-company agreement form and specifications for the joint use of poles by lighting and telephone companies."

4th.—Specifications for overhead crossings of electric light and power lines.

NOTE—Numbers 1, 2, 3, and 4 are set forth in the four sections of the "Report of Committee on Overhead Line Construction," approved by the National Electric Light Association, May 29th to June 2, 1911, and Section 4 as approved by the Committee representing the American Institute of Electrical Engineers, American Electric Railway Association, American Railway Engineering Association, the Association of Railway Telegraph Superintendents and the American Railway Association.

5th.—Report of the Committee on Power Distribution read before the American Electric Railway Association, October 13, 1913.

6th.—Report of the Committee on Joint Use of Poles read before the American Electric Railway Association, October 13, 1913.

7th.—National Electrical Code.

By National Electrical Code is meant the code which is described as follows:

“The National Electrical Code was originally drawn in 1897 as the result of the united efforts of the various insurance, electrical, architectural and allied interests which through the National Conference on Standard Electrical Rules, composed of delegates from various National Associations, unanimously voted to recommend it to their respective Associations for approval and adoption; and presented by the National Board of Fire Underwriters with the various amendments and additions which have been made since that time by them.

The National Conference has disbanded, the work of the Underwriters' National Electric Association and of the National Conference having been taken over by the National Fire Protection Association.

The following associations, formerly members of the National Conference are represented on the Electrical Committee of the National Fire Protection Association:

American Electric Railway Association.
American Institute of Electrical Engineers.
Association Factory Mutual Fire Insurance Cos.
National Board of Fire Underwriters.
National Electric Light Association.
National Electrical Contractors' Association.
National Electrical Inspectors' Association.

IV. POLE IDENTIFICATION.

- (a) Each utility owning poles supporting wires along or over public highways, this to include each railroad, street railway, telephone, telegraph and electric light and power utility, shall, on or before January 1st, 1915, stencil each pole, post or other structure similarly used with
 - (1) The initials of its name, abbreviation of its name, corporate symbol or other distinguishing mark by which the owner of each such structure may be readily and definitely determined;
 - (2) A number by which the location of each such structure may be described.
- (b) The manner of making such stencils shall be with paint, and the characters of the stencil shall be of such size and so spaced and hereafter maintained as to be easily read from the surface of the ground at a distance of ten feet from the structure.
- (c) In the case of two or more utilities jointly owning any such structure, the distinguishing mark of each utility shall be placed on such structure, but not more than one number necessarily shall be placed thereon.
- (d) In the case of such structures carrying or supporting overhead trolley wires where there is a double line of structures, one on each side of the railroad track, such stencil need be affixed to but one line of such structures.
- (e) In the case of such structures erected upon private rights of way or on the public highways of such character that the construction may be deemed to be a through or trunk line, such stencil need be affixed only to every fifth structure; provided, however, that each and every such structure situated within the limits of any built-up community shall be stenciled, except as otherwise provided in paragraph (d).
- (f) The requirements herein shall apply to all existing and future erected structures and to all changes in ownership.

(g) Every such utility shall file with the Board of Public Utility Commissioners, in duplicate, on or before March 1st, 1914, a statement showing:

1. The initials, abbreviation of name, corporate symbol or distinguishing mark.
2. The means of stenciling to be employed.
3. The method intended to be followed in numbering structures, to wit, within the limits of cities, towns, or other built-up communities, and upon through or trunk lines.

V. POLE INSPECTION.

Each pole, post, tower or other structure used for the support or attachment of wires, guys or lamps must be inspected by the utility owning or using it with sufficient frequency and comprehensiveness to determine in each specific case the necessity for replacement or repair.

The inspector shall be guided by the specifications referred to in Article III of these rules, and also for the guidance of the inspector reference is hereby made to the general rules for Pole Replacement Inspection of the American Telephone and Telegraph Company.

VI. FLUCTUATION IN VOLTAGE ON LIGHTING CIRCUITS.

Each utility supplying electrical energy on constant potential system shall adopt and maintain an average value of voltage as measured at any customer's cutout, and the fluctuations as measured by a standardized indicated voltmeter shall not vary between sunset and eleven P. M., for periods exceeding five (5) minutes, more than three per cent. (3%) above nor more than three per cent. (3%) below the standard voltage for said location in force at the time; provided, however, that variations in pressure caused by the operation of

apparatus on customer's premises in violation of the utility's rules, the action of the elements, or other causes beyond the utility's control shall not be considered a violation of this provision.

- VII. Each utility furnishing electric service shall keep a record of the time of starting and shutting down power station equipment and feeders, together with the indication of the several switchboard instruments at frequent intervals, and shall maintain a record of all interruptions of service upon the entire system or major divisions of its system, and include in such record, time, duration and cause of each interruption.
- VIII. Each utility shall keep a record of "complaints" received at its office in regard to service, which shall include the name and address of the customer, the date, nature of complaint and the remedy. The record shall be available for inspection at any time within one year by duly accredited representatives of the Public Utility Commission.
- IX. Each utility supplying electrical energy for incandescent illumination shall inspect in a general way the incandescent lamps of each consumer, to whom free lamp renewals are supplied, at least once every two years, and render its consumers reasonable assistance in securing incandescent lamps best adapted to the service furnished.
- X. Each utility supplying electrical energy for incandescent illumination shall specifically inform each of its customers, where unusual conditions prevail, as to the conditions under which efficient illuminating service may be secured from its system.
- XI. Each utility shall furnish to any prospective customer, on request, a statement of the kind or kinds of service available, giving the adopted voltage, nature of

current, and, if alternating current, the frequency and number of phases. Where one class of service is available through only a part of the district served, this should be stated in connection with any such application. Where service is available only at certain times of day or night, full information must be readily available to all prospective customers or their representatives.

Where unusual conditions prevail, each utility supplying electrical energy for power shall specifically inform each of its customers as to the conditions under which efficient and satisfactory service may be secured from its system. When, on account of its size and character, the apparatus desired to be connected to the lines of the utility is so unusual as to affect the adequacy of the service furnished to other customers, prospective or otherwise, conditions may require special provision for the load in question. This applies particularly to such connections as grounded signal system, medical apparatus, welding machines, large motors, large capacity arc lamps, furnaces, moving picture machines, wireless telegraph apparatus, &c. In all cases, however, it is understood that the utility is merely a supplier of its commercial standard electrical energy deliverable at the customer's service cutout under certain conditions as to pressure, continuity and regularity.

- XII. Whenever any transformers, high tension insulators or other appliances are removed from the system for any reason, they must be inspected before being re-installed in the same or other location.
- XIII. A utility may refuse to connect with any customer's wiring when it is not in accordance with the provisions of the National Electrical Code of 1913; or when the certificate of the underwriters or of the local inspection bureau has not been issued, or when the wiring is defective under the rules of the utility.

- XIV. The rules contained in the 1913 edition of the National Electrical Code regarding grounding of secondaries are hereby adopted FOR ALL NEW CONSTRUCTION. Each utility shall adopt a plan whereby existing services will be changed to conform to the rule, and submit the same to the Board for approval by July 1, 1914.
- XV. The utility shall, without charge, furnish each customer supplied with energy on a measured basis, with an electric meter and such service appliances as are customarily furnished by the utility in order to connect the customer's equipment with its mains.

NOTE.—Any utility now furnishing service through meters owned by customers must arrange to take over the same by January 1st, 1915, and thereafter own and maintain all service meters.

- XVI. All meters hereafter placed in buildings should be located in the cellar or first floor, as near as possible to the point of entrance of the service in a clean, dry, safe place, free from vibration, not subject to great variation in temperature, and the top of the meter board should not be more than six feet nor the bottom less than four feet above the floor, or above a suitable platform placed underneath the meter, where it will be easily accessible for reading and testing.

Under no circumstances should meters be placed in coal or wood-bins or on the partitions forming the same, nor on any flimsy partitions or supports.

In cases where buildings have no cellar, or have very damp cellars or cellars that are not easily accessible, the meter should be installed on the first floor.

Unless absolutely unavoidable meters should not be

installed in attics, sitting-rooms, bath-rooms, bed-rooms, restaurant kitchens, over doors, over windows, or any location where the visits of the meter reader or tester will cause annoyance to the customer.

The installation of meters and connections shall be strictly in accordance with the rules of the National Electrical Code of 1913 and the utility furnishing the service.

XVII. TESTING OF WATT-HOUR METERS.

(1) All utilities supplying electricity within the State of New Jersey shall provide and properly maintain suitable apparatus and facilities for testing and proving the accuracy of watt-hour meters.

(2) All portable standards shall be tested and proved as to their accuracy as often as is necessary to insure their maintenance in proper condition for testing of watt-hour meters. Portable standards, if not tested and calibrated in the laboratory of the electrical utility owning the same, shall be tested and calibrated in any properly equipped laboratory of recognized standing. Each standard shall at all times be accompanied by a certificate giving the date it was last checked, the corrections to be applied at various loads, and signed by the proper authority. These certificates, when superseded, shall be kept on file in the utility's office.

(3) All direct current meters installed upon consumer's premises shall be periodically tested according to the following schedule:

Meters up to and including 25 amperes rated capacity shall be tested at least once in every 18 months.

Meters exceeding 25 amperes, up to and including 500 amperes rated capacity, shall be tested at least once in every 12 months.

Meters exceeding 500 amperes rated capacity shall be tested at least once in every 6 months.

(4) All types of alternating current induction meters shall be periodically tested as follows:

Single phase meters, up to and including 25 amperes rated capacity, shall be tested at least once in every 30 months.

Single phase meters exceeding 25 amperes rated capacity shall be tested at least once in every 24 months.

Polyphase meters, up to and including 150 amperes rated capacity, shall be tested at least once in every 24 months.

Polyphase meters exceeding 150 amperes rated capacity shall be tested at least once in every 12 months.

(5) A complete record shall be kept of all complaint tests, office and periodic tests of watt-hour meters installed on consumers' premises. Such record shall include:

- Owning utility's number;
- Manufacturer's name and number;
- Type, rated volts, amperes and wire;
- Date of each installation, removal and test;

The average of the readings at full load, at light load and at normal load as found at each and every test.

A record of tests of each meter shall be continuous for a period of not less than five years, and in any event of sufficient length to cover three consecutive periodic tests.

(6) Every direct current meter in service at the time these rules are adopted, for which there is on file at the utility's office no complete record of a satisfactory periodic test made within the period of eighteen months, or twelve months, or six months, as above prescribed in paragraph (3) of this rule, next preceding the adoption of these rules shall be tested prior to July 1st, 1914.

(7) Every alternating current meter, up to and including 25 amperes rated capacity, in service at the time these rules are adopted, for which there is on file at the utility's office no complete record of a satisfactory periodic test made within the period of thirty months, as above prescribed in paragraph (4) of this rule, next preceding the adoption of these rules, shall be tested prior to January 1st, 1915.

(8) Every alternating current meter over 25 amperes rated capacity in service at the time these rules are adopted, for which there is on file at the utility's office no complete record of a satisfactory periodic test made within the period of twenty-four months, or twelve months, as above prescribed in paragraph (4) of this rule, next preceding the adoption of these rules, shall be tested prior to July 1st, 1914.

XVIII. An electric meter may be considered correct when it does not show, in comparison with standards approved by the Commission, an error which is greater than 4 per cent. on the light load or heavy load. Definition: Light load shall be between 5 and 10 per cent. of rated capacity of the meter for an induction meter and between 10 and 15 per cent. of rated capacity of the meter for a commutator meter. Heavy load shall not be less than 60 per cent. of full rated capacity of the meter.

XIX. The average accuracy of a meter shall be the average of the accuracy of light load and at heavy load as found above, but in all cases, except residences, where meter is found more than 4 per cent. fast tests shall be made at light load, at normal load and full load, and the average of these tests shall be obtained by multiplying the result of the test at normal load by 3 and adding the results of the tests at light load and full load and dividing the total by 5.

Definition.—The normal load shall be considered as the following percentage of full connected load:

- (a) Residence and apartment lighting, 25% ;
- (b) Elevator service, 40% ;
- (c) Factories (individual drive), churches and offices, 45% ;
- (d) Factories (shaft drive), theatres, clubs, entrances, hallways and general store lighting, 60% ;
- (e) Saloons, restaurants, pumps, air compressors, ice machines and moving picture theatres, 70% ;
- (f) Sign and window lighting and blowers, 100%.

XX. No electric meter which registers upon "no load" shall be placed in service or allowed to remain in service.

XXI. Each utility supplying electricity shall equip itself with a rotating standard test meter of suitable range, and shall fasten permanently on the wall of the meter shop, a house or switch-board type meter or meters of suitable capacity to be used only for checking the rotating standard. This check should be made at least every week when standard is in service. Utilities supplying direct current or having already other test apparatus, or small utilities having less than 100 meters may apply to the Commission for a modification of this rule. Each wall standard shall be tested at least once a year and certified by the Board and furnished with an inspection tag or plate. Rotating standards will not be sealed, but wall standards will be sealed and are to be considered the reference standard for the utility. Where a utility is maintaining a standardizing laboratory, inspection will be made of the instruments in use in this laboratory, and if the instruments and methods are approved, certification of rotating and wall standards may be made by such laboratory.

XXII. Each electric meter shall be tested and adjusted for accuracy before installation or within thirty days after being set.

- XXIII. Each meter after being tested as found shall be adjusted to record within 2 per cent. of correct at heavy load, and not more than 2 per cent. fast nor 4 per cent. slow at light load. This periodic test is to be made by comparing the meter while connected in its place of service with an approved standard at light load and at heavy load. Meters removed from service are to be tested and adjusted in the meter room before being put in service again.
- XXIV. Complete records shall be kept in the local office of all periodic tests and tests on old meters brought in. These records shall be available for examination at any time by the inspectors of the Board. A report shall be made to the Board at stated intervals giving a summary of the tests. Each utility having more than 500 meters shall report monthly. Utilities having less than 500 meters shall report quarterly. Blank forms will be furnished by the Board on which reports are to be made.
- XXV. Each electric utility shall, without charge, make a test of the accuracy of a meter upon request of a customer, provided such customer does not make a request for test more frequently than once in six months. A report giving results of such tests shall be made to the customer, and a complete record of such tests shall be kept on file at the office of the utility.
- XXVI. Upon formal application by any customer to the Board of Public Utility Commissioners a test shall be made of the customer's meter by an inspector employed by the Board. Such test to be made as soon as practicable after receipt of the application. For such test a fee of \$1.00 shall be paid by the customer at the time application is made for the test; this fee to be retained if the meter is found to be slow or correct within the allowable limits. If the meter is found to be fast beyond the allowable limits, the amount of \$1.00 will be re-

funded to the customer, and collected from the utility owning the meter. The utility owning the meter will be notified that such test is to be made, and should have a representative present to open the meter and seal it after the test.

- XXVII. Meter dials should read directly in kilowatt hours. If not, the dial constant must be clearly indicated where it can be seen without disturbing the case of the meter or the connections. Bills rendered periodically by the utility shall designate the readings of the meter at the beginning and end of the time for which the bill is rendered, and give the dates on which the readings were taken. Bills shall also show the gross amount charged, and the net amount after deducting the rebate, if any, allowed for prompt payment. Where prepayment meters are in use, the meter reader at the time of reading same shall leave with the customer a slip showing the readings as well as the amount of money collected from the meter.
- XXVIII. No utility shall make any charge for replacing a meter where such replacement is requested by a customer, unless the meter first referred to has been in use less than one year, in which case a charge, which in no case shall exceed \$1.00, may be made to cover the actual expense of making the change.
- XXIX. Each utility supplying electrical energy shall adopt some method of informing its customers as to the reading of meters either by printing on bills a description of the method of reading meters or a notice to the effect that the method will be readily explained on application. It is recommended that an exhibition meter be kept on display in each commercial office maintained by the electric utility.

- XXX. The utility should have the right of access to customer's premises, and to all property furnished by the utility at all reasonable times, for the purpose of reading meters, or inspecting or repairing appliances used in connection with the supply of service, or for the removal of its property at the time service is to be terminated. The customer should obtain, or cause to be obtained, all necessary permits needed by the utility in giving it access to the appliances referred to. The customer should not permit access to the meter and other appliances of the utility except by authorized employees of the utility, or properly qualified State or local inspectors. In case of defective service, the customer should not interfere with the apparatus belonging to the utility but should immediately notify the proper parties to have the defects remedied.
- XXXI. The utility will not be held responsible for resulting inadequacy of service if customers make additions or alterations to the electrical equipment on their premises without first having notified the utility of their intention so to do, and the installation must comply with the rules of the utility furnishing the service.
- XXXII. Nothing herein contained shall require any utility to furnish service until the customer shall have conformed to the reasonable rules of the utility, not inconsistent with the foregoing regulations.
- XXXIII. The foregoing regulations, with the exception of those referring to pole identification, shall not be construed to require reconstruction in accordance with rules for equipment or construction from time to time contained in the Electrical Code or other standards referred to,

not in force when such equipment was installed or construction made, but the Board reserves the right to deal with specific cases as the particular conditions require.

Adopted December 9th, 1913.

In the Matter of the Investigation By
the Board of Public Utility Com-
missioners, on Its Own Initiative,
of the Justice and Reasonableness
of Certain Rates for Intra-State
Commutation Service, Etc., and of
Whether Said Rates Are Unjustly
Discriminatory or Preferential.

MEMORANDUM.

Charles E. Gummere, for the Pennsylvania Railroad Company.

M. M. Stallman, for the Delaware, Lackawanna and Western Railroad Company.

H. A. Taylor, for the Erie, New York, Susquehanna and Western, and the New York and New Jersey Railroad Companies.

Stewart C. Pratt and *F. E. Hammond*, for the Lehigh Valley Railroad Company.

Roy M. Robinson and *John W. Zisgen*, for the New Jersey Commuters' Association.

Borden D. Whiting, for the Board of Trade of the City of Newark.

Frank H. Sommer, for the Commission.