

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * *

IN THE MATTER OF THE RULES)
FOR ELECTRIC UTILITIES OF THE)
COLORADO PUBLIC UTILITIES COMMISSION,) DOCKET NO. 92R-259E
4 CODE OF COLORADO REGULATION-723-3)
CONCERNING ELECTRIC AND MAGNETIC FIELDS)

COMMISSION ORDER GIVING NOTICE OF PROPOSED RULEMAKING CONCERNING
ELECTRIC AND MAGNETIC FIELDS, PROPOSING A NEW RULE 33 (ELECTRIC AND
MAGNETIC FIELDS) OR MODIFIED RULE 18 IN THE COMMISSION'S RULES FOR
ELECTRIC UTILITIES, 4 CODE OF COLORADO REGULATIONS 723-3; AND
NOTICE OF RULEMAKING HEARINGS ON AUGUST 17, 18, AND 19, 1992.

Adopted date: April 29, 1992

The Colorado Public Utilities Commission ("PUC" or "commission") hereby gives notice of proposed rulemaking in the matter of electric and magnetic fields.

In a commission docket related to upgrading transmission service provided by Public Service Company of Colorado in northern Douglas County, one of the issues involved electric and magnetic fields. See In the Matter of Public Service Company of Colorado to Have Upgrades in Douglas County, Docket No. 89A-028E, Decision No. C89-1622. (dated December 20, 1989 on appeal Douglas County Board of Commissioners v. PUC, Case No. 91SA-79 (oral argument held on February 24, 1992). One conclusion of that case was that "the Commission will consider the feasibility of entering into rulemaking with respect to the entire issue of the design and placement of overhead power lines." See In the Matter of Public Service Company of Colorado to Have Upgrades in Douglas County, Docket No. 89A-028E, Decision No. C89-1622, at 20.

At the commission's open meeting on April 29, 1992, the commission decided to open a rulemaking hearing to determine what standards should apply to electric and magnetic field strength when a utility subject to the regulation by the commission builds new, or upgrades existing, electrical facilities.

Long-term research is underway which may eventually resolve whether electric and magnetic fields (EMF) are a hazard to human health. The commission believes that increased research, at all levels, that is coordinated to maximize its effectiveness, is in the public interest.

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SECRETARY OF STATE

In the interim, because the public is increasingly concerned about EMF, a proactive approach in dealing with this issue is warranted. Therefore, until scientific findings are more conclusive, facilities should be designed and located using methods to mitigate, to the extent practicable, involuntary exposures to the public.

Commissioner Nakarado has proposed modification of Rule 18 as set forth at Appendix A. We are interested in comments on the rules as drafted by Commissioner Nakarado. The commission has decided to offer another alternate rule, a new Rule 33, based upon the electric and magnetic fields rules of the State of Florida. See Appendix B. The two sets of rules are appended to this notice of proposed rulemaking to serve as a starting point for discussion by the commission and interested parties who choose to participate in the rulemaking proceeding on what appropriate rules should apply to electric and magnetic fields.

Accordingly, the commission will file a notice of these two sets of proposed rules with the Office of Regulatory Reform during May 1992, because they may affect small businesses. The commission will send the notice of proposed rulemaking to the Secretary of State, who will publish the notice in the Colorado Register on or about June 10, 1992. See Colorado Revised Statutes Section 24-4-103.5 (1988 Repl. Vol. 10A) (requiring 10-days advance notice to the office of regulatory reform); Colorado Revised Statutes Section 24-4-103(3)(a) (1988 Rep. Vol 10A) (requiring a minimum of 20-days notice of hearing after publication by the secretary of state).

The commission will conduct public hearings on the proposed establishment of a new Rule 33 or modification of Rule 18 of the commission's Rules for Electric Utilities on August 17, 18, and 19, 1992.

THEREFORE THE COMMISSION ORDERS THAT:

1. The Executive Secretary of the Colorado Public Utilities Commission shall file with the Colorado Secretary of State the necessary documents to allow for notice of the proposed adoption of a new Rule 33 or modification of Rule 18 of the commission's Rules for Electric Utilities, 4 Code of Colorado Regulations 723-3, to be published in the Colorado Register on or before June 10, 1992.

2. The commission will conduct hearings on the proposed rules as follows:

Date: Monday, Tuesday, and Wednesday
August 17, 18, 19, 1992.

Time: 9:00 a.m.

Place: Colorado Public Utilities Commission
Logan Tower
1580 Logan Street, Office Level 2
Commission Hearing Room "A"
Denver, Colorado 80203

3. All parties wishing to participate in this docket may file an Entry of Appearance to be on the commission's official mailing list, and shall do so by July 31, 1992. It is not necessary to petition to intervene.

4. Initial comments on the proposed rules shall be filed on or before Friday, August 7, 1992.

ADOPTED IN OPEN MEETING on April 29, 1992.

(S E A L)



ATTEST: A TRUE COPY

Bruce N. Smith
Bruce N. Smith
Executive Secretary

THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

ARNOLD H. COOK

GARY L. NAKARADO

CHRISTINE E. M. ALVAREZ

Commissioners

Appendix A

PUBLIC UTILITIES COMMISSION RULE 18
REGULATING THE SERVICE OF ELECTRIC UTILITIES RELATING TO
CONSTRUCTION REQUIREMENTS

Now reads:

- (a) The electric plant of the utility shall be constructed, installed, maintained and operated in accordance with accepted good engineering practice in the electric industry to assure, as far as reasonably possible, continuity of service, uniformity in the quality of service furnished and the safety of persons and property.

Propose to add:

In assuring "the safety of persons and property," the utility shall implement the standard of prudent avoidance with respect to planning, siting, construction, and operation of plant potentially harmful electric and magnetic fields, as endorsed by the Commission in Decision No. C89-1622, Docket No. 89A-028E, In the Matter of Public Service Company of Colorado to have Upgrades in Douglas County. Prudent avoidance shall mean, for the purpose of this rule, the striking of a reasonable balance between avoiding potential harm and the attendant costs and risks; and taking steps to reduce exposure at reasonable or modest cost. Such steps include, but are not limited to: (1) design alternatives considering the spatial arrangement or phasing of conductors, including reverse phasing; (2) distancing lines from population centers; (3) up-rating lines within right of way (ROW) corridors, but lowering magnetic fields at the edge of the ROW through design alternatives; (4) installing higher structures; (5) widening ROW corridors; (6) strongly discouraging location of new facilities near potentially sensitive receptors; (7) encouraging reduction of EMF when existing facilities are upgraded; (8) burial of lines, and (9) taking EMF exposure into account when balancing environmental and cost issues in routing selection (i.e., accepting higher project mitigation costs because EMF costs might be substantial if this is not done. EMF costs in this case could be derived from anticipated additional costs of delay, legal work, re-engineering, redesign, etc.)

Appendix A (page 2)

Rule 18 (f) presently reads:

Each electric public utility, whether or not each such utility is deregulated pursuant to CRS 1973, 40-9.5-101, et seq., shall submit to the Commission, no later than April 30 of each year, a schedule of its proposed new construction or extensions for the next three subsequent calendar years pertaining to generation and transmission facilities as described in Sections (d) and (e) of this rule. For each such project, each utility shall set forth the following:

1. Name of the project
2. The function of the project, and

Propose to add:

3. The applicability and implementation of the prudent avoidance standard. The applicant shall describe those actions and techniques evaluated to minimize EMF exposure to the public and estimate the change in EMF exposures that may occur for each option considered. The applicant shall describe other factors to be taken into account in selecting the final design and site, including, but not limited to, cost, reliability, social, safety and environmental factors.

APPENDIX B

DER ELECTRIC AND MAGNETIC FIELDS 17-274

DER ELECTRIC AND MAGNETIC FIELDS 17-274

CHAPTER 17-274
ELECTRIC AND MAGNETIC FIELDS

PART I

17-274.100	Electrical Facilities; Electric and Magnetic Fields, Intent, Findings, Basis of Standards and Research Needs.
17-274.200	Electrical Facilities; Electric and Magnetic Fields, Definitions.
17-274.300	Electrical Facilities; General Technical Requirements.
17-274.301	Electrical Facility; Deviations from Standards and Requirements.
17-274.400	Electrical Facilities; General Standards.
17-274.450	Electrical Facilities; Electric and Magnetic Field Standards.
17-274.460	Electrical Facilities; Computation and Measurement Methodology.
17-274.470	Electrical Facilities; Compliance Methodology.
17-274.480	Electrical Facilities; Emergency, Exemptions.
17-274.510	Electrical Facilities; Monitoring and Reporting.
17-274.520	Electrical Facilities; Compliance.

17-274.100 Electrical Facilities; Electric and Magnetic Fields; Intent, Findings, Basis of Standards, and Research Needs.

(1) Intent--The intent and purpose of this chapter is to establish electric and magnetic field (EMF) standards for 60 hertz electrical transmission lines and substations rated at 69 kV or greater and to prescribe how compliance with those standards shall be determined, pursuant to Sections 403.061(30) and 403.523(1) and (14), Florida Statutes, relating to the protection of public health and welfare from such electrical facilities.

(2) Findings--Based on the information available to the Department, the Department makes the following general findings:

(a) The Department has reviewed the present scientific data on the potential for health effects of electric and magnetic fields. The Department has also reviewed data on the existing or potential electric and magnetic field levels near electrical transmission and distribution lines and substations in Florida. Although there is no conclusive evidence that there is any danger or hazard to public health at the levels of existing 60 hertz electric and magnetic fields found in Florida, there is evidence of a potential for adverse health effects on the public. Further research is needed to determine if there are effects and the exposure levels at which effects may occur.

(b) With respect to 60 hertz EMF, reasonable measures include urging more applied research on the potential adverse human health effects of EMF and EMF mitigation techniques; initiating a comprehensive review of the state of the science and the provisions of this rule, not later than two years after the adoption of this rule; and requiring all new and modified transmission lines and substations to meet standards which are achievable through the use of available EMF reduction technology and measures, but in no case to allow any new or modified line or substation, under normal conditions, to cause electric or magnetic field strengths greater than those that now occur for existing transmission lines and substations.

(3) Basis of EMF Standards

(a) Electric Field Strength. The electric field strength standards in this rule are based on the avoidance of the perception of an electric field at the edge of the right-of-way (ROW) or within a ROW; and on the reasonable measures and status quo cap criteria stated under paragraph (2) Findings, above.

Compliance with the National Electrical Safety Code (NESC), which applies to all electrical transmission lines and substations within Florida through rules administered by the Florida Public Service Commission (PSC), ensures that unsafe conditions will not exist in the vicinity of these facilities, but compliance with that code does not ensure that a person will not experience tingling sensation or mild, though harmless, shock within the ROW.

(b) Magnetic Field Strength. The magnetic field strength standards in this rule are based on the reasonable measures and status quo cap criteria stated under paragraph (2) Findings, above.

17-274.100(1) -- 17-274.100(3Xb)

(c) For both electric and magnetic fields the standards apply to the maximum instantaneous field strength that occurs, or is predicted to occur by the model prescribed in this rule (whichever is greater) under any normal operating mode (all operating conditions except emergency load conditions). Under most normal load conditions the actual magnetic field strength at the edge of the ROW will be about one-half of the standards, which are to be met at the facilities maximum current rating (MCR).

(4) Additional Research Needed--Continued research is needed on the potential adverse human health and welfare effects of 60 hertz EMF and EMF mitigation techniques because existing knowledge is inadequate to confidently conclude that no further action is needed.

(5) Electrical Facilities, Categories--This chapter sets forth three categories of major electrical facilities for regulation in regards to the electric and magnetic fields associated with these facilities.

(a) The first category is for existing electrical facilities on which construction was commenced prior to the effective date of this rule. These facilities will be allowed to operate at up to their extant highest operating voltage or maximum current ratings.

(b) The second category of electrical facilities is for those which were certified pursuant to Chapter 403, Part Two Florida Statutes, after April 15, 1988, but before the effective date of this chapter. These facilities will be subject to specific standards moderated by the individual circumstances of the facility.

(c) The third category is for electrical facilities the construction of which commences after the effective date of this chapter.

(6) Effect of Rule--The effect of this chapter is to establish requirements to reasonably protect the public health and welfare from electric and magnetic fields associated with new electrical transmission lines, distribution lines and substations:

Specific Authority: 403.061(7), 403.523(1), F.S.

Law Implemented: 403.061(30), 403.523(14), F.S.

History: New 3-21-89.

17-274.200 Electrical Facilities; Electric and Magnetic Fields; Definitions.

Words, terms and phrases used in this chapter, unless otherwise indicated, shall have the meaning set forth in the Standards Dictionary of Electrical and Electronic Terms (ANSI/IEEE Standards No. 100-1984) adopted by reference in Rule 17-274.300, F.A.C. In addition, the following words or terms, when used in this Chapter shall have the following indicated meanings:

(1) "ANSI" means the American National Standards Institute.

(2) "Balanced Current" means currents in three-phase electrical systems which are equal in amplitude and separated by a phase angle of 120 degrees.

(3) "Balanced Voltage" means voltages in a three-phase system which are equal in amplitude and separated by a phase angle of 120 degrees.

17-274.100(3)(c) -- 17-274.200(3)

(4) "Commence Construction" means, as applied to the construction of a new transmission line, or new substation supplied by a new transmission line, or new distribution line that the facility owner has begun after the effective date of this chapter a continuous program of actual on-site construction or physical modification of the electrical facility, to be completed within a reasonable period of time.

(5) "Department" means the Florida Department of Environmental Regulation.

(6) "Distribution Line" means a system of conductors used to transport electrical energy at voltages of less than 69 kV including service drops from transformers to residences or businesses.

(7) "Electrical Facility" means the components of an electrical transmission line, distribution line or substation that produce or affect electric and magnetic fields.

(8) "Facility Owner" means an owner or operator of an electrical facility.

(9) "Gauss" means the unit of magnetic flux density that will induce an electromotive force of 1×10^{-8} volt in each linear centimeter of a wire moving laterally with a speed of one centimeter per second at right angles to the magnetic flux.

(10) "Hertz" means the unit of frequency of an electrical facility equivalent to a cycle per second.

(11) "Highest Operating Voltage" means the maximum voltage value set forth for a particular transmission line on Table 1, ANSI C 84.1-1982, or ANSI C 92.2-1981, or the maximum operating voltage as established by the facility owner.

(12) "IEEE" means the Institute of Electrical and Electronic Engineers.

(13) "Kilovolts/meter" means a unit of measurement of electric field strength generally measured at a point one meter above the ground and expressed as kV/m.

(14) "Maximum Current Rating" or "MCR" means the maximum quantity of electric current, expressed in amperes, that can be continuously carried on the conductors of an electrical circuit as determined by the facility owner.

(15) "Maximum Electric Field Strength" means the amplitude (Root Mean Square) of the electric field produced by an electrical facility operating at the highest operating voltage expressed in kV/m at a height of one meter above ground level.

(16) "Maximum Magnetic Field" means the amplitude (Root Mean Square) of the magnetic flux density produced by an electrical facility operating at MCR measured in Gauss one meter above the earth's surface.

(17) "Minimum Conductor Height" means the minimum vertical distance from the earth's surface to the geometric center of the conductor or conductor bundle at MCR.

(18) "Modified" as it relates to electrical facilities means a transmission line or substation that is modified to operate at a higher nominal voltage or current after the effective date of this rule.

17-274.200(4) -- 17-274.200(18)

(19) "New Distribution Line" means a distribution line that commenced construction after the effective date of this rule.

(20) "New Electrical Facility" means an electrical facility which commenced construction after the effective date of this rule.

(21) "New Substation" means a substation that commenced construction after the effective date of this rule that is built to connect new transmission lines of 69 kV or larger with other electrical facilities, or a substation into which a new transmission line is built.

(22) "New Transmission Line" means a transmission line upon which construction commences after the effective date of this rule or an existing transmission line which commences construction for the purpose of reinsulating to operate at a higher nominal voltage or reconductoring to operate at a higher MCR after the effective date of this rule. This does not include transmission lines which are relocated or rebuilt unless such lines are modified to operate at a greater nominal voltage or current than previously existing.

(23) "NEC" means the National Electrical Safety Code.

(24) "Nominal Voltage" means the voltage classification as defined in Table 1, ANSI C 84.1-1982 or ANSI C 92.2-1981.

(25) "Residential, Commercial or Industrial Building" means a structure that persons use for their residence, for commercial transactions, or for manufacturing a product. It does not include buildings visited by people for short periods of time on a non-daily basis.

(26) "Rights-of-Way" (ROW) as used herein is a term intended to be used only for purposes of determining the appropriate points for compliance with this rule, and not for the purpose of determining a legal interest in property. Rights-of-way means any of the following, as appropriate:

(a) Land where the facility owner has a property interest, such as, but not limited to, an easement, prescriptive easement, or fee simple title, and which is used or designated for construction, operation and maintenance of transmission lines.

(b) In areas where the facility owner does not have a property interest in the land where the transmission line or distribution line will be located, the ROW will be assumed to extend to the edge of the nearest residential, commercial or industrial building in existence prior to the date the electrical facility commenced construction or applied for a permit, whichever is sooner, or 50 feet from each outside conductor, whichever ever is closer.

(c) In areas where the facility owner has no property interest or has less than 50 feet of property interest as described in (26Xa) and where such interest is adjacent to or within the property boundary of a linear easement of a railroad, utility pipeline, communication line, or public utility linear facility, or public road or canal the ROW will be assumed to extend to the furthestmost edge of the such property boundary or linear easement or edge of the nearest residential, commercial or industrial building in existence prior to the date the electrical facility commenced construction or filed for a permit, whichever is sooner, or 50 feet from each outside conductor, whichever ever is closer.

17-274.200(19) -- 17-274.200(26Xc)

(d) In areas where the facility owner has a property interest as described in (26Xa) and where such interest is adjacent to or within the property boundary of a linear easement of a railroad, utility pipeline, communication line, or public utility linear facility, or public road or canal, the ROW will be assumed to extend to the furthestmost edge of such property boundary or linear easement, whichever ever is further.

(e) In areas where the facility owner has a property interest as described in (26Xa) and where such property interest is located within property owned by federal, state, regional or local governmental agencies, the ROW will be assumed to extend to the edge of the nearest residential, commercial or industrial building in existence prior to the date the electrical facility commenced construction or filed for a permit, whichever ever is sooner, or 50 feet from each outside conductor, whichever ever is closer.

(27) "Secretary" means the Secretary of the Department of Environmental Regulation.

(28) "Substation" means the electrical facility and related property used for the connection of transmission lines or distribution lines to other such electrical facilities or electrical generating plants.

(29) "Transmission Line" means a system of conductors used to transport electrical energy at voltages of 69 kV or greater.

Specific Authority: 403.061(7), 403.523(1), F.S.
Law Implemented: 403.061(30), 403.523(14), F.S.
History: New 3-21-89.

17-274.300 Electrical Facilities; General Technical Requirements.

(1) The technical standards and criteria contained in the standard manuals and technical publications listed in paragraph (2) below are hereby incorporated by reference and shall be applied unless a deviation is approved, in determining whether proposed new or modified electrical facilities comply with the provisions of this chapter.

(2) Standard Manuals and Publications.

(a) Standards Dictionary of Electrical and Electronic Terms (ANSI/IEEE Standards No. 100-1984.) Copies available from American Institute of Electrical and Electronics Engineers, Inc. 345 East 47th Street, New York, NY 10017.

(b) Appendix E, ANSI C 84.1-1982. Copies available from the Institute of Electrical and Electronics Engineers, Inc., 345 E. 47th Street, New York, NY 10017.

(c) IEEE Standard No. 644-1987. Copies available from the Institute of Electrical and Electronics Engineers, Inc. New York, NY 10017.

(d) ANSI C 92.2-1981. Copies available from American Institute of Electrical and Electronics Engineers, Inc.

17-274.200(26Xd) -- 17-274.300(2Xd)

(3) Copies of the publications listed in subsection (2) are available for inspection at the Department's Information Center, 2600 Blair Stone Road, Tallahassee, Florida, 32399-2400.

Specific Authority: 403.061(7), 403.523(1), F.S.
Law Implemented: 403.061(30), 403.523(14), F.S.
History: New 3-21-89.

17-274.301 Electrical Facilities; Deviations From Standards and Criteria.

(1) Deviations from the standards and criteria contained in publications listed in Rule 17-274.300(2), F.A.C., above or equivalent methodology for the computation and measurement methodology referenced in Rule 17-274.460, F.A.C., may be approved by the Department provided the applicant's engineer's report provides reasonable assurance that the proposed design, calculations or measurement methods will result in electrical facilities meeting the requirements of this rule.

(2) The Department may approve deviations from the standards and criteria contained in the publications listed in Rule 17-274.300(2), F.A.C., above or equivalent methodology for the measurement for the computation and measurement of electric and magnetic fields upon a finding that conformance to them will not result in noncompliance with the remainder of this chapter or other rules of this Department in accordance with the following:

(a) The owner or operator of any electrical facility subject to the provisions of this section may request in writing a determination by the Secretary or his designee that any requirement of Rule 17-274.300, or 17-274.460, F.A.C., relating to measurement or calculation of electric or magnetic fields, procedures, test equipment, methodology, or test facilities shall not apply to such electrical facility, and shall request approval of alternate standards or criteria.

(b) The request shall set forth the following information, at a minimum:

1. Specific electrical facility for which an exception is required.
2. The specific provision(s) of Sections 17-274.300 or 17-274.460, F.A.C., from which an exception is sought.
3. The basis for the exception, including but not limited to any hardship which would result from compliance with the provisions of Rule 17-274.300, or 17-274.460, F.A.C.

4. The alternate standard(s) or criteria for which approval is sought and a demonstration that such alternate standard(s) or criteria shall be adequate to demonstrate compliance with the field strength standards contained in this Chapter.

(c) The Secretary or his designee shall specify by order each alternate standard or criteria approved for an individual electrical facility in accordance with this section or shall issue an order denying the request for approval. The Department's order shall be the final agency action, reviewable in accordance with Section 120.57, Florida Statutes.

Specific Authority: 043.061(7), 403.523(1), F.S.
Law Implemented: 403.061(30), 403.523(14), F.S.
History: New 3-21-89.

17-274.300(3) -- 17-274.301(History)

17-274.400 Electrical Facilities; General Standards.

(1) No electrical facility, subject to the provisions of this chapter, shall be operated in such a way that it exceeds the standards set forth in Section 17-274.450, F.A.C., except as provided in Section 17-274.480, F.A.C.

(2) All existing electrical facilities on which construction was commenced on or prior to the effective date of this rule, and all new distribution lines shall be allowed to operate at their maximum current ratings, highest operating voltage, and emergency conditions, provided that such facilities comply with the National Electrical Safety Code (NESC) as required by the Florida Public Service Commission.

(3) Except as otherwise provided in Section 17-274.480, F.A.C., no facility owner shall operate a new transmission line with a nominal voltage of 230 kV or greater above the highest operating voltage or MCR such that the standards in Section 17-274.450, F.A.C., are exceeded.

Specific Authority: 403.061(7), 403.523(1), F.S.
Law Implemented: 403.061(30), 403.523(14), F.S.
History: New 3-21-89.

17-274.450 Electrical Facilities; Electric and Magnetic Field Standards.

(1) Existing Lines for which construction was commenced on or prior to the effective date of this rule (Reserved).

(2) Lines certified pursuant to Chapter 403, Part Two, Florida Statutes, after April 15, 1988, and prior to the effective date of this rule.

(a) For the Lake Tarpon - Kathleen transmission line where the ROW width is 100 feet:

1. The maximum electric field at the edge of the ROW shall not exceed 1.56 kV/m.

2. The peak daily magnetic field at the edge of the ROW shall be limited to 35 milliGauss under normal load conditions. Under load conditions in excess of 500 MW, the peak daily magnetic field shall be limited to 229 milliGauss. Load conditions in excess of 500 MW shall occur for no more than 15 hours in any given year, except for non-permanent load conditions caused by malfunction or maintenance outages in the transmission grid or generation facilities within or outside the state of Florida. Florida Power Corporation shall report annually to the Department the amount of time during which the 500 MW normal load condition was exceeded.

(b) For the Lake Tarpon - Kathleen transmission line where the ROW width is 150 feet:

1. The maximum electric field at the edge of the ROW shall not exceed 1.80 kV/m.

17-274.400(1) -- 17-274.450(2Xb)1.

2. The peak daily magnetic field at the edge of the ROW shall be limited to 24 milliGauss under normal load conditions. Under load conditions in excess of 500 MW, the peak daily magnetic field shall be limited to 154 milliGauss. Load conditions in excess of 500 MW shall occur for no more than 15 hours in any given year, except for non-permanent load conditions caused by malfunction or maintenance outages in the transmission grid or generation facilities within or outside the state of Florida. Florida Power Corporation shall report annually to the Department the amount of time during which the 500 MW normal load condition was exceeded.

(c) In no event shall any provision of this section ever be construed to place any limitation or restriction upon the Lake Tarpon-Kathleen transmission line that is not specifically required by the Final Order of the Governor and Cabinet, sitting as the Siting Board, dated May 26, 1988, certifying that transmission line, either as that Final Order is presently worded or as it may hereafter be lawfully modified or amended.

(3) New Transmission Lines and Substations.

(a) The maximum electric field at the edge of the transmission line ROW or at the property boundary of a new substation shall not exceed 2.00 kV/m.

(b) The maximum electric field on the ROW of a 230 kV or smaller transmission line shall not exceed 8 kV/m.

(c) The maximum electric field on the ROW of a 500 kV transmission line shall not exceed 10 kV/m.

(d) The maximum magnetic field at the edge of a 230 kV or smaller transmission line ROW or at the property boundary of a new substation serving such lines shall not exceed 150 milliGauss.

(e) The maximum magnetic field at the edge of the transmission line ROW for a 500 kV line or at the property boundary of a new substation serving a 500 kV line shall not exceed 200 milliGauss except for double circuit 500 kV lines to be constructed on ROWs existing on the effective date of this rule as identified below where the limit will be 250 milliGauss.

(f) For existing ROWs extending from the Andytown substation to the Orange River substation, Andytown substation to the Martin Generating Plant, and the Martin Generating Plant to the Midway substation, where the facility owner has acquired prior to the effective date of this rule a ROW sufficiently wide for two or more 500 kV transmission lines and has constructed one or more 500 kV transmission lines on this ROW prior to the effective date of this rule, the maximum magnetic field at the edge of the ROW or property boundary of a new or modified substation shall not exceed 250 milliGauss.

Specific Authority: 403.061(7), 403.523(1), F.S.

Law Implemented: 403.061(30), 403.523(14), F.S.

History: New 3-21-89.

17-274.450(2Xb)2. -- 17-274.450(H)History)

17-274.460 Electrical Facilities; Computation and Measurement Methodology.

(1) Computations to establish compliance with standards set forth in Rule 17-274.450, F.A.C., shall be performed by the use of Bonneville Power Administration (BPA) Corona and Field Effects Program for calculating electric and magnetic fields set forth in paragraphs 17-274.470(1) and (2), F.A.C., below. When electric and magnetic field calculations are made using the BPA Corona and Field Effects Program, the following input data will be used:

(a) Magnetic field calculations:

1. The MCR currents will be used.

2. The conductor will be at its minimum clearance to the earth.

3. Currents will be assumed to be balanced in phase and in magnitude with no zero-sequence current.

(b) Electric field calculations:

1. The highest operating voltage will be used.

2. The conductor will be at its minimum clearance to the earth.

3. Voltages will be assumed to be balanced in phase and in magnitude.

(c) Equivalent methodology

The Department and the facility owner may agree on substituting other equivalent methodology to verify compliance, in accordance with Rule 17-274.301, F.A.C.

(2) On-site measurements of electric and magnetic fields, when made, shall be conducted in accordance with the procedures set forth and with instruments conforming to and calibrated in accordance with the IEEE Standard No. 644-1987.

Specific Authority: 403.061(7), 403.523(1), F.S.

Law Implemented: 403.061(30), 403.523(14), F.S.

History: New 3-21-89.

17-274.470 Electrical Facilities; Compliance Methodology.

(1) New Transmission Lines for Which Construction Was Commenced After the effective date of this rule.

(a) Compliance with the electric field standards set forth in Rule 17-274.450, F.A.C., shall be determined by calculations using the highest operating voltage for a new transmission line, together with lines then existing in the ROW.

(b) Compliance with the magnetic field standard set forth in Rule 17-274.450, F.A.C., shall be determined by calculations at the MCR current for a new transmission line, together with lines then existing in the ROW.

(c) Measurements shall be made in conformance with the criteria of Rule 17-274.460, F.A.C., above.

(2) New Substations for Which Construction Was Commenced After the effective date of this rule.

(a) Compliance with the electric field standard set forth in Rule 17-274.450, F.A.C., shall be determined by calculations using the highest operating voltages for the entering and exiting transmission lines associated with the substation and shall be equal to the maximum edge of ROW electric field of any transmission line entering or exiting the substation property boundary.

17-274.460(1) -- 17-274.470(2Xa)

(b) Compliance with the magnetic field standard set forth in Rule 17-274.450, F.A.C., shall be determined by calculations using the MCR current of the entering and exiting transmission lines associated with the substation and shall be equal to the maximum value of the edge of PGM magnetic field of any transmission line entering or exiting the substation property.

(3) Access.

Department employees shall have access to all electrical facilities with reasonable notice to the facility owner for the purpose of determining compliance in accordance with Section 403.091, Florida Statutes.

Specific Authority: 403.061(7), 403.091, 403.523(1), F.S.
Law Implemented: 403.061(30), 403.091, 403.523(14), F.S.
History: New 3-21-89.

17-274.490 Electrical Facilities; Emergency Exemptions.

An electrical facility that exceeds the maximum current rating (MCR) or highest operating voltage due to emergency conditions is exempt from the provisions of Rule 17-274.450, F.A.C., provided the facility owner exercises reasonable practices to minimize the time the facility exceeds the MCR or highest operating voltage. The Department may consult with the Florida Public Service Commission to verify any emergency conditions. Emergency conditions mean conditions that cause the MCR or highest operating voltage to be exceeded due to unexpected, unforeseen or unanticipated events such as, but not limited to, failure of generating or electrical facilities due to natural or man-made causes beyond the control of the facility owner.

Specific Authority: 403.061(3), 403.061(7), 403.061(21), 403.081, 403.523(1), F.S.
Law Implemented: 403.061(30), 403.523(14), F.S.
History: New 3-21-89.

17-274.510 Electrical Facilities; Monitoring and Reporting.

(1) Monitoring for compliance shall be accomplished by including devices for measuring and recording voltage and current flow or their equivalent on all new 230 kV or greater transmission lines in accordance with this chapter.

(2) Reporting of exceedances of highest operating voltage or MCR on new 230 kV and greater transmission lines shall be made when the standards of Section 17-274.450, F.A.C., are exceeded. Notification shall be made to the department in writing within 30 days of the determining of an exceedance.

Specific Authority: 403.061(7), 403.523(1), F.S.
Law Implemented: 403.061(30), 403.523(14), F.S.
History: New 3-21-89.

17-274.470(2)(b) -- 17-274.510(History)

17-274.520 Electrical Facilities; Compliance.

(1) No certification, as described in paragraph 2 of this section, for a new electrical facility may be issued unless the applicant gives reasonable assurance that the standards of this rule and other rules of the Department will be complied with.

(2) Any electrical facility owner seeking certification of an electrical facility under the provisions of the Florida Electrical Power Plant Siting Act or the Transmission Line Siting Act, Chapter 403, Part II, Florida Statutes, after the effective date of this rule shall include in the application for certification sufficient information to demonstrate compliance with the standards of this rule. For those electrical facility owners that have filed an application for certification prior to the effective date of this rule but which application has not proceeded to a certification hearing, the information to demonstrate compliance with this rule shall be provided at the certification hearing.

(3) Any facility owner seeking to construct a new transmission line of nominal voltage of 230 kV or larger or a new substation served by transmission lines of 230 kV or larger, which is not subject to Chapter 403, Part II, Florida Statutes, shall submit to the Department a completed DER Form 17-274.901 at least 90 days prior to start of construction. The information on that form shall be of sufficient detail to show compliance with standards of Section 17-274.450, F.A.C. Any facility owner seeking a permit subject to the provisions of Chapter 17-12, F.A.C., for new 230 kV or larger transmission lines shall include a completed DER Form 17-274.901 with the other applicable application forms.

(4) On or before March 31 of each year, any facility owner that placed in operation, during the preceding calendar year, a transmission line of nominal voltage less than 230 kV or a substation serving transmission lines of less than 230 kV, shall submit to the Department a statement and a completed DER Form 17-274.901 from a Florida registered professional engineer verifying that the electrical facility complies with the criteria set forth in Rules 17-274.400 and 17-274.450, F.A.C.

Specific Authority: 403.061(7), 403.523(1), F.S.
Law Implemented: 403.061(30), 403.523(14), F.S.
History: New 3-21-89.

17-274.520(1) -- 17-520(History)

CR15-861