Q. (Reference Application) Regarding Newfoundland Power's Wood Pole Line Management Program:

a) What programs, if any, does NP have to ensure the extension of wood pole asset life?

b) What are NP's policies and practices regarding reduction of the environmental footprint relating to wood pole disposal?

c) What preservation treatments has NP used to preserve the life of wood poles?

d) What wood pole line management programs are in place in Atlantic Canada?

e) What wood line management programs are in place in other Fortis companies in Canada?

f) What is the unit cost for the purchase of wood poles? Provide a table showing the unit costs for wood pole purchases for the last ten years.

g) What is the average life of wood poles and how has the average life been improved, if at all?

h) Please provide details of NP's inspection plan for wood poles and compare your inspection program with that of NL Hydro.

i) What is NP's inspection cycle for wood poles?

A. a) Newfoundland Power does not currently have a program in place that attempts to extend the life of an individual wood pole. Newfoundland Power's current inspection and maintenance program focuses on the extension of the life of transmission lines as a whole through the completion of annual inspections and the execution of preventative and corrective maintenance.

Newfoundland Power is currently undertaking a review of its asset management practices to ensure its practices continue to be adequate, given the age of its electrical system, and to remain consistent with industry best practice. This review will include an assessment of the Company's transmission line asset management practices, including its capital investment and maintenance programs. Any change to the Company's current inspection and maintenance program, or the potential implementation of a wood pole chemical re-treatment program would be considered in the full context of the lifecycle management of the Company's transmission assets.

b) Newfoundland Power and its contractors follow the *Industrial Treated Wood Users Guidance Document* developed by the Wood Preservation Strategic Options Process' Guideline Development Working Group for Environment Canada. This document was designed to promote environmentally responsible management of the purchase, use, storage and disposal of wood products treated with preservatives. Following the guidelines outlined in this document, along with the Provincial Government's *Policy for Treated Utility Poles in Water Supply Areas*, ensures that Newfoundland Power's procedures align with recommended industry best practices for the full lifecycle use of treated wood poles.

c) Newfoundland Power currently purchases wood poles treated with both Chromated Copper Arsenate ("CCA") and Pentachlorophenol ("Penta"). Chemical treatment

substantially increases the useful service life of a wood pole compared to an untreated wood pole.

d) Newfoundland Power does not currently have detailed information regarding all of the current wood pole line management programs in place across Atlantic Canada. Previous industry surveys reviewed by Newfoundland Power as a part of the Company's ongoing asset management review included a response from one Atlantic Canadian utility.[1] Table 1 below provides high level details of the utility's wood pole management program based on their survey response.

Table 1
Atlantic Canada Utility – Wood Pole Management Program

Inspections	
Type	Frequency
Aerial	1-2 years
Ground	1-3 years
Climbing	N/A[2]
Methods Used	Conventional (Visual, Sounding, Boring)
Replacement Criteria	
Condition	Physical damage, internal decay, insect damage, woodpecker holes,
Age	35-55 years
Other Work	Nearby projects[3]
Laboratory Testing	N/A[4]
Chemical Retreatment	
Type	Boron rod
First Retreatment	15 years
Subsequent Retreatments	10 years
Expected life – Not treated	35 years
Expected life – treated	55 years

1 The industry survey from which this information was collected is not publicly available and as such Newfoundland Power is unable to identify this utility.
2 Only used in specific instances to gather further information regarding previously identified issues.
3 The presence of nearby projects or planned work could play a factor in replacement decisions depending on the accessibility to the pole's location or other environmental factors.
4 Laboratory or destructive testing of a pole after it has been removed from service is not standard practice.

e) Newfoundland Power has limited information regarding the current wood pole line management programs in place with two Fortis companies in Western Canada for their distribution systems.

Utility 1 conducts annual drive-by inspections of its lines. A more detailed wood pole inspection is conducted on an eight-year cycle starting when the line is 20 years old. The more detailed inspection includes visual inspections (from an aerial lift, climbing and more recently, drones) of the pole, crossarm and hardware. Inspections looking for rot are conducted by drilling a hole down 12 inches to 14 inches below grade to remove a test sample. The hole is filled with a boron rod after the sample is removed. The results of the detailed inspection inform the future year's work scope which could include pole replacement, line rehabilitation, or a full line replacement.

Utility 2 inspects its lines annually to identify damage that requires mitigation measures to be taken. Detailed inspections are completed every seven years which involves testing approximately 150,000 wood poles every year. Poles 15 years of age and older receive both an above ground and below ground inspection. Poles under 15 years of age only receive an above ground inspection. Chemical retreatment is completed using both pole wraps for insects and fungus and rods for insects and internal decay.

f) Table 2 below shows the average unit cost for the purchase of wood poles over the last ten years.[5]

Table 2
Average Unit Cost of Transmission Pole
(2014-2023)

Year	Cost ($)
2014	868.63
2015	879.66
2016	884.58
2017	911.07
2018	963.92
2019	982.79
2020	1,026.56
2021	1,056.44
2022	1,161.26
2023	1,232.72

[5] These annual costs are an average across pole height (40'-65'), class (1-4) and treatment (Penta or CCA).

g) The expected useful service life of a transmission wood pole is 58 years.[6] Newfoundland Power does not have information on the level of improvement of transmission wood poles life across industry resulting from wood pole line management programs in place.

h) Attachment A provides Newfoundland Power's *Transmission Inspection and Maintenance Practices*.

For a discussion of the two utilities' inspection practices, see the response to Request for Information PUB-NP-047.

i) Newfoundland Power's inspection cycle for wood poles is based on its Distribution and Transmission maintenance practices. Inspection cycles for distribution poles are completed on a seven-year cycle, while inspection cycles for transmission poles are completed annually.

[6] See Newfoundland Power's *2024 Capital Budget Application, 2024-2028 Capital Plan,* page 10.

ATTACHMENT A:

Transmission Inspection and Maintenance Practices

NEWFOUNDLAND POWER
A FORTIS COMPANY

TRANSMISSION INSPECTION AND MAINTENANCE PRACTICES

Approved By:	Mike Comerford, P. Eng.
Approved Date:	March 4, 2013
Revised By:	M.R. Murphy, P. Eng
Revised Date:	June 28, 2018

Table of Contents

TRANSMISSION INSPECTION AND MAINTENANCE PRACTICES

Policy Statement

Regularly scheduled inspections and correction of identified deficiencies shall be undertaken on all transmission lines to provide for safe and reliable operation. Regional Directors are responsible to ensure that transmission line inspection and maintenance activities are completed in accordance with this policy. Responsibility for maintaining and revising this policy rests with the Manager responsible for Transmission.

All preventative and corrective maintenance activities shall be recorded in the Company's computerized Transmission Asset Management System (TAMS).

Public and Employee Safety

Newfoundland Power owns and operates in excess of 2,000 km of transmission lines that transverse both rural and urban environments. Transmission line corridors may be used as trailways for snowmobilers, ATV operators, skiers, hikers and others and are also regularly used by employees to carry out inspection and maintenance activities. As well, in urban areas, lines often travel along streets and through residential neighbourhoods. Because transmission line corridors are used by the public and employees, lines and right-of-ways must be inspected and maintained in a safe manner.

Regular inspections of transmission lines and timely correction of identified deficiencies will minimize risk to the public and employees. Transmission line inspectors have the responsibility to inspect lines thoroughly with a keen focus on identifying potential public and employee hazards. Regional Directors, Area and Regional Managers of Operations, and Line-Supervisors have the shared responsibility to ensure that inspections are completed and any identified deficiencies and hazards are corrected in accordance with this policy.

Inspector Qualifications

As a minimum, an inspector must have the following qualifications to complete the Detailed Ground Inspections on Newfoundland Power's transmission lines:

i) Minimum 3 years of experience in the electrical utility industry, in the operations or engineering area.

ii) Familiarity with the operation, maintenance and construction of transmission lines.

iii) Familiarity with the use and operation of off-road vehicles such as ATV's and snowmobiles.

iv) Basic understanding of the electrical and mechanical nature of transmission lines.

v) Successful completion of Newfoundland Power line inspection workshop "Line Inspection Fundamentals".

The above qualifications can be obtained by a combination of on-the-job training, formal education and training as provided by recognized educational institutions, and internal Company training and workshops.

In order to maintain status as a Newfoundland Power line inspector, the inspector must successfully complete in-house line inspector training every three years.

Typically, all inspections will be carried out by the Planner assigned to the respective area.

Transmission Asset Management System (TAMS)

All transmission line preventive maintenance and inspections as well as deficiency identification and corrective maintenance activities shall be recorded in the Company's computerized maintenance management system known as Transmission Asset Management System (TAMS). The inspections and deficiencies are to be recorded in the field, by inspectors on handheld devices. Data from these devices shall be downloaded regularly into the computer system.

The Transmission department is responsible for administering TAMS and information services for training users. Planners, Supervisors, Line Supervisors, Managers, and others within the Transmission group may have access to this system.

Inspection Type and Frequency

All transmission lines are required to have a minimum of one (1) Detailed Ground Inspection per year. More frequent inspections or patrols may be required on some lines depending on their operating performance and as determined by the Area or Regional Manager of Operations.

Generally, Climbing Inspections shall only be performed on transmission structures/lines to:

a) More thoroughly assess concerns with specific components (i.e. insulators, hardware, crossarms) as identified by ground inspections

b) Ensure a newly constructed line meets construction standards (acceptance inspection).

Regularly scheduled Helicopter Patrols are not required under this policy. Special circumstances and operational problems can arise that will warrant a helicopter patrol (i.e. frequent line trips, storm damage, etc). A patrol performed under these conditions shall not substitute for a ground inspection.

Detailed Ground Inspections

During detailed ground inspections of transmission lines, inspectors will inspect all poles, towers, conductors, insulators, crossarms, crossbraces, anchors, guys, deadends, jumpers, sleeves and other hardware, as well as the right-of-way, and identify deficiencies that require correction.

To provide for a thorough inspection of poles, anchors, and guys at the groundline, at least one (1) of every four (4) ground inspections shall be carried out with no snow cover present.

Personnel performing inspections shall use binoculars, plumb bob, hammer, core sampler, screw driver, crescent wrench, digital camera, height measurement meter and all other equipment deemed necessary to assist in the evaluation of transmission line components.

In some cases it will be necessary for inspectors to utilize off-road capable vehicles such as ATVs, snowmobiles, or Argos. When such vehicles are required, additional considerations will be necessary. If the vehicle used is equipped with an enclosed cab, it is required that the vehicle be equipped with an escape hatch operable from both inside and outside the vehicle. Should water bodies need to be crossed, floater survival suits are required equipment as well.

Any line or site specific hazards or details should be identified by the inspectors on a go-forward basis and noted in handheld device. This information should be consulted before beginning any line inspections to confirm any extra requirements that inspectors should be aware of prior to commencing work, and to communicate any site considerations to contractors who may be working on the lines. Any additional details should be identified by the inspectors on a go-forward basis and noted in handheld device.

When working on "Remote" transmission lines, extra safety equipment and precautions are necessary. Inspectors should have in their possession the following items:

- Appropriately stocked survival kit
- GPS device including most recent mapping software
- Personal flotation devices (PFDs) if use of off road vehicles in water is required

- Redundant transportation such as a second ATV, snowmobile, or Argo; to be used in the case of incapacitation of primary mode of transportation
- At least one satellite phone for use in areas with poor cellular coverage

Inspectors are also required to complete and document tailboard discussions on a daily basis, and more often as needed to address changing conditions and newly identified hazards. Ground conditions and communications limitations should be considered as part of the discussion.

Appropriate operations manual procedures must be followed. Relevant procedures include the following:

- OPR112.08 – "Off Road Vehicles"
- OPR112.16 – "Driving Off Road Vehicles"
- OPR101.16 – "Working Alone or in Isolated Locations"
- OPR101.17 – "Traveling and Working in Remote Areas"
- OPR300.01 – "Risk Management/Job Planning"
- OPR300.03 – "Working Alone"
- OPR112.07 – "Travelling Over Wetlands and/or Bogs"
- OPR106.46 – "Power Line De-Energization and Hold-Off Protection"
- OPR106.47 – "Transmission Line Structures with Damaged Insulators"
- OPR106.48 – "Transmission Line Structures with Damaged Equipment or Hardware other than Damaged Insulators"

Results of detailed ground inspections and identified deficiencies shall be recorded in the field on handheld devices. GPS co-ordinates are to be taken in the field for all structures, approved access trails and hazards.

Transmission Line Component Inspection Guidelines

Transmission line ground inspections require evaluation of the following components. For each component there are guidelines to follow during inspections. These guidelines do not cover all possible deficiencies that may exist on each component, and reasonable judgement must be used by the Planner in identifying and prioritizing deficiencies.

a) Wood Poles

Ensure all 'nameplate'/structure list information such as structure number, type, etc. is recorded and correct. Collect GPS co-ordinate of pole if required.

Inspect and test wood pole(s) to determine condition at and above the groundline as per the following section - Detailed Wood Pole Inspections.

Ensure pole is properly backfilled and not undermined.

Check poles for any vibrations and indications that conductors are vibrating excessively.

Where applicable, inspect condition of crib timbers. Ensure crib is properly rock filled.

Check structure for plumbness or any degree of misalignment.

Check for structure number tags.

Check rock mounts for damage or deterioration.

b) Crossarms and crossbraces

Inspect the wood crossarms/crossbraces for the following:

- Rotting
- Damage due to burning
- Splitting or Cracking
- Any deformation due to twisting or bending

c) Crib

Inspect and test the crib for the following:

- Proper rock filling
- Rotting/damaged timbers
- Missing timbers

d) Steel Pole Structures

Inspect pole for mechanical damage and corrosion.

Check for plumbness.

Check for number tags. Ensure pole is properly backfilled and not undermined.

Check that steel pole climbing pegs are not installed to at least the 4m height location.

Check structure grounding across section joints.

e) Steel Towers

Inspect tower for damaged or missing members.

Check member connections for loose or missing nuts and bolts.

Check members for buckling.

Inspect tower for corrosion
.
Check tower for plumbness and any degree of misalignment.

Check for structure number tags.

Inspect backfill conditions around tower footings and legs. Check footing for deterioration. Check vegetation around footing.

Check anchor bolts for cracks, rusting or missing nuts.

Check tower for missing or damaged Danger Signs. Ensure that signs are clearly visible.

Check condition of anti-climbing barriers. Anti-climbing barriers and warning signs should be installed on all steel towers.

f) Guys

Inspect guys and preformed grips for wear, breaks, slackness, and corrosion.

Ensure guy guards are secure and are installed on every guy wire. Install additional guy guards where deep snow or drifts are encountered or expected to cover existing guy guards.

Ensure guys are grounded where required.

Ensure guy insulators are properly installed

g) Anchors	Inspect anchor rod and backfill conditions. Check for anchor rod damage or deterioration. Ensure anchor is not undermined or pulling. Ensure preformed grip is completely visible and anchor eye is above ground level. Check for any abandoned anchor rods that are protruding above ground and may pose a hazard.
h) Insulators	Inspect for broken, cracked, chipped, misaligned, or flashed insulators. Check non-deadend insulators for uplift. Check post insulator studs for backing off and looseness. If suspension insulators are ≥50% damaged the inspector shall stay clear of the structure in question and take pictures from a distance. These deficiencies should be called in to the Transmission/Distribution Maintenance Supervisor immediately, prioritized as Emergency and brought to the attention of the Area Operations Superintendent. The determination may be made at this time to place the line in Hold-Off immediately as per OPR116.02.
i) Hardware	Check hardware for missing nuts, bolts, cotter pins, and loose, worn, bent or corroded hardware. Check ball link eye bolts for visible wear in the link connection FleXall-type saddle clamps have been known to wear at the clevis bolt eventually causing conductor damage or failure. Inspect all FleXall type clamps using binoculars or a spotting scope, to determine the amount of visible wear at the clevis bolt and saddle ears.
j) Conductors & Accessories	Inspect conductor sag. All three conductors should appear to have the same sag. Check for excessive sag that could result in phases slapping together. Inspect conductors for proper clearances from buildings, roads, ground, other power/communication lines. Use height measurement device to determine conductor height above ground where clearance may not be adequate. Inspect conductor for broken or frayed strands, bird-caging, burn marks, foreign objects. Inspect deadend assemblies and splices for any abnormal condition. Inspect vibration dampers and anti-galloping devices for wear and positioning. Where required, inspect for damaged or missing conductor warning markers.
k) Ground Wires	Inspect condition of overhead ground wire for corrosion and broken strands. Inspect structure ground wire. Ensure it is rigidly supported and has not been cut, and that ground wire guard is in place. Check for tightness and corrosion.

l) Group Operated Disconnect Switches

Check locks and locking mechanism are intact and secure. Check switch for signs of tampering. Gang-operated switches in areas readily accessible to the public are required to be double-locked.

Inspect switch handle, pipe, etc. for damage and proper alignment.

Inspect all ground connections for tightness, corrosion and damage.

Ensure switches are properly labeled.

Check switch blades are in fully open or closed position as per its normal configuration.

Inspect insulators for damage.

Ensure ground mat has not been disturbed.

Check for missing or damaged danger signs. Ensure that signs are clearly visible.

Where switch yards exist, check for damage or deterioration of the fence. Also check to ensure gate is closed and locked, that that fence is adequately grounded and danger signs are in good condition. Check vegetation inside yard.

m) In Line Switches

Ensure blades are in fully open or closed position and locked open for normally open switches.

Check insulators for deterioration or damage.

Check whips for damage and proper alignment.

n) Right of Way

To assign a priority to the vegetation deficiency, the inspector must take into consideration the details of the vegetation growth, as well as the following

- Public and employee safety
- The criticality of the line (radial or loop, number and type of customers, load, etc.)
- The physical location of the line (populated or remote area, near existing roadways or cross-country, etc.)
- The anticipated growth rate (depending on the type of vegetation)

Check condition of vegetation growth along right-of-way.

When recording a brush clearing vegetation deficiency, be sure to record information on the type of brush to be cleared (deciduous or coniferous), the density of brush to be cleared (Light, Medium, Heavy), the average height of the brush, and the start and end points of the section on line requiring brush clearing.

Check for danger trees that may contact the conductor or trees close to the line that can be easily climbed.

Check for tree stumps or cut off pole stumps that could pose a hazard for snowmobiles and ATV's.

Check for encroachments by foreign structures, unauthorized excavation or fill areas, etc.

Any clotheslines or other customer owned attachments on transmission line structures should be removed by the Planner during the inspection.

Detailed Wood Pole Inspections and Testing

The following inspection and testing procedures shall be used to determine the integrity of transmission line wood poles.

Visual Inspection

Inspect the condition of the pole from the groundline to the top on all quadrants. The pole shall be examined for the following defects: pole top rot, ground line rot, external decay, rotting, deterioration, splits, checks, cracks, breaks, burns or other fire damage, woodpecker damage, signs of insect infestation, and plumbness

During each transmission line inspection, all wood poles in service shall require a detailed Visual Inspection.

Sounding Test

Using a flat faced hammer, sound the pole surface at regular intervals on all quadrants from the groundline to 2 m above grade. Care should be taken to detect any difference in sound. When the sound does differ, (i.e. hollow sound) it may indicate internal decay and further testing may be required. This test can be used to evaluate any portion of the pole above groundline.

Sounding Tests shall be randomly done on poles in service 35 years or less.

Poles in service more than 35 years require a Sounding Test during each inspection.

Core Sampling Test

This test is performed using an approved core sampling device. By drilling through the centerline of the pole a core sample can be extracted for evaluation. The location of bore holes shall be determined by the sounding test. All bore holes should be plugged with a tight fitting, treated wooden plug. Also, to avoid transfer of decay, the core sampler must be cleaned with an approved fungicide.

If the visual inspection and/or the sounding test indicate a problem, a Core Sampling Test can be performed to aid in the evaluation of the pole.

Deficiency Prioritization and Correction

Where practical, inspectors shall correct deficiencies on site during a transmission line inspection. The inspector shall carry the required materials to complete the repair.

- Replace or reattach a missing guy guard.
- Tighten a loose pre-form connection or slack guy.
- Replace or reattach a missing ground cover.
- Add staples to an unsecured ground wire or ground cover.
- Replace or reattach a sign, equipment/structure label, or lock.

The Planner shall assign a Maintenance Priority for each major deficiency identified during an inspection which will quantify the seriousness of the deficiency and establish when corrective action is required. All non-Emergency deficiencies are to be priority ranked as TD1, TD2 or TD4 and entered into TAMS via a hand held device.

The correction of deficiencies shall be completed in the time frame outlined below:

CLASSIFICATION OF PRIORITY	RESPONSE
Emergency Immediate security of the line is at risk or serious safety hazard exists.	Immediate
TD1 Deficiencies that are a serious hazard or would result in an interruption if not corrected within 7 days.	Within 7 days
TD2 Deficiencies that are a less serious hazard or would result in an interruption if not corrected within 1 month.	Within 1 month
TD4 Deficiencies that are not a safety hazard which should be corrected as part of the capital plan for the following year	In the following capital year

The shared responsibility for scheduling maintenance rests with the Planner and Line Supervisor.

If the Planner notes a deficiency that is considered to be an Emergency, he shall immediately notify the area Manager.

If a deficiency is noted to be a TD1 or TD2 priority, it is the Planner's responsibility to ensure the appropriate personnel is aware of the work and of the high priority nature of the work.

A TD1 priority will permit time for formulating a plan of action to correct the deficiency. Planning should begin immediately to ensure corrective action is taken as quickly as possible after the identification of the deficiency.

Regional Managers / Supervisors will ensure corrective maintenance work is complete, in the time frames outlined above, to prevent failure from occurring.

While it is not possible to cover all conditions that a Planner may encounter, the general guidelines found in Appendix A can be used to assist in the classification of defects. In practice, the Planner will assign priority based on his knowledge and experience.

APPENDIX A

GENERAL GUIDELINES FOR CLASSIFICATION OF PRIORITY

ITEM	EMERGENCY	TD1	TD2	TD4
Poles	Broken/severe undermining	Serious cracks or deterioration/unauthorized attachment		Serious checks or splits/woodpecker holes/decay
Crossarms	Broken	Serious cracks or deterioration		Significant rot
Crossbrace			Significant deterioration or broken cross brace	Less significant cracks or deterioration
Cribs				Significant damage or deterioration of the crib timber or loss of rock
Leaning Structures	Line clearance in question or high risk of falling over	Leaning over 2m		Leaning between 0.5m – 1m
Steel Towers		Significant damage/deterioration to support structure or members. Missing or significant deterioration or damage to signs or anti-climbing barrier		Deterioration to support structure or members. Minor deterioration or damage to signs or anti-climbing barriers
Guys / Guy Guards Preform Grips	Broken or disconnected on angle or deadend structure	Buried or severely corroded on angle or deadend structure. Missing guy guard (TD1 or TD2 depending on location, time of year)		Broken, buried, disconnected or severely corroded on other structures. Missing ground attachment. Slack guys.
Anchors / Rod	Rod cut off or undermined on angle/deadend struc.	Rod severely corroded or pulling out on angle/deadend structure		Rod cut or anchor pulling out on other structure types or buried on any structure
Suspension Insulator	50% or more defective in string or cracked/broken rod in composite insulator			Less than 50% defective in string or damage/rod exposed in composite insulator
Pintype / Linepost Insulators	50% or more of the skirts are chipped, cracked or otherwise damaged, or insulator is floating	< 50% of the skirts are chipped, cracked or otherwise damaged Very loose insulator stud		Minor defects – chipped, misaligned Loose insulator stud
Hardware		Missing or Damaged/Worn: High risk of causing interruption	Missing or Damaged/Worn: Moderate risk of causing interruption	Missing or Damaged/Worn: Low risk of causing interruption
Ball Link Eye Bolts			Visible wear in link, >50% worn	Visible wear in link, <50% worn
Conductor Saddle Clamps			FleXall type, extreme wear in clevis bolt	FleXall type, moderate wear in clevis bolt

ITEM	EMERGENCY	TD1	TD2	TD4
Conductor Damage	Sag causing public safety hazard	More than ¼ strands broken		Bird caging. 1 or 2 strands broken
Vibration Dampers				Failed or broken
Overhead Groundwire	Broken and/or severe clearance problem with conductor		Frayed or broken strands	Slack with minor clearance problem
Structure Grounding	Unsupported grounding in danger of contacting conductor	Section missing or cut		Section unsupported-no clearance problem
Group Operated Disconnect Switch	Lock/locking mechanism removed/damaged. Missing or significant deterioration or damage to signs. Missing or significant deterioration to ground connections or ground mats. Blades that are not fully opened or closed. Significant damage to insulators		Moderate damage or deterioration to insulators/handle or other hardware.	Less serious damage or deterioration to infrastructure or signs
In Line Switches	Blades not fully engaged or not fully open. Significant damage to insulators			Less serious damage or deterioration of insulators, blades, hardware or another part of the switch
Corrosion (any component)		Severe cases		
Encroachments	Active operations with clearance concerns (public safety hazard) and/or high risk of causing interruption (Emergency or TD1)		Non-active operations with clearance problem	Other encroachments on r-o-w
Danger Trees		Substantially leaning and high risk of falling and hitting line: TD1 or TD2 depending on situation		Trees within easement that may contact line when felled
High Trees/Brush	Burnt trees close to line and trees that would pose hazard to person climbing tree. Energized trees.			Trees close to line with no evidence of burning and pose no immediate hazard if climbed.