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- 1959 – 1994 **QUALIFIED JOURNEYMAN ELECTRICIAN**
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- 2000 – Pres. **CERTIFIED UTILITY SAFETY ADMINISTRATOR (CUSA)**
National Safety Council – Utilities Division
- 2003 **MEMBER, NATIONAL SAFETY COUNCIL UTILITIES DIVISION**
- 1998 – Pres. **COORDINATOR – OFFICE OF EMERGENCY MANAGEMENT**
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- 1984 – Pres. **AUTHORIZED STAFF OSHA INSTRUCTOR**
General Industry & Construction, U.S. Department of Labor
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Power Generation, Transmission & Distribution E-Tool, Salt Lake City, UT
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Arlington Heights, IL - Reporting to Construction Branch Chief
- 1994 – Pres. **ELECTRICAL & OSHA TRAINER**
New Jersey Department of Labor Seminars Program
- 1994 – Pres. **SAFETY INSTRUCTOR**
New Jersey Division of Criminal Justice Electrical Programs
- 1986 – Pres. **HAZ MAT ADVISORY COUNCIL MEMBER, HUNTERON COUNTY, NJ**
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- 1965 **FIRE CHIEF**
- 1965 – Pres. **MEMBER**
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- PLANNING BOARD/BOARD OF ADJUSTMENT, LEBANON, NJ**
- 1981 – 1997 **BOARD MEMBER**
- 1999 – 2004 **ASSISTANT CHAIRPERSON**
- 2004 – Pres. **CHAIRPERSON**
- 1984 Received a Presidential Award "I Care Award" presented for electrical demonstration that utilized 15kv simulator unit. (U.S. Department of Labor)
- 1999 Designed Amtrak's Current Safety Electrical Program

REPORT OF ALEXANDER SAHARIC REGARDING
VEGETATION MANAGEMENT BY PSE&G IN BRIDGEWATER
TOWNSHIP, SOMERSET COUNTY, NEW JERSEY, AND
DISCUSSION OF RECENTLY PROPOSED BPU
REGULATIONS CONCERNING VEGETATION MANAGEMENT.

The Township of Bridgewater, Somerset County, New Jersey requested that I prepare this report to address and comment upon the recent clear cutting of vegetation in transmission line right-of-ways by PSE&G in the Township, and the recently proposed BPU regulations regarding vegetation management.

My qualifications to express the opinions contained herein may be found in my curriculum vitae which is attached hereto.

PRELIMINARY STATEMENT

Electric Power Utilities transmit power for long distances from power plants to the ultimate consumer. Safety and the liability of service are critical components for the transmission of power.

Electric systems provide a grid network that transverse a wide variety of climatological, geological, and topographic formations and extremes, including water expanses, that expose structures and lines to a myriad of conditions. Due to these extremes, construction of power lines reflect electrical engineering standards that address electrical theory, and incorporate variables such as heat, cold, ice and wind that impact on conductor and structure mechanical factors.

This report is intended to address the interplay between electric power transmission lines in right-of-ways and "Vegetation

Management" regulations recently implemented by BPU. My report incorporates and discusses engineering principles, utility vegetation management in Bridgewater Township, case histories regarding safety and reliability issues, BPU regulatory standards which relate to the prime objective of effective "Vegetation Management", and the impact of Vegetation Management on the adjacent property owners and Bridgewater Township. Recent photographs of clear cutting by PSE&G was a topic discussed at great length while meeting with representatives of the Community (Bridgewater Township). From both an aesthetic and neighborly approach, I see why adjacent property owners to right-of-way lands have valid concerns, and rightly so.

This report addresses Vegetation Management under and adjacent to transmission tower circuits. Therefore, the type of tower and width of the right-of-way or easement becomes relevant to a discussion of the necessity and extent of vegetation management under the BPU regulatory scheme. The following factors affect the shape of tower: (1) single or double circuit; (2) height, which is fixed by the sag, span, length of insulator string; distance between wires (lines) and clearance to ground; (3) deflection of insulator string; (4) permissible distance between circuits; (5) sag of wire inside tower; (6) minimum clearance between conductor and tower members. The particular tower observed and in question is a "Conowingo" horizontal circuit carrying structure that is

usually from 80' to 125' high with phase clearances of some 25-1/2' to each other and an arm clearance from the ground a minimum of 70+ feet. The conductor height from the ground at the 80' structure would be approximately 62 feet. With the approximate aforementioned height of the transmission conductors, and the approximate spans, the sag clearance from ground would be approximately 35 to 40 feet at the lowest point.

Clearance to ground is determined by Federal, State, and Local regulations and standards. The allowable clearance over roads and railroads may differ from those over the line right-of-way. The clearance is sometimes specified in terms of span length and voltage since each are an effect that dictates sag through both electrical load and temperature. Hence, local regulations should always be consulted. For example, for rural roads and districts, the National Electrical Safety Code (NESC) recommends 20 feet up to 50 KV and an increase of 0.5 inch for every KV above 50 KV.

Distance is a prime factor for safety protection from energized power lines. Safety standards found in OSHA/PEOSHA 29 CFR Parts 1910 and 1926, National Fire Protection Association (NFPA 70 E), American National Standards Institute (ANSI 2133.1-2006) and Tree Care Industry Association (TCIA) EHAP, establish distance requirements for safety and reliability.

NEPA 70E

APPROACH BOUNDARIES TO LIVE PARTS FOR SHOCK PROTECTION
(All dimensions are distance form live part to employee.)

Limited Approach Boundary

1	2	3	4	5
Nominal System Voltage Range, Phase to Phase	Exposed Movable Conductor	Exposed Fixed Circuit Part	Restricted Approach Boundary; Includes Inadvertent Movement Adder	Prohibited Approach Boundary
0	Not specified	Not specified	Not specified	Not specified
51 to 300	10 ft. 0 in.	3 ft. 6 in.	Avoid contact	Avoid contact
301 to 750	10 ft. 0 in.	3 ft. 6 in.	1 ft. 0 in.	0 ft. 1 in.
751 to 15 kV	10 ft. 0 in.	5 ft. 0 in.	2 ft. 2 in.	0 ft. 7 in.
15.1 kV to 36 kV	10 ft. 0 in.	6 ft. 0 in.	2 ft. 7 in.	0 ft. 10 in.
36.1 kV to 46 kV	10 ft. 0 in.	8 ft. 0 in.	2 ft. 9 in.	1 ft. 5 in.
46.1 kV to 72.5 kV	10 ft. 0 in.	8 ft. 0 in.	3 ft. 3 in.	2 ft. 1 in.
72.6 kV to 121 kV	10 ft. 8 in.	8 ft. 0 in.	3 ft. 2 in.	2 ft. 8 in.
138 kV to 145 kV	11 ft. 0 in.	10 ft. 0 in.	3 ft. 7 in.	3 ft. 1 in.
161 kV to 169 kV	11 ft. 8 in.	11 ft. 8 in.	4 ft. 0 in.	3 ft. 6 in.
230 kV to 242 kV	13 ft. 0 in.	13 ft. 0 in.	5 ft. 3 in.	4 ft. 9 in.
345 kV to 362 kV	15 ft. 4 in.	15 ft. 4 in.	8 ft. 6 in.	8 ft. 0 in.
500 kV to 550 kV	19 ft. 0 in.	19 ft. 0 in.	11 ft. 3 in.	10 ft. 9 in.
765 kV to 800 kV	23 ft. 9 in.	23 ft. 9 in.	14 ft. 11 in.	14 ft. 5 in.

To maintain required clearances and distance to ground, power company engineering also utilizes a National Electrical Safety Code (NESC) district loading map of the United States for mechanical

loading of overhead lines divided into light, medium and heavy zones of climate guidance. Charts such as the Pender-Thompson sag and deflection chart are also engineering aids for ground clearance requirements. By utilizing a distance chart and a version of the "limits of approach" figure as found in NFPA 70(e), Figure A-1-2.4, a practical tool, a more effective vegetation management standard is offered.

UTILITY VEGETATION MANAGEMENT - BRIDGEWATER TOWNSHIP

To evaluate the Vegetation management program implemented by PSE&G in Bridgewater Township, I conducted a site inspection of the transmission line coming from 550 Milltown Road, Readington Substation (JCP&L) and the PSE&G Transco Gas line right-of-way. The dead-end tower U-22-1 adjacent to the tennis courts on Salvadore Court, Stratton meadows, was readily accessible from the Meadows project and from the driveway off Milltown Road. While there is considerable growth below the tower/conductors, there was no clearance issue; however, off to the side, growth in the border was evident and in all probability identified in the present Vegetation Management program. As with any right-of-way, some dumping of a cut up white pine tree was also evident at this site. The suspension tower north of the dead-end tower off Walters Brook Road and Traci Road shows considerable growth along the road (Traci) and to the tower location, although clearance was not an issue, since growth did not come close to the conductors and, due

to the fact that electricity will only jump approximately 1/4 inch for each 10 thousand volts of energy under normal conditions. This location growth would be subject to standards found in N.J.A.C. 14:5-8.5, for growth distance from the tower. Judging from growth I observed, it would seem likely that this area has been identified as part of the present utility program. It is important to note that this line has been erected prior to December 18, 2006, and without upgrading would allow for exemption under 14:5-8.6(d) of the proposed standard, i.e., tower support clearance trimming.

As I continued my site inspection, I stopped off Route 28 and at the right-of-way and observed a clear line path with tall trees along the right-of-way border. The trees were clearly above the line at a distance of 20' to 25' on the westerly side toward Meadow Road. I observed a new 6' stockade fence that in all probability extended into the right-of-way that was of no consequence. The residence was actually located on Lenape Trail. Further observations of the line, my perspective did not raise any concerns regarding vegetation management that would require immediate action by the utility at this point.

BPU REGULATORY STANDARDS

I reviewed the New Jersey Administrative Code, Title 14; Board of Public Utilities, Chapter 5; Electric Service, Subchapter 8; Vegetation Management and the standards established. I offer the following comments with respect to these regulations:

The primary objective of the standards is to promote safety and the need for reliability of service. Recently, First Energy Corporation of Ohio experienced a tree contact that cascaded power outages into the northeastern United States transmission grid system. A single tree fault disrupted a vast area dependent on electrical energy. In another, unrelated incident on JCP&L Co. property, a worker lost his life while working on a ski slope adjacent to a transmission line when a snow-making gun allowed ice to accumulate on a section of line. As the weight increased in the section of line loaded with ice, the adjacent sections without the weight of ice pendulumed insulators toward the weight and lowered the ice-covered wire. Realizing what had occurred, the worker attempted to knock the ice off the energized line with a shovel, which resulted in his electrocution and death. The aforementioned incidents clearly support and dictate the need for regulation and standards; however, these requirements must be free of ambiguity in order for those affected by the requirements to have a clear understanding of what is, and is not, required for the purpose of compliance. Just as distance charts are included into safety standards previously mentioned, "Vegetation Management" should define the minimum distance required as a "Border Zone", to effectively and practically determine clearances that allow for utility company objectives, while considering those property owners who live adjacent to transmission circuits.

While reviewing the vegetation management standard I note measurements of 18", 3 feet, 12 feet, 15 feet. Why not include a minimum border chart that reflects line kV with respective clearances? Charts of this nature would offer and provide clarity to PSE&G and its contractors in order to prevent varied interpretations and implementations. In order to further clarify the standards, both vertical and horizontal graphic depictions should be included in the regulations in order to achieve compliance. The incorporation of drawings would assist municipal officials, local officials and residents in understanding the requirements and allow for a determination whether vegetation management implementation complies with the standards established by the regulatory scheme. Bridgewater Township may then better assist the BPU and PSE&G in addressing concerns of residents near the right-of-way as well as groups interested in transmission line exposures, environmental issues and tree preservation.

CONCLUSION

New Jersey is the Garden State; safety and reliability in providing electric energy are and should be matters of the highest priority to PSE&G and the BPU. Vegetation management in a transmission right-of-way does not require absolute clearing or clear cutting that leaves the area blighted. Consequently, in reviewing the technical standards of "Vegetation Management", I see a need for cooperation and coordination from all that will

benefit the community, regulators, and the electric power utilities alike. I, therefore, recommend the following:

BPU

(1) Clearly define "Border Zone" with ground layout depiction and dimensions.

(2) Provide a chart with relative kV and distances of Border Zone, inclusive of a "Limited Approach" chart and diagram.

(3) Allow controlled growth within the "Border Zone" with height requirement provision for species which may be permitted to grow in the Border Zone.

(4) Provide a vertical depiction in directing accepted growth within the Border and line zones.

PSE&G

(1) Maintain a Vegetation Management cycle with specified priorities, especially with flexibility along the "Border Zone" of Right-of-Ways.

(2) Assure reliability of safety by continued visual inspections as coordinated by the qualified resident arborist with coordination of respective Line Operation's representative(s).

(3) Assure contractor competence and compliance with Vegetation Management standards.

(4) Provide a Vegetation Manager (VM) who is an arborist as defined by N.J.A.C. 14:5-8.2.

(5) Allow for the (VM) to identify allowable species on the

right-of-way and those to be removed or saved pursuant to Vegetation Management standards.

(6) Coordinate trimming activities with municipality representatives well in advance of the work to be performed.

(7) Assure local interests that indiscriminate clearing and cutting is not a preferred practice by conducting a schedule of electrical safety information sessions for the Community thereby explaining pertinent salient points, i.e., cutting, trimming and electrical theories.

BRIDGEWATER TOWNSHIP

(1) Require material safety data sheets (MSDS) when chemical agents are used for Vegetation Management.

(2) Coordinate Vegetation Management cycle with PSE&G.

(3) Assure that contractors hired by the utility are familiar with local codes.

(4) Assure that all required permits and licenses have been issued prior to commencement of management practices.

(5) Confirm that PSE&G has notified affected property owners in advance of Vegetation Management activities so that owners can react without delaying needed Vegetation Management.


(6) Provide a mechanism where by Township employees, inclusive of police and first responders, are able to assist in reporting line clearance concerns.

(7) Coordinate with Utility the scheduling and presenting of

informational programs.

Implementation of the above recommendations will clarify the regulations adopted by BPU, and permit implementation which correctly balances safety, reliability, environmental, and quality of life issues.

Respectfully submitted,


Alexander Saharic

Dated: September th 6, 2007

management standards contained in subchapter 9. In addition, this section has been amended to replace the term “electric public utilities” with the term “EDCs”.

N.J.A.C. 14:5-9.2 contains a list of defined terms that are used throughout subchapter

9. Several amendments have been made to this section, and they are as follows:

1. The term “agricultural crop has been amended to state that is is a non-woody cash crop that can be used as food;
2. A new term, “Inactive transmission line corridor”, has been added. This term refers to an unused part of the right of way;
3. A new term, “Vegetation Manager”, has been added. A vegetation manager is a electric utility arborist;
4. The term “Wire Zone” has been amended to state that the horizontal wire zone is bounded on each side by a location on the ground that is under the outermost transmission wire, ~~or transmission tower~~. Further, the wire zone for a vertical transmission array is the minimum safe distance as specified in the National Electric Safety Code. [Rationale: On higher towers the tower base is outside the conductor into the “Border Zone.”]

N.J.A.C. 14:5-9.3 pertains to the general requirements that EDC’s must abide by in the performance of vegetation management activities. This section has been amended to replace the term “electric public utility” with the term “EDC” throughout. In addition, subsection (e) has been amended to clarify that each EDC shall be required to ensure that their employees and contractors abide by all federal and state regulations and laws while

been amended to limit the clearings under the transmission lines to those within the right of way. In addition, paragraph (e)2 has been amended to require EDC's to limit vegetation that will grow less than 150% of the minimum National Electric Safety Code Standard, to grow anywhere within the right of way. In addition, paragraph (e)3 has been amended to state that the preferred growth within a wire zone shall be grasses or low growing shrub scrub plants. Finally, a new subsection (f) has been added which states that EDC's may allow vegetation within the right of way where: 1) The easement allows for it; 2) Where the vegetation will grow to have more than ~~150%~~ 1-1/2 times of the clearance requirements set forth for electrical path to ground, as stated in the National Electric Safety Code; and 3) Where vegetation is located in an inactive transmission corridor and meet the requirements of paragraph (f)2.

N.J.A.C. 14:5-9.7 pertains to the training, recordkeeping and reporting requirements for EDC's. Throughout this section, the term "electric public utility" has been replaced with the term "EDC". Subsection (a) has been amended to replace the term "persons" with the phrase "qualified OSHA and ANSZ131.3 line clearance employees or contractors. Further, subsection (b) has been amended to require EDC's to ensure that their contractors keep a record of all personnel used to conduct vegetation management for the EDC.

N.J.A.C. 14:5-9.8 pertains to the requirements for public notice that the EDC's are expected to abide by in order to provide their customers with sufficient notice of upcoming planned vegetation management activities. Throughout this section, the term "electric

The rules proposed for readoption with amendments relate directly to the provision of safe, adequate and proper service by New Jersey electric utilities. Said rules are necessary to ensure that electric plant is constructed and installed pursuant to acceptable standards and is maintained and inspected in a manner that will protect the safety and well-being of the public. There is no additional impact resulting from the proposed amendments, all of which are technical. [Cannot agree, in all probability impact will be substantial, i.e., "Border Zone" clear cutting and/or severe trimming along property lines. Especially noted is property with southern exposure to sun, i.e., air conditioning cycling.]

Economic Impact

As a result of the rules proposed for readoption with amendments, electric utilities, as they have in the past, will incur expenses for, among other things, inspecting and testing their plant and meters and maintaining required records. Since these items represent appropriate business activities, all reasonable levels of costs associated with them will be passed along to ratepayers through rates for service.

Environmental Impact

The rules proposed for readoption with amendments will ensure that electric utilities maintain and operate adequate facilities that will protect the environment and provide ratepayers with safe, adequate and proper service, including service that meets all quality standards. [Question: how cutting of trees (ground line) is environmentally

positive. Also EDC should provide technical data as to trees bordering and and inductive fields factors.]

Federal Standards Statement

The rules proposed for readoption with amendments contain, in *N.J.A.C. 14:5-6.1*, the adoption by reference of the Uniform System of Accounts for Classes A and B Electric Utilities that have been promulgated by the Federal Energy Regulatory Commission (FERC) as well as any subsequent amendments, revisions, deletions and corrections which FERC may make thereto. The remainder of the subject matter of the rules proposed for readoption with amendments is not the subject of any Federal law, rule or regulation.

Jobs Impact

The Board does not anticipate that the rules proposed for readoption with amendments will either cause jobs to be generated or lost in any area of the State's economy.

Agriculture Industry Impact

The Board does not anticipate that the rules proposed for readoption with amendments will have any impact on the agriculture industry of the State.

Regulatory Flexibility Analysis

The rules proposed for readoption with amendments will not impose reporting, recordkeeping or other compliance requirements on small businesses, as that term is defined in the Regulatory Flexibility Act, *N.J.S.A. 52:14B-16* et seq., in that no regulated New Jersey electric distribution company has fewer than 100 employees.

Smart Growth Impact

The Board anticipates that the proposed new rules will have no impact on either the achievement of smart growth or the implementation of the State Development and Redevelopment Plan. The State Plan is intended to "provide a coordinated, integrated and comprehensive plan for the growth, development, renewal and conservation of the State and its regions" and to "identify areas for growth, agriculture, open space conservation and other appropriate designations." *N.J.S.A. 52:18A-199a*. Smart growth is based on the concepts of focusing new growth into redevelopment of older urban and suburban areas, protecting existing open space, conserving natural resources, increasing transportation options and transit availability, reducing automobile traffic and dependency, stabilizing property taxes, and providing affordable housing." These rules apply uniformly Statewide and the Board does not expect that they will affect the location of future development.

Therefore, the proposed new rules will not impact smart growth or the State Plan.

[Question: how does cutting of aged trees promote conservation and stabilizing property taxes.]

Full text of the proposed readoption follows:

SUBCHAPTER [6] 7. ELECTRIC TRANSMISSION LINES

14:5-[6]7.1 Requirements for electric transmission lines

(a) Whenever an **EDC** [electric company] constructs an overhead transmission line, it shall:

1. Make use of available railroad or other rights-of-way whenever practicable, feasible and with safety, subject to agreement with the owners;
2. Locate towers whenever practicable and feasible in accordance with the topography so as to minimize their appearance;
3. Establish a program of painting towers initially and periodically in order to camouflage their appearance as much as possible and to the extent consistent with the need for protection;
4. Employ **Vegetation Management standards found at 14:5-9, [nonuniform]**for clearing and trimming of the right-of-way; [and, wherever possible, in accordance with sound construction and maintenance practice as well as clearance requirements, allow a maximum number of mature trees to remain;]
5. Landscape the right-of-way by planting low-growing **grasses or non woody** shrubs where **permitted and where** the right-of-way is visible from heavily traveled roads;
6. [Wherever practical and feasible, consistent with municipal zoning laws, permit use of the right-of-way for farming, recreational and other appropriate purposes. If it is proposed by electric company that such use is not practical and feasible, the electric company shall send written notice, including its reasons, to the Board for final determination;

14:5-[7]8.9.

"Right of way" means less than fee interest in property, which gives a public utility a limited right to use land owned by another person or entity for the purpose of transmitting or distributing electricity. This right is typically memorialized in an easement. This term also includes the parcel of land for which a public utility holds a right of way or easement.

"Transmission line" means an electrical line, wire or cable, (including the supporting structures) and appurtenant facilities which transmits electricity from a generating plant to electric distribution lines. An electric transmission line usually has a rating exceeding 69 kilovolts.

Live Line Work – Provide definition to include aerial lifts and helicopters.

"Vegetation" means trees and other plants.

"Vegetation management" means the removal of vegetation or the prevention of vegetative growth, to maintain safe conditions around energized conductor(s) and ensure reliable electric service. Vegetation management consists of biological, chemical, cultural, manual and mechanical methods to control vegetation in order to prevent hazards caused by the encroachment of vegetation on energized conductor(s), and to provide utility access to the conductor.

"Vegetation Manager" or (VM) as used in these rules means an Electric Utility

Arborist,

"Tree" means a tall perennial woody plant with a main trunk and branches forming a distinct elevated crown.

"Wire zone" means the land located directly under the widest portion of a transmission line.

For a horizontal transmission line, [] the wire zone is bounded on each side by a location on the ground that is directly under the outermost transmission wire, or the transmission tower, whichever is wider. For a vertical transmission array, the wire zone shall be the minimum safe distance specified in the National Electric Safety code that will allow maintenance on the wires. [Wire Zone should only include wires definition.]

"Woody plant" means any vascular plant that has a perennial woody stem and supports continued vegetative growth above ground from year to year and includes trees.

14:5-[8]9.3 General provisions

(a) An [electric public utility] **EDC** shall ensure that vegetation management is conducted in accordance with this subchapter on any energized conductors of 600 volts and higher, whether for distribution or transmission, that the electric public utility owns, in whole or in part.

(b) Each [electric public utility] **EDC** shall obtain, and shall ensure that its contractors

electric public utility for these costs.

(h) An [electric public utility] **EDC** may petition the Board for recovery of the distribution and transmission portion of vegetation management program costs required under this subchapter in future base rate proceedings.

(i) Upon an **EDC's** [utility's] receiving notice of, or having actual knowledge of, any dead, rotten, or diseased vegetation which overhangs, leans toward, or may fall into an energized conductor **that is part of its primary distribution or transmission system and represents a safety hazard**, the [electric public utility] **EDC** shall promptly remove or remedy the potential safety concern as promptly as possible. [If removal of the vegetation requires the electric public utility to access or cross property for which it does not hold an easement or other legal authorization, the electric public utility shall take all reasonable steps to obtain any necessary permission from the property owner and remove or remedy the potential safety concern as promptly as possible.]In response to a major event, the utility will only be required to remedy the potentially dangerous condition. The EDC shall provide whatever remediation is necessary to restore any property crossed for service restoration and/or condition remedy.

(j) EDCs shall perform vegetation management on a pro rata basis as identified in N.J.A.C. 14:5-9.4(b) to achieve full compliance by December 18, 2010.

14:5-[8]9.4 Maintenance cycle

cycle, within five business days after the vegetation was cut, except if:

[1.] The [electric public utility] **EDC** obtains [written] consent to leave the trimmings or cut vegetation, from the owner of the property upon which the trimmings or cut vegetation are located, [; or]

[2. The vegetation management activities are performed as a direct result of a major event, in which case the electric public utility shall remove the trimmings and cut vegetation that was cut or trimmed as part of its vegetation management activities, after the conclusion of the major event.]

14:5-[8]9.6 Transmission line vegetation management

(a) In addition to the other requirements of this subchapter, transmission lines, as defined at N.J.A.C. 14:5-8.2, are subject to the requirements in this section.

(b) An [electric public utility] **EDC** shall meet the requirements of the National Electric Safety Code (C-2 2002) for minimum clearances between any transmission line and the closest vegetation beneath it.

See 14:5-[8]9.6(b) Figure (b1) "Limit of Approach" Distance Chart and Drawing.

(c) If a transmission line is upgraded or newly constructed after December 18, 2006, the

width of the clearing under the transmission line shall meet the minimum requirements of the National Electrical Safety Code (C-2 2002).

(d) An [electric public utility] **EDC** may request an exemption from (b) and (c) above based upon exigent circumstances.

(e) In addition to meeting the other requirements in this section, each [electric public utility] **EDC** shall ensure that the following requirements for transmission lines are met, **except for those instances set forth in subsection 14:5-9.6(f):**

1. Clearing under transmission lines shall be wide enough **within the EDC's right of way** so that no vegetation or parts of vegetation will grow or fall into the transmission lines;

2. An [electric public utility] **EDC** shall not allow any vegetation [~~that grows]~~ taller than 15 feet in violation of 14:5(8)9.6 Figure (b1) at maturity to grow anywhere within a transmission line right of way;

3. **The preferred growth in a wire zone shall be grasses or a low growing compatible shrub scrub plant community to obtain a meadow effect where possible.** An [electric public utility] **EDC** shall not allow woody plants that naturally mature above three feet tall to grow in the wire zone, [without prior notice and inspection by the electric public utility vegetation manager];

4. The [electric public utility] **EDC** shall not allow any woody plant species that naturally matures beyond the limits specified in above-15-foot Figure (b1) to grow in the border zone. Mature height may be determined from a reliable text authorities either listed in, or equivalent to those listed in N.J.A.C. 14:5-8.5(a). **Utilities shall provide this information on their web site or in a publication upon request by a ratepayer;**

5. Non-woody agricultural crops, not exceeding 12 feet in height at maturity, may be grown anywhere in the right of way;

6. Only grass vegetation not exceeding a height of 18 inches shall be permitted to grow within three feet of any structure;

7. Where an [electric public utility] **EDC** has cleared a right of way of vegetation and bare soil is exposed, the [utility] **EDC** shall comply with the soil erosion requirements of the applicable soil conservation district in order to prevent soil erosion. A list of the soil conservation districts in New Jersey may be found at <http://www.state.nj.us/agriculture/rural/natrsrc.htm>;

8. To the extent that any plant species identified as invasive and non-indigenous to New Jersey poses **a threat to the maintenance of the right of way or** a hazard to electrical transmission conductors, the [electric public utility] **EDC** shall make reasonable efforts to **actively** eliminate **from the entire right of way** the species identified as invasive and non-indige[i]nous, **see** Snyder, David and Sylvan R. Kaufman, 2004[.], [from the entire right of

mature height will be more than 150% of 1-1/2 times the clearance requirements for an electrical path to ground set forth in the National Electric Safety Code; or

3. where trees are located within an Inactive Transmission Corridor and at mature height will be more than 150% of 1-1/2 times the clearance requirements for an electrical path to ground set forth in the National Electric Safety Code.

(g[e]) For the purposes of this section, the mature height of woody and non-woody agricultural crops shall be determined in accordance with the publications listed in N.J.A.C. 14:5-[8]9.5(a), or equivalent publications.

(h[f]) Each year, before June 1, the [electric public utility] **EDC** shall develop a schedule for transmission line vegetation management, which shall be included in the [electric public utility] **EDC**'s annual system performance report as required by N.J.A.C. 14:5-[7]8. The schedule shall:

1. List the transmission lines planned for vegetation management for the next four years in advance (one of the four-year cycles required at N.J.A.C. 14:5-[8]9.4(b));
2. Ensure that vegetation management on transmission lines is performed prior to vegetation becoming a threat to safety or service reliability; and

3. Be distributed to affected municipalities by the [electric public utility] **EDC**.

14:5-(8)9.7 Training, recordkeeping and reporting

(a) Each [electric public utility] **EDC** shall ensure that **qualified OSHA and ANSI Z133 line clearance employees or contractors** [all persons] who perform vegetation management for the [utility] **EDC**, whether employees or contractors, are trained in the proper care of trees and other woody plants in order to provide safe, reliable electric service, are knowledgeable regarding safety practices and line clearance techniques as specified in 14:5-(8)9.6(b), Figure (b1), "Limit of Approach"., and have demonstrated the ability to perform the work safely].

(b) Each [electric public utility] **EDC** shall **ensure that its contractors shall** keep a record of all personnel used by a contractor or the [utility] **EDC** to perform vegetation management for the [electric public utility] **EDC**, and the dates and types of training that each has received.

(c) The [electric public utility] **EDC** shall **conduct an orientation program**, monitor and document all vegetation management and related activities. Documentation shall **be retained for five years and shall** include, but shall not be limited to:

1. The municipality in which the work was performed;