Archive Materials

"All Utilities" Letters
As issued by the Oregon Public Utility Commission

January 2000 – September 2015

These documents are provided for historical reference only; in many cases they were written for a specific circumstance or situation and may or may not represent Safety Staff's current position.

For additional information, please contact Paul Birkeland, Oregon PUC, at paul.birkeland@state.or.us

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January 13, 2000

To: All electric utilities and telephone utilities and cable television operators in Oregon.

Re: Temporary Administrative Rule related to potential rental reductions for pole attachments.

At the most recent Joint Use Task Force meeting, we were made aware that some utilities have sent letters to attaching entities informing them that because they are not in compliance, they are ineligible to receive any rental reduction. We have also heard that some of the letters offered little or no documentation of the non-compliance. The intent of this letter is to make you aware of the requirements of the temporary rule, a copy of which is attached to this letter.

HB 2271 requires a rental reduction for a licensee effective January 1, 2000, unless a utility can show that the licensee violated PUC rules or the contract that the licensee has with the utility. The new law also requires the utility to give the licensee written notice if the utility contends that the licensee should lose some or all of its rental reduction.

The temporary rule sets out what information a utility must put in its written notice. Specifically, the temporary rule requires the utility to: (1) point out how and when the licensee violated PUC rules or the contract it has with the utility; (2) state how much of the rental reduction the utility believes the licensee should lose as a result of the violations; and (3) specifies any losses the utility claims that stem from the violations.

The temporary rule does not require that a utility give a copy of the written notice to the PUC. The PUC will get involved in resolving a dispute between a licensee and a utility only if the licensee disagrees with the claim made by the utility in the written notice. If the licensee disagrees, it may send a letter to the utility stating the basis for its disagreement. At the same time the licensee must also send a true copy of the utility's written response as well as its letter of disagreement with the written notice, to the PUC, so the agency is aware of the dispute.

The PUC will set up dockets to resolve disputes between licensees and utilities. In resolving the disputes, the PUC will apply whatever rules existed at the time of the alleged violations. That is, it will use its existing rules to decide disputes that arise up to the time the PUC adopts new rules. After the new rules are in place, the PUC will use those rules to resolve disputes that involve alleged violations occurring on and after the effective date of the new rules.

The PUC will want to resolve any dispute - - whether it arrives under the old and new rules - - but not until after the new permanent rules are in place. The PUC will need to wait for the new rules because the new rules will give the agency some guidance on any policy questions that may arise.

All Utility Letter

Please note that the temporary rule deals only with procedure. The PUC will deal with the do's and don'ts of the pole attachments when it, with the assistance of the task force, amends its existing rules.

If you have any questions regarding this temporary rule, feel free to call me at the number below.

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attachment: temp rule

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June 6, 2000

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TO: All Oregon Electric Utility Operators

RE: 2000 Incident Report

OPUC Staff recently completed the annual report on personal injuries reported to the OPUC in 1999. These incidents are related to utility facilities and include injuries to utility personnel, non-utility workers and members of the public.

Staff prepares this report so that utilities have statewide information to direct their safety programs in the most effective manner. The report gives details concerning the "Who, What, Where, and When," utilizing text and graphics. Included are a summary and recommendations.

Please pass this report around to those in your utility that would find the information of interest. Feel free to make copies.

Also enclosed is a revised "Electric And Communication Incident Report" form. Please make 2-sided copies of this form for your use. Remember to discard all older forms.

If you need further information or have ideas to improve future reports, please contact Bob Sipler.

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Enclosures

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October 6, 2000

To: All electric utilities and telephone utilities and cable television operators in Oregon.

Re: Revision of OPUC staff policy on line inspection requirements

The intent of this letter is to make you aware of revisions to staff's policy regarding the obligations to perform regular inspections of electric supply and telecommunication facilities. The obligations to inspect and maintain overhead and underground facilities are mandated by Oregon Revised Statute 757.035 and are more specifically addressed in Rules 121, 214, and 313 of the National Electric Safety Code (NESC). A copy of Rule 214 for overhead lines is attached.

Staff's line inspection policy was originally published in 1987 and has been in effect since that time. The attached revision is intended to provide clarification regarding the scope and who must adhere to the terms and conditions set forth. It also firms up some maintenance program obligations for utility operators and provides more specific guidelines for performing management quality assurance checks of inspections performed by your personnel.

One of the reasons for issuing the revised policy at this time is because more telecommunication entities are installing and operating new lines on Oregon's utility rights-of-ways. These additional lines are making inspection and joint-use responsibilities more complex. Also, some utility operators, both electric supply and telecommunication line entities, have facilities that are not in compliance with the policy and its specific requirements. OPUC staff feels that revising and reissuing the policy is necessary to ensure that all utility operators are fully aware of their inspection and maintenance responsibilities.

Another reason to emphasize this policy is that electric contact incidents and injuries have been high in the last few years for utility line workers. According to OPUC records, Oregon set an unacceptable new record with at least nine utility workers injured in 1998, and there have been 45 injured over the last seven years because of contacts with electric supply lines. The purpose of the NESC and of this policy is to safeguard persons against accidents due to unsafe line conditions, both for utility employees and members of the public. Adherence to the attached policy is a critical element in keeping Oregon's lines safe and trouble-free.

Please review this policy carefully within your own organization. Because it applies to the entire utility community, please circulate it to other parties such as pole joint-use attachers, association members, or anyone else who may be affected by the language of the policy.

In closing, please take special care to ensure that all workers on your respective systems are fully aware of the obligations set forth in the policy. The rules and requirements of the NESC are not only state law, but are practical, time tested rules designed to provide the proper level of safety for utility employees, as well as for members of the general public. If you have any questions regarding NESC rules, feel free to call me at the number listed below or Bob Sipler at (503) 373-7451.

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Attachments

Oregon Public Utility Commission
Staff Policy
Line Inspection Requirements For Utility Operators

1. PURPOSE

The purpose of this policy is to clarify the line inspection requirements of ANSI-C2, National Electrical Safety Code (NESC), as interpreted by the administrative authority. Specific reference is made to NESC Rule Nos. 012, 013, 121, 214, and 313.

In order to ensure that overhead and underground lines are kept in a safe and relatively trouble-free condition, Utility Operators must make a thorough inspection before a new installation is put into use and at sufficient intervals thereafter. Intervals are determined by considering: age and condition of line, previous inspection and maintenance programs, soil and environmental conditions, weather, and quality of line materials, workmanship and design. Inspections should be preventive in nature and intended to effect repairs previous to failures.

2. SCOPE

This policy applies to the inspection by Utility Operators of all electrical supply and communication lines, both overhead and underground.

3. DEFINITIONS

Lines - Those conductors rights-of-way, supporting structures, and associated equipment used to transmit electric supply energy or communication signals. (Such lines include electric supply, telephone, cable television, and similar utility lines.)

Utility Operator - Any person, company, utility, or municipality, pursuant to ORS 757.035, who is involved in the construction, operation, or maintenance of electrical supply and signal lines.

4. WRITTEN POLICIES AND STANDARD PRACTICES

Each Utility Operator shall have clearly written policies and work practices for its overhead and underground line inspection programs, including: new installation inspections, on-going cyclic inspections of existing lines and substations, and the utility's record keeping system that tracks code violations until corrected.

5. INSPECTION RESPONSIBILITIES (Also see item 7d of OPUC Policy entitled *Safety Provisions for Joint-Use of Poles.*)

Each Utility Operator shall conduct the applicable inspections listed in a., b., c. and d. below. Inspections b. and c. shall be done at such intervals as experience has shown to be necessary in accordance with good practice for the given local conditions.

a. Inspections of New and Repaired Installations

Each new line installation shall be closely checked and corrected for compliance with the NESC before being placed into service.

b. Public Safety Inspections

Public safety inspections are intended to identify hazards and right-of-way encroachments that can be seen during a patrol. These inspections shall include all overhead lines and other accessible equipment. For electric utilities, the maximum cycle length shall not exceed two years. Substations should be inspected monthly.

CHRON FILE

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Oregon
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Public Utility Commission
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October 12, 2000

To: All electric utilities in Oregon.

Re: Oregon Utility Vegetation Management Conference.

This letter is intended to make you aware of the conference referenced above and to provide you with registration information, should you wish to have people from your organization attend.

The conference promises to be extremely informative and offers all that attend an opportunity to interact with a wide variety of vegetation management professionals, as well as with peers from the utility community.

The 1999 conference was well attended and all attendees were very complimentary of the content of the agenda. Because we believe that the 2000 conference will be equally well received, OPUC staff strongly encourages you to have your organization represented.

If you have any questions, feel free to call me at the number listed below.

Jerry Murray

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Attachment

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December 29, 2000

To: All electric utilities in Oregon.

Re: Electrical substation security.

During recent inspection tours across the state, OPUC staff members have observed circumstances related to electrical substation security that constitute a significant safety hazard to the public. Specifically, within the last three months, staff members have been able to literally walk into five substations. Although all the gates had some type of locking mechanism, by pulling up and out, we were able to open them.

The purpose of this letter is to re-emphasize the requirements of the National Electrical Safety Code (NESC), as it relates substation security measures. Rule 110 is very specific regarding minimum protective requirements. Staff strongly recommends prompt and continuing compliance inspections of your substations.

As the minimum, inspections at monthly intervals are suggested for such crucial installations as electrical substations. Particular attention needs to be given to inspection of substation fences and gates to ensure that they, as stated in Rule 110, "limit the likelihood of entrance of unauthorized persons or interference by them with equipment inside."

Critical items to be aware of when performing inspections are:

- Gaps and erosion under fencing and gates.
- Adequate fence heights (at least six feet of fabric) and barbed wire top assemblies. A total height of not less than seven (7) feet is required.
- Gates capable of being securely locked. (Chains are recommended.)
- Suitable warning signs at all gates and on fencing as required. (Note: ANSI Z535.1-1991, ANSI Z535.2-1991, ANSI Z535.3-1991, ANSI Z535.4-1991, and ANSI Z535.5-1991 contain information regarding safety signs.)
- Proper grounding/bonding techniques for fences and gates.
- Substations free of stored material and equipment not essential to the maintenance of installed equipment.
- Outside perimeter of substation fences free of objects that would provide access. (i.e., trees, shrubs, vehicles, fences, buildings, etc.)

The rules and requirements of the NESC are not only state law, but are practical, time tested rules designed to provide safety minimums for utility employees, as well as for members of the general public. If you have any questions regarding NESC rules, feel free to call me (number below) or Bob Sipler at (503) 373-7451.

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August 20, 2001

To: All Electric Utilities

RE: Report – Personal Injury Incidents Reported to the OPUC in 2000

Enclosed is the 2001 Utility Electric Contact Incident Report. This report was compiled by the Safety and Reliability Section of the OPUC. It covers incidents reported in 2000.

Our purpose in distributing this report is to provide information and analysis to help Oregon electric utilities better target their safety and accident prevention programs.

In addition to this hard copy of the report, you can find the report (and lots of other information) on the OPUC web site at http://www.puc.state.or.us/. Once in the web site, look for "Safety", and then select your choice in the safety menu.

If you have any comments or questions related to the report or the safety section of the PUC web site, feel free to contact me or Jerry Murray (503) 378-6626, or email, jerry.murray@state.or.us.

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Enclosure

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February 28, 2002

To: All Electric and Communication System Operators in Oregon

Subject: Adoption of the 2002 edition of the National Electrical Safety Code (NESC) in place of the 1997 edition

At its November 20, 2001, Public Meeting, the Public Utility Commission opened a rulemaking proceeding, docketed as AR 430, to consider adopting the 2002 edition of the National Electrical Safety Code and to make housekeeping changes to OAR 860-024-0010.

On December 3, 2001, the Commission filed Notice of the Proposed Rulemaking with the Secretary of State and subsequently provided notice to all interested persons on the Commission's rule changes list. The notice was published in the January 2002 *Oregon Bulletin*.

There were no written comments nor was there a request for a public hearing as a result of the notice.

At its public meeting on February 19, 2002, the Commission approved Staff's recommendation to adopt the proposed changes. OPUC Order No. 02-119, dated February 22, 2002, completes this process of adopting the new edition into state regulation.

The 2002 edition was published by the American National Standards Institute, on August 1, 2001, and became effective as a national standard 180 days later. This rulemaking adopts the 2002 NESC into Oregon law under the authority of ORS 757.035.

The NESC is the minimum standard for the construction, operation and maintenance of electric supply and communication lines for electric and communication line operators in Oregon and has been adopted in Oregon to some degree since 1923. Each edition of the NESC has been adopted in its entirety and without exception since the 1973 edition was adopted on January 13, 1976. The code has been revised every three or four years since that time. Future revisions are expected to occur every five years.

If you have any questions regarding this rulemaking, feel free to contact me.

Bob Sipler
503-3763-7451
bob.sipler@state.or.us

September 23, 2002

To: All Electric Utility Operators in Oregon.

Re: Vegetation Management Conference.

The 2002 Pacific Northwest Utility Vegetation Management Conference is coming soon (Nov. 13 & 14 in Eugene) and promises to be very informative and offers all attendees an opportunity to interact with a wide variety of vegetation management professionals, as well as with peers from the utility community. We have had significant events like the February windstorm and extensive summer fires this year. Many important lessons were learned during these events that can make a big difference in preparing for future years.

OPUC Staff continues to believe that this annual conference provides a significant benefit to the utility industry. The previous conferences have been well attended, with attendees very complimentary of the content of the agenda. We encourage you to have key managers and workers in your organization participate.

An electronic version of the agenda can be found on the PUC website. Go to www.puc.state.or.us then click on "Safety", then under "Affiliated Safety Organization Links" click on "Oregon Vegetation Management Consortium". If I can answer any further questions, feel free to contact me at the e-mail address listed below. My phone number is listed below also, if you prefer.

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May 19, 2003

To ALL Oregon Electric and Communications Utilities and Operators

Subject: **WARNING** – Public Exposure to Ground Laid Cables a Problem!

Angry customers have been calling the Oregon PUC with complaints of communication cables left on the ground across their sidewalks and lawns, draped on fences, and along their driveways. These installations have involved either ground laid cables or lines with insufficient ground clearances that are unsafe obstructions to pedestrians or vehicular traffic. They have not been guarded or marked as required by the National Electrical Safety Code (NESC) and often have been allowed to remain in place for weeks and sometimes months, well beyond the term of a reasonable emergency.

There seems to be confusion in the communication industry regarding a legal **temporary** or **emergency** installation. This has resulted in hazardous situations for the public. We ask that your organization and contractors review their practices to make sure that temporary or emergency installations comply with NESC Rules 014 and 230A when permanent installations are not possible. A temporary installation allows Grade N construction, but otherwise maintains all overhead or underground requirements of a permanent installation (height, or burial depth). Whenever an emergency installation is unavoidable, operators need to take extra care to ensure it does not endanger the public and is remedied in an expedited manner. While the emergency installation exists, it must be appropriately **marked, guarded, located,** and **inspected** at sufficient intervals, so that the installation does not jeopardize the safety of the public, especially children.

We ask for your cooperation in keeping emergency and temporary installations to a minimum and in getting them promptly remedied to prevent danger to the public and property. Hopefully, the information covered in attachment A, together with the NESC, will assist your organization in evaluating its emergency and temporary practices.

As a reminder, failure to comply with the provisions of NESC rules 014 and 230A for temporary and emergency conditions is considered a serious matter. Non-compliance with NESC provisions can result in Commission compliance orders per ORS 757.035 and/or fines authorized by ORS 757.990.

If you have any questions about this matter, please feel free to call Bob Sipler at 503-373-7451 or myself.

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Attachment A

Attachment A

Emergency and Temporary Installations for Communication Lines

(Attention needs to be given to the following partial listing of National Electrical Safety Code (NESC) rules, Oregon Administrative Rules (OARs), and accepted industry good practice. *Italics indicate actual rule language.*)

Emergency Installations:

- Underground
  - NESC Rule 230A2d - *Supply and communication cables may be laid directly on grade if they are guarded or otherwise located so that they do not unduly obstruct pedestrian or vehicular traffic and are appropriately marked. Supply cables operating above 600V shall meet either Rule 230C or Rule 350B.*
  - NESC Rule 014A3 - *Emergency installations shall be removed, replaced or relocated, as desired, as soon as practical.*
  - OAR 952-001-0010(5) - *"Emergency" means an occurrence involving an immediate danger demanding prompt attention to prevent loss of life, or to mitigate damage to property, or to prevent interruption of essential public services (as determined by an emergency response agency or the facility operator) or to prevent a customer service outage (as determined by the facility operator).* (See page 2 of the Oregon Utilities Coordinating Council (OUCC) Standards Manual.
  - OAR 952-001-0050 (1) requires excavators to give at least two (2) business days notification to the Oregon Utility Notification Center before commencing routine excavations. There is also provision to request locates to perform emergency work with less than two (2) business days notice in OAR 952-001-0060. In either scenario, the work shall be completed as soon as practical.
  - Staff discourages the use of cable laid directly on grade for emergency installations; however, if there are no other means to remedy the emergency, cables may be installed per NESC rules 014A and 230A. If emergency provisions are used, the operator has the obligation to correct the installation to comply with the permanent provisions of the NESC as soon as the practical.
- Overhead
  - NESC Rule 014A1 - *The clearances required in NESC section 23 may be decreased for emergency installations. See NESC rule 230A for reduced clearances.*
  - NESC Rule 014A2 - *The strength of material and construction for emergency installations shall be not less than that required for Grade N construction. See NESC Rule 263.*
  - NESC Rule 014A3 – *Emergency installations shall be removed, replaced, or relocated, as desired, as soon as practical.*

Temporary Installations:

- Underground
  - The NESC does not make any provision to install underground facilities temporarily, therefore NESC Rule 352D1 applies. This rule reads: *The distance between the top of the cable and the surface under which it is installed (depth of burial) shall be sufficient to protect the cable from damage imposed by expected surface usage.*
  - Where the NESC does not give specific requirements, it points to "accepted good practice" as the appropriate standard. Staff believes the OUCC's Standards Manual sets a reasonable standard in Oregon for the depth and placement of underground cables and lines. Refer to Joint Trench Examples on page 17 and 18 in OUCC's Standards Manual.

- Overhead
  - NESC Rule 014B - *When an installation is temporary, or where the facilities are temporarily relocated to facilitate other work, the installation shall meet the requirements for non-temporary installations* [underlining added for emphasis] *except that the strength of material and construction shall be not less than that required for Grade N construction.* See Rule 263.
  - Refer to Part 2 of the NESC, particularly Section 23, for minimum clearance requirements.

Some Other Relevant Requirements: NESC Rule 012 - General Rules; NESC Section 2, definitions of "guarded" and "enclosed"; & NESC Rules 214 and 313 – Inspections and Tests of Lines and Equipment.

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July 14, 2004

To: All Electric Supply and Communication Operators in Oregon

Re: Revised information regarding the minimum clearance between facilities on service poles

An issue was raised by several representatives of Oregon operators, both communications and electric supply, around the minimum vertical clearance required between communication and electric supply facilities where they attach to a dead end service pole. The code reference here is to the National Electrical Safety Code (NESC) Rule 235C1, Exception 3.

OPUC Staff had been relying on a 1985 interpretation from the IEEE National Committee that stated that the 12" clearance exception applied only to a building being served, and all poles required the standard vertical clearances (of 40").

We were made aware of a code change for the 1993 edition of that same exception to Rule 235C1. The change proposal found in the preprint makes it clear that "structure being served" is to include a service pole where the services terminate. Hence, the NESC-required minimum vertical clearance may be reduced to 12" between electric supply and communication service drops when the specified conditions exist.

However, all operators should be aware that some electric operators have stated in their electric service requirements that they do require the 40" minimum vertical clearance. If those requirements exist and are clearly stated, they can be enforced. The rules contained in the NESC are intended to be viewed as minimum standards. Many operators have adopted more stringent standards, in order to ensure a safe environment for utility workers and the public.

If you have any questions regarding NESC rules, feel free to call me at the number below, or Jerry Murray at (503) 378-6626.

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February 15, 2005

All Electric Supply and Communications Operators in Oregon

RE: Modification of time standards for making repairs of probable NESC violations, identified during OPUC Staff inspections.

OPUC Staff is charged with the obligation of ensuring that all utilities are in compliance with the National Electrical Safety Code (NESC). A portion of that obligation is satisfied by regularly performing reviews of each utility's facilities and maintenance programs. Subsequent to each Staff review, a report is issued to each utility affected by the review. In the RECOMMENDATIONS section of the report, Staff requires a ninety (90) day time standard for correction of identified probable violations.

This letter is in response to an issue raised by representatives of several Oregon utilities, both communications and electrical. Specifically, there has been a long-standing belief that the 90-day time standard is insufficient for assembling the resources, coordinating with other affected utilities, and effecting repairs.

In recognition of the validity of this issue, particularly in view of all the inspection/correction activity presently occurring statewide, Staff has elected to lengthen that specific time standard to 180 days. All subsequent reports from this date will reflect that time standard.

This change will not affect the time standards recommended by Staff when dealing with correction of violations that represent an imminent hazard. Typically, those range from "immediate" to 30-days, depending on the specific circumstances.

Please take special care to ensure that all workers on your respective systems are fully qualified, trained and supervised. The rules and requirements of the NESC are not only state law but are practical time tested rules designed to provide the minimum level of safety for all utility employees, as well as for members of the general public.

In closing we want to reiterate that "the violation correction time" discussed in this letter is for those violations cited by OPUC Staff when they perform a safety program review (audit) of your utility. This is not referring to correction times for those items you find during your routine inspections of your system. Those correction times have not changed.

If you have any questions regarding this letter, feel free to call me at the number listed below or Jerry Murray at (503) 378-6626.

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July 25, 2005

RE: IR 541 NESC, IEEE interpretation of NESC Rule 234C3d(2), Exception 2, regarding proximity of services to windows designed to open.

This letter is in regard to an issue raised by representatives of Oregon electrical utilities. Specifically, the issue came up recently regarding windows where one pane is fixed and the other pane moves either up and down or slides sideways. Staff submitted the following request for an interpretation to the NESC Interpretation Subcommittee to determine if the fixed pane of glass in the examples meets Exception 2 of Rule 234C3d:

Statement of Problem and Supporting Comments:

Rule 234C3d(2) states that service drop conductors, including drip loops, shall not be readily accessible, and they shall have a clearance of not less than 3 feet in any direction from windows, doors, porches, fire escapes, or similar locations. Exception 2 to that Rule states that those provisions do not apply to windows that are not designed to open.

In most sliding glass windows, only one side opens and the other side is fixed. In such a case, does the fixed portion of the window comply with Exception 2, and only the openable portion need to comply with Rule 234C3d(2), or does the entire window require the 3 foot clearance?

Recently, Staff received the following communication from the Interpretations Sub-committee:

Exception 2 of Rule 234C3d(2) applies to both windows and portions of windows that are not designed to open. Note that such windows or portions thereof must be permanently fixed, so that they cannot be opened, in order to qualify for the exemption. Consequently, the fixed portion of the sliding glass window in your example qualifies for the exception.

Note that Rule 234C3d(2) still requires the service drop conductors, including the drip loops be not readily accessible and not less than 900 mm (3ft) clearance in any direction from doors, porches, fire escapes or similar locations, as well as from the opening portions of windows.

Hopefully, this interpretation (IR 541) will ease some of the strain between utilities and their customers. OPUC Staff recognizes that utilities, when confronted with a situation involving a pre-1984 energized service in close proximity to an openable window, have the option of considering the installation to be "grandfathered". However, Staff also recommends that utilities be mindful of the historical concept within the NESC that instructed utilities to ensure that their

facilities were not "readily accessible" to members of the public. Even when the grandfather rule can be applied, if an inexpensive and easily accomplished fix is available and which increases that minimum clearance, utilities should always take advantage of it. This could include moving the service dead end location and retraining the drip loops from the weather head, for instance.

In closing, please remember that the rules and requirements of the NESC are not only state law, but are practical, time tested rules designed to provide safety for utility employees, as well as for members of the general public. If you have any questions regarding NESC rules, feel free to call me (number below) or Jerry Murray at (503) 378-6626.

J. R. Gonzalez, P.E.
Program Manager
Utility Safety & Reliability Section
(503) 373-1531

Chand, Jerry, JK, Phil, Gar

Oregon
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February 25, 2008

All Electric Utility Advisory Letter

RE: Open/Loose Service Neutral Connections

In the last 12 months, increased numbers of customers have filed complaints with the Oregon PUC about their utility service conductors being defective. Primarily, these complaints have involved open or loose neutral connections, which have resulted in safety issues and in damage to the customers' equipment. In most cases, utilities have denied responsibility and customer damage claims because - according to the utility - the failure was "beyond the utility's control" or "there is no clear evidence of negligence on the part of the utility or its employees." Understandably, there are cases where there have been neutral failures caused by acts of God (e.g., major storms), and third party damage (e.g., car-hit poles), or other unique situations that are clearly beyond the control of the utility.

However, the Oregon PUC Staff takes exception to the failure of service neutral conductors (including their connections) under "normal wear and tear" conditions being classified as "outside the utility's control" with the utility not being responsible for the failure. As discussed below, in handling future customer complaints associated with open/loose neutrals, Staff will recommend the utility as being "At-Fault" (or non-compliant) with PUC safety rules unless the utility can show that the defective connector was the result of circumstances beyond the utility's control.

The neutral conductor is the grounded return conductor that connects the secondary on the utility's transformer to the customer's service equipment. When the neutral conductor is open or loose, the operating voltage for the customer's loads on one phase will rise, while the operating voltage for the other phase will drop. These under and over voltages can cause customer equipment damage, especially to electronic and computer equipment. Further, overvoltage conditions can involve excessive heat in customer equipment that can lead to building fires and personal injury.

Moreover, the neutral service conductor serves as the required effective ground-fault current path to the utility's system necessary to ensure that dangerous currents from a ground fault will be quickly removed by the appropriate circuit protective device. If the neutral service conductor is opened, objectionable ground-fault currents will flow onto the metal parts connected to the customer's electrical system. This can result in dangerous voltages on metal parts on the customer's premises that expose the public to electric shock and injury.

Attached on page 3 is a partial listing of state regulations and safety code provisions that relate to the neutral or return conductor. It should be noted that all electric utilities and operators in Oregon are responsible for complying with the PUC's safety regulations in Chapter 860, Division 024 of the Oregon Administrative Rules (OARs). Especially note that the criticality of the return or neutral conductor is well established in its own separate safety rule under

OAR 860-024-0015. Further, per OAR 860-024-0010, all electric utilities are required to construct, operate and maintain their electric supply lines and equipment in compliance with the National Electrical Safety Code (NESC). In the NESC, general rule 012(1) states that "all electric supply and communication lines and equipment shall be designed, constructed, operated, and maintained" to meet the requirements of the NESC.

For fully regulated public utilities, including Idaho Power, PacifiCorp, and Portland General Electric, an open/loose service neutral can also result in non-compliance with OAR 860-023-0005 related to plant or equipment maintenance or non-compliance with OAR 860-023-0020(1) concerning service voltages supplied to customers. As a caution, these two service quality rules are basically "accepted good practice" which should apply to all Oregon electric utilities under NESC rule 012(C) when considering the safety impact of open/loose neutral conditions.

Managing electric utility infrastructure is a challenge especially when many lines or facilities are getting close to end-of-life. Some older electrical components, which include service conductors/connections, may be in need of extra care, maintenance or replacement. Staff has heard some utilities say that they have no special programs or policies for preventing service connection failures, except: "We wait for the connection to fail. Then we'll do something about it." PUC Safety Staff makes no specific recommendations about appropriate inspection/testing practices for service conductors/connections except to say that NESC rules 214 and 313 apply and electric utilities are responsible for the electric supply system and for the power they supply to customers.

Under state law, the PUC does not have the authority to adjudicate claims between customers and their utilities. Claims settlement is the responsibility of the courts.

In conclusion, Staff's policy in handling future customer complaints associated with open/loose neutrals will be to recommend the utility as being "At-Fault" (or non-compliant) with PUC safety rules unless the utility can show evidence that the defective connection was the result of major storm damage, an act of God, third-party damage, or a unique failure that is clearly beyond the utility's control. When recommending the At-Fault, Staff will give the reason(s) for the non-compliance declaration along with the rules/codes violated. Staff will further notify both the customer and the utility of this action, and such action will be documented in the PUC's consumer database records for future tracking.

If you have any question on this letter, contact Jerry Murray at (503) 378-6626 or one of us.

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Attachment: Key Relevant Rules associated with Open/Loose Neutral Connections (partial list)

OAR 860-024-0015. Further, per OAR 860-024-0010, all electric utilities are required to construct, operate and maintain their electric supply lines and equipment in compliance with the National Electrical Safety Code (NESC). In the NESC, general rule 012(1) states that "all electric supply and communication lines and equipment shall be designed, constructed, operated, and maintained" to meet the requirements of the NESC.

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In conclusion, Staff's policy in handling future customer complaints associated with open/loose neutrals will be to recommend the utility as being "At-Fault" (or non-compliant) with PUC safety rules unless the utility can show evidence that the defective connection was the result of major storm damage, an act of God, third-party damage, or a unique failure that is clearly beyond the utility's control. When recommending the At-Fault, Staff will give the reason(s) for the non-compliance declaration along with the rules/codes violated. Staff will further notify both the customer and the utility of this action, and such action will be documented in the PUC's consumer database records for future tracking.

If you have any question on this letter, contact Jerry Murray at (503) 378-6626 or one of us.

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Attachment: Key Relevant Rules associated with Open/Loose Neutral Connections (partial list)

Attachment A – Key Relevant Rules associated with Open/Loose Neutral Connections (partial list)

Safety Regulations[1]

OAR 860-024-0010, Construction, Operation, and Maintenance of Electrical Supply and Communication Lines

Every operator shall construct, operate, and maintain electrical supply and communication lines in compliance with the standards prescribed by the 2007 Edition of the National Electrical Safety Code approved June 16, 2006, by the American National Standards Institute.

OAR 860-024-0015, Ground Return

Every operator with either alternating or direct current power lines or equipment within Oregon may use a connection to ground only for protection purposes. A ground connection shall not be used for the purpose of providing a return conductor for power purposes.

National Electrical Safety Code (NESC) Section 2, Definitions)

Neutral Conductor. A system conductor other than a phase conductor that provides a return path for current to the source. Not all systems have a neutral conductor. An example is an ungrounded delta system containing only three energized phase conductors.

NESC Rule 012, General Rules

A. All electric supply and communication lines and equipment shall be designed, constructed, operated, and maintained to meet the requirements of these rules.

B. The utilities, authorized contractors, or other entities, as applicable, performing design, construction, operation, or maintenance tasks for electric supply or communication lines or equipment covered by this code shall be responsible for meeting applicable requirements.

C. For all particulars not specified in these rules, construction and maintenance should be done in *accordance with accepted good practice for the given local conditions known at the time by those responsible for the construction or maintenance of the communication or supply lines and equipment.*

NESC Rule 214, Inspection and Tests of Lines and Equipment

(See entire rule in 2007 edition of the NESC including requirement for initial compliance, inspection, tests, record of defects, and remedying defects)

[1] Applicable to all electric operators including investor-owned utilities and consumer-owned utilities (i.e., cooperatives, municipalities, and peoples utility districts)

Plant and Equipment Maintenance Regulations[2]

OAR 860-023-0005, Maintenance of Plant and Equipment by Energy Utilities, Large Telecommunications Utilities, and Intrastate Toll Service Providers

Each energy utility, large telecommunications utility, and intrastate toll service provider must have and maintain its entire plant and system in such condition that it will furnish safe, adequate, and reasonably continuous service. Each energy utility, large telecommunications utility, and intrastate toll service provider must inspect its plant distribution system and facilities in such manner, and with such frequency, as may be needed to ensure a reasonably complete knowledge about its condition and adequacy at all times. Each energy utility, large telecommunications utility, and intrastate toll service provider must keep such records of the conditions found as the utility considers necessary to properly maintain its system, unless in special cases the Commission specifies a more complete record.

Electric Service Standards[2]

OAR 860-023-0020, Quality of Electric Service

(1) Every electric company shall adopt a set of normal standard voltages at the point of delivery for the different classes of service in its service areas. The nominal standard voltages applicable to residential and commercial customers shall be specified in the tariffs filed by the electric company. Except as may be caused by the customer's operation of apparatus in violation of the electric company's rules, or by conditions beyond the electric company's control, every electric company shall maintain the adopted standard secondary voltages so the same shall not normally vary more than plus or minus 5 percent of the standard at the service entrance.

(2) Each electric company shall make a sufficient number of voltage surveys to indicate the service furnished is in compliance with the standard as indicated under section (1) of this rule.

(3) Each electric company shall keep a complete record of each test of voltage and service conditions, as made under these rules, and this record shall be accessible to the Commission or its authorized representatives. Each record of tests of voltage or service conditions so kept shall contain complete information concerning the test, including such items as the Commission may from time to time require.

[2] Applicable to investor-owned electric utilities, which include Idaho Power Company, Pacific Power, Portland General Electric.

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March 21, 2008

To: All Electric Utilities

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RE: Follow-Up to All Electric Utility Advisory Letter

Staff would like to take this opportunity to thank you all for the candid input we received during the spirited meeting discussion of 03/17 regarding the "All Electric Utility Advisory Letter" pertaining to "Open/Loose Service Neutral Connections". First of all, let me state that we heard your concerns, and moving forward we will do our best to better communicate with you on the advisory letters. During the meeting, we had the opportunity to very briefly talk about the Commission's Consumer Services complaint process. Although we felt that information was well received by you, we would like to further that understanding by more thoroughly describing how the consumer complaint process works, how and when the Safety, Reliability & Security Section interfaces with the Consumer Services Division in addressing consumer complaints, and, importantly, how the communication process Staff uses in contacting the operators during the complaint process works. Finally, we will address the process of when Staff will recommend an "at-fault" and the venues available to you to pursue recourse of Staff's at-fault recommendations.

Consumer Complaint Process

- This link on the PUC website directs customers how to file a complaint with the PUC. http://www.puc.state.or.us/PUC/consumer/comppro.shtml
- The internal complaint process used by the Consumer Services Division of the PUC is as follows:
    - When a consumer calls the PUC to register any complaint, our Staff first asks if they have contacted the company about their issue. If they have not done so, they are directed back to the company. If they have already tried to work with the company and were not satisfied with the outcome, we will register their complaint and initiate an investigation. If a complaint is for the recovery of monetary damages, our intake people notify the consumer that the PUC has no jurisdiction over such damage claims. However, we still take their complaint.
    - The assigned Consumer Services investigator will forward the consumer's complaint to the company (usually via email) along with a series of questions about the incident. Once the company responds to the investigator's questions, there may be additional communications back and forth until the investigator fully understands what has occurred. This

is the part of the process where the company can provide all evidence to substantiate its position.

- After weighing all of the available facts, the investigator will make a determination whether the company has violated any of the Commission's administrative rules or the company's tariffs. If there are no violations, the customer is notified as such and the case closed.

Safety Staff's Investigation Process

- If the complaint has any connection to a safety issue, it is first forwarded to the PUC Safety Staff for their review. Safety Staff reviews the information and data provided, and as warranted, further pursues a more detailed investigation of the facts of the case. This investigation entails contact with the company's engineering or operation personnel, and in some cases face-to-face meetings to better understand all the issues.
- Upon completing the investigation process, Safety Staff informs the company of its findings and forwards its recommendation to Consumer Services for their final communication with the company's personnel and the customer.
- Once Safety Staff has notified the Consumer Services investigator that an at-fault has or has not occurred, the consumer is notified of the outcome and the case is closed. A copy of the closed case is forwarded to the utility.

The At-Fault Recommendation Process

- The process related to the at-fault recommendation only progresses if Staff, after a complete investigation, concludes the incident was within the control of the company. If so, Staff will communicate its findings to the company and cite the relevant Commission and NESC rules violated, before forwarding its recommendation to the Consumer Services Division.
    - Should the company agree to remedy the complaint with their customer, no at-fault recommendation is made. Staff then notifies Consumer Services that the complaint has been resolved and asks that it close the case.
- For the cases where, after the investigation, Staff determines the incident was outside the control of the company, no at-fault is recommended or assigned the company. Staff's determination is communicated to Consumer Services, who in turn communicates with the customer and closes the case.

Rights to Review

- Should the company feel Staff's determination is incorrect, the company has the right to have its case reviewed. There are potentially two avenues of review:
    - Bring the issue before the Commission in a Public Meeting
    - File a formal complaint with the Commission, which procedure can be found in our website at:

http://www.puc.state.or.us/PUC/consumer/2008_consumer_complaint_filing.pdf, or

- Any Commission Order may be appealed to the Court of Appeals.

Last, on the matter of increased liability the company may face, Staff wants to clarify that neither its previous letter nor this current one is intended to represent a finding that a company is, or is not, at-fault in a "general sense" for open or loose service neutral connections. As explained in this letter, any finding of "at-fault" can and will only be made after a full investigation of the facts presented by each individual complaint.

Staff sincerely hopes the above information is helpful in the understanding of the consumer complaint process, recommendation for at-faults, remediation course, and the right to have the cases reviewed. We appreciate your willingness to talk to Staff and share your concerns.

Should you have any further questions, or would like clarification on any of the above described processes, please do not hesitate to let one of us know.

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July 27, 2009

All Telecommunications Operators[1] in Oregon

RE: **Ground Laid Facilities**

OPUC Staff is responsible to ensure that all operators are in compliance with the National Electrical Safety Code (NESC), on a continuing basis.

This communication is a follow-up correspondence to a notice sent to operators by staff's Jerry Murray, dated May 19, 2003, about the Commission's Consumer Services Division receipt of a number of complaints from concerned telecom subscribers suffering multiple instances of exposure to ground laid facilities (GLF) left in the wake of an operator's maintenance activities. The focus of that discussion was situations where operators found it necessary to install temporary GLF to restore services and then failed to follow through in replacing the facility bypassed by GLF, to mitigate a maintenance condition.

During that discussion we cautioned industry that **"when an emergency installation is necessary and unavoidable" (emphasis added)**, operators are to take extra care, caution and consideration to insure that the temporary deployment of GLF does not endanger the public and is mitigated in an expedited manner. In the interim, the operator will insure that the area around the installation is **guarded**[2] and inspected at sufficient intervals to insure its continuing safe condition in protecting the public overall, until mitigation is achieved.

Staff's expectation is that the matter will be managed as an emergency, and that a permanent solution, mitigating any GLF, will be in place, and finalized, as soon as possible.

Currently, staff has received complaints from telephony customers that their serving utility, in anticipation of accomplishing customer initiated service orders and associated activities[3], repeatedly placed facilities on the ground, unguarded, to satisfy those customer requests.

We once again remind and encourage operators to be mindful of their obligation to comply with the NESC, and Oregon's Revised Statues and Administrative Rules. If you have any questions regarding this letter, feel free to call me at the number listed below, Rick Carter at (503) 378-6631, or Jerry Murray at 503-378-6626.

J. R. Gonzalez, P.E.
Administrator
Safety, Reliability and Security Division
(503) 378-1531

[1] Including Incumbent and Facility-Based Competitive Local Exchange Carriers (Operators)
[2] NESC 311(C)"For emergency installations…guarded or otherwise located so that they do not unduly obstruct pedestrian or vehicular traffic and are appropriately marked."
[3] Non Emergency Activities include, but are not limited to, Customer or Company Initiated Activities for New Service Establishment, Existing Service Modification, Augmentation or Service Delivery Systemic Network Conversions and Facility Relocations.

Chron. (109)

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June 21, 2011

To: All electric utilities and telephone utilities and cable television operators in Oregon.

Re: Modification of incident reporting form on PUC website

This letter is in response to an issue recently raised by representatives of several Oregon utilities. Specifically, there has been some confusion regarding the definitions of "serious injury to person", "serious injury to property", and others. Those definitions are needed to complete the form, or to determine whether it is necessary.

On the heading of the existing form, there is a parenthetical reference to OAR 860-024-0050. Staff has elected to add a third page to the form by adding the language of the OAR. This page is only for your reference, so it is not necessary to submit it with the form in the event of an incident.

If you have any questions regarding this letter, feel free to call me at the number listed below or Jerry Murray at (503) 378-6626.

J.R. Gonzalez
Administrator
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Attachment: Revised incident report form

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December 16, 2011

All Electric Supply and Communications Operators in Oregon

RE: Reporting of progress in NESC inspections by the end of calendar year 2012.

OPUC Staff is charged with the obligation of ensuring that all utilities are in compliance with the National Electrical Safety Code (NESC) and the Safety Standards in Oregon Administrative Rule 860-024.

This letter is to remind all Electric Supply and Communications Operators in Oregon that to be in compliance with Commission Safety Rules they must conduct detailed safety inspections of their facilities in the state to find and correct violations of the NESC. OAR 860-024-0011 recommends a 10 year program and an inspection rate of 10% per year.

The rule also requires that during the 5th year of the inspection cycle, the operator must report on the progress of their inspection program and either report that they have inspected 50% or more of their total facilities, or report that they have inspected less than 50% of their facilities and provide a plan for Commission approval to inspect the remaining percentage within the next 5 years.

The rule was adopted by Commission Order 06-547 and the inspection programs were to start at the beginning of calendar year 2007, so it follows that the 5th year of the inspection cycle would be calendar year 2012.

Commission Safety Staff has placed a sample report on our web page that can be used by Oregon utilities to report their inspection progress. It is located on the Safety Page under "Reports". Towards the close of 2012, the report can be e-mailed to paul.birkeland@state.or.us or sent in paper form to our Salem mailing address (above).

If you have any questions, call me at the number listed below or Paul Birkeland at (503)-378-6190.

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111

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December 23, 2011

All Electric Supply and Communications Operators in Oregon

RE: Adoption of 2012 Edition of the National Electrical Safety Code (NESC)

The 2012 edition of the National Electrical Safety Code (NESC) has been published as an ANSI standard and will supersede the 2007 NESC on February 1, 2012.

OPUC staff is recommending its legal adoption in Oregon. We plan to ask the hearings division to begin the formal adoption process on January 10, 2012, to revise the rule (OAR 860-024-0010). The Notice of Proposed Rulemaking will be served and published in the Oregon Bulletin announcing the opportunity to provide written comment.

If you want to comment on a less formal basis, or have any other questions, you can call or e-mail me directly at the phone number and address below.

Here are a few of the sources that the 2012 NESC is available through: the IEEE (www.ieee.org), 1-800-699-9277; the Oregon Joint Use Association (www.ojua.org), 503-378-0595; Builders Books, Inc. (www.buildersbook.com), 1-800-273-7375.

Paul Birkeland

Paul Birkeland, PE
Senior Utility Analyst
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February 7, 2013

RE: NESC Inspection Program Progress Report

To: Oregon Communications Facility Operators

Pursuant to OAR 860-024-0011, "*. . . Operator must report to the commission that 50% or more of all its outside plant (OSP) facilities have been inspected, or report that less than 50% of all OSP facilities has been inspected and provide a plan to inspect the remaining percentage within the next 5 years.*" These reports were due to the Commission December 31, 2012. If you are receiving this letter, the Commission has not received a report from your organization and you are in violation of this rule. Please submit the required information no later than Friday, March 29, 2013.

Commission Safety Staff have placed information and sample reports, which can be used to report inspection progress on the Commission's web site. (http://www.oregon.gov/puc/Pages/safety/reports.aspx)

Reports can be emailed to paul.birkeland@state.or.us or sent in paper form to the Commission's mailing address to the attention of Paul Birkeland.

If you have any questions, please feel free to contact me, at the information below, or Paul Birkeland at 503-378-6190, or Rick Carter at 503-378-6631.

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Cc:
Brant Wolf-OTA
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April 3, 2013

AUL: COUs & IOUs

RE: All Pole Owners

The Public Utility Commission of Oregon (OPUC) is compiling the results of operator submissions pursuant to OAR 860-024-0011(1) (b) (A), which requires operators to have completed detailed inspections of at least 50% of their facilities in the fifth year of their inspection cycle. We would like to take this opportunity to extend our appreciation to those who have provided their information.

We have discovered that our records are inadequate and that we do not have a way to identify all of the potential operators. Therefore, we are asking that each pole owner provide us with a list of operators that have been licensed or granted access to the pole owner's infrastructure.

We appreciate the licensee-pole contact lists that several of the electric operators have already submitted.

Please provide this information to the OPUC, by close of business on Tuesday, April 30, 2013. The information may be sent by email, fax or mail to:

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Oregon Public Utility Commission
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Lori.g.koho@state.or.us
FAX: 503-373-7752

If you have any questions regarding this request, please contact me at 503-378-8225.

Respectfully,

Lori Koho

Lori Koho, Administrator
Safety, Reliability and Security Division
Public Utility Commission of Oregon

(114)

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June 7, 2013

Electric Supply Operators and
Communications Operators in Oregon

RE: NESC Inspection Report

The Oregon Public Utility Commission is currently compiling the results of operator reports from all Electric and Communications utilities that have poles and supply or communications facilities in the state. The report, sometimes called the "5-Year Check-in", is a summary of the operators detailed facility inspections done in calendar years 2008 through 2012. The inspections and the report are in Oregon Administrative Rule (OAR) 860-024-0011, and are detailed in Commission Order No. 06-597. The reports were due at the end of calendar year 2012.

All Electric Supply Operators and Communications Operators with facilities in Oregon are required by law to have a detailed facilities inspection program per OAR 860-024, and are required to report their progress in inspecting their system. Information on the rule was sent out in an All Utilities Letter dated December 11, 2011, and instructions on how to report have been available on the OPUC web page (www.oregon.gov/PUC).

Of the Electric Operators in Oregon, 90% have reported.
Of the Telecommunications Operators, only 27% have reported.

Total operator participation is less than 50%.

If you have not reported your inspection progress per OAR 860-024-0011, the Commission has the authority under ORS 757.035 to find you out of compliance with Commission Safety Rules and can levy fines of up to $10,000/day under ORS 757.990.

You can become compliant with the rule by starting your inspection program immediately and completing it before the end of calendar year 2017. You must also send in the "5-Year check-in report" immediately showing your progress in the previous 5 years and how you will completely inspect your system in the next 5 years.

If you have any questions about this reporting requirement please contact either Paul Birkeland at 503-378-6190 or me at 503-378-8225

Lori Koho
Administrator
Safety, Reliability, & Security Division
(503) 378-8225
Lori.g.koho@state.or.us

Oregon

John A. Kitzhaber, MD, Governor

Public Utility Commission
3930 Fairview Industrial Dr SE
Salem, OR 97302-1166
Mailing Address: PO Box 1088
Salem, OR 97308-1088
Consumer Services
1-800-522-2404
Local: 503-378-6600
Administrative Services
503-373-7394

December 3, 2013

RE: Emergency Contact Information

In 2013 the Governor signed into law House Bill 2203 which requires electric power line operators to provide emergency contact information to the Public Utility Commission before January 2 of each even-numbered year and to update as necessary. January 2, 2014, is the first reporting period. The relevant text of the law is below:

> *SECTION 3. (1) Each person who is subject to the Public Utility Commission's authority under ORS 757.035 and who engages in the operation of an electric power line as described in ORS 757.035 must provide the commission with the following information before January 2 of each even-numbered year:*
> *(a) The name and contact information of the person that is responsible for the operation and maintenance of the electric power line, and for ensuring that the electric power line is safe, on an ongoing basis; and*
> *(b) The name and contact information of the person who is responsible for responding to conditions that present an imminent threat to the safety of employees, customers and the public.*
> *(2) In the event that the contact information described in subsection (1) of this section changes or that ownership of the electric power line changes, the person who engages in the operation of the electric power line must notify the commission of the change as soon as practicable, but no later than within 90 days.*
> *(3) If the person described in subsection (1) of this section is not the public utility, as defined in ORS 757.005, in whose service territory the electric power line is located, the commission shall make the information provided to the commission under subsection (1) of this section available to the public utility in whose service territory the electric power line is located.*

The process for providing this information to the Commission is to file it as a report through our filing center. Instructions for filing reports can be found at:

http://www.puc.state.or.us/pages/efiling/ereports/index.aspx

The reference docket for these reports is **RO-7**. A sample cover sheet and the filing instructions are attached.

In addition to making this information available as outlined above, the Commission will also use the information in the event of an emergency or disaster. This information will be maintained with the level of confidentiality you request as long as we are able to use it in the event of an emergency.

If you have any questions, please feel free to contact me.

Lori Koho
Administrator
Safety, Reliability, and Security
Public Utility Commission of Oregon
503-378-8225
lori.g.koho@state.or.us

Public Utility Commission of Oregon
Report eFiling Instructions

Send an email with the report and the cover sheet attached. Address email to PUC.FilingCenter@state.or.us.

REPORTS EXCLUDED FROM electronic filing through the PUC Filing Center:

- Annual fee statement form or payment remittance or
- OUS or RSPF surcharge form or surcharge remittance or
- Any other Telecommunications reporting or
- Any daily safety or safety incident report or
- Accident reports required by ORS 654.715.

What formats may I use to prepare my report? Prepare report in a MS Office (that is, Word, Excel, and PowerPoint) *or* text-searchable PDF format. Provide attached diagrams, photos, or maps in PDF format. JPEG, TIF, and TIFF files are not compatible with our system.

How do I file my report? Complete the e-Filing Report Cover Sheet located on the PUC website using the cover sheet link above. (Use this link for a Word version.) Send an email with the report and the cover sheet attached. Address email to PUC.FilingCenter@state.or.us.

In most instances, you do not need to send a paper copy of the report to the Filing Center. The exceptions, as of March 2012, are:

- Report pages containing information designated as Confidential, and
- Energy utility Results of Operations reports.

How do I submit a report that contains confidential information?

- Redact (delete)* confidential information from the public version and prepare the confidential portion of the information either in print on yellow paper or on a separate CD to be physically sent to the PUC Filing Center. *
- Submit the original cover sheet or cover letter and any public (non-confidential) sections of the report electronically to the Filing Center, noting that confidential information will be submitted in paper copy or on a separate CD.
- Submit 2 copies of the confidential information on yellow paper or on a separate CD in a sealed envelope as set out in OAR 860-001-0070. Mail to PUC Filing Center, PO Box 1088, Salem, OR 97308-1088.

**Note that using electronic redaction tools may still allow access to the confidential information – please physically delete any confidential portions.*

Where may I find reports online? Reports will be posted in eDockets using "R" designations: RE for electric companies and providers, RG for natural gas utilities, RW for water utilities, and RO for reports relating to multiple industries or other information.

Who do I contact with questions about efiling a report or finding a report? Please contact Kathy Williams, (503)-378-2118 or Diane Davis, (503) 378-4372 with questions about report efiling.

e-FILING REPORT COVER SHEET

Send completed Cover Sheet and the Report in an email addressed to:
PUC.FilingCenter@state.or.us

REPORT NAME: Triple-click to highlight field and enter report name here, tab to next field

COMPANY NAME: Enter company name

DOES REPORT CONTAIN CONFIDENTIAL INFORMATION? ☐No ☐Yes

If yes, please submit only the cover letter electronically. Submit confidential information as directed in OAR 860-001-0070 or the terms of an applicable protective order.

If known, please select designation: ☐RE (Electric) ☐RG (Gas) ☐RW (Water) ☐RO (Other)

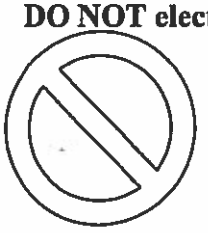
Report is required by: ☐OAR Enter rule number
☐Statute Enter Statute
☐Order Enter PUC Order No.
☐Other Enter reason

Is this report associated with a specific docket/case? ☐No ☐Yes

If yes, enter docket number:

List applicable Key Words for this report to facilitate electronic search:

DO NOT electronically file with the PUC Filing Center:



- Annual Fee Statement form and payment remittance or
- OUS or RSPF Surcharge form or surcharge remittance or
- Any other Telecommunications Reporting or
- Any daily safety or safety incident reports or
- Accident reports required by ORS 654.715

Please file the above reports according to their individual instructions.

Oregon
John A. Kitzhaber, MD, Governor

Public Utility Commission
3930 Fairview Industrial Dr SE
Salem, OR 97302-1166
Mailing Address: PO Box 1088
Salem, OR 97308-1088
Consumer Services
1-800-522-2404
Local: 503-378-6600
Administrative Services
503-373-7394

January 29, 2015

To: All electric utility operators in Oregon.

Re: Recent IEEE interpretations of NESC Table 232-1, 1961 Edition

This letter is in regard to two interpretation requests sent to the IEEE Interpretation Subcommittee. (IR 577 - submitted by OPUC Staff and IR 577a - submitted by PacifiCorp) The committee's responses to both requests are attached to this letter.

At issue was the minimum ground clearance allowed for the drip loops of a service installed under the provisions of the 1961 Edition of the NESC, the earliest Edition to which any item can be grandfathered.

It is obvious the interpretations may carry some obligation to correct those installations that have been mistakenly grandfathered at a height of less than 10 feet. As you will see, footnote 8(2) provides the only exception to the 10 foot clearance standard. It allowed an open wire service to be installed at the lesser height of 8 feet, assuming that *"..the form of the building will not permit 10 feet clearance"*. (A copy of Table 232-1, with footnotes, is attached)

When a utility makes the decision to apply the provisions of NESC Rule 013B (Grandfathering) to an existing installation, it is imperative that they know the date of the original installation in order to determine which Edition would apply. If the installation is in compliance with that particular Edition and has not been altered or modified in the interim, the utility is justified in considering the installation to be grandfathered. If their records indicate that the installation was modified at a later date, to comply with the Edition in effect at that time, grandfathering can still be claimed to that later Edition.

In the circumstance considered in the interpretations, they were considered not in compliance with the provisions of the 1961 NESC, Table 232-1. Consequently, similar installations at all Oregon utilities that have been mistakenly grandfathered must be corrected.

If you have any questions regarding this letter, feel free to call John Wallace at (503) 373-1016, Paul Birkeland at (503) 378-6190, or Mark Rettmann at (503) 378-5362.

Lori Koho

Lori Koho
Administrator
Utility Safety, Reliability, and Security Division
(503) 378-8225

Attachments: IR 577, IR 577a
NESC Table 232-1, with footnotes, 1961 Edition

232. A. Basic Clearances—Continued

TABLE 1.—*Minimum vertical clearance of wires above ground or rails*

[Supply wires include trolley feeders]

Nature of ground or rails underneath wires	Guys; messengers; communication, span, and lightning protection wires; communication cable; supply cable having effectively grounded continuous metal sheath, or insulated conductors supported on and cabled together with an effectively grounded messenger, all voltages	Open supply line wires, arc wires and service drops [11]			Trolley contact conductors and associated span or messenger wires [1]	
		0 to 750 volts	750 to 15,000 volts	15,000 to 50,000 volts	0 to 750 volts to ground	Exceeding 750 volts to ground
WHERE WIRES CROSS OVER						
Track rails of railroads (except electrified railroads using overhead trolley conductors) handling freight cars on top of which men are permitted [2] [13]	*Feet* [3] [13] 27	*Feet* [3] 27	*Feet* [3] 28	*Feet* 30	*Feet* [4] 22	*Feet* [4] 22
Track rails of railroads (except electrified railroads using overhead trolley conductors) not included above [2]	18	18	20	22	[5] 18	[5] 20
Public streets, alleys or roads in urban or rural districts	[6] [12] 18	18	20	22	[5] 18	[5] 20
Driveways to residence garages	10	10	20	22	[5] 18	[5] 20
Spaces or ways accessible to pedestrians only	[7] 15	[8] 15	15	17	[9] 16	[9] 18
WHERE WIRES RUN ALONG, AND WITHIN THE LIMITS OF PUBLIC HIGHWAYS OR OTHER PUBLIC RIGHTS-OF-WAY FOR TRAFFIC						
Streets or alleys in urban districts	[10] [11] [13] 18	[10] 18	20	22	[5] 18	[5] 20
Roads in rural districts	[10] [11] [13] 14	[10] 15	18	20	[5] 18	[5] 20

Footnotes on following page.

232. A. Basic Clearances—Continued

[1] Where subways, tunnels, or bridges require it, less clearances above ground or rails than required by table 1 may be used locally. The trolley contact conductor should be graded very gradually from the regular construction down to the reduced elevation.

[2] For wire crossings over railways handling only cars considerably lower than ordinary freight cars, the clearance may be reduced by an amount equal to the difference in height between the highest car handled and the highest ordinary freight car, but the clearance shall not be reduced below that required for street crossings.

[3] This clearance may be reduced to 25 feet where paralleled by trolley contact conductor on the same street or highway.

[4] In communities where 21 feet has been established, this clearance may be continued if carefully maintained. The elevation of the contact conductor should be the same in the crossing and next adjacent spans. (See rule 289, D, 2, for conditions which must be met where uniform height above rail is impracticable.)

[5] In communities where 16 feet has been established for trolley contact conductors 0 to 750 volts to ground, or 18 feet for trolley contact conductors exceeding 750 volts, or where local conditions make it impracticable to obtain the clearance given in the table, these reduced clearances may be used if carefully maintained.

[6] If a communication service drop, or a guy which is effectively insulated against the highest voltage to which it is exposed, up to 8,700 volts, crosses a street, alley or road, the clearance may be reduced to 16 feet at the side of the traveled way.

[7] This clearance may be reduced to the following values:

	Feet
(1) For communication conductors of circuits limited to 150 volts to ground, and communication cables	8
(2) For conductors of other communication circuits	10
(3) For guys	8
(4) For supply cable having effectively grounded continuous metal sheath, or insulated conductors supported on and cabled together with an effectively grounded messenger, all voltages	10

[8] This clearance may be reduced to the following values:

	Feet
(1) Supply wires (except trolley contact wires) limited to 300 volts to ground	12
(2) Supply wires (except trolley contact wires) limited to 150 volts to ground and located at entrances to buildings	10
Such wires, where the form of the building will not permit 10 feet clearance and where all other clearance requirements are met	8
(3) Where supply circuits of 550 volts or less, with transmitted power of 3,200 watts or less, are run along fenced (or otherwise guarded) private rights-of-way in accordance with the provisions specified in rule 220, B, 3	10

[9] Trolley contact conductors for industrial railways when not along or crossing over roadways may be placed at a less height if suitably guarded.

[10] Where a pole line along a road is located relative to fences, ditches, embankments, etc., so that the ground under the line will never be traveled except by pedestrians, this clearance may be reduced to the following values:

	Feet
(1) Communication conductors limited to 150 volts to ground, and communication cables	8
(2) Conductors of other communication circuits	10
(3) Supply conductors	12
(4) Guys	8

[11] No clearance from ground is required for anchor guys not crossing streets, driveways, roads, or pathways, nor for anchor guys provided with traffic guards and paralleling sidewalk curbs.

[12] This clearance may be reduced to 13 feet for communication conductors where no part of the line overhangs any part of the highway which is ordinarily traveled, and where it is unlikely that loaded vehicles will be crossing under the line into a field.

[13] Where communication wires or cables cross over or run along alleys, this clearance may be reduced to 15 feet.

[14] A conductor which is effectively grounded throughout its length, and is associated with a supply circuit of 0 to 22,000 volts may have the clearance specified for guys and messengers.

[15] This value may be reduced to 25 feet for guys and for cables carried on messengers. This value may be reduced to 25 feet for conductors effectively grounded throughout their length and associated with supply circuits of 0 to 22,000 volts, only if such conductors are stranded, are of corrosion resistant material, and conform to the strength and tension requirements for messengers given in Rule 261G.

[16] Adjacent to overhead bridges which restrict the practice of permitting men on top of cars, these clearances may be reduced, within the restricted area, by mutual agreement between the parties at interest, but in no case shall the wires or cables be at levels below the underside of the bridge.

National Electrical Safety Code®

Interpretation

Section 23.
Clearances

Rule 232.A. Table 1 Vertical clearance of wires above ground or rails—Basic clearances—Minimum vertical clearance of wires above ground or rails

(1961, 6th Edition; Volume 12, NESC Archives, pages 56-57)
(9 December 2014) IR577

Question: Does the language in the middle column of Table 232-1, entitled "Open supply line wires, arc wires and service drops" apply to all service drops or only open-wire drops?

The language of the middle column is unclear regarding the clearances required by this Table. Specifically, clarification of the minimum required clearance for a 120 V to ground triplex service drop (now known as a 230C3 cable) is requested, at point of attachment to the structure, above pedestrian-only areas. This becomes an issue when attempting to apply grandfathered status to the terms of the 1961 Edition, to the service height clearance to an older home.

The lack of clarity arises when trying to apply the footnotes for the clearances indicated for "Spaces or ways accessible to pedestrians only..." One interpretation could be that the (middle column) language applies to all service drops and that, consequently, Footnote 8(2) gives the flexibility to reduce that clearance to 8 ft, under certain conditions. Another interpretation is that the minimum clearance required by Table 232-1 is 10 ft, for what is now known as a 230C3 cable; that footnote 8(2) would apply only to open-wire services and then only when the form of the building will not permit 10 ft clearance. The second interpretation would also seem to indicate that, for the 230C3 cable described, the only avenue for reduction in the 15 ft clearance (stated in the Table) lies in application of footnote 7(4).

Discussion: The language in this Table was changed significantly in this Edition, as was the language of Rule 230.C., describing "Supply Cables."

The verbatim inclusion of Rule 230.C. into the first column of Table 232-1, as well as into footnote 7(4), appears to be intentional and a clear indication that the committee recognized the differences between open-wire facilities and those described in Rule 230.C., and wanted to draw clear distinctions between the two types.

Interpretation

This Interpretation is limited to NESC 1961 Edition clearance requirements for service drops over spaces or ways accessible to pedestrians only, as detailed in Rule 232.A., Table 1. In answer to the question presented, the middle column of Table 1, "Open supply line wires, arc wires and service drops," applies to open-wire service drops only; it does not apply to triplex service drops. Consequently, footnote 7 applies to triplex service drops and footnote 8 applies to open-wire service drops.

In the heading of the Table 1 middle column, "Open" applies to all of the three designated types of conductors: supply line wires, arc wires and service drops. A semicolon would have been used after "arc wires" if the middle column was intended to apply to all service drops. Rather, triplex service drops are covered in the first column under "insulated conductors supported on and cabled together with an effectively grounded messenger."

See also NESC IR 577a.

National Electrical Safety Code®

Interpretation

Section 23.
Clearances

Rule 232.A. Table 1 Vertical clearance of wires above ground or rails—Basic clearances—Minimum vertical clearance of wires above ground or rails

(1961, 6th Edition; Volume 12, NESC Archives, pages 56-57)
(9 December 2014) IR577a

Question: What is the appropriate column in Table 1 contained within Rule 232.A. Basic Clearances to evaluate a service drop for minimum clearance?

NOTE—Perspective 1 the "open" is implicit to service drops and they would fall into column 1 and 2, while perspective 2 is the use of column 2.

232. A. Basic Clearances—Continued

TABLE 11—*Minimum vertical clearance of wires above ground or rails*

(Supply cables and trolley feeders)

Nature of ground or rails underneath wires	Class: messenger, communication, span, and lighting protection wires; communication cables; supply cables bearing effectively grounded continuous metal sheath, or having such conductors supported on effectively grounded messenger, all voltages	Open supply line wires, arc wires and service drops[14]			Trolley contact conductors and associated messenger wires[11]	
		0 to 750 volts	750 to 15,000 volts	15,000 to 50,000 volts	0 to 750 volts to ground	Exceeding 750 volts to ground
WHERE WIRES CROSS OVER						
Track rails of railroads (except electrified railroads using overhead trolley conductors) handling freight cars on top of which men are permitted[22][23]	*Feet* 22[13] 27	*Feet* 22 27	*Feet* 22 28	*Feet* 30	*Feet* [16] 22	*Feet* [16] 22
Track rails of railroads (except electrified railroads using overhead trolley conductors) not included above[22]	18	18	20	22	[13] 18	[13] 20
Public streets, alleys or roads in urban or rural districts	[8][13] 18	18	20	22	[13] 18	[13] 20
Driveways to residences garages	10	10	20	22	[15] 18	[13] 20
Spaces or ways accessible to pedestrians only	[17] 12	[18] 15	15	17	[19] 16	[19] 18
WHERE WIRES RUN ALONGSIDE, AND WITHIN THEIR CLIMBING OR BUILDING HEIGHT-WARES OR OTHER PUBLIC RIGHTS-OF-WAY FOR TRAVERSE						
Streets or alleys in urban districts	[8][11][13] 18	[8] 18	20	22	[13] 18	[13] 20
Roads in rural districts	[8][11][13] 18	[8] 18	18	20	[15] 18	[13] 20

The issue arises when attempting to evaluate service drop clearances for an insulated 120 V to ground service drop at the point of attachment to the building that are above spaces or ways accessible to pedestrians only to the terms of the 1961 Edition.

One opinion is that in the text of the heading, "Open supply line wires, arc wires and service drops," the "open" carries through the entire heading "Open supply line wires," "Open arc wires" and "Open service drops." This would indicate that only open wire service drops fall within column 2, and that the applicable footnotes would be footnote 14 and footnote 8. In this first opinion, an insulated service drop would fall into column 1 under "insulated conductors supported on and cabled together with an effectively

grounded messenger," and the applicable footnote would be footnote 7. This opinion allows for a 120 V to ground service drop at the point of attachment to the building that was constructed with open wire under certain conditions to have a minimum 8' clearance, and for an insulated service drop under certain conditions to have a minimum clearance of 10 ft.

A second opinion is that column 2, "Open supply line wires, arc wires and service drops" applies to all service drops as defined. This opinion allows for a 120 V to ground service drop at the point of attachment to the building under certain conditions to have a minimum 8 ft clearance.

A complicating factor to applying either opinion to evaluating a service drop as the point of attachment is defined as customer equipment and subject to the National Electric Code, while the service drop is utility equipment and subject to the National Electric Safety Code. If the use of "open" is implicit in establishing clearances for insulated 120 V to ground service drops, it is unclear how the transition between utility clearance requirements and customer attachment height requirements can be accommodated.

Discussion:

Additional Definitions and Rules
63. Service means the conductors and equipment for delivering electric energy from the secondary distribution or street main, or other distribution feeder, or from the transformer, to the wiring system of the premises served. For overhead circuits, it includes the conductors from the last line pole to the service switch or fuse. The portion of the overhead service between the pole and building is designated as "service drop."

230. C Supply Cables
As far as clearances are concerned, supply cable having effectively grounded continuous metal sheath, or insulated conductors supported on and cabled together with an effectively grounded messenger, of all voltages, are classified the same as guys and messenger.

The definition contained within 63. Service would indicate that open wire or insulated service between the pole and building is defined as the service drop and should be evaluated under the middle column which contains "...service drop" This definition is also consistent with 1940 National Electric Code, and the application of footnote 8 (2) is consistent with the 1940 National Electric Code Section 2325. Point of Attachment to Building.

Rule 230.C would indicate that the first column would apply to a service or parallel aerial cable commonly referred to as "parlay" for structure to structure (pole to pole) vertical clearances. The rule references guys which run either pole to pole or to the ground which would be an anchor guy.

The 1961 NESC Edition is being applied to service drop installations that were constructed pre-1961 to determine grandfathering status. If opinion 1 is accurate and an insulated service drop has a greater minimum clearance than an open wire service drop, would it be acceptable for the customer to seek relief from the expense under Rule 201A similar to interpretation request 195 dated June 24, 1977, since the greater clearance for an insulated service drop versus on open wire service drop is not securing any additional protection? Further, if opinion 1 is correct, how does that comport with the allowance for communication equipment less than 160 V to ground having a different and more lenient clearance requirement than the insulated 120 V to ground service drop?

Interpretation

This Interpretation is limited to NESC 1961 Edition clearance requirements for service drops over spaces or ways accessible to pedestrians only, as detailed in Rule 232.A., Table 1. Two statements in the first opinion are correct:

1) The word "open" carries through the entire heading of the second column, and

2) An insulated service drop falls in the first column. Note that this statement is based on the description of an insulated service drop as: "insulated conductors supported on and cabled together with an effectively grounded messenger." Such cables are commonly referred to as "triplex" cables (120/240 single-phase for this interpretation) and classified as 230C3 cables in later NESC editions.

Therefore, footnote 7 applies to triplex service drops and footnote 8 applies to open-wire service drops.

In the heading of the Table 1 middle column (second column), "Open" applies to all of the three designated types of conductors: supply line wires, arc wires and service drops. A semicolon would have been used after "arc wires" if the middle column was intended to apply to all service drops. Rather, triplex service drops are covered in the first column under "insulated conductors supported on and cabled together with an effectively grounded messenger."

The following two comments also apply to this Interpretation Request:

1) Open wire services can be either bare or covered with an insulating material. If cabled to a messenger as described above (triplex cable), the service is not "open wire."

2) Regarding the question about seeking relief, the NESC does not preclude an appeal to the commission under the provisions of Rule 201.A. (NESC 1961 Edition).

See also NESC IR 577.

BIRKELAND Paul

Subject: FW: Eastern Oregon Utility Safety Committee Meeting

From: BIRKELAND Paul
Sent: Thursday, June 11, 2015 4:40 PM
Subject: Eastern Oregon Utility Safety Committee Meeting

I am sending this to as many people I know in the utility industry to encourage attendance at the Eastern Oregon Utility Safety Committee meetings. I have attached a document with the some details about the meetings, which are regularly scheduled on the third Friday of the even numbered months of the year. (The regular Western Oregon Utility Safety Meeting is on the odd numbered months, here in Salem). Information including location, agendas, and minutes of past meetings are also on our website at http://www.puc.state.or.us/Pages/safety/ousc.aspx Please forward this to anyone in your organization that may have an interest.

The next scheduled "east side" meeting is at 9:00 AM, June 19, in Baker City, at the Oregon Trail Electric Cooperative service center.

(We are also sending out a separate notice about the OUSC (west side) meetings, we apologize for any duplicates).

EOUSC Invitation2015.d...

Paul Birkeland
OPUC Sr. Staff Engineer

This e-mail states the informal opinions of commission staff, offered as technical assistance, and are not intended as legal advice. We reserve the right to amend these opinions should circumstances change or additional information be brought to our attention. Staff's opinions are not binding on the commission.

distribution by e-mail to eastern Oregon electric, com, Cable June 11 & 12, 2015

Eastern Oregon Utility Safety Committee

Sponsored by the Oregon Public Utility Commission

The mission of the OUSC is to bring utilities and state agencies together in a non-adversarial, cooperative effort to promote positive safety and health practices for both the public and worker.

I would like to extend an invitation for you or a representative of your utility to attend the bimonthly Eastern Oregon Utility Safety Committee meeting. Our attendees include representatives of natural gas, electric, water, and telecommunications utilities. Contractors for utilities and anyone else with an interest in utility safety are encouraged to attend as well. Representatives from OR-OSHA, OR-PUC, U.S. DOT, and IBEW also participate. The Eastern Oregon meetings are held bi-monthly and alternate between Baker City and Bend.

During the meetings, the OR-PUC Staff reports on electrical and gas accidents/incidents and the group discusses current trends, hot topics, changing regulatory code and best practices. These meetings help representatives of both public and privately owned utilities discuss and gather valuable information that they can then take back to their own company. Some recent topics have been Emergency Preparedness, New OSHA Crane Rules, Fleet and Towing Safety, Metal Theft Prevention, and First Responder Training.

I encourage you to join us at one of our upcoming meetings. It's a unique and informal venue to discuss safety challenges and network with your peers. If you have any questions, please give me a call at 503.378.6190 or 503.559.6481.

Sincerely: Paul Birkeland, Sr. Staff Engineer, Oregon Public Utilities Commission

Eastern Oregon Utility Safety Committee Meeting Location(s):

Oregon Trail Electric Cooperative Conference Room
4005 23rd Street, Baker City, Oregon

Cascade Natural Gas Knife River Conference Room
64500 O B Riley Road, Bend, Oregon

Time: 9:00am to 12:00pm

Dates:

Next Baker City Meeting	Friday, June 19, 2015
Next Bend Area Meeting	Friday, August 21, 2015
Baker City Meeting	Friday, October 16, 2015
Bend Area Meeting	Friday, December 11, 2015

Oregon
Kate Brown, Governor

Public Utility Commission
201 High St SE Suite 100
Salem, OR 97301
Mailing Address: PO Box 1088
Salem, OR 97308-1088
Consumer Services
1-800-522-2404
Local: 503-378-6600
Administrative Services
503-373-7394

August 7, 2015

All Oregon Utility Operators

RE: Incident Reporting, OAR 860-024-0050

Every operator subject to this rule is required to report incidents to the Oregon Public Utility Commission. For serious injury to persons or property, the rule requires immediate notice by telephone, facsimile, by electronic mail, or personally, followed up by a written report within 20 days.

Operator is defined in 860-024-0001, and that definition includes every communications and electric entity that has facilities in the state. The reporting form can be found at:

http://www.puc.state.or.us/safety/Electric_and_Communication_Incident_Report_FM221.pdf

A hard copy of the rule and the reporting form is attached to this letter.

The recently revised reporting form has only one telephone number: 503-378-6964. When you call this number, it will transfer your call to the member of the Electric Safety Staff currently on duty. There is a dedicated fax line: 503-378-5505, and if you choose to report by e-mail, the group address is **PUC.Esafety@state.or.us**, which will send your message to all members of the electric safety staff.

Also, we have moved. Our new location is 201 SE High Street, 97301, in downtown Salem (at the intersection of SE Ferry and SE High Streets).

Our mailing address will remain the same:

PO Box 1088
Salem, Oregon 97308-1088

Sincerely,

Lori Koho

Lori Koho, Administrator
Safety, Reliability and Security Division

ELECTRIC AND COMMUNICATION INCIDENT REPORT
(OAR 860-024-0050 (See Page 3 for definitions)
PUBLIC UTILITY COMMISSION OF OREGON

Instructions: Fill in the appropriate sections.
Check options and fill in blanks.

Reporting Information & Phone Numbers

Section 1 (Immediate Notice – Phone/Fax)

For PUC Staff Only

Time Received ____:____a.m./p.m. Date ____/____/____ Received By _____

Utility or Operator _____ Reported By _____

Phone Number (____) _____ Incident Date ____/____/____ Time ____:____a.m./p.m.

Location of Incident – City _____ County _____ Address or Directions _____

Description of Incident _____

Personal Injury or Contact Information

Name _____ Age____ Sex: M ☐ F ☐
Injury Severity: Fatal ☐ *Hospital ☐ *Minor Injury ☐ No Injury ☐

Name _____ Age____ Sex: M ☐ F ☐
Injury Severity: Fatal ☐ *Hospital ☐ *Minor Injury ☐ No Injury ☐

Name _____ Age____ Sex: M ☐ F ☐
Injury Severity: Fatal ☐ *Hospital ☐ *Minor Injury ☐ No Injury ☐

Name _____ Age____ Sex: M ☐ F ☐
Injury Severity: Fatal ☐ *Hospital ☐ *Minor Injury ☐ No Injury ☐

Facility Type: *OH ☐ *UG ☐ Substation ☐
Other _____ Voltage: _____

Work Related: Yes ☐ No ☐ Worker's Trade: _____

Employed By: _____

Utility notified of activity prior to incident: Yes ☐ No ☐

Property Damage

(over $100,000)
Estimated amount $_____

Service Outage

Date____/____/____

Time Out _____a.m./p.m.

Time In _____a.m./p.m.

Customers Out _____

Number of Circuits _____

Reportable:
- Utility serving over 15,000 customers with 500 customers or more out over two hours.
- Utility serving less than 15,000 customers with 500 customers or more out over five hours.

Exception:
- Not reportable if outage is restricted to a single feeder and outage is less than four hours.

860-024-0050

Incident Reports

(1) As used in this rule:

(a) "Serious injury to person" means, in the case of an employee, an injury which results in hospitalization. In the case of a non-employee, "serious injury" means any contact with an energized high-voltage line, or any incident which results in hospitalization. Treatment in an emergency room is not hospitalization.

(b) "Serious injury to property" means:

(A) Damage to operator and non-operator property exceeding $100,000; or

(B) In the case of a gas operator, damage to property exceeding $5,000; or

(C) In the case of an electricity service supplier (ESS) as defined in OAR 860-038-0005, damage to ESS and non-ESS property exceeding $100,000 or failure of ESS facilities that causes or contributes to a loss of energy to consumers; or

(D) Damage to property which causes a loss of service to over 500 customers (50 customers in the case of a gas operator) for over two hours (five hours for an electric operator serving less than 15,000 customers) except for electric service loss that is restricted to a single feeder line and results in an outage of less than four hours.

(2) Except as provided in section (5) of this rule, every reporting operator must give immediate notice by telephone, by facsimile, by electronic mail, or personally to the Commission, of incidents attended by loss of life or limb, or serious injury to person or property, occurring in Oregon upon the premises of or directly or indirectly arising from or connected with the maintenance or operation of a facility.

(3) Except as provided in section (5) of this rule, every reporting operator must, in addition to the notice given in section (2) of this rule for an incident described in section (2), report in writing to the Commission within 20 days of the occurrence. In the case of injuries to employees, a copy of the incident report form that is submitted to Oregon OSHA, Department of Consumer and Business Services, for reporting incident injuries, will normally suffice for a written report. In the case of a gas operator, copies of incident or leak reports submitted under 49 CFR Part 191 will normally suffice.

(4) An incident report filed by a public or telecommunications utility in accordance with ORS 654.715 cannot be used as evidence in any action for damages in any suit or action arising out of any matter mentioned in the report.

(5) A Peoples Utility District (PUD) is exempt from this rule if the PUD agrees, by signing an agreement, to comply voluntarily with the filing requirements set forth in sections (2) and (3).

(6) Gas operators have additional incident and condition reporting requirements set forth in OARs 860-024-0020 and 860-024-0021.

Oregon
Kate Brown, Governor

Public Utility Commission
201 High St SE Suite 100
Salem, OR 97301
Mailing Address: PO Box 1088
Salem, OR 97308-1088
Consumer Services
1-800-522-2404
Local: 503-378-6600
Administrative Services
503-373-7394

September 8, 2015

All Oregon Utility Operators

RE: Substation Safety Signs

The National Electrical Safety Code requires signs on substation fences to warn the public of electrical hazards within the fence boundaries. For the most part, the public is respectful of utility property but occasionally, an unqualified person gains access, bad things happen, and the subject of proper signage comes up. Determining proper signage is not a simple task as it involves not only the NESC but also industry practice and ANSI standards.

Safety Staff have worked with a few utilities on code compliant substation signage. We believe the issue is relevant to the entire industry and that Staff's approach to interpreting the standards will make it easier for others to maintain compliance.

Attached is a short document that outlines Staff's methodology to determine proper substation signage. If you have any questions please call Paul Birkeland at 503-378-6190 or Mark Rettmann at 503-378-5362.

Sincerely,

Lori Koho

Lori Koho, Administrator
Safety, Reliability and Security Division

Substation Warning Signs: A Discussion of Code and Best Practice

References:

National Electrical Safety Code, 2012 edition
NESC Rule 110.A.1.

NESC Handbook, Seventh Edition, by Allen L. Clapp
Appendix B, Safety Signs.

ANSI Z535.2-2007
American National Standard for Environmental and Facility Safety Signs.

Section 11 of the NESC, in Rule 110.A.1 essentially states that an electrical supply station should be fenced, and "safety signs" shall be displayed at each entrance and on each side of a fenced enclosure. There is a note referring the reader to the entire ANSI rule for Safety and Environmental signs, but the specific rule for this application is ANSI Z535.2.

Danger vs Warning: Until the early 1990's, utilities used a sign that usually said DANGER – High Voltage, with DANGER being at the top of the sign in large letters and the rest of the message in smaller type underneath. The colors used were red, black, and white for contrast.

Subsequent updates to the ANSI standards recognized that there was a proliferation of DANGER signs, and began to promote the use of WARNING signs in places to inform of a possible hazard, and DANGER signs where there is an *imminent hazard*, i.e., you are in the area where the hazard is located. With the WARNING sign there is a *potential hazard*, i.e., you are safe where you are, but if you go further you will be in a DANGER area.

So utilities began to update their substation signage and use a WARNING sign, with black lettering in an orange panel. In ANSI Z535.2 there is a "signal word selection process" decision tree on page 36 that summarizes when you use the word DANGER and where the WARNING is more appropriate.

The thought process goes like this: If someone makes entry into an electrical substation, how likely is an accident? If it is almost certain, and the consequences are certain death or serious injury, the DANGER sign is appropriate. But employees enter and leave substations on a daily basis. Intruders sometimes enter and leave without accident, too, so the WARNING sign is most appropriate for a substation that meets all NESC requirements.

OK, now we know what the sign should say and where we put them. A Warning sign on each entrance (gate) and one on each side of the substation. They should have the ANSI WARNING panel and then instructions like "Hazardous Voltage Inside, Keep Out", an appropriate safety signal (the electrical/falling seems most appropriate for substation fences) and perhaps some instructions on whom to call in an emergency or identification as to who owns the substation.

See Figure B6 in the NESC Handbook, Seventh Edition, by Allen L. Clapp, for specific examples of appropriate signage.

Some utilities have used the "electrical hand" safety signal for their substations, this is not exactly wrong, but these signs are more appropriate for a small enclosure where you shouldn't stick your hand, and the "falling man" signal is better as it warns of two hazards, one of which is electrocution, but the other very real hazard is falling off the fence.

How many signs should we use on a fence that is dozens or even hundreds of feet long? The intent of putting a sign on the fence is that the intended recipient of the message should be able to read a sign no matter where he encounters the fence, which is addressed in the NESC Handbook, Seventh Edition, by Allen L. Clapp in the aforementioned Appendix B.

First you must determine the ANSI "Safe Viewing Distance" from part 9.2.3 of Z535.2-2007. If the Signal Word (WARNING) is composed of 2-1/2 inch high letters, it will have a "Safe Viewing Distance" of 31.25 feet (150 times the letter height = 375 inches which = 31.25 ft.) From the NESC Handbook, Figure B3, the range of sign spacing to have appropriate readability when the observer is directly opposite the space between signs will be somewhere between 1.73 and 3.47 times the "Safe Viewing Distance".

So for a WARNING sign where the signal word is 2-1/2 inches high, the maximum distance between signs could be a number between 54 feet and 108 feet. In the previously mentioned NESC handbook appendix B there is further discussion of appropriate spacing.

One Oregon utility has installed warning signs with 2-1/2 inch high letters in the signal word and in their substation fence standard they specify no more than 65 feet between signs.

Another Oregon utility has been using signs with the "WARNING" message that are only 1-1/4 inches in height. The ANSI Safe Viewing Distance would be 150 times 1.25 = 187.5 inches or 15.63 feet. Following the same methodology, in order for these signs to be readable from all angles they would need a maximum spacing of somewhere between 27 feet and 54 feet apart.

Consideration has to be given to a substation where the approach would be at an angle, towards a corner post. Signs may have to be placed where the viewing angle allows the sign to be read or recognized from all angles of approach.