Control Number: 32182

Item Number: 162

Addendum StartPage: 0

PROJECT NO. 32182

INVESTIGATION OF METHODS TO	§	
IMPROVE ELECTRIC AND TELECOM	§	**PUBLIC UTILITY COMMISSION**
INFRASTRUCTURE THAT WILL	§	
MINIMIZE LONG TERM OUTAGES	§	**OF TEXAS**
AND RESTORATION COSTS	§	
ASSOCIATED WITH GULF COAST	§	
HURRICANES	§	

TEXAS-NEW MEXICO POWER COMPANY

Report On Vegetation Management Program for Overhead Facilities and On-going Cyclical, Ground-based Inspection Program for Overhead Facilities

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CORPORATE PROCEDURE

Appendix - J

NAME	T&D VEGETATION MANAGEMENT POLICY
PROCEDURE NUMBER	TBD
OWNER	Lewisville-North Texas Business Unit Manager
EFFECTIVE DATE	August 24, 2004
PURPOSE	This policy exists to establish standards for clearing and maintaining right-of-ways for T&D power lines. Standard preventative maintenance procedures are needed to provide public safety, and system reliability. This is achieved by maintaining established clearances through the facilitation of this program.
OPERATIONAL SCOPE	TNMP T&D Operations
GOVERNING STANDARDS	TNMP O.H. Construction Standards 1-4, 1-5, *"Pruning Methods"* TNMP O&M Manual, Section 3 – III (a)(b)(c) NESC 218 – Tree Trimming ANSI A300 (Part 1)-2001 "*Pruning Standard*" OSHA 1910.269 - Safe Work Rules for Line Clearance Tree Trimmers
FORMS	Customer Notification (Example Door Hanger)
AFFECTED EMPLOYEES	All TNMP Operations Employees & Line Clearance Contractors

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TNMP VEGATATION MANAGEMENT PROGRAM

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SECTION I. GENERAL

A. PURPOSE

These standards establish patrol cycles, clearances, and best management practices to maximize safe reliable operation of TNMP's T&D System. In addition, guidance is provided within this document for the consistent management of line clearance contractors.

B. TERMS & DEFINITIONS

Brush - a woody plant that is less than 4 inches d.b.h., that is not part of an existing tree, and that may reach the conductor at maturity.

Brush work – trimming, clearing brush and applying a herbicide to the cut stems, or only applying herbicide to brush.

Clearance -the distance between vegetation and the conductors.

Coniferous - any cone-bearing trees or shrubs, mostly evergreens.

Danger tree - any dead, dying, weak, diseased, or leaning tree (on or off the right-of-way) that could fall onto the conductors.

Deciduous - any perennial plant that sheds its leaves annually at the end of a growing season.

Demand tree trimming -trimming or removing the trees on a customer requested or emergency basis. Also may include tree work associated with line construction projects. This is typically required when trees have grown into the conductors, or are close to the conductors, and have created a potentially dangerous situation. This may also include special trimming or chipping work when requested by Texas New Mexico Power. Customer requested demand tree work should only be assigned by Texas New Mexico Power.

Directional trimming - a form of natural trimming (pruning) used to encourage tree re-growth away from the conductor. It is accomplished by removing limbs growing toward the conductors

entirely at the branch collar near the trunk of the tree, or by pruning to lateral branches that are at least one-third the diameter of the limb being cut and are growing away from the conductor.

Drop-crotching - generally speaking, is a crown reduction technique in which a tree trimmer makes the proper pruning cuts at crotches, removing the larger limb and favoring the smaller. For electric line clearance, the trimmer would remove limbs growing toward the conductors and favor those growing away from the conductors. This usually results in a "V" shaped appearance of the tree crown and is frequently referred to as "V-trimming". See definition of "natural pruning" for further description.

Evergreen - any plant that retains its leaves/needles year-round.

Herbicide - a chemical pesticide used to control, suppress, or kill plants.

Natural pruning -a method by which branches are cut to the branch collar at a suitable parent limb, the trunk of the tree, or an appropriately sized lateral branch. This method of pruning is sometimes called "drop-crotching", "proper pruning", the "Shigo method" or "lateral trimming."

Preventative maintenance - trimming or removing vegetation on a systematic basis typically by, but not limited to, circuit or grid, and in a manner intended to achieve system reliability.

Pruning - the removal of dead, dying, diseased, interfering, objectionable, and/or weak branches of trees or shrubs using proper arboricultural techniques.

Removal - completely removing an entire tree as close as practical to ground level and applying herbicide to the cut stump.

Right-of-way - a transmission or distribution right-of-way, an easement, a utility easement, or any other corridor of land paralleling, on both sides, an overhead transmission or distribution line, and in respect of which TNMP has certain rights.

Safety zone work – removing all overhang and cutting back limbs to a minimum clearance of 10 feet from energized conductor.

Selective herbicide - a herbicide that, when applied to a mixed population of plants, will control specific species without injury to others.

Shearing -the making of many small cuts so that a tree adjacent to the conductors is sheared in a uniform line. This is not a generally acceptable practice.

Side pruning - using natural pruning methods to cut back or removing side branches that are threatening the conductors; required where trees are growing adjacent to conductors.

Topping - cutting back the upper crown of a tree to a uniform horizontal line, leaving multiple stubs. This is an improper and unacceptable trimming technique.

Tree - a perennial plant with a woody trunk measuring at least four (4) inches d.b.h., and having one set of annual rings at ground level or more than one set of annual rings not separated by included bark. Trees that grow adjacent to one another and share an apparent common base completely separated by "included bark" are considered to be distinct trees. "Included bark" is

bark that is included within the wood of a tree, or between the woody stems of separate trees, creating a physical separation between the trees.

Tree crown - the upper portion of the tree, the branches or leaf area.

Trimming - cutting back tree branches or shrubs to shape or reduce the size of the tree or shrub.

V-trim - using natural pruning methods to cut back large portions of the upper crown of a tree. This is required when trees are located directly beneath a conductor. Also known as crown reduction pruning or drop crotching.

Vegetation - all the plant (flora) life in a particular region. A plant community, assemblage, or aggregation with distinguishable characteristics.

SECTION II. REMOVAL & TRIMMING STANDARDS

A. Distribution Clearance Requirements

1. General Guidelines: Effective tree to conductor clearance is determined by:

   a. Voltage, tree location, and importance of the individual line
   b. Ambient air temperature and the height of the poles and line
   c. The species and growth habit.
   d. The trimming cycle
   e. Local weather characteristics

2. Under and Side-clearance - Any tree affecting or potentially affecting a primary distribution line shall be trimmed to prevent any involvement with the line (see table 1. "*TNMP Minimum Clearance Requirements*").

   Note: (1) Where the amount to be removed in order to obtain adequate clearance will have an adverse impact on the overall long term health of the tree, the tree will be considered for removal; (2) The neutral wire has the potential to carry primary voltage, which contractor shall take into consideration when clearing primary lines; and (3) Open-Wire Secondary Conductor and neutral shall have a minimum 5' of clearance.

3. Overhang Clearance: When at all possible, overhangs shall be removed. When not removed, clearance shall be a minimum of 10 feet. Note: Overhang clearance shall be increased where circuits have experienced historical exposure to snow and ice.

4. Other Clearances: (1) Secondary Conductors, Service Drops, Streetlight Circuits and Guy Wires shall be cleared on a case by case basis as determined necessary by TNMP during field inspection, to free them from weight, strain, or displacement caused by contact with trees. (2) All dead wood shall be removed when it is a hazard to transmission or distribution conductors or when TNMP supervision directs the contractor to do so.

5. Brush & Vine Clearance: (1) Brush shall be cut as close to ground level as practical with a chainsaw and/or chemically treated to prevent re-sprouting. (2) Unless otherwise instructed, vines ascending all poles and guy wires shall be cut off at ground level.

Table 1. TNMP Minimum Clearance Requirements

*Clearance From Trees	Conductor Type	Secondary (120-480 V)	Primary Voltage (2-25 kV)	69 kV and above
SIDE	Primary Neutral	5 5	10 5	20
OVER	Primary Neutral	5 5	10 5	None None
UNDER	Primary Neutral	5 5	10 5	20

**Clearances at time of trimming.*

B. Transmission R.O.W. Requirements: Transmission vegetation management (VM) work typically differs from what would be found adjacent to distribution power lines. Distribution VM work is dominated by pruning and removing trees adjacent to distribution poles, which in most cases are in more populated areas. Conversely, transmission lines are typically located on structures & towers and are typically located in more remote areas.

There is no industry consensus as to how a transmission ROW should be established and maintained. From an electric reliability standpoint, it simply requires managing vegetation so that it cannot grow into, or fall onto the energized facilities. It requires creating a predictable and low-growing environment of vegetation under and adjacent to the ROW.

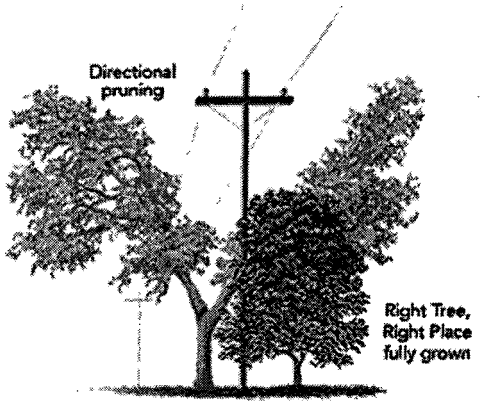
1. Clearance: Trees shall be trimmed to obtain a 20-foot conductor clearance on all transmission right-of-ways. Note: Trees shall be trimmed so that no falling tree could possibly pass any closer than ten feet from an energized conductor.

2. Supplemental Vegetation: Supplemental planting, re-vegetation or mitigation measures will not be placed in, or interfere with TNMP's existing access roads or existing cleared work areas such as structure foundations. The developer or landowner will verify the location of existing access roads and work areas with TNMP and submit a plan for review and approval prior to installing any supplemental planting, re-vegetation or mitigation in TNMP rights of way. Only trees and low growing vegetation with a mature height of 12 feet or less may be permitted within TNMP's right-of-way, i.e., easements.

3. R.O.W. Clearing Methods: Physical and mechanical clearing is the generally approved method of R.O.W. clearing. Limited herbicidal applications may only be used with local TNMP Management approval and the use of licensed applicators.

C. General Pruning Methodology: Natural (directional) pruning is a method by which branches are cut at a suitable parent limb back toward the center of the tree. The cut should be made as close as possible to the branch collar at the branch base, but the collar should not be injured or removed.

Every branch has a branch bark ridge that separates the branch from the main stem. The cut should be made on the outer side of the ridge. If the cut is made on the inner side of the ridge, a trunk wound will result that provides easy entry for microorganisms.

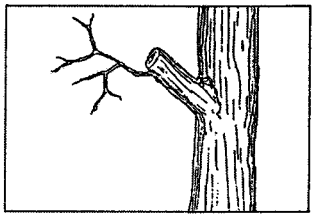


This method of pruning is sometimes called "drop-crotching" or "lateral trimming." Large branches should be removed to laterals at least one-third the diameter of the branch being removed. Natural pruning is especially adapted to the topping of large trees where a great deal of wood must be removed. In natural pruning, almost all cuts are made with a saw, and very little pole pruning works is required. This results in a natural looking tree when finished, even if a large amount of wood has been removed.

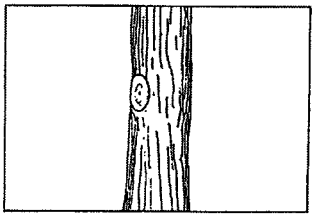
Natural pruning is also directional pruning, since it tends to guide the growth of the tree away from the wires. Stubbing or pole-clip clearance, on the other hand, tends to promote rapid sucker growth right back into the conductors. The big factor to remember is that natural pruning does work, and that two or three trimming cycles done in this manner will bring about an ideal situation for both the utility and the tree owner. Most shade trees lend themselves easily to this type of pruning.

Details of improper trimming and proper natural pruning techniques are shown here. The branch at figure 1. was cut back to a lateral that is too small. Branches should be cut back to a lateral that is at least one-third the size of the branch being removed as shown at figure 3. If a proper lateral is not available, the branch should be cut back to the trunk.

1.Incorrect

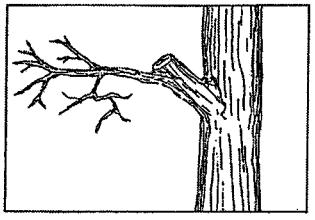


2. Incorrect



The cut shown at figure 2. is an improper flush cut where the branch collar was removed. The cut at figure 4. shows the proper method to remove the branch at the trunk, leaving the branch collar but not a stub.

3. Correct



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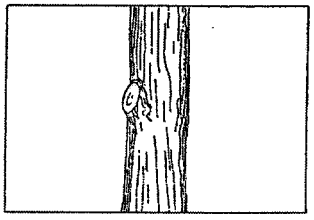

D. Specific Procedures

1. SCHEDULED TREE PRUNING

Procedure

Texas New Mexico Power and its agents will inspect trees near power lines for pruning and determine which trees should be pruned or removed. Attempts will be made to notify homeowners or residents before pruning is done. Note: Line Clearance Contractors are generally responsible for making initial customer contacts and/or notifications.

Limb and Branch Disposal
Texas New Mexico Power contract crews will dispose of all debris resulting from their tree removal and pruning operations unless different arrangements have been made with the property owner.

2. SCHEDULED TREE REMOVAL

Removal Procedure
Texas New Mexico Power and its agents will inspect the trees near power lines scheduled for maintenance and determine which trees should be removed. If a tree is a candidate for removal, the homeowner or resident will be contacted and asked to authorize Texas New Mexico Power, and its contractors to remove the tree to the ground line.

Tree Disposal
Texas New Mexico Power contract crews will dispose of all debris resulting from their tree removal and pruning operations unless different arrangements have been made with the property owner.

Stumps
Texas New Mexico Power and its contract crews will NOT grind out stumps, unless special arrangements have been agreed upon. Stumps should be treated with an approved herbicide unless a property owner has requested that the stump not be treated and/or if the herbicide label warns against treatment of stumps in particular situations.

3. CUSTOMER REQUESTED PRIMARY TREE PRUNING

Procedure
When a customer requests Texas New Mexico Power Company to prune or trim a tree away from pole-to-pole lines, the company will send out a representative to make a determination of any potential hazards that exist.

If it is determined that a potential hazard does exist, Texas New Mexico Power will schedule a crew to perform all necessary pruning and/or removal.

If the tree is not a potential hazard, Texas New Mexico Power will inform the customer that the tree will be re-evaluated when that particular area is scheduled for clearing.

Customer requested tree removals that do not encroach TNMP facilities can be removed with local management approval and the customer shall be liable for all applicable and incurred expenses.

Limb and Branch Disposal
When Texas New Mexico Power prunes or removes trees at the customers' request, the disposal of the debris is the responsibility of the property owner unless otherwise agreed to in writing.

4. SERVICE-DROP TREE TRIMMING

Procedure
Customer service-drops are not generally trimmed by TNMP or it's contractors. In all cases, the decision on which course of action to take will be determined by local management. In most instances the following rules shall adhered to.

- TNMP will clear/trim limbs encroaching service wires that pose a hazard to service, facilities or the public when found and/or made aware of.

- When requested by the customer, TNMP will lower/remove overhead services for tree removal by the customer or customer's agent during normal business hours at no charge. After 4:00 PM, normal service and overtime charges shall apply. Note: The customer shall be made aware of applicable fees at the time of the initial request.

Rationale: The customer has the control and responsibility for planting and pruning of vegetation on private property.

Limb and Branch Disposal
When Texas New Mexico Power prunes or removes trees at the customers' request, the disposal of the debris is the responsibility of the property owner unless otherwise agreed to in writing.

E. STORM RELATED TRIMMING & DISPOSAL

Procedure
When trees fail or branches break during storms, and they tear down or make contact with Texas New Mexico Power facilities, Texas New Mexico Power will do the necessary pruning or removal to clear its facilities and restore power.

Disposal
If Texas New Mexico Power and its contract crews prune or remove the trees as a result of storm related damage; all limbs and logs will be left on the customer's premises. The disposal of limbs and/or logs is the responsibility of the property owner.

Customer Notifications during Storm Work
Crews may make a courtesy knock on the customer's door to let the homeowner know that work will be performed at that location. However, due to emergency conditions that occur during storms, Texas New Mexico Power and its contractors may prune and remove trees necessary to restore power without contacting every homeowner.

SECTION III – WORK MANAGEMENT

A. Trimming Cycles: A "cycle" is a loosely defined term used by utility arborists to generally describe the time it takes to complete identified pruning or removal of certain trees on their entire electric system. The majority of utility companies have a systematic approach to scheduling routine work. Some use simple geographic grid systems, and others use the actual electric circuits for developing their work schedule.

This process proceeds sequentially until all of the circuits have been patrolled and the required work has been completed. If it took seven years to identify and then complete all of the required

work, the utility would be considered to be on a seven-year cycle. The actual spread for utility cycles industry-wide is anywhere from 1 to 10+ years. This wide divergence in "cycle lengths" is due to an extensive list of influences that are often uncontrollable and unpredictable. With this understanding, TNMP Business Units shall follow the below assigned cycle rates as needed for work management and budgeting purposes.

TNMP Regional Cycle Schedules

Region/Area	Cycle Rate
North East TX (WW/Leonard/Bogata)	3
Gulf Coast	3
North TX (Olney/LV/Nocona/PP)	4
Central TX	4
East NM	4
West NM	5
West TX (Desert)	5

B. Circuit Management & Scheduling: Scheduling should be based on an updated and ongoing analysis of the workload, circuit reliability and current conditions. For example, both excessive precipitation and drought can significantly influence vegetative growth and resulting workloads. Schedules should be flexible enough to address these and other variables such as customer and line-patrol-initiated work. The intent of scheduling is to manage the vegetation prior to it becoming a threat to service reliability.

Trimmed Inventory – Minimum Requirements

Circuit #	SAIDI Rankings	SAIFI Rankings	Cycle Rate (3yr, 4yr, 5yr)	Date of Last Full Trim	Cost $	Next Scheduled	Status (% complete)

Priority Scheduling Criteria:

1. Public Safety
2. Reliability Ranking (15% worst circuits)
3. Critical Load(s)
4. Cycle/Circuit Schedule

C. Line Patrols: It is important to perform routine inspections of all transmission and distribution facilities for potential conflicts involving vegetation. These inspections should be performed by qualified individuals and be scheduled to ensure that all T&D lines are systematically reviewed before conflicts occur. All inspections should be adequately documented and followed up on to ensure timely completion of the identified work requiring attention.

It should supplement, not replace, other utility line inspections. While helicopter patrols are adequate for many locations, ground patrols should be utilized whenever there is the possibility of not being able to accurately identify clearances between lines and vegetation.

VM Line Patrol Schedule(s)

Transmission Lines	6 - Months	Walked once a year
Distribution Lines	12 - Months	Includes main circuit & lateral feeds

D. Inventory Management: TNMP believes that in order to adequately manage the VM Program, each Business Unit should have accurate baseline information that is adequate to plan and perform effective VM activities. Workload projections, planning, budgeting, and scheduling shall be based on an accurate inventory of the existing and likely future vegetation exposures under and adjacent to existing T&D lines that put both reliability and public safety at risk.

E. Customer Planting Guidelines: It is very important that the customer carefully match the tree species with the planting location. Trees with mature heights over 15 feet should be planted at least 15 feet from any overhead utility lines.

SECTION IV – CUSTOMER RELATIONS

A. General: The contractor should be friendly and courteous to customers at all times. They should maintain a professional appearance and respect the customer's property. The contractor should represent their company and shall not wear clothing with TNMP logos, such as hats, shirts, and jackets. Under no circumstances is the contractor to engage in any negative discussion with the customer. If at any time a customer becomes intolerable, the contract crew is to immediately leave the customer's premises. The crew shall report it to their supervisor and they in turn shall promptly notify the proper Texas New Mexico Power line clearance representative concerning the situation.

B. Customer Permission: Normal routine pruning or cycle pruning does not require customer permission. However, if at home, the customer should be notified. When pruning in a cycle area, door cards are to be used to notify customers of your intentions and presence in the area. These door cards will be provided by TNMP. Any crew will use door cards, particularly manual crews that gain access to private property. Door cards should be placed before the scheduled work is to begin.

C. Inquiries: Any customer concerns or complaints received by the contractor shall receive their immediate attention and appropriate recourse shall be made. After exhausting all means of explanation if the customer is still uncertain or displeased, the contractor is to report to the TNMP line clearance representative with a statement of the customer complaint and agreed upon settlement. Written documentation, including date, name and address of the customer will prove beneficial.

D. Customer Refusals: Under circumstances where the customer will not allow proper clearance, or where a customer problem is anticipated, the contractor shall use good judgement in trying to come to an understanding and communicating the importance of obtaining proper line clearance with the customer. The contractor shall contact the appropriate TNMP line clearance representative and provide written documentation and customer information.

E. Media Notifications: The contractor shall not make any verbal or written statement to any press or news media, relative to the work under this contract, without first obtaining specific written approval thereof from TNMP.

F. Complaint Resolution: All complaint resolution is the responsibility of the contractor. Complaints will be corrected to TNMP's reasonable satisfaction, at the contractor's expense. The appropriate Line Clearance Supervisor will be informed of all complaints on the next regular TNMP workday. The contractor shall notify the appropriate Line Clearance Supervisor when a complaint is resolved. Any complaint left unresolved after job completion will result in withholding of final payment and exclusion from consideration for any future work. TNMP will

notify the contractor of complaints TNMP receives directly. Complaints received after job completion are also the responsibility of the contractor and shall be resolved as stated above. Failure to do so will result in exclusion from consideration for future work and possible payment withholding.

G. Claims Management: All damage claims are the responsibility of the contractor. In addition, the contractor is responsible for all damage to TNMP facilities resulting from their work, including labor and material costs associated with system repair. Costs of system repair may be deducted from the most current invoice.

DISTRIBUTION

In order to maintain Texas-New Mexico Power Company's electric distribution systems in a safe and a properly maintained operating condition, periodic inspections and reporting on these systems shall be accomplished in the manner and frequency outlined in the following sections. These inspections will also assist in planning a maintenance program that will help to reduce the number and duration of outages or interruptions that TNMP's customers may experience.

I. Overhead Line Patrol

A. All TNMP distribution lines shall be visually inspected by a qualified patrolman experienced with distribution line facilities and construction.

B. The frequency of inspections on TNMP distribution lines shall be determined by whether the inspection is made aerially or from the ground.

1. If distribution line patrols are made aerially, they shall be made annually. In rural area where distribution lines are not visually accessible from normal vehicle travel, aerial patrols should be done semi-annually.

2. If distribution line patrols are made from the ground, either on foot or from a vehicle, they shall be made annually.

3. At least once in a two-year period the inspection shall be made in such a manner that the person patrolling the line visits the base of the pole being inspected.

C. Each patrolled distribution line shall have a Form 672 – OVERHEAD ELECTRIC LINE PATROL REPORT prepared for it and, this report will list all defects found during the patrol. This report should be turned in to the Operations Coordinator for the location to correct the defects.

D. Distribution poles shall be put on a ten-year ground line treatment program. Ground line treatment shall consist of inspection and treatment. Depending on location and weather conditions this process can be extended.

II. Underground Line Patrol

A. All TNMP underground distribution facilities shall be visually inspected by a qualified patrolman experienced with underground distribution facilities and construction.

B. Underground distribution facilities shall be inspected annually.

C. While inspecting the underground distribution system, the persons doing the patrol shall inspect the overhead to underground transition and each piece of underground equipment.

D. Each patrolled distribution line shall have a Form 634 - UNDERGROUND ANNUAL DISTRIBUTION REPORT prepared for it and, this report will list all defects found during the patrol. This report should be turned in to the Operations Coordinator for the location to correct the defects.

III. Trimming and Maintenance of Right-of-ways

A. Only qualified and trained personnel shall perform vegetation control. Trimming shall be done in a safe manner as not to endanger personnel, property or the T&D line.

B. Tree trimming and vegetation control should be done by cycles depending on tree growth in each geographic location.

C. Trees should be trimmed to obtain a 10-foot conductor clearance and 5-foot secondary and neutral clearance. Natural (directional) pruning techniques shall be the preferred trimming method. This method of trimming directs the growth of the tree thus limiting encroachment until the next cycle.

D. Trees directly under the line should be clear-cut or removed when possible.

E. The use of herbicides to control vegetation growth is allowable with Business Unit Manager's approval.

F. Trees that overhang or pose a falling threat to the T&D line should be removed where possible.

G. The use of right-of-way mowing is permissible in areas applicable.

* Refer to TNMP Corporate Procedures on T&D Vegetation Management for details.