

DUKE ENERGY CAROLINAS, LLC'S VEGETATION MANAGEMENT POLICIES AND PRACTICES

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DEFINITIONS

BRUSH- Any perennial woody stem, six inches or less DBH (diameter at breast height), located in an unmaintained or natural area.

BRUSH HOG- A type of rotary mower used to control vegetation. Typically, these mowers attach to the back of a tractor and are driven via the power take-off (PTO).

DANGER TREE- A tree which has the potential of adversely impacting electrical service by falling into a transmission electric line as a result of being cut, blown into, or otherwise falling, by virtue of its height and/or physical condition.

DISTRIBUTION LINES- Electric utility lines in the Duke Energy Carolinas' service territory energized at less than 44,000 volts and typically carried on wood poles.

FAC-003 - North American Electric Reliability Corporation (NERC) standard that addresses vegetation maintenance for transmission facilities for voltages at 200kV or higher as well as designated interconnection lines at lower voltages connecting with adjacent utilities. FAC is the NERC designation for standards written for Facilities Design, Connections, and Maintenance.

HERBICIDE- A chemical product specifically formulated to be applied to and to control certain species of plants, trees or other vegetation.

HASHING DOWN- A technique performed with a chain saw in which the saw operator repeatedly cuts down through a pile of brush or limbs in order to reduce the height of the pile. This process forces the brush closer to the ground and allows it to bio-degrade naturally in unmaintained or natural areas.

HAZARD TREE - A tree that is dead, structurally unsound, dying, diseased, leaning or damaged, whether on or off the right-of-way, and that could strike electrical lines or distribution system equipment if it falls or is cut.

MINIMUM APPROACH DISTANCE (MAD)- As defined by OSHA, the closest distance an employee, based on his qualifications, is permitted to approach an energized or a grounded object.

OLD DESIGN URBAN CIRCUITS - consist of overhead electric distribution lines typically built early to mid-1900's and operating at 4 kV or 12 kV in older, populous neighborhoods or historic districts in which the line is located in public right of way along the street or on the property line between the neighborhood homes.

OPEN WIRE SECONDARY- An electrical conductor design that consists of three separate conductors carrying secondary voltages, and that are normally spaced approximately 10-12" apart. Two of the conductors are energized at 120 volts and the third conductor is a neutral. These wires may be bare-wire or in some cases have a weather-proof covering.

PRIMARY LINE- Electric conductor(s) that carry electricity at more than 600 volts.

RIGHT OF WAY - A strip of land that is granted through an easement or other mechanism for the installation and maintenance of electric lines and equipment to provide electric service to the customers of an electric utility.

SECONDARY LINE- Electric conductor(s) that carry electricity at less than 600 volts.

SERVICE CONDUCTORS (TRIPLEX) - Low voltage bundled conductor (wire) that runs from a pole to the delivery point at the meter. This bundle consists of multiple covered conductors twisted together, with a supporting bare neutral wire. These conductors typically carry less than 600 volts.

SINGLE-PHASE- A type of electric power line construction that contains one conductor carrying primary voltage.

THREE-PHASE- A type of electric power line construction that contains three conductors carrying primary voltage.

TRANSMISSION LINES- Electric utility lines in the Duke Energy Carolinas' service territory energized at voltages greater than 44,000 volts and typically carried on steel poles or towers; however, some lower voltage transmission lines may be on wood pole structures.

TREE- Any perennial woody stem greater than six inches in DBH (diameter at breast height) is classified as a tree.

TWO-PHASE - A type of electric power line construction that contains two conductors carrying primary voltage.

WINDROWED - A technique that includes moving wood and limb debris to the edge of the right of way corridor and positioning it parallel to the direction of the right of way in unmaintained areas.

1.1 INTRODUCTION

1.1.1. Introduction

Duke Energy Carolinas, LLC (“Duke Energy Carolinas” or the “Company”) is committed to delivering high quality service to its customers while ensuring the safety, reliability, and accessibility of the power system. In order to provide safe, reliable power to our customers, Duke Energy must continuously manage vegetation that could interfere with the lines and associated facilities or create a safety hazard.

The purpose of this Vegetation Management Plan (VMP) is to serve as a general guide for Duke Energy Carolinas personnel engaged in supervision of vegetation management activities. If any provision of this VMP conflicts with the provisions of a specific right of way agreement, the right of way agreement shall prevail. This VMP should not be interpreted to relinquish any rights contained in the right of way agreements. This VMP is subject to change.

The following is a general overview of Duke Energy Carolinas’ VMP and it applies to vegetation management for both distribution and transmission rights of way. More specific and detailed information is found in Sections 2, 3, 4 and 5.

Significant Points to Remember about Duke Energy Carolinas’ VMP

- Our Company has a commitment to our customers and property owners to be forthright and open in our business dealings.
- Tree work is a part of our overhead line construction and maintenance programs that is necessary to supply customers with safe and reliable electric service with minimal interruption of service.
- The growing interest of property owners and public agencies in the care and preservation of trees is an important factor in adopting and implementing our vegetation management policies.
- Heavy annual precipitation and long growing seasons bear heavily in adopting and implementing our vegetation management policies.
- Imperative to the accomplishment of all policies, procedures and specifications is the strict adherence to industry safety standards as contained in the American National Standards Institute (ANSI) Z133 requirements. In so far as practical, these specifications will be considered the standard for all tree work on the Company's transmission and distribution system. These specifications are aligned with the

industry-accepted tree pruning standards as prescribed in the ANSI A-300 Standard (Tree, Shrub, and Other Woody Plant Management- Standard Practices (Pruning)).¹

- All pruning shall be done in accordance with established, sound principles of the care and preservation of trees. Pruning techniques shall balance current tree health with clearance needed for power lines.

Customer Contact - General

- Any time work is accomplished in close proximity to a property owner's premises, a courtesy contact should be made in accordance with the policies outlined in Section 2 (Distribution) and Section 3 (Transmission).
- In landscaped and residential areas, contact should be made with the property owner and/or customer at least three working days prior to, but not more than two weeks prior to, the anticipated day for the work to begin.
- Anytime that a significant change is planned in the way the work is performed, compared to the types or extent of work done in the past, customer notification is recommended.
- If personal contact cannot be made, a door hanger should be left informing of our intentions to maintain the trees that affect our lines. Included with the door hanger should be other required information explaining the work Duke Energy Carolinas intends to perform and providing the property owner the opportunity to discuss the work with a Company representatives.
- In landscaped and maintained settings, our processes are designed to promote discussions with property owners before a tree is cut down.

Wood & Debris Removal - General

- Landscaped Areas- In landscaped and maintained areas, brush will be chipped and removed from the site. When feasible and agreed to by the property owner and Duke Energy Carolinas, this brush may be blown into an area either within the right of way or adjacent to the right of way corridor. Larger wood is the property of the owner, and contractors will work with the property owner to cut the wood into manageable lengths. The wood will be stacked neatly at the base of the tree or at the edge of the right of way corridor.
 - **NOTE:** Wood or brush from dead or dying trees will not be chipped due to safety concerns. If trees are dead or dying, the brush and wood will be cut down and stacked neatly at the base of the tree.

¹ To learn more about the ANSI Standards, please visit www.tcia.org. The standards themselves are not included herein due to copyright infringement concerns.

- Non-maintained areas- In non-maintained areas, trees and limbs will be cut, left on site, and windrowed along the edge of the right of way. Brush can be brush hogged when the terrain or site allows. If the terrain does not allow mechanized equipment, the trees and limbs will be manually hashed down and left to bio-degrade naturally.
- The Company does not remove or grind stumps in distribution or transmission rights of way.
- The Company is not responsible for clearing or removing wood or debris after a storm or other act of nature.

Herbicide Use – General

- From an environmental, scientific, and economic perspective, our Company considers the integral and judicious use of herbicides as a viable tool in managing vegetation along our rights of ways. The Company should have no reservations about explaining herbicide use to our customers.
- Herbicide use on distribution and transmission rights of way is an effective tool in controlling brush. Usage shall be accomplished in a very conscientious manner, and users familiar with the product labels, uses, rates, and precautions.
- Duke Energy requires that herbicide application crews be led by licensed pesticide applicators.
- Duke Energy has knowledgeable, trained, and conscientious individuals applying herbicides.
- The application of herbicides offers the greatest opportunity for improving our rights of way by eliminating unwanted and non-compatible vegetation.
- The property owner has the right to request his/her property be considered a “no spray” area as outlined in Section 2 (Distribution) and Section 3 (Transmission).

Communication Materials and Resources

- Duke Energy Carolinas provides information about its right of way maintenance activities to its customers on its website, www.duke-energy.com/trees. Information pertaining to maintenance practices for both distribution and transmission lines and a section of Frequently Asked Questions (FAQ) is included.
- Most printed materials used in the customer notification process are included in Sections 2, 3 and 5.
- On an annual basis, Duke Energy Carolinas provides a bill insert to customers explaining its herbicide program and the herbicides used on its rights of way. A copy of the annual bill insert is shown on page 99.

Customer Inquiries

- Any door hanger, letter or other material left with the customer/property owner or on the premises regarding right of way maintenance shall include the name and telephone number of the Duke Energy Carolinas Representative responsible for responding to customer inquiries.
- Inquiries of a general nature regarding requested vegetation maintenance activities should be directed through customer service at **1-800-777-9898**. Customer service will identify the area responsible for addressing the individual's inquiry and assign to the appropriate Duke Energy Carolinas Representative for follow up.

Technical Standards Reference (Applicable or current version)

The following documents are used as references in developing the Right of Way Policies, Procedures and Specifications:

NESC- National Electrical Safety Code- Section 218 entitled "Tree Trimming".

This code gives general guidance on maintaining clearances between electrical conductors and vegetation.

OSHA 1910.269- Occupational Safety and Health Administration's rule for Electric Power Generation, Transmission, and Distribution (www.OSHA.gov).

This Standard is applicable to all aspects of work around energized conductors, including vegetation management. It includes such issues as training, safety, emergency procedures, and knowledge of voltages, approach distances, use of insulated tools, job briefings, personal protection and equipment use.

ANSI Z133 Safety Standard- American National Standards Institute

This voluntary standard for Safety Requirements for Arboricultural Operations includes guidelines for general tree care operations as well as those operations which occur in close proximity to electrical conductors and facilities.

ANSI A300 Pruning Standard- American National Standards Institute

This is a voluntary standard for Tree Care Operations for the maintenance of trees, shrubs, and other woody plants.

IEEE 516 (Transmission Only) - Guide for Maintenance Methods on Energized Power Lines

This standard provides general recommendations for performing maintenance work on energized power lines.

The North Carolina Pesticide Law of 1971- (Pesticide Law)

G.S. 143-434 through G.S. 143- 470.1, established the program for pesticide management and control.

All applicable North Carolina and South Carolina State laws and regulations.

1.2 INTEGRATED VEGETATION MANAGEMENT PROGRAM

1.2.1 Integrated Vegetation Management Program

The primary objective of the Duke Energy Carolinas Vegetation Management Program is to control the growth of vegetation along the electric lines so that the Company can provide safe and reliable service to our customers. This is accomplished by using qualified personnel to monitor the condition of the utility rights of way and by initiating various vegetation control practices to reduce, manage or eliminate undesirable growth. This approach is called an Integrated Vegetation Management (IVM) Program.

Duke Energy Carolinas utilizes an IVM Program for all aspects of its management of vegetation on distribution and transmission rights of way. IVM Programs incorporate manual, mechanical and chemical maintenance to comprehensively manage the vegetation that is incompatible with the right of way use. Depending on vegetation species, densities, locations, and sizes, the most appropriate tool will be utilized for the given situation and circumstances. IVM Programs are designed to incorporate the management tools to provide for long term, environmentally sound rights of way.

The consistent implementation of industry-accepted vegetation management practices greatly reduces the risk and likelihood of tree and power line conflicts, as well as service interruptions, and allows for the full utilization of the operating system.

1.3 VEGETATION MANAGEMENT WEBSITE INFORMATION

1.3.1. Vegetation Management Web Site Information

The following information can be found on the Duke Energy Carolinas Web Site. Path: Our Company/Safety/Right of Way/Duke Energy Carolinas:

- Integrated Vegetation Management
- Managing With Herbicides
- Plan Before You Plant
 - Selecting trees for Distribution Rights of Way
 - Selecting trees for Transmission Rights of Way
- Frequently Asked Questions
- Asset Protection
- What is a Right of Way?
- Distribution Rights of Way
- Transmission Rights of Way
- Transmission Rights of Way Restrictions

The website location is as follows:

<http://www.duke-energy.com/safety/right-of-way-management/carolinas.asp>

2.1 INTRODUCTION – DISTRIBUTION RIGHTS OF WAY

2.1.1 Introduction

Managing vegetation, which includes pruning or cutting down trees and the use of herbicides, along Duke Energy Carolinas' rights of way is a part of the distribution overhead line construction and maintenance programs that is necessary to supply customers safe and reliable electric service with minimum interruption. The large number of trees and tree species prevailing in the Duke Energy Carolinas service territory directly influences the design, construction and operation of our overhead electric distribution system. The growing interest of property owners and public agencies in the care and preservation of trees is an important consideration in our overhead line and maintenance programs, as well. Heavy annual precipitation and long growing seasons are other factors directly affecting the general conditions. Because of these conditions, a comprehensive procedure to guide vegetation management activities is desirable.

2.1.2 Purpose

The purpose of this section is to clearly set forth policies, procedures and specifications to guide Duke Energy Carolinas personnel engaged in supervising line clearance work along its overhead distribution system. Application of these specifications still allows the Company reasonable flexibility to adequately meet a wide range of conditions. Even though the solution may vary for the many types of line clearance field situations encountered, certain fundamental vegetation management principles remain the same. Imperative to the accomplishment of all policies, procedures and specifications stated herein, is the strict adherence to industry safety standards as contained in the ANSI Z133 requirements.

In so far as practical, these specifications will be considered the standard for all vegetation management activities on the Company's distribution system. They are aligned with the industry accepted tree pruning standards as prescribed in the ANSI A-300 standard (Tree, Shrub, and Other Woody Plant Management- Standard Practices (Pruning)).

2.2 INITIAL (NEW CONSTRUCTION) RIGHT OF WAY CLEARING

2.2.1 General

Although the majority of initial right of way clearing will be performed by line clearance crews, minor initial right of way clearing for new line extensions does not necessarily require line clearance crews to perform this work assignment. The project engineer shall be responsible for identifying the location of the proposed line and determining the most economical and practical manner to accomplish the work. Company and contractor construction crews shall be equipped with a chain saw in their normal tool complement and shall be assigned the initial clearing on specific construction projects when designated by the project engineer.

Rights of way of fifty (50) feet should be secured, where obtainable, from property owners for distribution bulk feeders and large subfeeders. Thirty (30) feet is the minimum acceptable overhead width. The recommended width for underground rights of way is twenty (20) feet, including ten (10) feet of operating space for transformer and cabinet openings. The actual width needed for underground rights of way and the amount of the right of way that is actually cleared will vary depending on the type of equipment used for installation and the actual route of the facilities.

2.2.2 Clearing Procedures

Where practical, before cutting and felling, the outside boundaries of a right of way should be measured and marked from the center line with temporary stakes set 200' - 300' apart to guide crews. In felling and clearing, the following points should be observed:

- Never cut where rights to do so are uncertain.
- A strip free of all wood, brush, and stumps roughly two (2) inches high should be left along the center line for easy movement and installation of line construction materials.
- In many types of forest growth, it is often best to cut underbrush and small trees in advance of tree felling. An excellent method to economically accomplish this is to use mechanical brush cutting equipment. Trees should be felled parallel to, rather than away from, the right of way strip whenever practical to avoid extra handling of logs and tops. Felling of trees in crisscrossing patterns should be avoided.
- Stumps should be cut low to the ground - but not so low as to damage valuable sawing equipment.
- Avoid damage to standing trees off the right of way swath.

2.2.3 Clean-up Procedures After Initial Clearing

Below are the procedures to be followed after initial clearing:

- Duke Energy Carolinas generally does not remove the brush or debris from the property of the property owner requesting new service. The Project Engineer will communicate with the customer that this work will be cleaned up in accordance with our 'non-maintained' area practices for routine maintenance work. In non-maintained areas, trees and limbs will be cut and will be left on the site, windrowed along the side of the right of way. Brush may be brush-hogged when the terrain or the site allows. If the terrain does not allow for mechanized equipment, the trees and limbs will be manually hashed down and left to bio-degrade naturally. Any additional clean-up beyond this could be determined to be billable to the property owner or customer requesting the new service.
- If a third party grants a new right of way or permission for work to be completed, then the Project Engineer negotiates the level of clean-up with the third party property owner or resident who is granting the right of way or permission for the construction. Typically, this clean-up is done in accordance with our standard practices for planned maintenance work. The level of clean up to be provided would be communicated to the affected property owner or customer by the Project Engineer.
- In landscaped and maintained areas, the Company will chip and remove brush from the site. Wood or brush from dead or dying trees will not be chipped due to safety concerns. If trees are dead or dying, the brush and wood will be cut down and stacked neatly.
- **Larger wood is the property of the property owner.** The Company will work with the property owner to cut the wood into manageable lengths and the wood will be stacked neatly at the base of the tree or at the edge of the right of way corridor.
- In non-maintained areas, trees and limbs will be cut and will be left on the site, windrowed along the side of the right of way. Brush may be brush-hogged when the terrain or the site allows. If the terrain does not allow for mechanized equipment, the trees and limbs will be manually hashed down and left to bio-degrade naturally.

2.3 CUSTOMER COMMUNICATIONS - DISTRIBUTION

In order to maintain adequate distribution rights of way and service reliability and to maintain proper respect for individuals' property, as well as to minimize tree-related damage claims against the Company, the following basic operating practices should be followed:

2.3.1 Customer Notification

Personal contact by contractor supervision is the preferred standard method for notifying customers of upcoming maintenance activities. Notification is especially important any time a significant change is planned in the way the work will be performed (e.g. trees and brush that were topped in the past are now of such size that the resulting trees should be cut down, or a tree that has never been pruned has grown such that it now must be pruned.). Frequently, a customer's expectations are significantly influenced by the way in which work was done in the previous pruning cycles.

In landscaped and residential areas, contact should be made with the property owner and/or customer at least three working days prior to, but not more than two weeks prior to, the anticipated day for the work to begin. A short personal meeting is preferable when distributing informational material, but if the customer is not at home, the material should be left in a door hanger to review when he or she returns. The door hanger, is a multi-purpose form used to provide notification and other information to customers, and it is shown on page 15.

If a personal contact is made, the nature and extent of the work should be explained to the owner or customer. He or she should be provided a copy of the customer notification letter and informational material is shown in Section 5. There are two customer notification letters to be used as appropriate to the situation: Planned Maintenance Letter (shown on page 16) or Hazard Tree Letter (shown on page 18). Meeting with customers personally facilitates Duke Energy Carolinas' ability to clearly establish its intent and allows the Company to gain an understanding of the property owner's expectations, which may enable it to provide flexibility where appropriate and warranted.

In some areas, e.g. historic districts, historically sensitive areas, it may be advisable to provide advance notice by mail (postcard/mailer) that right of way maintenance is scheduled. The form of this Postcard/Mailer is shown on page 18.

If right of way maintenance requires that service be de-energized to perform the work safely, the customer/property owner should be notified using the Planned Outage letter shown on page 19.

Special attention should be given when maintenance operations must be performed in areas involving tree farms or pine plantations. Although these planted tracts can sometimes appear to be unkempt, they represent an investment by the property owner and the property owner will be highly concerned about cutting and pruning in the area. Establish contact with these property owners prior to beginning any work. This contact is even more critical if it is necessary to cut down any of these planted trees.

In rural and non-maintained, non-landscaped areas, there is typically not sufficient need to search out property owners to notify them of the work the Company has planned. Good judgment should be used in determining the extent of customer notification in these areas. Any time work is accomplished in close proximity to property owner's occupied premises, however, courtesy contact should be made. Such contacts will often eliminate property owner conflicts at a later date.

If the customer objects to the work that is required, including pruning and cutting down trees, and the concern cannot be resolved by the crew, the crew should stop work and notify their supervisor. Supervision should contact the owner/customer and attempt to explain the work and the need for it to the customer's satisfaction, as well as offer alternatives where appropriate and reasonable.

If the customer continues to object to the work, Duke Energy Carolinas management/supervision should take the appropriate steps to ensure that the necessary pruning is done. The Company has a responsibility and right to obtain proper clearance for its electric lines.

The property owner's agreement will normally be required when:

- A tree is to be cut down within a landscaped setting, or
- The Company desires to widen the right of way through tree removal beyond the existing right of way width or beyond thirty feet.

2.3.2 Customer Requests for Tree Work

Duke Energy Carolinas will investigate and, if appropriate, act on pruning/removal requests by customers. The Company does not, however, prune or trim vegetation to improve light patterns from security lights. If investigation determines that there is no need to perform the requested work, the customer will be notified, based on the circumstances, using one of the following letters:

Customer Requested Maintenance Work on Primary/High Voltage Lines

Customer Request for Work on Electric Service Cable

Customer Request for Maintenance Around A Security Light

Storm/Weather-related Clean Up Request

2.3.3 Customer Notification Door Hanger and Letters

The following are door hangers and letters used by the Company in its communications with its customers as discussed in the preceding Section 2.3.

The door hanger is a multi-purpose form and the appropriate box should be checked. When required based on the situation, additional information is provided along with the

door hanger. For all routine planned maintenance activities, the "Distribution Planned Maintenance Letter" shall be included in the door hanger.

DISTRIBUTION PLANNED MAINTENANCE DOOR HANGER

Date: _____

Dear Customer/Property Owner:

Duke Energy has been on your property today for the following purpose:

- ☐ Trees or brush on your property and in the right of way needs to be pruned or removed in order to prevent an electrical outage. Trees subject for removal are marked with lime green surveyor's tape. Duke Energy will perform this work at no cost to you.
- ☐ The trees that you reported will be scheduled to be pruned or removed.
- ☐ Duke Energy does not need to perform the work you requested because the trees do not interfere with power lines. Please refer to the enclosed letter for more details.
- ☐ Duke Energy is not responsible for the clean-up of wood or debris due to storms or an act of nature.
- ☐ Duke was performing routine vegetation maintenance/pruning which we were unable to complete. We will be back on the next scheduled working day, which should be: _____
- ☐ Other _____

Thank you,

If you have any questions, please feel free to contact me at the number listed on the attached business card or by contacting the Customer Contact Center at:

800.777.9898

Job No. _____

Date _____ Time _____



www.duke-energy.com/customer

Distribution Planned Maintenance Letter

_____ (Notification Date)

Dear Customer/Property Owner:

Duke Energy Carolinas is committed to providing you with safe, reliable electric service. One of the best ways to deliver on this commitment is to keep the lines that deliver electricity to your home free from trees and underbrush. To do this, Duke Energy Carolinas hires qualified and trained tree experts to inspect and clear the electrical lines.

The electrical lines serving your immediate area are scheduled for vegetation maintenance work. Trees or vegetation in the right of way that may pose a danger to the lines and public safety will be pruned or cut down. Distribution rights of way are generally maintained 15 to 25 feet on either side of the line (30 to 50 feet total width). Actual clearance and widths will vary depending on the applicable right of way.

What Can You Expect?

- Trees affecting safety or reliable electric service will be pruned or cut down. Any trees in maintained or landscaped areas identified to be cut down **will be marked with lime green surveyor's tape**. Other trees on the property that may impact the lines will be pruned, but will not be marked. Please refer to our enclosed booklet for details about pruning methods. These methods are endorsed by the North Carolina Division of Forestry, the South Carolina Forestry Commission and are in accordance with the American National Standards Institute (ANSI) A300 Pruning Standards manual.
- Brush **will not** be marked prior to removal. Brush is vegetation growth that is six (6) inches or less in diameter at approximately 4.5 feet from the ground.
- In landscaped and maintained areas, brush will be chipped and removed from the site. When feasible and agreed to by the property owner and Duke Energy Carolinas, the brush may be blown into an area either within the right of way or adjacent to the right of way corridor. Larger wood is the property of the owner and contractors will work with the property owner to cut the wood into manageable lengths. The wood will be stacked neatly at the base of the tree or at the edge of the right of way corridor.
- Dead or dying wood will not be chipped due to safety concerns, but will be stacked neatly as well.
- The Company does not remove or grind stumps.
- In non-landscaped areas, trees and limbs will be cut, left on site, and windrowed along the edge of the edge of the right of way. Brush can be brush hogged when the terrain or site allows. If the terrain does not allow mechanized equipment, the trees and limbs will be manually hashed down and left to bio-degrade naturally.

What if I Have Questions or Concerns?

Please call me at the number below with any questions you have concerning this work. If I am unavailable, please leave your name, address, and a daytime phone number (including area code). I will return your call as soon as possible. You can also find more information online about our program and policies by visiting www.duke-energy.com/trees.

Work will proceed as scheduled unless we hear from you within **three working days of this notification**.

Sincerely,

(name)
(title)
(company)
(phone)

D-Routine Maint.
(Rev. (08/02/2013))

Distribution Lines Hazard Tree Letter



OFFICIAL COPY

Dec 14 2015

_____ (date)

Dear Customer/Property Owner,

Duke Energy Carolinas is committed to providing its customers with safe and reliable service. In order to continue providing this level of service, Duke Energy Company must constantly inspect and clear its lines of vegetation-caused hazards. This is done through a scheduled integrated vegetation management program.

As part of this program, the electrical circuit serving your immediate area is scheduled for our annual hazard tree survey. This survey will include pruning and/or taking down of trees that may cause safety or reliability problems. Any trees on your property identified to be taken down will be marked with lime green surveyors tape. If the marked trees are in landscaped areas **and** are alive, the brush will be chipped and removed from the site. When feasible and agreed to by the property owner and Duke Energy Carolinas, this brush may be blown into an area either within the right of way or adjacent to the right of way corridor. However, if the trees are dead or dying, the brush will not be chipped, but instead stacked neatly around the base of the tree. The wood resulting from the pruning or the taking down belongs to the property owner, and we will work with you to cut it into manageable lengths. We do not remove or grind stumps.

If you have any questions concerning the proposed work, please contact me at the number below. If I am not available, leave your name, address, and daytime phone number. Your call will be returned promptly. If necessary, you may direct your call to our 24 hour Customer Service number 1-800-777-9898. Please give the customer service representative your name, address, and daytime phone number. You will be contacted regarding the proposed work.

We will proceed with the work as scheduled unless we are contacted within three working days of this notification. Please visit our web site at: www.duke-energy.com if you would like additional information on our right-of-way program.

Thank you in advance for your assistance in this matter.

Sincerely,

xxxxxxx (name)
xxxxxxx (title)
xxxxxxxx (company name)
xxx-xxx-xxxx (Phone Number)

Rev (08/02/2013)
D-Annual Hazard Tree

Post/Card/Mailer

Postcard for Sensitive area notification
Should be printed on colored postcard for easy identification by customer



_____ (Date)

Dear Customer:

Duke Energy Carolinas' qualified line clearance professionals will be pruning or taking down trees and vegetation which may interfere with the overhead power lines in your area. This work is being performed to help ensure continuous delivery of safe, reliable electric service to you and your neighbors. Our work is scheduled to begin around *(insert date)*. Property owners affected by this work will receive additional information in a door hanger prior to work beginning.

Should you have any questions, please call me at _____ *(insert phone number)*.

Thank you,

Sincerely,

xxxxxxx *(VM Specialist)*

xxxxxxx *(title)*

xxxxxxx *(company)*

xxx-xxx-xxxx *(phone)*

D-Sensitive Customer – Postcard
Rev (05/18/2012)

Planned Outage Letter

Notification of a planned outage that has been scheduled for the area, due to safety concerns related to tree maintenance.



_____ (date)

Dear Customer/Property Owner:

Duke Energy Carolinas is making improvements to the electrical system in your area to ensure the continuous delivery of safe and reliable electric service to our customers.

In order to conduct this maintenance work, your electric service will be interrupted on (date) at (time + am/pm) for approximately (xxx) hours.

If for some unforeseen reason we are unable to perform the work on this date, we will attempt to conduct it on (date) at (time + am/pm).

The area affected is

- (location)

We regret any inconvenience that may result from this interruption in your electric service. If you have any questions, please contact us by calling Duke Energy Carolinas Customer Service at 1-800-777-9898.

Sincerely,

Name: XXXXXXXXXXXXX

Title: XXXXXXXXXX

Company: XXXXXXXXXXXXX

Phone XXXXXXXXXXXXX

D-Planned Outage
Rev (08/02/2013)

Customer Request for Maintenance Work in Primary/High Voltage Lines



_____ (Date)

Dear Customer/Property Owner:

Your request for vegetation maintenance work on the power lines serving your property was reviewed by a Duke Energy Carolinas representative. Our inspection determined that there is not an immediate need to address the vegetation from an electric service, safety or reliability standpoint.

Your area will be reviewed again during our routine maintenance activities. Maintenance occurs systematically on all of our power lines in the Carolinas. The condition of vegetation around the power lines dictates the frequency of the need to manage the growth.

Thank you for bringing this to our attention. If you have further questions please call me at the number below.

Sincerely,

xxxxxxxxxx (name)

xxxxxxxxxx (Title)

xxxxxxxxxx (Company Name)

xxx-xxx-xxxx (Phone)

D-Customer Request for Maintenance Work on Primary
Rev (08/02/2013)

Customer Request For Work on Electric Service Cable



_____ (date)

Dear Customer/Property Owner:

Subject: Maintenance Work on the Electric Service Cable

You have requested vegetation maintenance work on the power lines serving your property. Your particular request is related to the "service cable" that runs from the transformer to the meter. A representative of Duke Energy Carolinas Vegetation Management has reviewed your particular situation and has determined that there is not an immediate need to address the vegetation from either a reliability or safety standpoint. Small limbs, leaves, and brush that occasionally contact a service cable are not normally a reliability problem. However, Duke would have performed maintenance if:

- A limb or tree pushes the line out of alignment.
- Vegetation is an imminent threat to safety or reliability

Occasionally, a property owner will make the decision to conduct trimming or removals on their own or hire a third party. Pruning trees around power lines should only be attempted by trained professionals. Serious injuries, and even fatalities, have occurred when unqualified individuals perform this type of work without the assistance of qualified professionals. As stated in the Occupational Safety and Health Authority (OSHA), and ANSI Z133, an unqualified person should not work within ten feet of overhead service conductors.

If a property owner decides to have any type of work performed around a service cable, Duke Energy Carolinas will temporarily disconnect the service cable. Please call Duke Energy Carolinas at 1-800-777-9898 and allow at least five working days in advance of your schedule. Please call us for an evaluation of the trees and vegetation prior to any tree pruning or take downs.

Thank you for contacting us. If you have further questions please call me at the number below.

Sincerely,
xxxxxxxxx (name)
xxxxxxxxx (Title)
xxxxxxxxx (Company)
xxx-xxx-xxxx (phone)

D-Service Cable
Rev (08/02/2013)

Request for Maintenance Work on a Security Light



_____ (date)

Dear Customer/Property Owner,

Subject: Request for Maintenance Work on a Security Light

A representative of Duke Energy Carolinas Vegetation Management has reviewed your particular situation and determined there is not an immediate need to address vegetation from either a reliability or safety standpoint. However, Duke Energy Carolinas would have performed maintenance if the vegetation was an imminent threat to safety, reliability, or was causing damage to the light fixture, wires, or other Duke Energy Carolinas equipment.

If your request was concerning the lighting pattern, Duke Energy Carolinas does not trim for specific lighting patterns.

If a property owner decides to have any type of work performed around the security light, Duke Energy Carolinas will temporarily disconnect the electrical cable serving the light. Please call Duke Energy Carolinas at 1-800-777-9898 and allow at least five working days in advance of your schedule. Please call us for an evaluation of the trees and vegetation prior to any tree pruning or take downs.

Thank you for contacting us.

Sincerely,

xxxxxxx (name)
xxxxxxx (title)
xxxxxxx (Company)
xxx-xxx-xxxx (phone)

D-Security Light
Rev (08/02/2013)

Customer Request for Storm/Weather Related Clean up

_____ (date)



OFFICIAL COPY

Dec 14 2015

Dear Customer/Property Owner,

The recent weather event caused outages in your area. Many of these outages were caused by falling trees and limbs, which affected the power lines on your property. When storm situations occur, our crews begin working to restore power as soon as possible. This includes clearing trees and limbs from the lines, poles, and equipment as needed to restore service.

During the course of the year, Duke Energy Carolinas performs routine vegetation maintenance in order to minimize service interruptions. Unfortunately, severe storms impact our lines and outages still occur, such as this most recent one.

We have completed the work to clear fallen trees and limbs which were involved in the power outage. Duke Energy Carolinas does not assume responsibility for the disposal of the wood and debris resulting from storm conditions or acts of nature. Disposal of the wood and debris is the responsibility of the property owner.

Sincerely,

xxxxxx (name)
xxxxxx (title)
xxxxxx (company)
xxx-xxx-xxxx (phone)

D-Storm Cleanup
Rev (08/02/2013)

2.4 SPECIFICATIONS FOR LINE CLEARANCE WORK ON DISTRIBUTION LINES

This section defines specifications associated with planned/scheduled right of way maintenance on distribution lines.

2.4.1 Tree Pruning

2.4.1.1 Standards

Pruning shall be done in accordance with established, sound principles of care and preservation of trees and in a manner balancing emphasis on current tree health and clearance needed for power lines.

All branches or limbs should be cut laterally to the supporting trunk or limb. This cut should not be made so flush so as to create a larger open area than necessary, and at the same time should not be cut so far away from the supporting wood that a stub is left. (See diagram below).

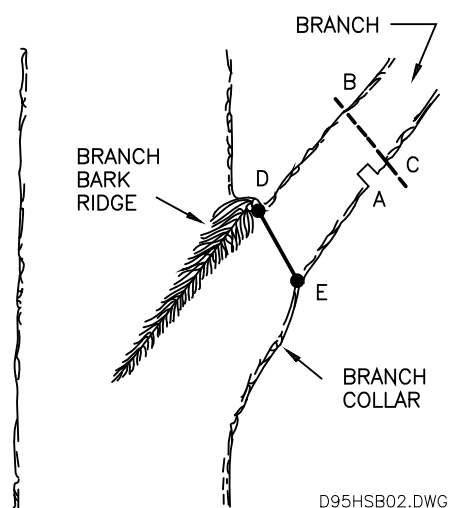


Figure 2.4.1 A

2.4.2 Natural and Directional Pruning

Natural and directional pruning techniques are the only accepted pruning methods employed by Duke Energy Carolinas for over fifteen (15) years. Where improper pruning procedures (i.e. stub-cutting and roundovers) may have been used prior to a change in our policy, or in work performed by customers themselves, customers might object to the presently approved and used techniques. When customers object, the Company shall explain that the present pruning procedures are based on sound arboricultural principles and are the best techniques for the health of the tree. Natural pruning techniques are endorsed by all major tree care industry organizations such as the Tree Care Industry Association (formerly known as the National Arborist Association) and the International Society of Arboriculture.

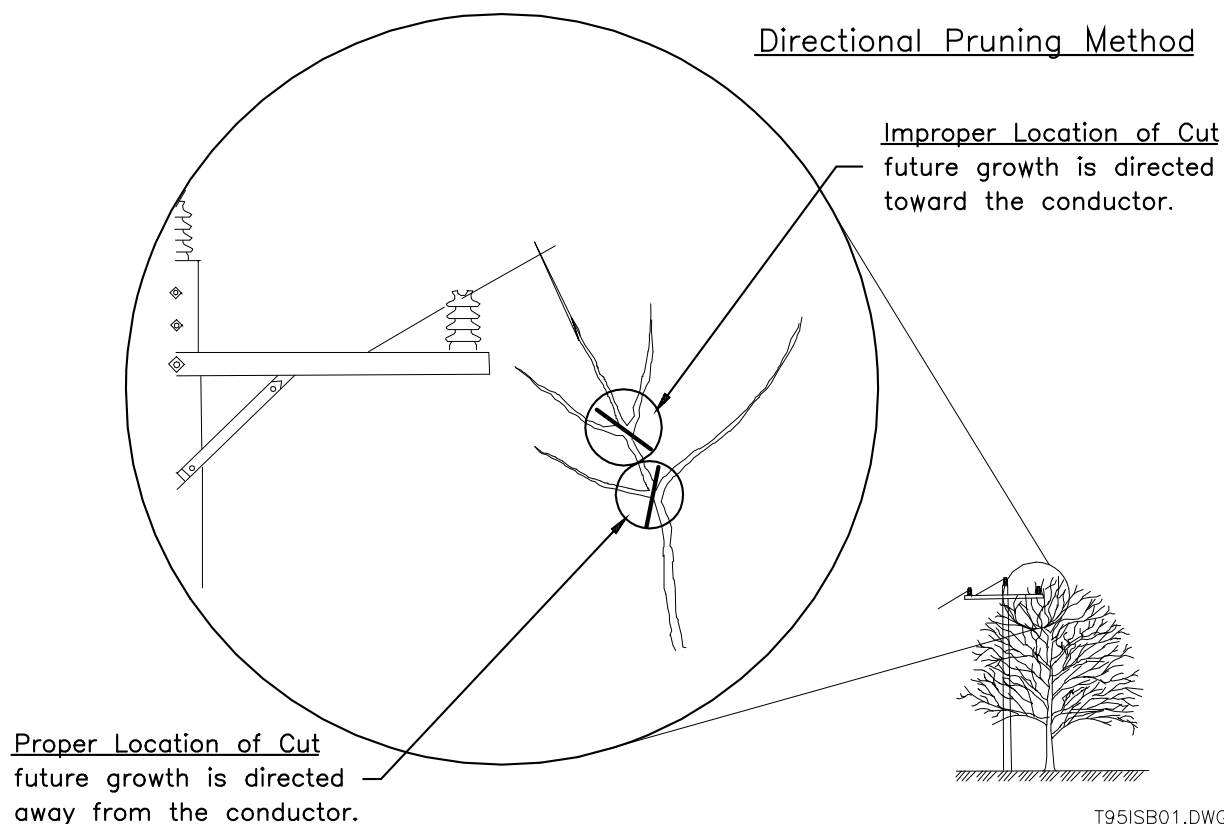


Figure 2.4.2 A

2.4.3 Proper Limb Removal

Please refer to Figure 2.4.1 A. To avoid the stripping of bark during limb removal, the following cuts should be made: an undercut "Cut A" is made a foot or so from the limb junction. The limb is now "stub cut" by "Cut B/C". The final "lateral cut" is made by "Cut D/E". Note that if the final cut was made straight down from point "D", it results in a much larger "opening" than necessary. However, by making the angled cut from D to E, the diameter of the cut was minimized, the "branch collar" was not disturbed and no "stub" was left.

When only a portion of a limb is to be removed, the portion removed should be cut back to an adjoining limb the size of which is at least one-third the diameter of the portion removed whenever possible.

2.4.4 Tools and Equipment

Suitable tools and equipment shall be used and shall be kept in good working condition at all times.

2.4.5 Pruning-Cut

Dressing - Use of pruning-cut dressing is not required during right of way maintenance operations. Pruning-cut dressings are aesthetically appealing but are not used to inhibit insects or disease pathogens from entering the pruned tree. Discretion should be used to determine if the cosmetic effects will justify application.

2.4.6 Climbing Spurs

The use of climbing spurs is not recommended unless the tree is to be cut down or the limb structure of the tree is such that the climber requires spurs to safely perform the necessary pruning.

2.4.7 Clearances

Clearances shall be sufficient to allow the line to function properly without unnecessary pruning to trees and in accordance with the following standards. All reclearing shall be done to restore the right of way to at least its originally constructed width. In those cases where the initial width was less than 30 feet, the Company should attempt to obtain customer approval for additional clearances.

2.4.7.1 Clearances on Three-Phase Primary Distribution Lines

Distribution rights of way are generally maintained 15 to 25 feet on either side of the line, for a total width of 30-50 feet; however, individual right of way agreements may vary.

Overhang: all live branches above the conductors shall be removed on trees in rights of way where trees must be manually climbed. On bucket accessible lines, the clearance above the lines will be determined by the maximum reach of the bucket or a minimum of 60' from the ground. All dead and structurally weak branches overhanging any primary voltage wires shall be removed.

Underneath the primary line, all non-compatible vegetation should typically be cleared from the floor of the right of way.

2.4.7.2 Clearances on Single-Phase and Two-Phase Primary Distribution Lines

Distribution rights of way are generally maintained 15 to 25 feet on either side of the line (for a total width of 30-50 feet); however, individual right of way agreements may vary. For single phase primary lines, a minimum ten (10) feet clearance from the tree branches to the nearest conductor must be obtained when the previously established right of way width is less than fifteen (15) feet.

Overhang: all live branches above the conductors shall be removed on trees in rights of way where trees must be manually climbed. On bucket accessible lines, the clearance above the lines will be determined by the maximum reach of the bucket or a minimum of 60 feet from the ground. All dead and structurally weak branches overhanging any primary voltage wires shall be removed.

Underneath the primary, all non-compatible vegetation should normally be cleared from the floor of the right of way.

2.4.7.3 Clearances on Open Wire Secondary Lines

As a part of planned/scheduled right of way maintenance work, minimum right of way clearance will be as follows:

- 5 feet clearance to the side from open wire secondary lines
- 5 feet clearance above and below open wire secondary lines

2.4.7.4 Clearances on Service Conductors and Street Light Conductors

Service conductors and street light conductors shall be maintained such that obvious line-damaging limbs will be removed. Line-damaging limbs include those that are lying on, or rubbing against, the conductor. These conductors are designed to withstand periodic "brushing" by a limb, but not sustained contact. Natural pruning techniques will improve the clearance and quality of these conductors by removing affected limbs at proper limb junctions, rather than "stubbing" them at a specific distance from the conductor.

2.4.7.5 Special Clearance Notes

- Guy Wires (down, span and other) shall be free of weight, strain, or displacement because of pressure from contact with tree parts, particularly the parts of fast-growing trees. Vines on poles and guys shall be cut. Working clearance from trees shall be obtained around transformers, cross-arms and risers.
- In cases where the existing right of way that has been previously maintained is deemed to be of insufficient width to maintain safe and reliable service, and when time and customer agreement exist, expansion or widening of the maintained area is strongly encouraged. Expanding the area cleared will negate much of the need for excessive side-pruning and will appear more natural. The additional clearances will result in extended pruning cycles and more cost-effectively maintained rights of way.
- In situations where trees have been "rounded-over" for years and proper clearances are difficult to obtain due to rapid re-growth, every effort should be made to obtain customer authorization to cut down the tree. Where such trees are not cut down, natural pruning methods should be employed to maximize the benefits of those clearances that can be obtained.
- Overhanging tree limbs are an undesirable situation on primary conductors. Even on strong-wooded tree species, any limbs left directly above the primary lines are capable of reducing reliability. **Effort shall be made to remove overhanging limbs in order to minimize the damaging effects from falling limbs when adverse weather affects the electric distribution system.** This is particularly important on multi-phase lines.

- All hazardous, dead wood shall be removed that may, under any circumstances, contact primary conductors.

2.4.8 Wood Debris and Clean-Up

2.4.8. Disposal of Brush and Wood

Landscaped Areas- In landscaped and maintained areas, brush will be chipped, and removed from the site. When feasible and agreed to by the property owner and Duke Energy Carolinas, the brush may be blown into an area either within the right of way or adjacent to the right of way corridor. Larger wood is the property of the owner and contractors will work with the property owner to cut the wood into manageable lengths and the wood will be stacked neatly at the base of the tree or at the edge of the right of way corridor. Dead or dying wood will not be chipped but will be stacked neatly.

Non-maintained areas- In non-maintained areas, trees and limbs will be cut and left on site and windrowed along the edge of the right of way. Brush can be brush hogged when the terrain or site allows. If the terrain does not allow mechanized equipment, the trees and limbs will be manually hashed down and left to bio-degrade naturally. In the interest of sanitation, safety, and orderliness, most municipalities regulate against abandoning or dumping of any foreign materials in public places.

Although most municipalities provide public dumping grounds, many are now beginning to prohibit biodegradable wastes such as brush, leaves, grass clippings, wood, and wood chips in those dumping grounds. Even when these wastes are accepted, however, dumping fees normally make this alternative unattractive. In consideration of our Company's commitment to environmental awareness and protection, it is important for us to search for waste disposal alternatives. Available options will vary by location. Some alternatives may include: firewood programs for low income families, municipal holding areas for the dumping of chips for landscape use, designated chip and/or wood dumping areas for general public use, and for local landscaping concerns as well as to individual customers. Information for customers interested in obtaining free wood chips is provided in the Wood Chip Door Hanger shown on the following page. Field personnel will assist property owners upon request.

Free Wood Chips

This notification may be left with the customer door hanger if appropriate to the situation.



Free Wood Chips

If you are interested in receiving wood chips processed during our line clearing work, please call:

xxxxxxxx (Contractor Foreman Name)

xxx-xxx-xxxx (Foreman Telephone Number).

If no one answers, please leave your contact information.

In order to deliver free wood chips, we will need:

- A dump location that is a reasonable distance from our work location.
- Directions to the dump site that will accommodate a two ton dump truck.

There is no charge for the wood chips!

Sincerely,

Name: XXXXXXXXXXXX

Title: XXXXXXXXXXXX

Company:

Phone: XXXXXXXXXX

Rev (08/02/2013)

2.5 TYPES OF TREE PRUNING

2.5.1 General

Familiarity with tree growth patterns proves beneficial in pruning individual trees and in planning new overhead lines in tree zones. In general, there are two industry accepted techniques for proper tree pruning - Natural/Lateral Pruning and Directional Pruning.

Natural/Lateral Pruning

"Natural" pruning, or "Lateral" pruning as it is sometimes called, shall be utilized in all four types of tree pruning procedures. This type of pruning refers to the removal of a limb from the trunk or a parent limb without damaging the trunk or leaving a protruding stub.

An added benefit of "natural" pruning is the positive effects it will have on the health of the tree. The tree is much less likely to suffer wood decay problems in the future if stubs are not left. Sucker sprout growth will also be greatly reduced as will the numbers of sucker sprouts.

Directional Pruning

"Directional" pruning involves cutting back to laterals which are growing away from the conductors. We can effectively influence the re-growth of the tree, and minimize our tree/line clearances by combining "natural" and "directional" pruning.

The methods described above can effectively influence re-growth. If stubs are not left, the tree is much less likely to suffer wood decay in the future. Sucker sprout growth will also be reduced.

2.5.2 Crown-Reduction Pruning

Crown-reduction pruning involves the cutting back of all or portions of the tree's upper crown and is generally required when a tree stands in close alignment with a primary pole line. On most trees needing crown-reduction pruning, every effort should be made to remove the tree. These trees normally require dramatic pruning to achieve necessary clearances. The visual effects of such pruning, even when done properly, can prove to be the source of conflict with our customers.

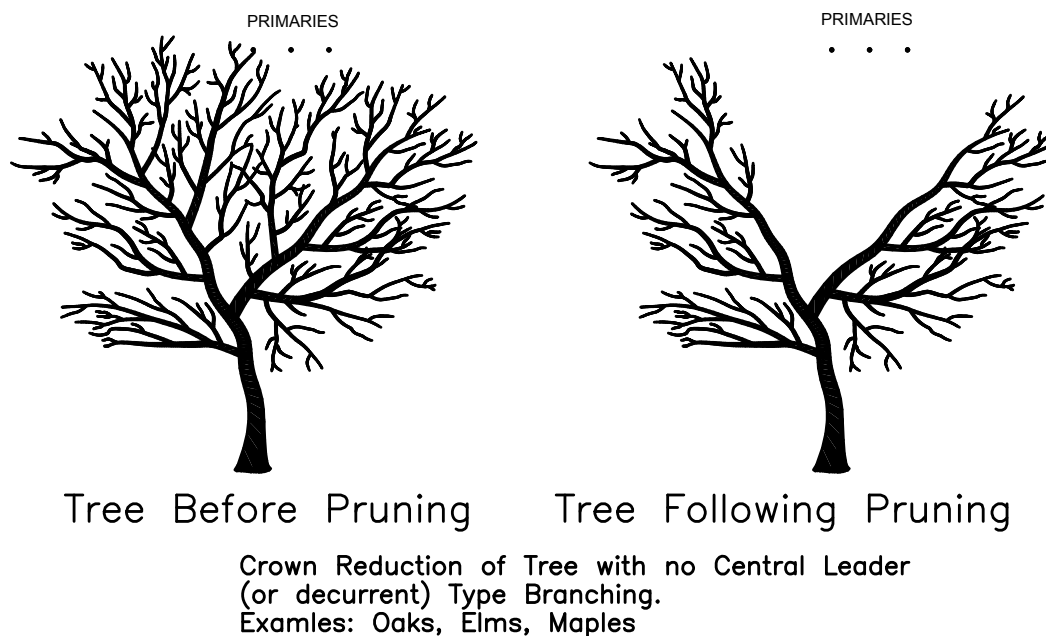
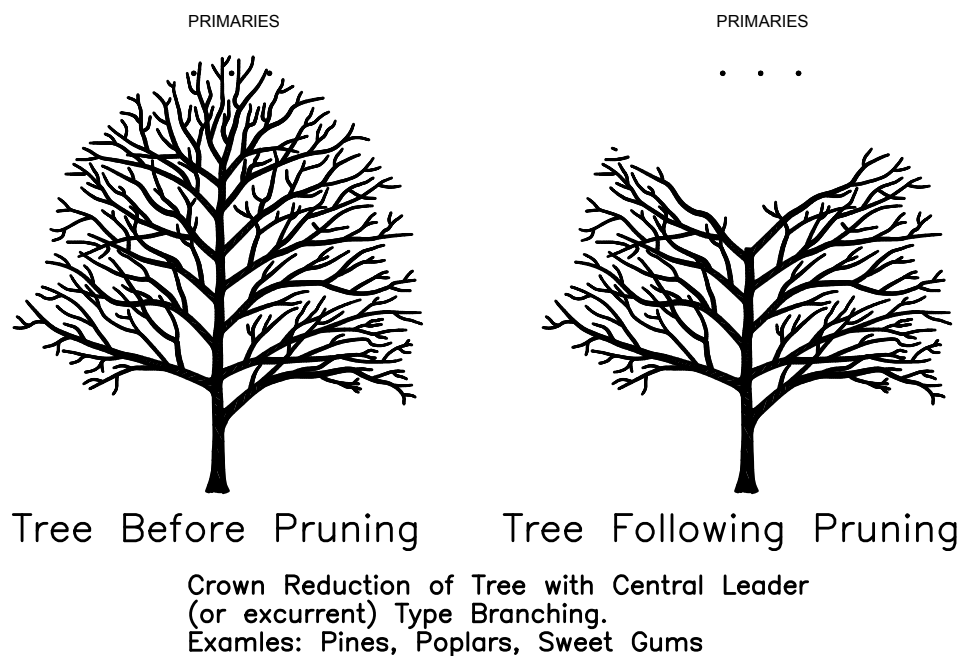
Historically, an improper type of pruning called "rounding-over" was used to reduce the height of trees for line clearance purposes. Rounding-over to a uniform conical line leaves many stub cuts. This type of pruning became an accepted practice by utilities across the nation and was also viewed positively by many of our customers. Although all of the scientific evidence indicates that rounding-over will lead to unhealthy tree

conditions, it is sometimes very difficult to convince customers that lateral pruning is the preferable method. Common problems resulting from rounding-over includes failure of the cut to properly callus over, which will usually lead to extensive decay. Although an unusually strong flush of "sucker" growth or sprouts will normally occur where stub cuts are made, they will tend to become more and more structurally unsound as they grow, especially if accompanied by decay. Rounding-over is not an accepted pruning method by Duke Energy Carolinas.

By employing natural pruning techniques to accomplish crown-reduction, we will achieve several objectives. They are:

- Maintain, and, in some cases, increase our line clearance cycle
- Accomplish the job through professional and defensible methods
- Maximize the tree's health in the given situation
- Cause as small an imbalance as possible between the tree's root system and crown by leaving portions of the tree that will not affect the delivery of our product.

Crown-reduction through natural pruning techniques may take on several different forms. If the tree is a central leader type species (such as a sweet gum or a yellow poplar), crown-reduction may very well result in the elimination of the entire top. (See Figure 2.5A). Whereas, if the crown is reduced on a species prone to multiple leaders or spreading crowns. (such as a maple), the resulting form of the tree may resemble a "V". (See Figure 2.5A). If the visual effects of a "V-pruned" tree are considered too dramatic, the sides (or "wings") may be reduced in height through lateral pruning. It should be recognized however that this additional pruning accomplishes cosmetic goals only and will serve no useful purpose to the physiological well-being of the tree.



D95JSB02.DWG

Figure 2.5 A

2.5.1 Side Pruning

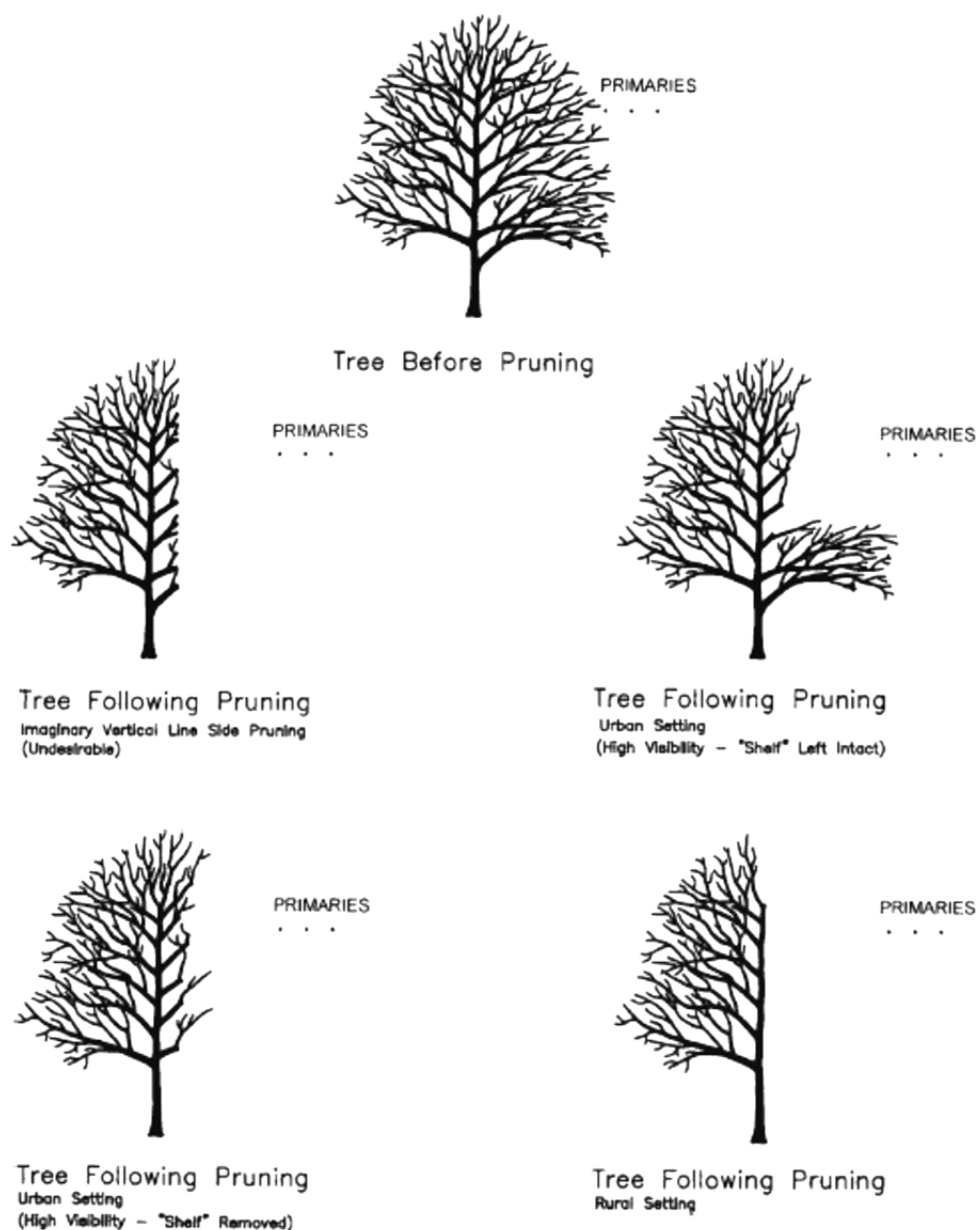
Side pruning is the shortening back or complete removal of side limbs of a tree located to the side of a line that project toward conductors. Limbs overhanging the conductors should, under most circumstances, be removed to better protect the lines during adverse weather conditions.

Avoid side pruning trees back to an imaginary vertical line, arbitrarily stubbing limbs back to a certain point. Utilize natural pruning methods and evaluate where each individual limb should be pruned. Basing cuts on the branching habit of each limb will promote better health for the tree, as well as provide a job with a more natural appearance. Note the "shelf" on the naturally side-pruned tree in Figure 2.5B. These lower limbs may be left as shown or they may be lateraled back to varying extents. Discretion, along with individual customer desires, should help determine to what extent, if any, these lower limbs should be pruned.

Techniques utilized on a given tree depend greatly upon where the tree is located. In the most rural, less populated areas, where aesthetics are perhaps less important, it may be appropriate to completely prune all of the limbs back to the trunk on the line side of the tree as well as to lateral the top of the tree back away from the line. If this same tree were located in a highly visible urban setting, the pruning methods used should be moderated to some extent. Depending on how close the main trunk of the tree is away from line, one or more of the following modifications may be appropriate:

- The leaving of the "shelf" limbs at or below the communication conductor height level.
- If distances permit, limbs above the "shelf" level may not be removed in their entirety, but may be taken back to intermediate laterals.
- Instead of removing every twig and leaf that may be in the desired "cleared" area, some of the small, incidental growth may be left. This type of growth will generally not be the limiting factor on the established line clearance cycle.
- Again if distances permit, and the tree is of substantial height above the primary lines, some of the more upright limbs at the top of the tree (and on the line side of the tree) may be left. In some cases they could be shortened rather than removed. This modification is not meant to encourage overhang.
- When removing portions of limbs on the line side of the tree, the aesthetics may be improved quite dramatically by varying the distances from the line that the individual limbs are cut. The more the cuts can vary from being vertically aligned with one another, the more natural the tree will look following pruning.
- Although pruning cut dressing is not required or recommended for purposes of the tree's health, the use of the dressing can help to soften the visual effects of large limb removal. When the dressing is used, only a light covering should be applied.

- Special attention shall be given to pine trees, which are especially susceptible to being affected by ice and wind conditions. Pines should be pruned such that ice loading will not cause them to fall toward the conductors. This can most easily be achieved by pruning limbs off of the line side of the pine. Discretion must be exercised in determining to what extent the pine should be pruned. In totally rural areas, this will probably result in the pruning of all the limbs off of the line side of the tree. In these most rural, less populated, non-landscaped areas where aesthetics are potentially less important, the tops of pines may be lateraled back to some extent. However, where this technique is utilized, care shall be taken to ensure the pine retains enough leaf area such that its viability is not threatened, resulting in a dead “danger tree.” In more urban areas, where aesthetics may play a role, additional moderation in the extent of pruning may be warranted. In these cases, consideration should be given to leaving some of the smaller and shorter limbs at the very top of the tree instead of completely stripping the entire line side of the pine.

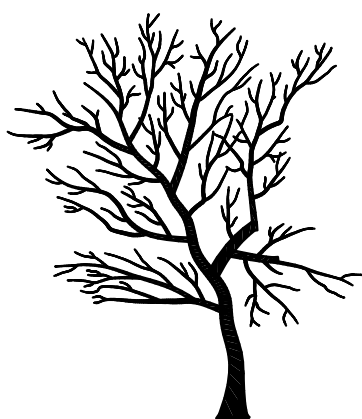


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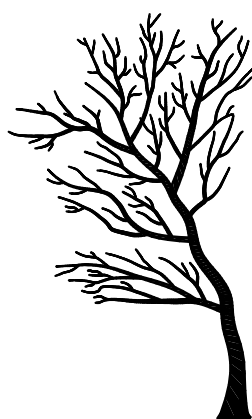
Figure 2.5B



Tree Before Side Pruning



Tree Following Side Pruning
Urban Setting – High Visibility



Tree Following Side Pruning
Rural Setting – Low Visibility

D95JSB03.DWG

Figure 2.5C

2.5.1 Under Pruning

Under pruning refers to the cutting of limbs and branches back to a major limb or the tree's trunk to provide conductor clearance below the tree crown. Under pruning is an available option for secondary lines, service lines, and street light conductors. It is not a recommended practice on primary lines due to safety and reliability concerns.

2.5.2 Through Pruning

Through pruning is the removal of limbs and branches from inner tree crowns to make room for the passage of conductors. This type pruning is best suited to service, streetlight and covered secondary conductors. Through pruning is not recommended for primary conductors.

2.5.3 Combinations

Combining some of the pruning techniques listed above is sometimes appropriate and necessary. Determination of the proper techniques to use on individual trees will depend on surrounding landscape factors, proximity of the tree to the conductors, tree species, previous pruning techniques utilized and line voltages.

2.6 TREE REMOVAL ON DISTRIBUTION RIGHTS OF WAY

2.6.1 Reasons for Tree Removal

For more satisfactory line clearance, it is preferable to cut down specific trees under certain conditions rather than proceed with pruning. Additional information is provided below regarding tree removals.

2.6.2 Customer Notification of Tree Removals

In landscaped and maintained settings, our processes are designed to promote discussions with property owners before a tree is cut down. During these discussions, the issue of wood and brush disposal shall be addressed and the extent of work clearly explained to the property owner. It is also necessary that the property owner understand that the tree removal process does not include the removal of the stump.

In landscaped and maintained areas, brush will be chipped and removed from the site. When feasible and agreed to by the property owner and Duke Energy Carolinas, this brush may be blown into an area either within the right of way or adjacent to the right of way corridor. Larger wood is the property of the owner, and contractors will work with the property owner to cut the wood into manageable lengths. The wood will be stacked neatly at the base of the tree or at the edge of the right of way corridor.

- **NOTE:** Wood or brush from dead or dying trees will not be chipped due to safety concerns. If trees are dead or dying, the brush and wood will be cut down and stacked neatly at the base of the tree.

2.6.3 Varieties to Be Cut Down

The following varieties will be cut down because they impede maintaining satisfactory, safe line clearance and because of their growth characteristics:

- Fast growing trees such as poplars, willows, ailanthus, Chinese elm, silver maple and boxelder. (These species will normally have weak limb structure and/or brittle wood.)
- Spindly pine trees that are likely to fall across the line during high wind or ice conditions.

2.6.4 Conditions Under Which Trees Should Be Considered for Cutting Down

- Large-maturing tree species that have been rounded-over in the past and have no future chance for reasonable natural development.

- Trees identified as “hazard trees” - defined as those which are badly decayed, diseased, dead or dying trees.
- Trees growing in shallow soil or with shallow root systems subject to wind throw.
- Trees prone to structurally unsound limb junctions (or included bark).
- Trees that can be cut down more economically than pruned.
- Trees that otherwise jeopardize obtaining adequate clearance.

2.6.5 Tree Removal Policy Relating to Secondary Conductors and Services

It is not standard procedure to cut down trees endangering secondary conductors and service cables. If a property owner decides to have any type of work performed around a service cable, Duke Energy Carolinas will temporarily disconnect the service cable.

2.6.6 Identification of Trees to Be Cut Down

Trees in landscaped areas that have been identified as those to be cut down shall be flagged with lime green surveyor's tape. This identification can serve two purposes. As explained in the customer notification letter, the green surveyor's tape will identify for the customer, the trees we intend to cut down. It will also identify for the crews, the trees that are to be cut down. For uniformity, the tape should be placed on the trunk of the tree in question at approximately breast height.

On new capital right of way projects, the marking of individual trees is not necessary unless special circumstances are identified.

2.7 BRUSH CUTTING ON DISTRIBUTION RIGHTS OF WAY

2.7.1 Definition of Brush

Brush is defined as vegetation that is six (6) inches or less DBH (diameter at breast height). Brush that could eventually reach a primary line is typically removed.

2.7.2 Low Maturing Trees

Low maturing trees in landscaped or maintained areas, such as dogwoods, are not considered brush and shall be pruned as necessary according to the prescribed line clearance specifications. In non-maintained areas, low-growing species should be evaluated on a site-specific basis. If smaller maturing species are located where access to the lines is impeded, the trees should be eliminated unless other factors prevent cutting them down. In non-maintained roadside situations where access to lines is not considered a problem, established small maturing species may be left. Good judgment should be utilized in assessing such sites to determine the appropriateness of either eliminating the vegetation or encouraging it.

2.7.3 Brush Cutting

All cuts when removing brush shall be made as close to the ground as practicable, preferably two (2) inches or less.

2.8 HERBICIDE USE ON DISTRIBUTION RIGHTS OF WAY

2.8.1 Herbicide Use - General

Herbicide use on distribution rights of way is an effective tool in controlling brush. Herbicides shall be used in a conscientious manner. Users shall be familiar with the product labels, uses, rates, and precautions. Duke Energy Carolinas requires that herbicide application crews be led by licensed pesticide applicators.

Additional information on the Company's herbicide program is located on the Duke Energy Carolinas website at <http://www.duke-energy.com/safety/right-of-way-management/managing-with-herbicides.asp>.

Note: The most important fact to remember is that you must always read and follow the manufacturer's label directions. Do not apply herbicides if you are in doubt about a particular application or use.

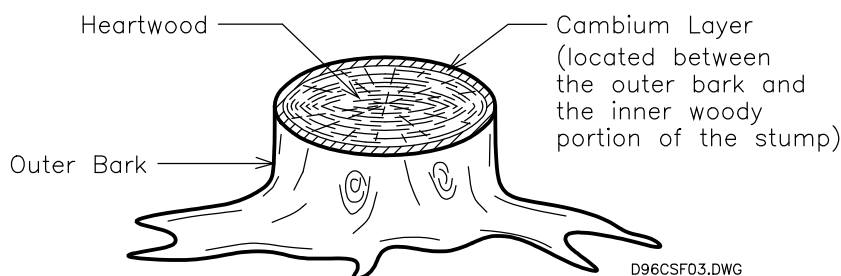
Duke Energy Carolinas primarily uses cut surface treatments (stump treatment), foliar spray, and basal treatment as a part of its overall herbicide program. These applications are described in the following sections.

2.8.2 Cut Surface Treatments (Stump Treatments)

Tree physiology dictates that when hardwood brush and trees are cut down, the remaining root systems of the plants will, in most cases, rapidly re-sprout. It is not unusual to observe 6-8 foot sprouts occurring out of existing hardwood stumps within one growing season following cutting. By using herbicides on the cut surface of the stumps (stump treatment), the Company can eliminate the particular incompatible species from future maintenance. Stumps of conifers (pines, cedars, and other junipers) should NOT be treated.

Cut surface treatments involve an appropriate herbicide or herbicide mix, which is applied to the freshly cut surface of a hardwood stem or tree.

Stump treatments must be made as soon as possible following the cutting of the stem or tree. The sooner the product is applied to the cambium area of the stump, the more effective the treatment will be. Crews should not wait until mid-day or day's end to go back and treat the cut stumps. The product should be applied only to the perimeter (or cambium area) of the cut surface. (See following figure)



The cambium layer is where the conductive vascular tissue of the stem lies, and where the product is capable of being picked up and transported to the root system of the plant. Avoid allowing this product to drench or run-down the barky sides of the stump. Very little benefit, if any, can be derived by allowing the product to run down these barky portions and depending on the product used, it can contribute to undesirable effects on non-target vegetation.

2.8.3 Foliar Application

By far, foliar application of herbicides offers the greatest opportunity for improving rights of way by eliminating unwanted and non-compatible vegetation. Through the use of low-volume backpack foliage sprays, we can change the species composition on our rights of way. This change involves going from a high density of undesirable hardwood and pine stems in a right of way to one comprised of grasses, weeds, vines, and wildflowers.

Several different herbicide mixes are very effective foliar treatments. A number of refinements in the herbicide mix have been made over the years to derive the most effective combination of products that will yield the broadest spectrum of control. Generally, the mix is comprised of approximately 4-5% of actual herbicide product and about 95- 96% water. On initial treatment of typical brush conditions approximately 12- 15 gallons of the product mixture may be utilized to treat an acre of right of way brush. Foliar applications used in the past normally required much more product to be applied and also required complete saturation of all the foliage on the plant. Applications today only require "spotty" coverage of the target plant for effective control. This maximizes the amount of herbicide that is actually applied to the target plants and minimizes the amount of herbicide required to accomplish the desired control.

2.8.3.1 Key Criteria for Successful Foliar Treatment

Several "key" criteria are needed to have a successful foliar treatment program. It is imperative that we have knowledgeable, trained and conscientious individuals applying herbicides. This aspect cannot be overemphasized. Herbicide applications will sometimes be controversial and our procedures and techniques must be sound, factual, and capable of withstanding scrutiny. Therefore, our Company requires that each herbicide crew be led by a state licensed pesticide applicator.

2.8.3.2 Advantages/Disadvantages of Foliar Treatment

Advantages include:

- A properly foliar treated right of way will become more attractive over time. Although there may be brown-out issues initially, the dead leaves will drop and the dead stems will fall. At the same time, there will begin to be an influx of compatible vegetation, such as the grasses, weeds, wildflowers and other herbaceous growth. As a result, less maintenance will be required on the floor of the right of way in the future, and the right of way will move toward a more self-sustaining state.
- The rights of way will be much easier to access when restoring power outages as well as during other maintenance activities.
- The compatible vegetation creates a bio-diverse situation that favors many forms of wildlife such as song birds, butterflies, rabbits, deer and turkey.
- On subsequent retreatment of these rights of way, there will be less brush to treat, more compatible vegetation, less visually distasteful brown-out of dying brush after treatment, and less time needed, and less volume of herbicides needed to accomplish the treatments.

Disadvantages include:

- The most common "negative" associated with foliar applied herbicides is that a treated right of way is not visually appealing within the first several weeks after application. The brown-out effect of the dying brush can be an extremely sensitive issue with some customers when the treated brush is highly visible.
- In many cases, customers know little about the herbicides and are initially inclined to request that herbicides not be utilized on their property. Quite often, however, we find that explaining the details of the treatments (such as how the products utilized, and their practically "non-toxic" properties) can be the key to customers' understanding and acceptance of the program.

2.8.3.3 Foliar Treatment of Kudzu Vines

The most rapidly growing vegetation that we have in our service area is kudzu. The predominant problem with kudzu vines is their ability to grow up a pole or guy wire and contact transformers or primaries. Due to their rapid growth, kudzu vines may require cutting as many as three times per growing season. In contrast, foliage treating the vine growing up the wire or pole and a circular area around the pole or guy typically requires only one trip per site per season.

If the kudzu has covered the pole or guy, it will be necessary to cut the vines, prior to treatment. If the vines are 1/2 to 2/3 of the way up the guy or pole,

apply the product mix as high as the backpack sprayer will reach. This will normally control the entire vine. Surrounding kudzu should be treated for a radius of at least 15-20 feet from the affected pole or guy. This will provide control for an entire season, if not more.

2.8.4 Basal Treatments

Basal treatments may be made on standing stems. The treatment is normally reserved for taller growing stems located in more remote areas. Since this treatment will result in a standing dead stem, caution must be exercised to make certain that the stem will not present a danger to the lines or other “non-target” objects when the stem succumbs, decays and falls. Basal applications offer several advantages. First, you do not have to cut the stem as you do in the cut surface application and, second, these applications may be year-round, unlike foliar applications, which have seasonal limitations to their use. Another advantage is that with applications made during the dormant season, there are no associated customer problems with the browning out of foliage, as sometimes experienced with foliar treatments.

Basal treatments use an herbicide product that is compatible with being mixed with oil type carrier. The herbicide mixture is usually applied by an applicator with a backpack and wand. The application is applied to the lower 12 to 18 inches of the trunk. It should cover the barked portion of the entire circumference of the stem and all the way down the root flairs to the edge of soil contact. The oil carrier containing the herbicide product penetrates the outside bark of the stem and enters the vascular system of the plant. Through its systemic activity, it is then transported throughout the plant to provide control.

One caution should be noted when dealing with an oil-based carrier. During periods of high temperatures, there is a possibility of chemical volatility and thus the possibility of damage to off-site vegetation. Therefore, applications should be avoided during periods of high heat where such damages cannot be tolerated.

Generally, basal treatments are more costly than foliage treatments due to the labor-intensive nature of the application. However, cutting foliage allows for resprouting, which must be treated later. Therefore, although generally somewhat more costly, basal treatments may be economically justified in some situations.

2.8.5 Communications and Customer Refusal of Herbicide Application

Duke Energy Carolinas considers the use of herbicides an important aspect of its overall right of way program. The use of herbicides is both environmentally acceptable and economically feasible. If the customer objects to the use of herbicides, the representative should fully explain the products we use and the environmental benefits of using herbicides. Past experience has indicated that the great majority of our customers are accepting of our herbicide program when they understand it; therefore, proper communications with customers is an important when as a part of our foliar spray program.

Although property owner agreement to use herbicides is not required, if performing work on the North Carolina and the South Carolina Department of Transportation rights of way, it is necessary to request a permit to do such work through the appropriate division. Other agencies that should be contacted are the local Agricultural Extension service, parks and recreation personnel, city arborists and tree commissions. Duke Energy Carolinas provides an annual bill insert to explain the use of herbicides on its rights of way and the products used. A copy of the bill insert is shown on page 99.

If a property owner has concerns or would like more information about Duke Energy Carolinas' herbicides program, the property owner should contact the Customer Contact Center at 1-800-777-9898 and ask to be connected with a vegetation management specialist. The vegetation management specialist will provide information to the property owner and a copy of the refusal form for herbicide applications upon request.

If a property owner refuses to allow the application of herbicides on his/her property, the owner should complete the Customer Refusal Form for Herbicide Applications on Duke Energy Electric Line Rights of Way on page 46 and install the required signs which can be ordered using the Order Form for "No Spray" Signs shown on pages 47-48.

Customer Refusal Form For Herbicide Applications on Duke Energy Electric Line Rights-of-Way

Customer's Name: _____ Home Phone Number: (____) _____

Address: _____ Alternate Phone Number: (____) _____

City/Town: _____ State _____ Zip Code _____

Name of Duke Employee Taking This Report: _____ Date of Report: _____

Circuit Number _____

Is the property, that you desire NOT to have herbicides used on, located at the above address? _____ If it is not, describe as closely as possible where the property is located.

Please provide a rough diagram of your property on the back of this form. Indicate where the right-of-way and individual poles are located in reference to your house, other structures, driveways, highways, intersections, etc.

Each customer who requests we not spray on his property will be given information regarding the ordering of signs that must be posted on the property. These signs must be placed approximately in the middle of the right-of-way on a post that the customer will provide. Under no circumstance shall the sign be attached to Duke's power poles or any other of Duke's equipment. The sign shall be facing away from the customer's property such that it can be easily seen by a crew as they approach the property in question.

Customer must read the following and indicate their acceptance by their signature.

I the undersigned, do hereby request that Duke Energy not use herbicides on the power line right-of-way that is located on my property as described above and/or diagrammed on the back of this form. I hereby agree to be responsible for ordering these signs and for properly placing the signs as indicated above. I hereby agree to be responsible for the upkeep of the signs and to maintain them so they are clearly visible, and I further understand and agree that if the signs are not clearly visible, then Duke Energy is free to use herbicides on my right-of-way. I understand that although I am electing to not allow herbicide applications on my property, that Duke Energy will maintain the vegetation under and around their facilities by manual and mechanical means. I further understand that I may rescind this agreement at any time by contacting Duke Energy, in writing, and requesting them to begin maintaining the right-of-way on my property in their routine manner.

Signature of Customer _____ Date _____

Rev (05/15/2012)

ORDER FORM FOR "NO SPRAY" SIGNS

The following is ordering information for obtaining "NO SPRAY" signs to post on Duke Energy's Rights-of-Way. Remember the sign must be placed on a post in the Right-of-way and must be clearly visible so that mowing crews can avoid mowing over the sign and so that the spray crews can easily spot them. Signs shall not be attached to Duke poles or other equipment. (Signs are made of highly durable corrugated plastic and are 12" x 18")

Signs may be purchased from:

Total Exposure Designs
Attention: No Spray Department
505--109 Meadowlands Drive
Hillsborough, NC 27278

PHONE: 919-732-1546
FAX: 919-732-1599



Please allow two weeks for delivery

SHIP TO:

Name _____

Address _____

City _____ State _____ ZIP _____

Phone # () _____ ted/pbr rev: 4-2007

Quantity

Of Signs ____ X \$5.50 = \$ _____

Shipping & Handling \$7.25 _____
 per order

Total Amount..... \$ _____

METHOD OF PAYMENT

Please Check One

☐ Check Enclosed (Made payable
 to Total Exposure Designs)

☐ Visa ☐ Mastercard
 Card # _____

Expiration Date _____



Vendor prices subject to
 change



OFFICIAL COPY

Dec 14 2015

PHONE: (704) 827-9979

BILL TO:

SHIP TO: (IF DIFFERENT)

Address

City _____ State _____ Zip _____

Phone #

Check One **METHOD OF PAYMENT**

☐ Check enclosed **TO : New Creation**

☐ Money order enclosed **Screen & Sign**

☐ Check enclosed **TO : New Creation**
☐ Money order enclosed **Screen & Sign**

**NEW
CREATION**
Screen & Sign
A DIVISION OF
CRISONNA
INC.

Vendor prices subject to change

2.9 PRUNING PRACTICES FOR OLD DESIGN URBAN CIRCUITS

2.9.1 Description of Old Urban Circuits

Old Design Urban Circuits consist of overhead electric distribution lines typically built early to mid-1900s and that operate at 4 kV or 12 kV in older, populous neighborhoods or historic districts in which the line is located in public right of way along the street or on the property line between the neighborhood homes. Typically, these circuits have mature and/or over-mature trees located directly under or near electric distribution lines and are in direct conflict with the overhead distribution utility space.

2.9.2 Operational Practices

From an arboricultural perspective, these trees will never be able to develop a natural structure and they have traditionally required utility crown-reduction (height and/or spread) pruning to maintain safe, reliable electric service. The preferred operational practice is to remove small diameter stems but, when that is not possible, the aforementioned utility crown-reduction pruning technique must be utilized to reduce the height and/or spread of a tree to provide the necessary clearance. Due to the growth characteristics and clearance needed at the time of pruning, the Company targets these circuits to be on a 5-year pruning schedule, provided, however, that system reliability can always necessitate variations in the schedule. As noted, pruning practices for these trees are more intensive and the option of tree removal and replacement with a compatible tree may be constrained. Refer to Vegetation Management Policies and Practices Section 2.5 “Types of Tree Pruning” for more detail.

The specification below has been developed with the following key objectives:

- Promote safety and reliability through species targeted clearances, specifications and removals
- Promote tree health and sustainment of an urban tree canopy through industry accepted arboricultural pruning practices and Tree Growth Regulator applications

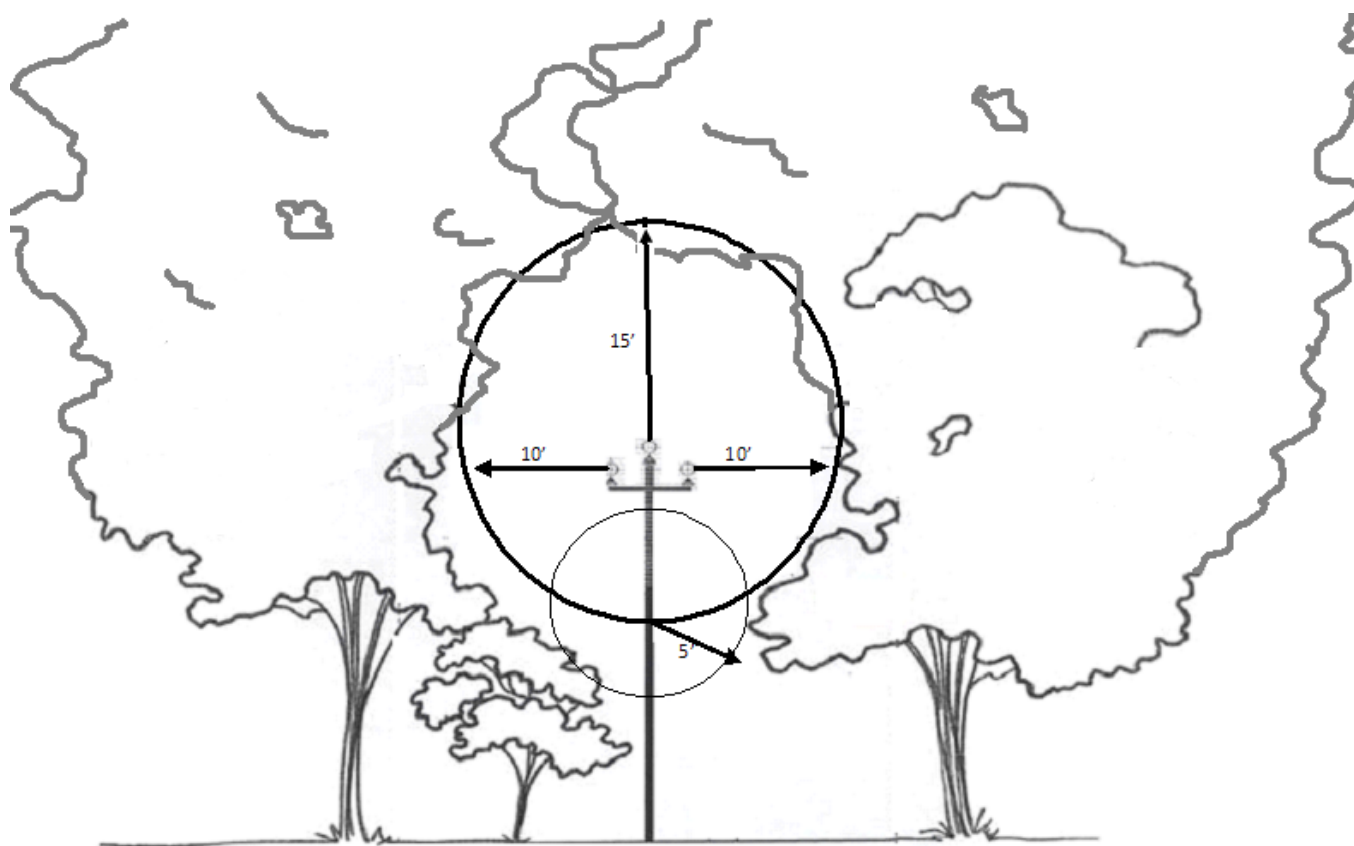
2.9.3 General Specifications for Old Design Urban Circuits

Clearances:

Pruning Type	Recommended Clearance	Special Notes
Height Reduction or Crown-Reduction	Minimum 5 ft from neutral conductor	Targeted for trees that are located directly under the electrical facilities. All cuts shall be made in accordance with acceptable industry standards (i.e. ANSI A300 and Shigo Methods). Topping, tipping, and rounding over are prohibited.
Pruning Type	Recommended Clearance	Special Notes
Pruning of Overhanging Limbs (Bucket Accessible)	15 ft on multi-phase and 10 ft on single-phase	Limbs located above and hanging over the line will be evaluated and may remain if mature and structurally sound. All incipient growth should be removed as high as the bucket will reach. Branch reduction pruning targeting mature structurally sound growth may be performed as high as

		the bucket will reach. Generally, with proper lateral pruning, limb reduction cuts should target no more than 1/3 reduction of the total limb length. All cuts shall be made in accordance with acceptable industry standards (i.e. ANSI A300 and Shigo Methods). All dead, diseased, or structurally unsound overhanging limbs will be removed.
Pruning of Overhanging Limbs (Manually Climbed Trees)	15 ft on multi-phase and 10 ft on single-phase	Limbs located above and hanging over the line will be evaluated and may remain if mature and structurally sound. All incipient growth should be removed and branch reduction pruning targeting mature, structurally sound growth may be performed. Generally, with proper lateral pruning, limb reduction cuts should target no more than 1/3 reduction of the total limb length. All cuts shall be made in accordance with acceptable industry standards (i.e. ANSI A300 and Shigo Methods). All dead, diseased, or structurally unsound overhanging will be removed.
Side Pruning – (General Practice)	10 ft from conductor including neutral	All pruning should be in accordance with established, sound principles of care and preservation of trees and in a manner balancing emphasis on current tree health and clearance needed for power lines. All cuts shall be made in accordance with acceptable industry standards (i.e. ANSI A300 and Shigo Methods). Limbs greater than 8" in diameter that are structurally sound may be allowed to encroach closer than 10ft from the side.
Side Pruning - Slow Growing Species (Targeted Practice)	7.5 ft	<p>Slow growing species include but are not limited to:</p> <p>Flowering Dogwood (<i>Cornus florida</i>)</p> <p>Southern Magnolia (<i>Magnolia grandiflora</i>)</p> <p>Wax Myrtle (<i>Myrica cerifera</i>)</p> <p>Eastern Redbud (<i>Cercis Canadensis</i>)</p> <p>Southern Red Cedar (<i>Juniperus silicicola</i>)</p> <p>Eastern Red Cedar (<i>Juniperus virginiana</i>)</p> <p>With these species, pruning techniques may be utilized that balance individual tree form characteristics and necessary clearance.</p> <p>All cuts shall be made in accordance with acceptable industry standards (i.e. ANSI A300 and Shigo Methods).</p>

2.9.4 Multi-Phase Illustration



The above illustration is a visual representation of a right-of-way upon completion of pruning in accordance with the specifications outlined in the tables above.

2.9.5 Danger/Hazard Tree for Old Urban Design Circuits

Danger or hazard trees are identified as trees that have the potential to adversely impact electric service by falling into a transmission or distribution electric line as a result of being cut, blown into, or otherwise falling, by virtue of their physical condition. For Distribution facilities, these hazard trees are identified as dead, dying, diseased, uprooting, or otherwise structurally unsound that pose a threat to electric facilities. Trees of this nature should be targeted for removal if within 45' of the centerline.

Note: Wood or brush from danger/hazard trees will not be chipped but rather cut into manageable lengths and stacked neatly at the base of the tree.

2.9.6 Tree Removals

A long-term goal of the vegetation management program is to promote planting “the right tree in the right place”. Thus, at the time of maintenance, the program will target

removal of incompatible tree species in close proximity to the distribution system. Incompatible species typically are short lived, fast growing, structurally weak, prone to failure and/or likely be weakened by pests or disease. Below is a representative, but non-exclusive, list of incompatible species that should be targeted for removal when encountered during maintenance activities.

Incompatible species to target for removal
1. Bradford Pear
2. Leyland Cypress
3. Red and Silver Maples
4. Locust
5. Poplar

In unmaintained/non-landscaped area(s), naturally established (volunteer) woody vegetation and/or trees $\leq 6"$ in diameter along the right-of-way, and of incompatible species will be targeted for removal.

2.9.7 Tree Growth Regulator Application (TGR)

During the planning and operational phase of routine pruning, the use of a TGR should be considered. If a TGR is to be used, discussions with the property owner are required prior to application of a TGR. During these discussions, an explanation of what a TGR is and the expected result(s) will be explained to the property owner. TGR application can occur up to 2 months prior to pruning depending on schedules, site, and environmental conditions.

3.1 INTRODUCTION - TRANSMISSION RIGHTS OF WAY

3.1.1 Purpose

Duke Energy Carolinas is committed to delivering the highest possible quality service to customers, ensuring safety, reliability, and accessibility. In order to provide safe, reliable power to as many customers as possible, Duke Energy Carolinas must regularly inspect electric transmission lines for situations where vegetative growth either threatens to damage the transmission line and associated facilities or creates a safety hazard to the public.

Duke Energy Carolinas has approximately 13,000 miles of high voltage lines that make up its transmission system. Disruption of service from these lines can have serious consequences to many customers. One of the most effective methods of protecting these lines is through purchased rights of way. These are the legal agreements that specify Duke Energy Carolinas' rights to maintain its facilities inside and outside of right of way corridors. The right of way agreement establishes the terms and conditions under which Duke Energy Carolinas performs maintenance activities.

The policies, procedures & specifications within this section are a general guide for Duke Energy Carolinas personnel engaged in supervision of right of way maintenance activities, but the policies & procedures stated herein do not supersede the specific rights granted under an individual right of way agreement. If any provision within this chapter conflicts with the provisions of a specific a right of way agreement, the right of way agreement shall prevail.


3.2 MINIMUM APPROACH DISTANCE (MAD) GUIDELINES


Operating Agreement for Duke Energy Employees or its Contractors, Working on Trees within the Minimum Approach Distance (MAD)

Minimum Approach Distance (MAD) - As defined by OSHA, the closest distance an employee based on his qualifications, is permitted to approach an energized or a grounded object.


The following outlines the best practices for vegetation removal within certain distances of energized transmission conductors.

44 kV to 69 kV

1.  Stop work if vegetation to be removed is within the Minimum Approach Distance (MAD). (See ANSI Z133 Standard for "phase to phase" MAD footages.)
2. Contact and consult contractor supervision and Duke Energy Carolinas Vegetation Management Specialist regardless of whether the vegetation will be worked with a bucket or a climbing crew.
3. If vegetation is actually contacting the line, the line must be de-energized and grounded prior to work on the tree progressing.
4. Insulated tools can be used to remove the vegetation in the case of a bucket or in the case of climber (if the tree is inaccessible by a bucket or a remote cutter (Skytrim, Jarraff, etc.)). Insulated tools will be kept clean and dry.
5. Worker must always stay out of MAD!
6. A bucket is the preferred method to accomplish this work (as opposed to a climbing crew.)
7. Remote cutters (Skytrims, Jarraffs, etc.) may be utilized to clear the vegetation as long as the vegetation is not in direct contact with the conductor. (Manufacturer's specifications will always be used in the determination of whether the equipment is tested for the applicable voltage.) Remote cutters (Skytrims, Jarraffs, etc.) may be operated both inside and outside the MAD.
8. Vegetation orientation to line (i.e. overhang vs. lateral distance) will be taken into consideration prior to commencement of work. Factors such as the possible sway of the tree in wind, etc. shall be considered prior to working. Other aspects of hazard awareness will also be considered in the work plan.
9. Only fiberglass pole pruners will be utilized on transmission voltages. Wood poles are not allowed.

1.  Stop work if the vegetation to be removed is within the Minimum Approach Distance (MAD). (See ANSI Z133 Standard for “phase to phase” MAD footages.)
2. Contact and consult contractor supervision and Duke Energy Carolinas Vegetation Management Specialist regardless of whether the vegetation will be worked with a bucket or a climbing crew.
3. If vegetation is actually contacting the line, the line must be de-energized and grounded prior to work on the tree progressing.
4. Bucket crews may work a tree within the MAD as long as insulated tools are utilized. Insulated tools will be kept clean and dry.
5. If work location is inaccessible to a bucket or a remote cutting device, the line will require being de-energized and grounded prior to work on the tree progressing. A climber will NOT be allowed to work in a tree that is within MAD.
6. Worker must always stay out of MAD!
7. Remote cutters (Skytrims, Jarraffs, etc.) may be utilized to clear the vegetation as long as the vegetation is not in direct contact with the conductor. (Manufacturer’s specifications will always be used in the determination of whether the equipment is tested for the applicable voltage.) Remote cutters (Skytrims, Jarraffs, etc.) may be operated both inside and outside the MAD.
8. Vegetation orientation to line (i.e. overhang vs. lateral distance) will be taken into consideration prior to commencement of work. Factors such as the possible sway of the tree in wind, etc. shall be considered prior to working. Other aspects of hazard awareness will also be considered in the work plan.
9. Only fiberglass pole pruners will be utilized on transmission voltages. Wood poles are not allowed!

Above 100 kV

1.  Stop work if vegetation to be removed is within the Minimum Approach Distance (MAD). (See ANSI Z133 Standard for “phase to phase” MAD footages.)
2. Contact and consult contractor supervision and Duke Energy Carolinas Vegetation Management Specialist regardless of whether the vegetation will be worked with a bucket or a climbing crew.
3. Steps will be taken to de-energize and ground line prior to any work being done on the tree.
4. Remote trimming devices will not be allowed to be utilized while the line is energized.
5. **Exception to “Phase to Phase” MAD footages:** Individual Contractors’ safety guidelines may be based on “phase to ground” MAD. If this is the case, the contractor may allow their workers to remove vegetation whose separation is less than the “phase to phase” MAD. In no case may the worker come closer to the conductor than the “phase to ground” MAD permits. In no case may the worker remove the vegetation, while the line is energized, if the vegetation breaks minimum separation based on “phase to ground” MAD footages.

3.3 CUSTOMER COMMUNICATIONS - TRANSMISSION

3.3.1 Customer Notification

In landscaped and residential areas, contact should be made with the property owner or present tenant at least three days prior to, but not more than two weeks prior to, the anticipated day for the work to begin. The standard method of notifying customers of upcoming right of way maintenance activities is through contact by the contractor crew lead person. A short personal meeting is preferable when distributing approved communication materials, but if the property owner is not at home, the material should be left in a door hanger at the premises for the customer to review when he/she returns. The door hanger for use on transmission rights of way follows this subsection.

If a personal contact is made, the Duke Energy Carolinas representative will explain the nature and extent of the work to the property owner. Also, the property owner should be given a copy of the Transmission Right of Way Planned Maintenance Letter, shown on page 60 The Duke Energy Electric Transmission Right of Way Guidelines/Restrictions Valid for North Carolina and South Carolina, document shown in Section 4 may be provided as appropriate. These materials should be given to the property owner along with a Duke Energy Carolinas door hanger describing the maintenance work to be performed, marked on the front with the appropriate Vegetation Management Specialist's business card attached. Meeting personally with the customers facilitates Duke Energy Carolinas' ability to clearly establish its intent and gain an understanding of the property owner's expectations.

If personal contact cannot be made, the door hanger with the above-mentioned materials will be left informing the property owner of Duke Energy Carolinas' intent to perform right of way maintenance to ensure the safety and reliability of the transmission lines. In conjunction with customer notification, trees outside the right of way corridor identified to be cut down shall be marked at the base of the tree with orange tree paint a minimum of three days prior to removal.

If the property owner objects to the identified maintenance to be performed, he or she will be instructed to call the Vegetation Management Specialist identified on the door hanger. The Vegetation Management Specialist will contact the property owner to understand the objection and to try to come to an agreement to allow the maintenance to continue. This discussion may include, but not be limited to, a re-assessment of the tree's height and/or condition to verify that the tree selected to be cut down will endanger the line. If discussion with the property owner does not resolve the issue, then the Duke Energy Carolinas Division Vegetation Management Specialist should be notified to help with resolution. If this also fails to bring the issue to closure, then the Transmission Vegetation Manager should be notified to help resolve the issue.

When property owners object to cutting danger trees outside of the right of way corridor, they may be given the option to continuously maintain the subject trees to Duke Energy Carolinas' standards at their own expense, as explained in the Transmission Right of Way Planned Maintenance Letter. However, "topping" of trees is not encouraged as it is arboriculturally unsound and may lead to diseased or hazardous trees. If the property

owner elects to maintain the tree to Duke Energy Carolinas' specifications, he/she must sign a Transmission Right of Way Danger Tree Pruning Agreement and will be allowed 30 days to complete the work.

Special Note: If by definition, the condition found is an SR (Service Response), this is an emergency condition and if the property owner cannot be reached, the Company will leave a door hanger shown on page 67. This hanger explains that the Company had to take emergency action to resolve a tree-related problem. The door hanger should include a business card with contact information.

Transmission Right of Way Door Hanger



Maintaining lines brings reliable power.

Date _____

Dear Customer/Property Owner:

Duke Energy will soon be conducting planned vegetation maintenance inside and outside the electric transmission right-of-way corridor. The purpose is to ensure the safety and reliability of these transmission lines.

In the near future Duke Energy will be:

☐ Removing trees and shrubs inside the right-of-way corridor that would mature at a height of greater than 15 feet. Please refer to the enclosed letter for more details.

☐ Removing any tree(s) outside the right-of-way corridors, which currently, or before the next maintenance cycle, could fall (for any reason) and endanger Duke Energy structures or equipment. Please refer to the enclosed letter for more details.

☐ Contacting you about a right-of-way encroachment and the need for removing this obstruction.

☐ Other _____

Thank you.

Job No. _____

Date _____ Time _____

Line Index No. _____

Structure No. _____

If you have any questions, please feel free to contact me at the number listed on the attached business card or by contacting the Customer Contact Center at 800.777.9898.

www.duke-energy.com/customer

Transmission Right of Way Planned Maintenance Letter



(date)

Dear Customer/Property Owner:

Duke Energy Carolinas' qualified line clearance professionals are conducting transmission right of way maintenance in your area. Transmission lines on Duke Energy Carolinas' electric system serve many thousands of customers. To provide safe, reliable service, we inspect and clear rights of ways of obstructions and vegetation hazards.

The right of way through your property is scheduled for maintenance. This work will be done in accordance Duke Energy Carolinas' purchased right of way easement. This typically includes:

- The removal of all tree(s) and shrubs inside the right of way corridor that mature at a height of greater than 15 feet;
- The removal of any tree(s) outside the right of way corridor, which, currently or before the next maintenance cycle, could fall for any reason, or endanger any structures or equipment.

In maintained areas trees identified for removal will be marked with orange paint. Brush will be chipped, and removed from the site. When feasible and agreed to by the property owner and Duke Energy Carolinas, the brush may be blown into an area either within the right of way or adjacent to the right of way corridor. Larger wood is the property of the owner and contractors will work with the property owner to cut the wood into manageable lengths and the wood will be stacked neatly at the base of the tree or at the edge of the right of way corridor. We do not remove or grind stumps.

In non-maintained areas, trees and limbs will be cut and left on site and windrowed along the edge of the right of way. Brush can be "mowed" when the terrain or site allows. If the terrain does not allow mechanized equipment (mowing operation), the trees and limbs will be manually hashed down and left to biodegrade naturally.

Please contact me if you believe that one or more of the trees we have marked are not of sufficient height to endanger any wires or structures in the right of way, either now or before the next maintenance cycle. We will have a representative reexamine the trees selected and make a further determination of whether the trees in question do constitute a danger or a hazard to our facilities. For those tree(s) selected to be cut down outside our specified right of way corridor, we allow you the option to continuously maintain any such tree(s) to Duke Energy Carolinas standards. This maintenance will be at your own expense.

If I am unavailable, please leave your name, date and time of call, along with your telephone number (area code included) so I may return your call as soon as possible.

If you wish to replace the tree(s) in place of those cut down, we urge you to consider lower growing species that mature no more than 15 feet in height..

Thank you.

xxxxxx (name)
xxxxxx (title)
xxxxxx (company)
xxx-xxx-xxxx (phone)

T-Routine Maint.
Rev (05/28/2015)

STATE OF NORTH CAROLINA)
)
)
 COUNTY OF _____) TRANSMISSION RIGHT OF WAY DANGER
) TREE TRIMMING AGREEMENT

This Transmission Right of Way Tree Danger Tree Trimming Agreement ("Agreement") is entered into as of _____, 20__ by and between **Duke Energy Carolinas, LLC** ("Duke Energy") and _____, having an address of _____ (collectively referred to herein as "Owner").

RECITALS

A. Owner is the owner of the property located at _____ (the "Property").

B. Duke Energy is the owner of a right-of-way and easement on the Property, _____ feet (_____) in width ("Right-of-Way Corridor"), for the construction, operation and maintenance of an electric transmission power line pursuant to that certain document dated _____, recorded in the Office of the Register of Deeds for _____ County in Deed Book ____ at Page ____ which gives Duke Energy the right to remove trees outside the Right of Way Corridor that may endanger the operation of the transmission power line. As a franchised electric utility subject to the jurisdiction of the North Carolina Utilities Commission, Duke Energy has an obligation to provide a reliable source of electric power at all times.

C. Duke Energy has identified _____ (_____) trees located on the Property, growing outside the Right-of-Way Corridor, that Duke Energy believes need to be removed because they jeopardize the operational reliability of Duke Energy's power line ("Danger Trees").

. Duke Energy employee, _____, _____), certified he/she met with Owner at the Property on _____. Duke Energy marked the Danger Trees with orange paint

Owner has requested that, in lieu of Duke Energy removing the Danger Trees, the Owner be permitted to trim them instead, to Duke Energy's specifications. Duke Energy has agreed to permit Owner to trim the Danger Trees pursuant to the terms and conditions of this Agreement.

NOW THEREFORE, in consideration of the aforementioned Property and the mutual covenants recited herein, Duke Energy and Owner hereby agree as follows:

1. Owner shall be solely responsible for maintaining the Danger Trees as well as all other trees on the Property located outside the Right-of-Way Area and within the "Danger Tree Zone," defined as sixteen (16) feet from the edge of the Right-of-Way Corridor. Owner shall utilize only certified electrical line clearance trimmers to maintain Owner's trees within the Danger Tree Zone. Owner shall be required to trim all trees within the Danger Tree Zone to maintain system reliability and conductor clearance for the proper operation of Duke Energy's transmission lines at all times. Owner shall be required at all times to keep the height of all trees within the Danger Tree Zone trimmed to such a height that if, at any time and for any reason, the tree should fall, the upper top limbs (i.e., the canopy) of the tree will clear the middle and bottom conductors that are closest to the Danger Trees at a minimum footage, defined by voltage class as listed below, for each power line crossing the Property:

44,000 kilovolts & 100,000 kilovolts = ten (10) feet clearance

2. Owner will be required to maintain and trim all trees located outside the Danger Tree Zone that grow into the Right-of-Way Corridor which includes keeping all limbs (branches) clear at a minimum footage, defined by voltage class as listed below, of any of Duke Energy's transmission lines, structures, bottom, middle and top conductors crossing the Property:

44,000 kilovolts & 100,000 kilovolts = twenty (20) feet clearance

3. Duke Energy conducts bi-annual helicopter patrols to inspect its transmission system for "danger trees." A "danger tree" is defined as any tree that is dead, dying or leaning, that if, for any

reason, it should fall or make contact with other live trees pushing them over, the tree itself or other trees falling would break a minimum separation from any one conductor and/or structure as provided under Paragraph 1 above. Healthy trees will also be reported as "danger trees" if and when their limbs (branches) grow within a specified footage based on voltage as provided in Paragraph 2 above. If for any reason and or at any time Owner fails to trim and/or maintain the tree clearance requirements specified in this Agreement, Duke Energy reserves the right to terminate this Agreement immediately, notify the Owner of said termination, and cut down the "danger trees" identified by Duke Energy. Owner will be notified prior to any work being scheduled. Duke Energy will cut to the ground all "danger trees" at its expense. The tree limbs will be chipped in maintained areas only, and the wood cut into manageable lengths and stacked at the base of the tree or at the edge of the Right-of-Way Corridor. Duke Energy will chip and dispose of limbs and debris less than six (6) inches in diameter.

4. This Agreement is for the personal benefit of Owner and shall not be assigned or otherwise transferred without Duke Energy's prior consent. This Agreement shall not run with title to the Property, except that Owner's children and grandchildren may exercise the rights herein granted to the Owner should the Owner's children or grandchildren become the fee or beneficial owners of the Property.

5. Nothing contained in this Agreement shall be deemed to waive, abrogate, or change the respective rights and obligations of Duke Energy or the Owner in and to the Property arising by virtue of the aforesaid Right-of-Way document dated _____, including specifically, but not limited to, the right of Owner to challenge Duke Energy's determination that any tree located upon the Property endangers the proper operation of electrical lines and wires.

This ____ day of _____, 20__.

OWNER:

(Signature)

(Name Printed)

STATE OF NORTH CAROLINA

COUNTY OF _____

I certify that _____ (subscribing witness) personally appeared before me this day and certified to me under oath or by affirmation that he or she is not a grantee or beneficiary of the transaction, signed the foregoing document as a subscribing witness, and either (i) witnessed _____ sign the foregoing document or (ii) witnessed _____ acknowledge his or her signature on the already-signed document.

Date: _____

(Subscribing Witness Signature)

Notary Public

My Commission Expires: _____

(Subscribing Witness Printed)

[Signatures Continue on Following Page]

OWNER:

(Signature)

(Name Printed)

STATE OF NORTH CAROLINA

COUNTY OF _____

I certify that _____ (subscribing witness) personally appeared before me this day and certified to me under oath or by affirmation that he or she is not a grantee or beneficiary of the transaction, signed the foregoing document as a subscribing witness, and either (i) witnessed _____ sign the foregoing document or (ii) witnessed _____ acknowledge his or her signature on the already-signed document.

Date: _____

(Subscribing Witness Signature)

Notary Public

My Commission Expires: _____

(Subscribing Witness Printed)

[Signatures Continue on Following Page]

DUKE ENERGY CAROLINAS, LLC

By: _____

Name: _____

Title: _____

STATE OF NORTH CAROLINA

COUNTY OF _____

I certify that the following person(s) personally appeared before me this day, each acknowledging to me that he or she signed the foregoing document:

Date: _____

Notary Public

My Commission Expires: _____

OFFICIAL COPY

Dec 14 2015

Transmission Notification for Service Response Action (Form 606510)

Immediate Threat Transmission Service Response

Dear Property Owner,

During a recent inspection our qualified line clearance personnel identified a tree(s) which posed an immediate threat to Duke Energy Carolinas' transmission system.

I attempted, but was unable to contact someone at the location concerning this issue to inform you of the need for immediate action. Therefore, our line clearance personnel cut down the tree(s) which posed the immediate danger to the transmission system.

Duke Energy operates its transmission system in a manner that provides safe, reliable electricity to thousands of people not only in the Carolinas and throughout the surrounding region.

Our practices provide that if the area where the danger tree(s) is located is landscaped, the brush and limbs are chipped and taken away. The wood is cut in manageable lengths and left. In non-landscaped areas the brush, limbs and wood are left on site to bio-degrade naturally.

If you have any questions, please feel free to contact us at the number on the attached business card.

Thank you.



3.4 SPECIFICATIONS FOR LINE CLEARANCE WORK ON TRANSMISSION LINES

3.4.1 General

More detailed descriptions of contractor requirements and specifications can be found within the specific contract agreements between Duke Energy Carolinas and the respective contractor.

3.4.2 Determining the Right of Way Easement Edge (Right of Way Corridor)

Most modern rights of way provide for a specified corridor to be maintained free of obstructions, with the right to cut down all trees inside the specified corridor, and those outside the specified corridor that may endanger the line. Many older rights of way have specific limits. The right of way corridor shall be determined by measuring from the center of the transmission line to the outer edge of the corridor. Prior to beginning work, flagging ribbon will be installed clearly identifying the right of way corridor or easement edge. All trees and/or brush located on the edge of the right of way corridor shall be cut to the ground if the trunk is twenty five percent (25%) or more within the corridor.

3.4.3 Inside the Right of Way Corridors

Duke Energy Carolinas uses herbicides where it is the safe and environmentally sound option in order to eliminate undesirable woody species from the rights of way while promoting lower growing, compatible vegetation. Further information on the use of herbicides is provided in Section 3.10.

Within the right of way corridor, the Company has the right to cut down vegetation that will mature at a height of greater than 15 feet is allowed, and for this reason, property owners are not permitted to trim taller species in the right of way corridor. When a live healthy tree's trunk is wholly outside the right of way corridor, but the limbs encroach into the maintained right of way corridor, the extent of pruning will be only to the edge of the right of way corridor, or at the first proper lateral past the edge of the right of way corridor. When cutting down trees or brush from within the corridor by hand, stumps will be treated with herbicide to prevent resprouting from these plants. Duke Energy Carolinas will not object to certain vegetation plantings as long as they do not interfere with the access to or the safe, reliable operation and maintenance of Duke Energy Carolinas facilities. Consult <http://www.duke-energy.com/safety/right-of-way-management/transmission-restrictions.asp> for the Asset Protection Specialist contact information. For compliant mature height species, refer to <http://plants.ces.ncsu.edu/> for reference.

3.4.4 Outside the Right of Way Corridors

For areas outside right of way corridors where the right of way agreement allows trees to be cut down outside the specified strip, the following provisions apply:

Above 200 kV

Danger trees are trees outside the specified right of way strip that are tall enough to break minimum separation of fifteen (15) feet to any one conductor, or other Duke Energy Carolinas apparatus, should the tree fall, be cut, or blown towards the lines. Danger trees will normally be cut down, subject to the provisions of the specific right of way agreement. Right of way agreements are the controlling guidelines for the appropriate handling of such trees. In addition, work outside the right of way corridor includes the elimination of danger trees that are dead, dying, diseased, or leaning. This work can be triggered by a condition assessment or be part of the normal “danger tree” cycle cut.

Below 200 kV

Trees that could fall within ten (10) feet of a conductor or any other Duke Energy Carolinas apparatus shall be cut down if the tree is within a sixteen (16) foot buffer zone on either side of the right of way corridor. Outside of the sixteen (16) foot buffer zone, any dead, dying, diseased or leaning tree that could fall within ten (10) feet of a conductor or any other Duke Energy Carolinas apparatus shall be cut down. Additionally, the Company will cut down any dead, dying, diseased or leaning tree that could fall and cause another tree to fall within ten (10) feet of the conductor or any other Duke Energy Carolinas apparatus.

For 44 kV voltage lines, and only in landscaped areas, the primary focus will be on the removal of conifers within the sixteen (16) foot buffer zone.

3.4.5 Landscaped Areas

In landscaped areas inside the right of way, the Company has the right to cut down all trees that will mature at a height greater than fifteen (15) feet. On rare occasions, a property owner may request permission to relocate, at his or her expense, a tree that is located inside the specified right of way corridor. In these circumstances, the Vegetation Management Specialist will evaluate the feasibility of the request. Factors the Vegetation Management Specialist must consider in granting such a request include, but are not limited to: (i) size of the tree; (ii) the proximity of the tree to the energized conductor; (iii) ability of the property owner to relocate the tree safely; (iv) the survivability of the relocated tree; and the (iv) ability of the property owner to relocate the tree promptly. Not all trees can be feasibly located, and the Vegetation Management Specialist is in the best position to make this determination on a case-by-case basis. If the Vegetation Management Specialist agrees that the property owner may relocate the tree, the property owners will be allowed four weeks from the notification date to relocate the tree(s). The Company will document by type and size the trees identified for relocation by the property owner. If the property owner does not relocate the tree(s) outside the right of way corridor within the specified timeframe, the Duke Energy Carolinas Vegetation Management Specialist will schedule the removal of the tree(s).

Trees that can grow to a height greater than fifteen (15) that may have been pruned, topped back, or rounded over in the past, shall not be pruned. Such trees within the right of way corridor should be cut down.

In landscaped and maintained areas, brush will be chipped, and removed from the site. When feasible and agreed to by the property owner and Duke Energy Carolinas, the brush may be blown into an area either within the right of way or adjacent to the right of way corridor. Larger wood is the property of the owner and contractors will work with the property owner to cut the wood into manageable lengths. The wood will be stacked neatly at the base of the tree or at the edge of the right of way corridor.

3.4.6 Non-Maintained Areas

In non-maintained areas, trees and limbs will be cut and left on site and windrowed along the edge of the right of way. Brush can be brush hogged when the terrain or site allows. If the terrain does not allow mechanized equipment, the trees and limbs will be manually hashed down and left to biodegrade naturally.

3.4.7 No Maintenance Areas (Leave Areas)

“Leave areas” documented and approved by Duke Energy Carolinas will be exception areas where trees will be allowed to remain within the right of way. “Leave areas” are defined as areas where fully mature trees will never interfere with the safe and reliable operation of the line. Leave areas will in most cases be located in mountainous terrains where electrical conductors are spanning across hills and valleys. Some locations could be under an ordinance requirement for road buffers on federal lands or state parks, etc. Line projects with known leave areas will be documented.

“Leave areas”, where no vegetation maintenance will be required, may be located inside and/or outside the right of way corridor. These areas will be determined based on the conductor’s height, wire sag with the system (amps) fully loaded and with the proper clearance requirements obtained from conductors to the tree tops or canopy of all tree species that exists in the “leave area”. Tree heights will be determined based on mature heights of each species identified within the leave area. Classified leave areas will have the following minimum clearance distances:

230 kV – Trees would never mature to a height to be within thirty (30) feet of the conductors

525 kV – Trees would never mature to a height to be within thirty (30) feet of the conductors

3.4.7.1 Unoccupied Right of Way

An unoccupied right of way is one in which a transmission line is not currently located. When an unoccupied right of way has been cleared at some point in the past, it will typically be maintained on a regular cycle. Aerial patrols will be periodically performed to identify possible encroachments.

For unoccupied rights of way that have never been cleared, these rights of way will remain in a natural state. Typically no vegetation maintenance will be performed inside the rights of way; neither will any danger tree maintenance cycle work be performed.

3.4.8 Right of Way with Inactive Line

All rights of way on which inactive lines are located will typically be maintained as necessary to protect our legal rights. These rights of way will only have danger tree work performed to cut trees which actually interfere with lines. Before a line is returned to an active status, a complete maintenance cycle including a danger tree cycle should be performed. Inactive lines should be part of the regular aerial patrol for encroachment prevention purposes and to ensure that trees are cleared from the lines. The exception to the danger tree policy for inactive lines is when a line is inactive but is in a standby state and could be called upon by the Transmission Control Center for load flow or service response Duke Energy Carolinas will maintain such a line as if it is an active line.

3.4.9 No Spray Areas

A "no spray" area is defined as an area within the right of way for which the property owner and Duke Energy Carolinas have executed a formal agreement (customer refusal form for herbicide applications: page 95) not to apply herbicides and is identified by approved Duke Energy Carolinas signage. (See Section 3.10 for additional information on no spray areas.) In no spray areas, there are typically two options for maintaining the brush :

1. Brush hog/mowing
2. Hand cutting

Hand-cutting will require cutting the brush at its existing location into small sections and leaving the debris secured to the ground safely. Hand cut brush shall not inhibit Duke Energy Carolinas' or its contractors, the ability to access the right-of-way to perform routine maintenance of the line trucks, equipment and/or ground crews walking within the right of way easement. This brush shall not impose any safety hazards for Duke Energy Carolinas field performers and/or contractors. Brush shall not be left in streams, or on access roads. When cutting down trees or brush from within the corridor by hand cutting, all stumps will be cut as close as possible to the ground

3.4.10 Wetlands-Classification and Specifications

What is a Wetland?

The United States Army Corps of Engineers (USACE) and the United States Environmental Protection Agency (EPA) define wetlands as follows:

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for

life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetlands are areas that are covered by water or have waterlogged soils for long periods during the growing season. Plants growing in wetlands are capable of living in saturated soil conditions for at least part of the growing season. Wetlands such as swamps and marshes are often obvious, but some wetlands are not easily recognized, often because they are dry during part of the year or "they just don't look very wet" from the roadside.

The Duke Energy Carolinas vegetation management program for wetland areas complies with the regulations and policies identified by the EPA and USACE.

Duke Energy's Best Management Practice (BMP) for wetlands is to protect wetland areas and remove only the vegetation that would impact the safe and reliable operation of the transmission system and electrical wires crossing the wetland. Duke Energy Carolinas contractors will be required to identify wetland conditions and conduct work in compliance with the BMPs.

Trees and brush shall be felled such that they do not disturb or damage other surrounding vegetation. Trees will be limbed prior to felling and cut into smaller sections and secured in an environmentally sound manner at the trees' location with one exception; trees cut down within twenty-five (25) feet on either side of the stream bed (water flow area) shall have limbs and debris pulled outside the stream buffer twenty-five (25) feet and secured properly. Vegetation and debris shall not impact or disturb the flow of water in the stream bed. Herbicide stump treatment shall not be utilized in wetland areas.

Prior to initiating work in wetland areas, the contractor should notify the Duke Energy Carolinas Vegetation Management Specialist to review the project and assess the vegetation methods of control.

3.4.11 Stream Buffers (Not Associated with Wetlands)

Duke Energy Carolinas maintains a twenty-five (25) foot buffer zone on each side of all stream and lake crossings within the transmission right of way corridor. This area is protected from all soil disturbing activities, and no mechanized equipment is allowed in the stream buffer zone. Stream buffers should be a minimum of twenty-five (25) feet on each side of the stream crossing. The buffer zone shall be clearly identified and flagged with marking ribbon prior to clearing operations. Contractor will measure from the edge of the water back twenty-five (25) feet on each side of the crossing. Contractor will be required to hand cut all vegetation inside the buffer zone that is greater than twelve (12) feet in height, and all species that have a mature height greater than fifteen (15) feet. All living hardwood stumps shall be stump treated. When it is necessary to cut canopy trees or danger trees, understory vegetation that will not exceed fifteen (15) feet in height at maturity will be left and protected to ensure shading of streams. Trees or other cut vegetation will not be left in or across streams. Removal of felled trees and debris from stream or creek channel is required. Care shall be taken to minimize the damage to

standing vegetation and no mechanized equipment is to be used within the buffers. Felled trees and brush shall be limbed and cut into short lengths to enhance decomposition and not hinder access.

3.4.12 Tree Topping

Tree topping is not an accepted right of way maintenance practice for trees identified as “danger trees” near transmission lines. Reducing a tree’s height in order to sufficiently take it out of danger tree status, often results in removing a substantial portion of the tree’s crown. When topping reductions of this magnitude occur, they create an unhealthy tree; therefore, tree topping is considered an unsound arboricultural practice. Topping trees will weaken subsequent re-growth and will cause further decay. Consequently, Duke Energy purchases rights of way and the rights to cut designated trees outside of the rights of way corridor. For these reasons, Duke Energy Carolinas does not top trees, except in the following circumstances:

- When Duke Energy does not have a purchased right of way and the property owner does not want the tree(s) cut down, or
- When the right of way agreement does not include danger tree rights (i.e. the right to cut down trees outside the specified corridor).

3.4.13 Wood Removal

The majority of Duke Energy’s right-of-way agreements do not state that the wood belongs to Duke Energy. In those cases, the wood belongs to the property owner, Duke Energy Carolinas’ policy is to leave the wood for the property owner unless the easement specifically states otherwise. Some right of way agreements specify that the wood from trees cut down during right of way maintenance belongs to Duke Energy Carolinas. In these cases, Duke Energy Carolinas will remove the wood at the request of the property owner in the most environmentally sound and cost-effective method available. In some cases property owners will request that the wood be removed even when the responsibility for Duke Energy Carolinas is not defined. In these cases Duke Energy Carolinas and the contractor will attempt to refer the property owner to persons or businesses in the area who may want the wood for timber or firewood. In cases where the wood will not be removed, we will work with the property owner to cut the wood into appropriate lengths for sale as timber, or into manageable lengths stacking the cut wood neatly at the base of the tree or the edge of the right of way corridor.

3.4.14 Replacement Trees

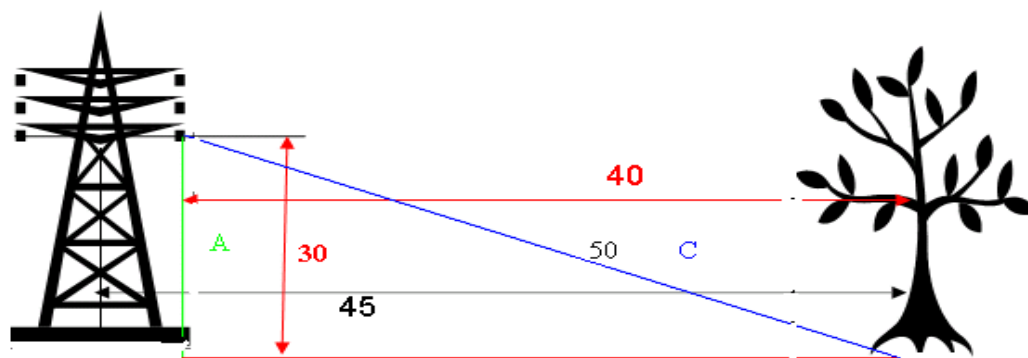
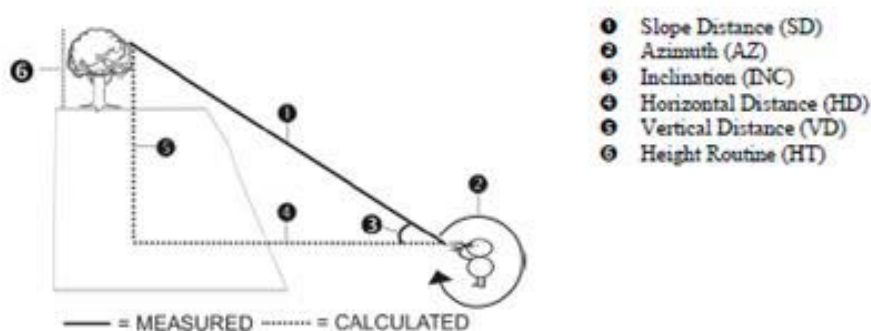
Duke Energy Carolinas does not provide replacement trees to a property owner on whose property it performs maintenance in accordance with the right of way agreement.

3.4.15 Stump Grinding

Duke Energy Carolinas does not grind the stumps from trees cut down during right of way maintenance activities. The contractor will cut the tree as close to the ground as possible.

3.5 DANGER TREE ASSESSMENT

The danger tree work cycle on lines are determined by the aerial inspection patrol process. Trees that are tall enough or will become tall enough under normal growing conditions to hit the lines or their supporting apparatus (under normal weather conditions or if blown toward the lines) will be cut down. The approved method for determining tree height is by use of a tele-height or laser measuring device. If a property owner disputes whether the tree will endanger the line, the Duke Energy Carolinas Vegetation Management Specialist should offer to perform a more precise tree height measurement. The Vegetation Management Specialist will obtain a laser measuring device and resurvey the trees in question.



3.6 QUALITY AND ASSURANCE (QA) REPORTING DOCUMENTS

Quality Assurance (QA) work is done with our contractors on a random basis to ensure that the assigned right of way maintenance work was accomplished according to contract specifications and Duke Energy Carolinas' expectations. The following forms are used to assess, audit, and report findings.

- Transmission Right of Way Quality Assessment Form
- Transmission Herbicide Quality Assessment Form
- Ground Patrol Report

For planned maintenance work, up to 100% of the work is audited by Duke Energy Carolinas Vegetation Management Specialists (or designees) after the contractor provides notification that the work is complete. Typically this notification occurs in 2-3 mile line segments.

Herbicide work is audited using randomly selected treated areas and the audits usually occur at least a month after the work is completed.

Additionally, when aerial patrols are performed during the course of the year, observations are made as the quality of the work for both planned maintenance and herbicide work.

Data from the audits are captured, summarized, and reviewed by Duke Energy Carolinas supervision. Meetings are held quarterly with contractors to review their performance with regard to the audits. If the performance is not satisfactory, Duke Energy Carolinas discusses with the contractor what steps are necessary to improve the performance to a satisfactory level.

3.7 HELICOPTER PATROL PROCEDURES

3.7.1 Procedures

There will be a semi-annual patrol of all transmission line assets and the associated rights of way in the spring and fall of each year. There will be a separate list maintained of lines which cannot be inspected from the aerial patrol due to restricted air space, congested overhead lines in the area, or tree canopy. These lines will be reviewed utilizing the region ground line inspection program.

In the spring and fall, Field Operations will provide a line observer for civil inspection and Vegetation Management will provide a vegetation observer for right of way inspection. The line observer will be responsible for scheduling and planning the flight routes with the aviation group and will be the Single Point of Contact (SPOC) within each region for daily flight plans.

The observers will report all items which will generate follow-up work, excluding previously reported long term right of way encroachments. ASAP and SR encroachments such as grading and logging will be reported using the process in place.

For any situation, activity, or items found that are **critical and must be handled immediately (Service Response Mode)**, the observer will make immediate contact by phone with the appropriate work planner. If the person cannot be reached, contact must be made with the appropriate Duke Energy Carolinas Supervisor. This supervisor will contact the appropriate contract General Foreman, who will assess the tree in question and coordinate with Field Operations Management and Operations and Transmission Control Center (TCC) to resolve any system reliability or safety concerns.

Field Operations response teams are expected to take immediate steps to resolve critical items. A work order will be generated for all ASAP and SR work.

For all **ASAP/SR items**, the line observer will communicate at the end of each flight day, and report any ASAP/SR items found, by e-mail to the work planner, the Supervisor, and the Region Manager which will list both line and right of way ASAP/SR items. ASAP/SR notes for vegetation management will go to the appropriate Vegetation Management Specialist for each region. The *subject line* on the e-mail should read 'HELICOPTER ASAP ITEM'. Region teams are expected to take appropriate steps to follow up on items reported as ASAP.

Aerial inspections will be conducted over all transmission/distribution substations, railroad spurs, Public Communication Service (PCS) stations and Gang Operated Air Break (GOAB) structures. Special observation should be given for inspecting vegetation growth near reactors at the following stations:

Greensboro Main

3.7.2 Helicopter Reporting Criteria

Work Order Response Criteria

Work Order Type	Target Response Time Frame
Service Response (SR)	Divert personnel to address immediately. May also be classified as an imminent threat.
As Soon as Possible (ASAP)	Prioritize and complete as soon as possible within normal work flow
Routine Work (RW)	In the normal course of work (or before next growing season)

Priority of Work	Time Frame	Reporting Criteria by Voltage Class	
		230 kV	525 kV
Service Response	Divert personnel to address immediately. May also be classified as an imminent threat.	Closer than 7 feet	Closer than 17 feet
As Soon As Possible	Prioritize and complete as soon as possible within normal work flow	Closer than 10 feet	Closer than 20 feet
Routine Work	In the normal course of work (or before next growing season)	Closer than 20 feet	Closer than 30 feet

Notes:

1. The above distances are known as work triggers for various priorities of work.
2. Service response work triggers are greater than our defined Clearance 2 for each voltage class.
3. The above distances are actual distances from the conductor to the vegetation.
4. With regard to ANSI Z133 Minimum Approach Distances, the above criteria should minimize the need to take a line out of service for vegetation maintenance. At 230 kV, phase to phase clearance is 7'-10" and phase to ground is 5'- 11". On 500 kV, phase to phase is 19'-0" and phase to ground 11'-10".

Work Trigger Distance Criteria (44 and 100kV)

Priority of Work	Time Frame	Reporting Criteria by Voltage Class	
		100 kV	44 kV
Service Response	Divert personnel to address immediately. May also be classified as an imminent threat.	Closer than 3 feet	Closer than 2 feet
As Soon As Possible	Prioritize and complete as soon as possible within normal work flow	Closer than 5 feet	Closer than 4 feet
Routine Work	In the normal course of work (or before next growing seasons).	Closer than 10 feet	Closer than 10 feet

3.8 FAC-003 COMPLIANCE PROGRAM

1.0 Introduction

Duke Energy's (DE) FAC-003 Vegetation Management Program Document defines how the enterprise addresses the latest version of the North American Electric Reliability Corporation (NERC) Standard FAC-003. DE Transmission Vegetation Management (TVM) employs an Integrated Vegetation Management Program (IVMP) and a defense-in-depth strategy that combines various components to manage vegetation on the electric transmission utility right of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW. Through the use of different integrated methods, the optimum results of improved reliability, increased safety, and greater access can be achieved. Maintaining ROWs, in accordance with ANSI, OSHA and other applicable safety requirements/laws as well as Duke Energy specifications, guidelines, and established procedures, prevents the risk of vegetation-related outages that could lead to Cascading.

2.0 Applicability

This FAC-003 Document applies to DE's transmission and generation lines operated at 200kV or higher and to each overhead line operated below 200kV identified as an element of an Interconnection Reliability Operating Limit (IROL) as designated under NERC Standard FAC-014 by the Planning Coordinator based upon the known Planning Horizon.

2.1 Applicable Overhead Transmission Lines (located outside the fenced area of a switchyard, station or substation and any portion of the span of the transmission line that is crossing the substation fence):

2.1.1 DE's Transmission Planning provides facility information to TVM anytime major changes are made to the System.

2.1.2 DE's Transmission Planning and the Compliance Group notifies TVM when a Planning Horizon IROL is identified and/or added to the System.

2.2 Applicable Overhead Generation Lines (that extend greater than one mile beyond the fenced area, or do not have a clear line of sight, of or between the generating station switchyard to the point of interconnection with the Transmission Owner's facility):

2.2.1 DE's Generation Operations requests TVM to maintain those lines determined to be applicable to FAC-003.

2.2.2 TVM maintains those lines in accordance with this FAC-003 VM Program Document and the applicable associated Regional Documents.

3.0 Purpose and Program Scope

3.1 Purpose

The purpose of this document is to facilitate compliance with the NERC Reliability Standard FAC-003 and to serve as a general guide for TVM personnel engaged in supervision of vegetation management activities. This document will be reviewed annually and updated as necessary if / when a revision to the Vegetation Standard occurs or circumstances warrant.

3.2 Program Scope

The visual inspection and appropriate maintenance of transmission line ROWs comprise the FAC-003 Vegetation Management Program. Inspections are performed to monitor vegetation growth and encroachments as well as ROW contractor effectiveness. All work performed by our designated contractors, shall be performed in accordance with ANSI, OSHA and other applicable safety requirements, laws and DE guidelines (Legal and Safety Requirements). Periodic quality assessments will be made by qualified personnel to assure legal and safety requirements are being met. The Regional TVM Manager will maintain the Regional processes, procedures and documentation to ensure that vegetation impacting the transmission system is properly maintained. Vegetation Governance will maintain this FAC-003 VM Program Document as well as other associated System TVM documents.

4.0 Integrated Vegetation Management Program (IVMP)

The IVMP program encompasses environmental stewardship and utilizes various ROW management tools— mechanical, herbicide, and/or manual floor maintenance, tree removal/trimming, and danger/hazard tree cutting. Herbicide use keeps vegetation from posing a threat to the transmission lines and equipment while promoting a transmission ROW compatible ecosystem within the ROW corridor. The IVMP applies to two areas of maintenance: 1) inside ROW corridors and 2) outside ROW corridors.

4.1 Right-of-Way (ROW)

The corridor of land under a transmission line(s) needed to operate the line(s). The width of the corridor is established by engineering or construction standards as documented in either construction documents, pre-2007 vegetation maintenance records, or by the blowout standard in effect when the line was built. The ROW width in no case exceeds the applicable Transmission Owner's or applicable Generator Owner's legal rights but may be less based on the aforementioned criteria.

4.2 Vegetation Inside ROW Corridors

Inside ROW corridors, in general, DE manages vegetation in a manner so as to establish growth of species that will not exceed a height at maturity that will encroach into the Minimum Vegetation Clearance Distance (MVCD).

4.2.1 No Maintenance Areas (Leave Area)

In some ROW corridors (typically in mountainous terrain), line heights are such that matured “tall-growing” species will not threaten the operation of transmission lines, apparatus or equipment, and thus is not dangerous or detrimental to safe and reliable electric service. These sections of lines are integrated into the inspection processes.

4.3 Vegetation Outside the ROW Corridors

Maintenance outside the ROW corridor typically encompasses the felling of danger and/or hazard trees. A danger tree is any tree outside of the ROW tall enough to endanger DE facilities. A hazard tree is a tree that is dead, dying, diseased, leaning, or damaged either on or off the right of way that endangers DE facilities. The felling of hazard or danger trees can be triggered by our inspection processes.

5.0 Vegetation Control Methods

5.1 ROW Herbicides

The preferred method of vegetation control of brush on transmission ROWs is through the use of herbicides. Where herbicides cannot be applied on a case by case basis, ROWs will be mowed or hand-cut. DE will use herbicides where it is the safe and environmentally sound option in order to eliminate undesirable woody species from the rights of way while promoting lower growing vegetation that does not create a hazard to transmission lines and apparatus.

5.2 ROW Mowing

Use of mechanical equipment – e.g., rotary mowers, Kershaw, Hydro-Ax, etc., to reclaim all of the wooded sections of the ROW, where possible, to the width as determined by the ROW definition in 4.1 above.

5.3 ROW Hand Cutting

All of the wooded sections of the ROW that cannot be reclaimed with mechanical equipment are to be hand cut to the width as determined by the ROW definition in 4.1 above.

5.4 Tree Felling/Trimming

All trees requiring felling/trimming shall be managed to prevent encroachment into the MVCD.

5.5 Side-trimming

Trees within and along the edge of the ROW will be selected for felling, and trees outside of the ROW with growth potential into the ROW will be side-trimmed at a minimum (some may require felling if side-trimming is not adequate) to meet clearance requirements. These trees or limbs, due to their height and location, have the potential to make contact with, or be in close proximity to, the conductor due to reasonably expected conductor movement (i.e. conductor blowout).

6.0 Preventing Encroachments into the Minimum Vegetation Clearance Distance (R1 & R2)

Manage vegetation to prevent encroachment into the MVCD for applicable lines that are (R1) or are not (R2) an element of an IROL.

6.1 DE maintains a list of applicable lines subject to R1 and R2. If lines are elements of an IROL, the lines/circuits are noted as to R1 or R2 applicability in that list. If no lines are an element of an IROL, Transmission Planning personnel will provide a letter of attestation, and all FAC-003 applicable lines/circuits will be subject to Requirement 2.

6.2 DE conducts an annual vegetation inspection of its applicable lines. Real-time, observed encroachments into the MVCD during the inspection are reported to the TVM Specialist or Regional TVM Manager. Appropriate information reported by the Inspector is documented and reported to the TVM Specialist or Regional TVM Manager who in turn, reports to the applicable Transmission Energy Control Center and Regulatory Compliance.

6.2.1 The documentation of Type 1 encroachments will be maintained for compliance purposes.

6.2.2 A letter of attestation will be provided if no real time observations of MVCD encroachments absent a sustained outage (Type 1) occur during an audit period.

6.3 DE maintains records of sustained outages from all causes including those applicable to FAC-003 for R1 and R2 (fall-ins from inside the ROW, blowing together of lines and vegetation inside the ROW, and vegetation growth into the MVCD). DE attests that these records are an accurate classification of all FAC-003 sanctioned outages.

6.4 MVCD Definition and Table 2

MVCD is the calculated minimum distance stated in feet to prevent flashover between conductors and vegetation for various altitudes and operating voltages. The MVCD will be maintained under all rated electrical operating conditions. The following is Table 2 from FAC 003-Minimum Vegetation Clearance Distances (MVCD) for Alternating Current Voltages (feet).

FAC-003 — TABLE 2 — Minimum Vegetation Clearance Distances (MVCD)⁷
For Alternating Current Voltages (feet)

(AC) Nominal System Voltage (KV)	(AC) Maximum System Voltage (KV) ⁵	MVCD (feet)	MVCD feet	MVCD feet	MVCD feet	MVCD feet	MVCD feet	MVCD feet	MVCD feet	MVCD feet	MVCD feet	MVCD feet
		Over sea level up to 500 ft	Over 500 ft up to 1000 ft	Over 1000 ft up to 2000 ft	Over 2000 ft up to 3000 ft	Over 3000 ft up to 4000 ft	Over 4000 ft up to 5000 ft	Over 5000 ft up to 6000 ft	Over 6000 ft up to 7000 ft	Over 7000 ft up to 8000 ft	Over 8000 ft up to 9000 ft	Over 9000 ft up to 10000 ft
765	800	8.2ft	8.33ft	8.61ft	8.89ft	9.17ft	9.45ft	9.73ft	10.01ft	10.29ft	10.57ft	10.85ft
500	550	5.15ft	5.25ft	5.45ft	5.66ft	5.86ft	6.07ft	6.28ft	6.49ft	6.7ft	6.92ft	7.13ft
345	362	3.19ft	3.26ft	3.39ft	3.53ft	3.67ft	3.82ft	3.97ft	4.12ft	4.27ft	4.43ft	4.58ft
287	302	3.88ft	3.96ft	4.12ft	4.29ft	4.45ft	4.62ft	4.79ft	4.97ft	5.14ft	5.32ft	5.50ft
230	242	3.03ft	3.09ft	3.22ft	3.36ft	3.49ft	3.63ft	3.78ft	3.92ft	4.07ft	4.22ft	4.37ft
161*	169	2.05ft	2.09ft	2.19ft	2.28ft	2.38ft	2.48ft	2.58ft	2.69ft	2.8ft	2.91ft	3.03ft
138*	145	1.74ft	1.78ft	1.86ft	1.94ft	2.03ft	2.12ft	2.21ft	2.3ft	2.4ft	2.49ft	2.59ft
115*	121	1.44ft	1.47ft	1.54ft	1.61ft	1.68ft	1.75ft	1.83ft	1.91ft	1.99ft	2.07ft	2.16ft
88*	100	1.18ft	1.21ft	1.26ft	1.32ft	1.38ft	1.44ft	1.5ft	1.57ft	1.64ft	1.71ft	1.78ft
69*	72	0.84ft	0.86ft	0.90ft	0.94ft	0.99ft	1.03ft	1.08ft	1.13ft	1.18ft	1.23ft	1.28ft

* Such lines are applicable to this standard only if PC has determined such per FAC-014
(refer to the Applicability Section above)

7.0 Documented Maintenance Strategies (R3)

DE has documented maintenance strategies and procedures to prevent vegetation encroachment into the MVCD of its applicable lines. Strategies and procedures account for the movement of applicable line conductors under their rating and all rated electrical conditions while considering the interrelationships between vegetation growth rates, control methods, and previous maintenance activities.

The following clearance considerations ensure that vegetation encroachment into the MVCD do not occur.

7.1 Floor Growth (vertical)

The following criteria for vertical clearances is to be considered in the planning and execution of all TVM work:

7.1.1 The maximum operating sag of the conductor is to be used as the reference point for TVM work for vegetation clearances.

7.1.1.1 If the actual maximum sag ground clearances are not known, the line design ground clearance for the specific voltage is to be used.

7.1.1.2 The appropriate MVCD vegetation to conductor clearance in Table 2 of this document.

7.1.1.3 Any other site specific factors, including but not limited to indigenous vegetation, easement/permit.

7.2 Side Growth (horizontal)

To ensure side growth and conductor movement impacts are limited, the TVM program will ensure vegetation side growth clearance based on the following criteria:

7.2.1 The TVM Program, to address side growth, will be based on reasonable conductor movement (i.e. conductor blowout) with 4.1 psf wind loading or less which is equivalent to approximately 40 mph winds (i.e., sub-tropical storm winds or fresh gale winds) and in no case is greater than the following:

7.2.1.1 The applicable NESC design criteria for conductor blowout used for the line

7.2.1.2 The edge of the defined Right of Way

7.2.1.3 For cases where side growth cannot be managed to meet the above criteria, corrective action measures to achieve sufficient clearances will be developed.

7.3 Each Region maintains records of vegetation control methods and inspections as well as a record of the annual work plan as executed including changes.

8.0 Imminent Threat Communications (R4)

Notify, without intentional time delay, the control center holding switching authority for the associated applicable line once a confirmed vegetation condition exists that is likely to cause a Fault at any moment in accordance with TVM Program Imminent Threat Communication practices and procedures.

8.1 During the course of TVM work and inspections, any vegetation situation or condition that is observed and deemed to present an imminent threat to the Transmission System shall be reported without intentional time delay. Once vegetation is confirmed to be an actual viable imminent threat to the transmission system, DE (TVM) personnel or Field Line/Substation Operations (after consultation with TVM personnel), notify the control center, without intentional time delay.

8.2 Other DE employees, or contractors, may contact Field Operations or TVM Personnel with potential imminent threats prior to confirmation by TVM Personnel. Once the threat is confirmed, without intentional delay, the threat shall be addressed.

8.3 TVM completes and retains documentation for Imminent Threat notification to the applicable control center and actions taken.

9.0 Corrective Action Plan (Mitigation) (R5)

When constrained from performing vegetation work on an applicable line that may lead to a vegetation encroachment into the MVCD prior to implementation of the next Annual Work Plan, corrective action shall be taken to ensure continued vegetation management to prevent encroachments.

9.1 In situations where DE cannot exercise its legal rights or is prevented from performing work that may lead to encroachment prior to the next scheduled maintenance on that circuit, contractors will contact their designated VM Specialist. The VM Specialist will then take the appropriate actions to resolve the issue or implement any corrective action.

9.2 If the hazard is considered an imminent threat, the VM Specialist will initiate the Imminent Threat Process.

9.3 In cases where DE cannot obtain clearance distances due to limited legal rights, the VM Specialist will develop a documented corrective action plan.

10.0 Inspections (R6)

Perform an inspection of 100% of applicable transmission lines at least once per calendar year and with no more than 18 calendar months between inspections on the same ROW to ensure no encroachments occur into the MVCD.

10.1 All transmission circuits (100%) subject to FAC-003 shall be completely inspected at least once a year. The inspection interval should not exceed eighteen months from the last inspection.

10.2 The timing and number of inspections is flexible and may adjusted based on changing conditions.

10.3 DE tracks and maintains inspection documentation as evidence that 100% of its inspections are completed.

11.0 Annual Work Plan (R7)

DE will complete 100% of its annual work plan of applicable lines to ensure no vegetation encroachments occur within the MVCD. Modifications to the work plan in response to changing conditions or to findings from vegetation inspections may be made (provided they do not allow for encroachment of vegetation into the MVCD) and must be documented.

11.1 An annual work plan will be maintained for each area. The plan will be developed using previous work completion dates, inspection data, existing vegetation conditions, and based on anticipated growth rates. Components in the annual work plan may include but are not limited to inspection, herbicide, and maintenance activities.

11.2 DE tracks and maintains its annual work plan documentation by circuit, corridor or other unit of measure as evidence that 100% of the work is completed. Changes to the annual plan shall be documented.

12.0 Transmission Vegetation Outage Reporting

On a periodic basis, as defined by the Region Reliability Organization, DE will report any outage that meets the criteria defined in FAC-003.

A Sustained Outage is to be categorized as one of the following:

Category 1A — Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, that are identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside and/or outside of the ROW;

Category 1B — Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside and/or outside of the ROW;

Category 2A— Fall-ins: Sustained Outages caused by vegetation falling into applicable lines that are identified as an element of an IROL or Major WECC Transfer Path, from within the ROW;

Category 2B— Fall-ins: Sustained Outages caused by vegetation falling into applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, from within the ROW;

Category 3 — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines from outside the ROW;

Category 4A— Blowing together: Sustained Outages caused by vegetation and applicable lines that are identified as an element of an IROL or Major WECC Transfer Path, blowing together from within the ROW.

Category 4B— Blowing together: Sustained Outages caused by vegetation and applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, blowing together from within the ROW.

3.10 TRANSMISSION VEGETATION MANAGEMENT REGIONAL PROGRAM

1.0 Introduction

Duke Energy Carolinas' Transmission Vegetation Program is governed by [GDLP-MNT-TRM-00018](#) (TVM: Duke Energy's FAC-003 Vegetation Management Program Document). This region specific document is intended to document the regional differences or variations specific to the region.

2.0 Preventing Encroachments into the Minimum Vegetation Clearance Distance (R1 & R2)

As per Section 6.0 in [GDLP-MNT-TRM-00018](#) (TVM: Duke Energy's FAC-003 Vegetation Management Program Document), DEC will manage vegetation to prevent encroachment into the MVCD for applicable lines that are or are not an element of an IROL with the following region specific variations.

- 2.1 DEC will maintain records of sustained outages from all causes including those applicable to FAC-003 for R1 and R2 (fall-ins from inside the ROW, blowing together of lines and vegetation inside the ROW, and vegetation growth into the MVCD).
 - 2.1.1 The outage record documentation of Type 2-4 encroachments will be maintained for compliance purposes.
 - 2.1.2 A letter of attestation will be provided if no MVCD encroachments (Type 2-4) occur during an audit period.
 - 2.1.3 DEC Vegetation Management personnel are involved in the investigation and documentation of vegetation-related sustained outages to ensure accurate classification of all vegetation-related outages on FAC-003 applicable lines.

2.2 Generation Owner Service Agreement for Vegetation Management Services (R2)

The Transmission Owner (TO) will provide vegetation management services for the McGuire Unit 1 and 2 Busline right-of-ways. The TO will perform annual inspections of the McGuire Switchyard and Busline right-of-ways and provide vegetation management services as needed per the Transmission Vegetation Management general and technical specifications. For purposes of audits and/or evidence requests, the TO will provide the GO representative with appropriate vegetation management records and documentation related to the McGuire Unit 1 and 2 Buslines.

3.0 Inspections (R6)

3.1 As per Section 10.0 in TVM: Duke Energy's FAC-003 Vegetation Management Program Document, [GDLP-MNT-TRM-00018](#), DEC will perform an inspection of 100% of applicable transmission lines subject to FAC-003 at least once per calendar year.

3.1.1 The general guidelines for TVM Ground Patrol Inspections, reactive work completion and frequencies that impact Right of Way are defined in TVM Program: Ground Inspection Guidelines procedure.

3.1.2 Additionally, when supplemental inspections (e.g. aerial, LiDAR, ...) are scheduled or are planned within the same calendar year, the goal will be to schedule those inspections within the growing season to ensure that growth issues can be detected.

3.2 All Ground Inspection reports are prioritized and executed based on the DEC Transmission prioritization process as outlined in the table below.

Work Order Type	Target Response Time Frame
Service Response (SR)	Divert personnel to address immediately. May also be classified as an imminent threat.
As Soon as Possible (ASAP)	Prioritize and complete as soon as possible within normal work flow
Routine Work (RW)	In the normal course of work (or before next growing season)

3.2.1 The SR mode is utilized to address immediate and/or imminent threats that may cause an interruption to the system. This process is the same whether the vegetation threat is identified through an aerial inspection or by field personnel performing other work on the system. The response to remove the vegetation is coordinated by the vegetation management personnel through the field operations team and the Carolina's Transmission Control Center (TCC). Actions may include temporary reduction in line rating or switching the line out of service until the threat is removed.

4.0 Annual Work Plan Completion (R7)

DEC Transmission will document and keep current an Annual Work Plan. This plan will be executed in accordance with the Duke Energy general and technical specifications..

An annual work plan will be maintained for each area managed by an Area VM Specialist. The plan will be developed for each component activity by line or complete line maintenance. The plan will be developed using previous work

completion dates, inspection data, existing vegetation conditions, and based on anticipated growth rates.

The details to be included in the annual work plan are:

- Inspection Schedule (Ground and/or Aerial)
- Lines/Corridor's work orders to be worked via herbicide program
- Lines/Corridor's work orders to be worked as maintenance projects

DEC will complete 100% of the annual work plan for FAC-003 applicable lines to ensure no vegetation encroachments occur within the MVCD on those applicable lines. Modifications to the annual work plan in response to changing conditions or to findings from vegetation inspections may be made when necessary, provided that those changes do not allow encroachment of vegetation into the MVCD. Any changes to the annual work plan are documented in the annual work plan tracking tool (e.g., spreadsheets, work management software, etc.) by the Area VM Specialist.

DEC maintains and tracks annual work plan documentation and progress in a spreadsheet or work management system by circuit mileages as evidence that 100% of the work is completed.

The Area VM Specialists document completion of planned work for each circuit using an Audit or QA Completion documentation process.

3.11 HERBICIDE USE ON TRANSMISSION RIGHTS OF WAY

3.11.1 General

Duke Energy Carolinas's approved method of herbicide application for Transmission will include the following.

- a. Low Volume Application (i.e. foliar and basal)
- b. High Volume Foliar Application
- c. Hack and Squirt
- d. Stump Treatment
- e. Cut Stubble Treatment

Other methods maybe considered and **shall require approval** by the Duke Energy Carolinas Transmission System Forester.

3.11.2 Herbicide Application:

Herbicide treatment coverage is applied along the right of way corridor from the beginning point (BP) to the ending point (EP) of the line and/or taps and includes non-maintained areas in between such as vegetation in wetlands, valleys, hills, creek banks, pastures and fence rows, in order to manage undesirable species. Maintained or

landscaped areas, however, such as private yards. Commercial or industrial complexes, etc., will not be treated.

Maintained species (yard trees maintained by the property owner) shall not be treated for any reason.

Under no circumstances shall the contractor treat any stems that could have the potential to decay and fall into any conductors, streams, rivers or other bodies of water, roadways, maintained landscaped areas or any other area which may reasonably be considered to be an area that would require clean-up of the debris to maintain good public relations with customers in that area or for public safety or environmental reasons.

3.11.3 Stump Treatment

On all rights-of-way (landscaped, non-maintained, inside or outside of right of way corridors) all hardwood trees and brush cut by hand will have the stumps treated with herbicide, a mixture of Garlon and Stalker. This will prevent re-sprouting of these root systems. Spraying stumps will be required unless it is prevented by wetlands guidelines or the property owner has previously designated the area as a “no spray” zone and the appropriate signage is in place.

3.11.4 Communication and Customer Refusal of Herbicide Application

Duke Energy Carolinas considers the use of herbicides an important aspect of its overall right of way program. The use of herbicides is both environmentally acceptable and economically feasible. If the customer objects to the use of herbicides, the representative should fully explain the products we use and the environmental benefits of using herbicides. Past experience has indicated that the great majority of our customers are accepting of our herbicide program when they understand it; therefore, proper communications with customers is an important part of our foliar spray program.

Although property owner agreement to use herbicides is not required, if performing work on the North Carolina and the South Carolina Department of Transportation rights-of-way, it is necessary to request a permit to do such work through the appropriate division of those state departments. Other agencies that should be contacted are the local Agricultural Extension service, parks and recreation personnel, city arborists and tree commissions. Duke Energy Carolinas provides an annual bill insert to explain the use of herbicides on its rights of way and the products used. A copy of the bill insert is shown in Section 5.

Herbicides are appropriate for use unless the property owner has requested his property be treated as a “no spray” area. The area should be marked with no spray signs within the right of way easement, identifying the beginning point (entry point) and ending point (exit point) that herbicides will not be applied. If a property owner refuses to allow the application of herbicides on his/her property, the owner should complete the Customer Refusal Form for Herbicide Applications on Duke Energy Electric Line Rights of Way

shown on pages 46 and 95 and install the required signs, which can be ordered using the Order Form for “no spray” signs shown on pages 47-48.

3.12 REFERENCE DOCUMENTS

3.12.1 Transmission Resource Training

Duke Energy Carolinas employees and contractors will be trained and qualified to perform their job duties in compliance with all policies and work procedures. Employees and contractors will be trained to ensure they perform their job duties and responsibilities in a safe and reliable manner. Contractors providing services to Duke Energy Carolinas are responsible for training their employees on their company policies and work procedures and documenting qualifications for each employee. Duke Energy Carolinas will provide additional training programs that will support each job specifically prior to working on the Duke Energy Carolinas System.

Training materials will consist of the following but not be limited specifically to these:

- FAC-003-3
- ANSI Z133 Standard
- OSHA 1910.269
- Contractor Maintenance Safety Orientation
- Substation Access Training
- Transmission Line Voltage Class
- Transmission General and Technical Specification Training
- Power Point Presentation “Ground Patrol Inspection Process Training”

Customer Refusal Form For Herbicide Applications on Duke Energy Electric Line Rights-of-Way

Customer's Name: _____ Home Phone Number: (____) _____

Address: _____ Alternate Phone Number: (____) _____

City/Town: _____ State _____ Zip Code _____

Name of Duke Employee Taking This Report: _____ Date of Report: _____

Circuit Number _____

Is the property, that you desire NOT to have herbicides used on, located at the above address? _____ If it is not, describe as closely as possible where the property is located.

Please provide a rough diagram of your property on the back of this form. Indicate where the right-of-way and individual poles are located in reference to your house, other structures, driveways, highways, intersections, etc.

Each customer who requests we not spray on his property will be given information regarding the ordering of signs that must be posted on the property. These signs must be placed approximately in the middle of the right-of-way on a post that the customer will provide. Under no circumstance shall the sign be attached to Duke's power poles or any other of Duke's equipment. The sign shall be facing away from the customer's property such that it can be easily seen by a crew as they approach the property in question.

Customer must read the following and indicate their acceptance by their signature.

I the undersigned, do hereby request that Duke Energy not use herbicides on the power line right-of-way that is located on my property as described above and/or diagrammed on the back of this form. I hereby agree to be responsible for ordering these signs and for properly placing the signs as indicated above. I hereby agree to be responsible for the upkeep of the signs and to maintain them so they are clearly visible, and I further understand and agree that if the signs are not clearly visible, then Duke Energy is free to use herbicides on my right-of-way. I understand that although I am electing to not allow herbicide applications on my property, that Duke Energy will maintain the vegetation under and around their facilities by manual and mechanical means. I further understand that I may rescind this agreement at any time by contacting Duke Energy, in writing, and requesting them to begin maintaining the right-of-way on my property in their routine manner.

Signature of Customer _____ Date _____

Rev (05/15/2012)

4.0 ASSET PROTECTION ON TRANSMISSION RIGHTS OF WAY

4.1.1 Right of Way Restrictions

To safely and reliably maintain transmission lines, the rights of way must be maintained by eliminating vegetation that may impact the line. Rights of way also must provide for safe, unencumbered access to the lines, towers, or other structures for construction and maintenance.

Duke Energy Carolinas does not object to property owner's use of the transmission rights of way so long as the use does not impact, in the opinion of the Company, the ability to operate and maintain its lines. As such, a list of Guidelines and Restrictions has been prepared setting forth the appropriate uses of the property within the right of way. These right of way restrictions are shown on pages 97-98 and are available on Duke Energy Carolinas' website at <http://www.duke-energy.com/safety/right-of-way-management/carolinas.asp>

4.1.2 Encroachments

Encroachments or other inappropriate uses within the right of way corridor are typically discovered through helicopter patrols or other inspections. Appropriate follow-up on vegetation management issues or such encroachments is handled as described in Section 3.

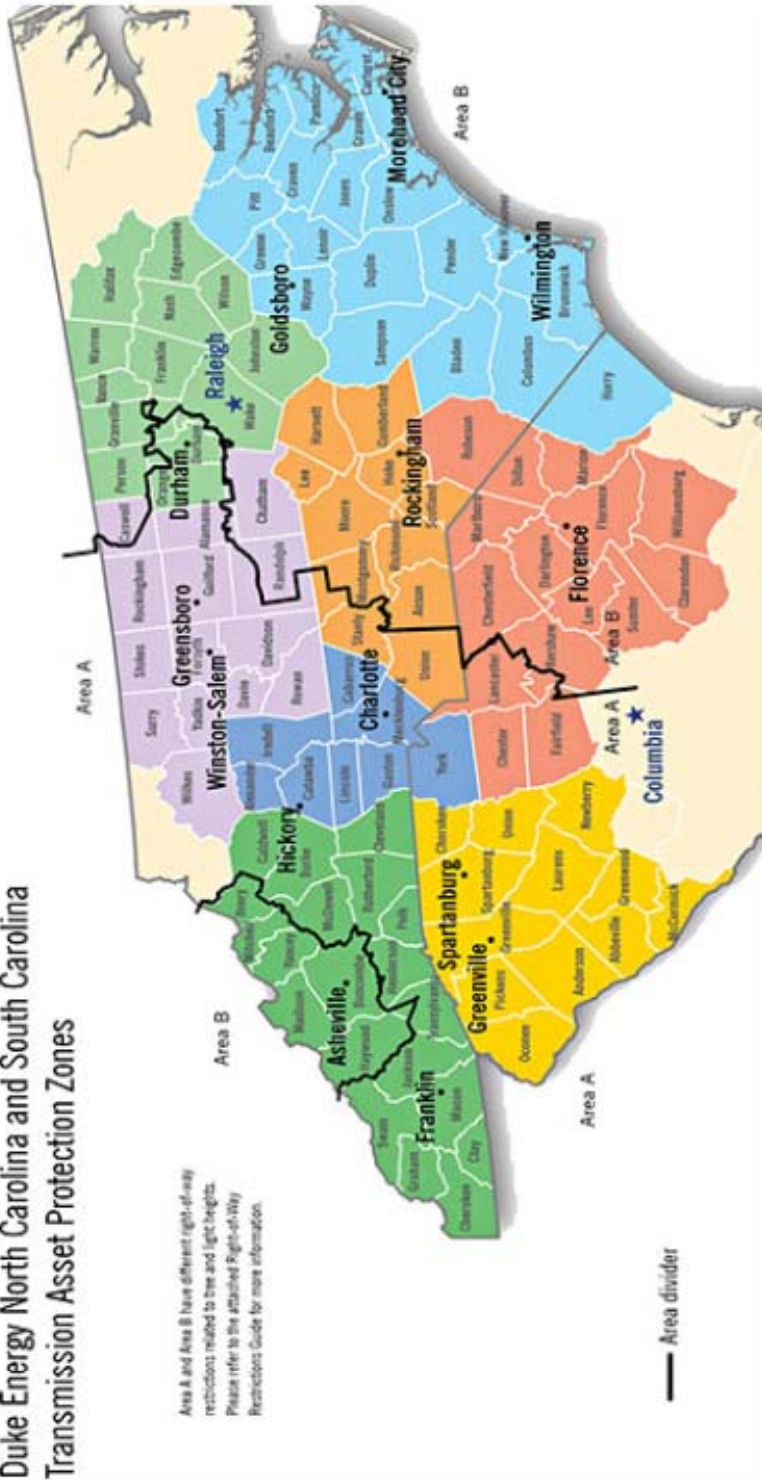
DUKE ENERGY ELECTRIC TRANSMISSION RIGHT-OF-WAY GUIDELINES/RESTRICTIONS
VALID FOR NORTH CAROLINA AND SOUTH CAROLINA
(Revised 11/20/2014)

This list of right-of-way restrictions has been developed to answer the most frequently asked questions about property owner use of Duke Energy's electric transmission rights of way. This list does not cover all restrictions or all possible situations. You should contact the Asset Protection right-of-way specialist if you have additional concerns about the rights of way. This list of restrictions is subject to change at any time and without notice. Duke Energy reserves all rights conveyed to it by the right-of-way agreement applicable to the subject property. All activity within the rights of way shall be reviewed by an Asset Protection right-of-way specialist to obtain prior written approval. Engineering plans may be required. Compliance with the Duke Energy Right-of-Way Guidelines/Restrictions or approval of any plans by Duke Energy does not mean that the requirements of any local, county, state or federal government or other applicable agency with governing authority have been satisfied.

1. Structures, buildings, manufactured/mobile homes, satellite systems, swimming pools (any associated equipment and decking), graves, billboards, dumpsters, signs, wells, deer stands, retaining walls, septic systems or tanks (whether above or below ground), debris of any type, flammable material, building material, wrecked or disabled vehicles and all other objects (whether above or below ground) which in Duke Energy's opinion interfere with the electric transmission right of way are not allowed within the right-of-way limits. Transformers, telephone/cable pedestals (and associated equipment) and fire hydrants are not allowed. Manholes, water valves, water meters, backflow preventers and irrigation heads are not permitted. Attachments to Duke Energy structures are prohibited.
2. Fences and gates shall not exceed 10 feet in height and shall be installed greater than 25 feet from poles, towers and guy anchors. Fences shall not parallel the centerline within the rights of way but may cross from one side to the other at any angle not less than 30 degrees with the centerline. If a fence crosses the right of way, a gate (16 feet wide at each crossing) shall be installed by the property owner, per Duke Energy's specifications. The property owner is required to install a Duke Energy lock on the gate to ensure access. Duke Energy will supply a lock.
3. Grading (cuts or fill) shall be no closer than 25 feet from poles, towers, guys and anchors (except for parking areas; see paragraph 7) and the slope shall not exceed 4:1. Grading or filling near Duke Energy facilities which will prevent free equipment access or create ground-to-conductor clearance violations will not be permitted. Storage or stockpiling of dirt or any other material is prohibited. Sedimentation control, including re-vegetation, is required per state regulations.
4. Streets, roads, driveways, sewer/water lines, other utility lines or any underground facilities shall not parallel the centerline within the right of way but may cross, from one side to the other, at any angle not less than 30 degrees with the centerline. No portion of such facility or corresponding easement shall be located within 25 feet of Duke Energy's facilities. Roundabouts, cul-de-sacs and intersections (such as roads, driveways and alleyways) are not permitted.
5. Any drainage feature that allows water to pond, causes erosion, directs stormwater toward the right of way or limits access to or around Duke Energy facilities is prohibited.
6. Contact Duke Energy prior to the construction of lakes, ponds, retention or detention facilities, etc.
7. Parking may be permitted within the right of way, provided that:
 - a. Prior to grading, concrete barriers shall be installed at a minimum of 9 feet from the Duke Energy facilities. During construction, grading shall be no closer than 10 feet to any Duke Energy facility.
 - b. After grading/paving activity is complete, a Duke Energy-approved barrier sufficient to withstand a 15-mph vehicular impact shall be erected 9 feet from any Duke Energy facility.
 - c. Any access areas, entrances or exits shall cross (from one side to the other) the right of way at any angle not less than 30 degrees with the centerline and shall not pass within 25 feet of any structure. Parking lot entrances/exits cannot create an intersection within the right of way.
 - d. Lighting within the right-of-way limits must be approved by Duke Energy before installing. Due to engineering design standards, lighting is not allowed in the "Wire Zone." Where lighting is approved ("Border Zone"), the total height may not exceed 15 feet in Area A and 12 feet in Area B. See map on back of this page for Areas. Contact your Asset Protection right-of-way specialist as the "Wire Zone" varies for the different voltage lines.
8. Duke Energy will not object to certain vegetation plantings as long as:
 - a. They do not interfere with the access to or the safe, reliable operation and maintenance of Duke Energy facilities.
 - b. With prior written approval, Duke Energy does not object to low-growing shrubs and grasses within the "Wire Zone." Tree species are not allowed within the "Wire Zone." Trees that are approved in the "Border Zone" may not exceed, at maturity, 15 feet in Area A and 12 feet in Area B. See map on back of page for areas. Contact the Asset Protection right-of-way specialist for "Wire Zone"/"Border Zone" definitions.
 - c. For compliant mature height species, refer to plants.ces.ncsu.edu/ for reference.
 - d. Engineering drawings must indicate the outermost conductor.
 - e. Vegetation that is not in compliance is subject to removal without notice.
 - f. Duke Energy may exercise the right to cut "danger trees" outside the right-of-way limits as required to properly maintain and operate the transmission line.

We hope this is useful information. If you have additional questions or plan any activity not mentioned above, please contact the Asset Protection right-of-way specialist for your area (see map).

Duke Energy North Carolina and South Carolina Transmission Asset Protection Zones





Providing reliable electric service through vegetation management.

Vegetation on power lines can adversely impact the reliability of your electric service. To minimize power interruptions resulting from overgrowth, Duke Energy uses an environmentally responsible vegetation management program to control the natural plant growth within power line rights of way, a critical part of this program is herbicide application. Our objective with herbicide application is to keep power lines clear of tall-growing plants while maintaining low-growing vegetation for wildlife habitat.

We use professional contractors to apply herbicide by utilizing different methods including foliar, stump, stem and vine applications.

Duke Energy contractors have been trained on the proper, safe and environmentally responsible techniques of managing plant growth. All products used by Duke Energy are approved by the Environmental Protection Agency and appropriate state agencies.

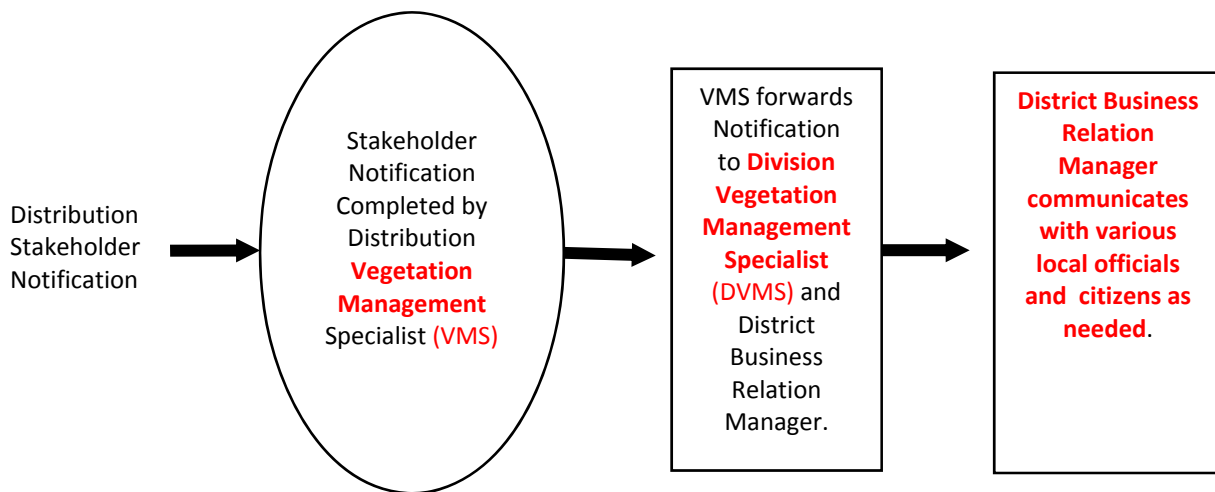
If you have questions about Duke Energy's vegetation management program, please visit us at duke-energy.com/trees or call 800.777.9898.

5.1 COMMUNICATION FLOW CHARTS FOR PROACTIVE COMMUNICATION

5.1.1 Distribution Right of Way Maintenance Stakeholder Notification

This chart shows the process to be used to provide advance notice to stakeholders that distribution right of way maintenance activities are scheduled for a particular area.

DISTRIBUTION STAKEHOLDER NOTIFICATION



Stakeholders include but are not limited to city/county government elected officials, historic districts, local tree boards, etc.

The form shown below is used to provide advance notice to internal stakeholders that distribution right of way maintenance activities are scheduled for a particular area.

Notification of Upcoming Circuit Line Clearance Work
(Distribution)

1. **Substation Name:** **Circuit I.D.:** -
2. **Circuit Length:** **# of Customers:** **Date Last Cut:**
3. **Tree Contractor:** **General Foreman:**

General Foreman Phone #:

Scheduled Start Date: Scheduled End Date:

General Location of Circuit/Major Thoroughfares: (ex. Area NW of I-85 and W.T. Harris Blvd.):

Community Name/Major Subdivisions:

Known Sensitive Customers:

Other Comments:

Form Completed by:

Contact Phone #:

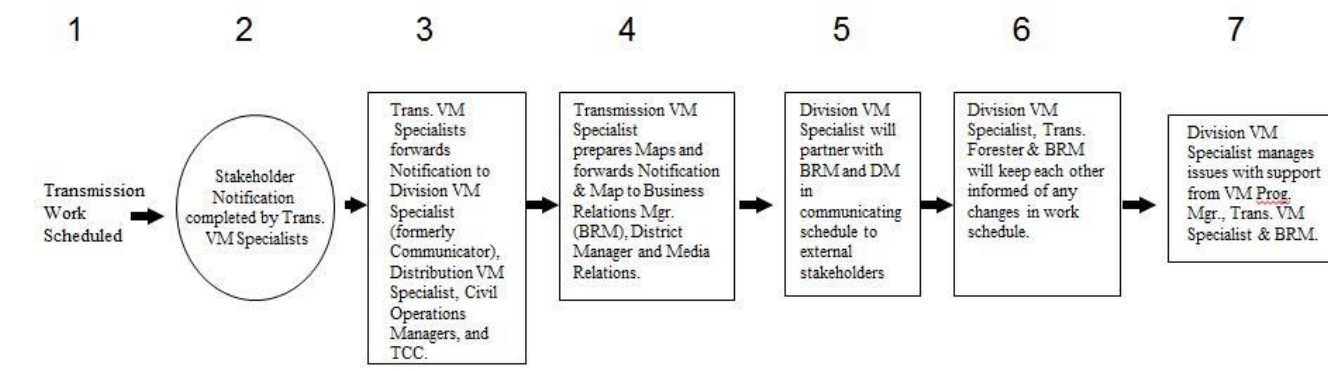
Date:

(Note: This is an internal document to be submitted to the local stakeholder with a minimum lead time of 2-3 weeks.)

5.1.2 Transmission Right of Way Maintenance Stakeholder Notification

This chart shows the process to be used to provide advance notice to stakeholders that right of way maintenance activities are scheduled for a particular area.

Transmission Stakeholder Notification



Notes:

1. This notification does not replace the door hanger process; door hangers shall be left where feasible and appropriate.
2. The Stakeholder Notification shall be provided to the BRM a minimum of four weeks before work commences.
3. It must be understood by all internal contacts that there is difficulty in targeting the exact day door hanging will occur (ex. A crew may have several miles of rural, non-maintained R/W clearing before work begins in a maintained area where door hanging is required....it is understood that door hanging for routine work in maintained areas will occur at least three working days prior to tree work).
4. The Division VM Specialist must be familiar with associated tap lines so the communication to BRM can be clear.
5. It is imperative that the BRM network make the appropriate contacts with external stakeholders in a timely manner.

The form shown below is used to provide advance notice to stakeholders that transmission right of way maintenance activities are scheduled for a particular area

Stakeholder Notification of Upcoming Transmission Vegetation Management	
Line Index :	Point to Point:
Operating Name :	
Associated Tap Lines:	
Voltage:	# Miles in Scope:
Tree Contractor:	General Foreman:
General Foreman Phone #:	
Scheduled Work Start Date:	Scheduled Work End
Date:	
General Location of Segment/Major Thoroughfares: (ex. Carmel Country Club; Gastonia Historical District, Club Blvd, Durham, etc.):	
<hr/>	
Community Name/Major Urban Areas:	
Known Sensitive Customers:	
<hr/>	
Other Comments:	
<hr/>	
Transmission R/W Forester:	
Contact Phone #:	
Date:	

6.0 VEGETATION MAPS

6.1.1 Transmission Areas and Forestry Specialist

