

ELECTRIC SAFETY FIELD ACTIVITIES and OVERHEAD FACILITIES NESC VIOLATIONS

WEDNESDAY, SEPTEMBER 8TH, 2021

PRESENTED BY: KRISTOFER KNITTLE, EIT, ELECTRIC SAFETY INSPECTOR

Topics to Cover

- ▶ Introduction to Electric Safety Division (ESD)
- ▶ NESC vs. NEC
- ▶ Part 1 – Electric Safety Field Activities
- ▶ Part 2 – Overhead Facilities NESC Violations
- ▶ Moving Forward

Electric Safety Division



Rob
Horensky,
Manager



Brent
Killian,
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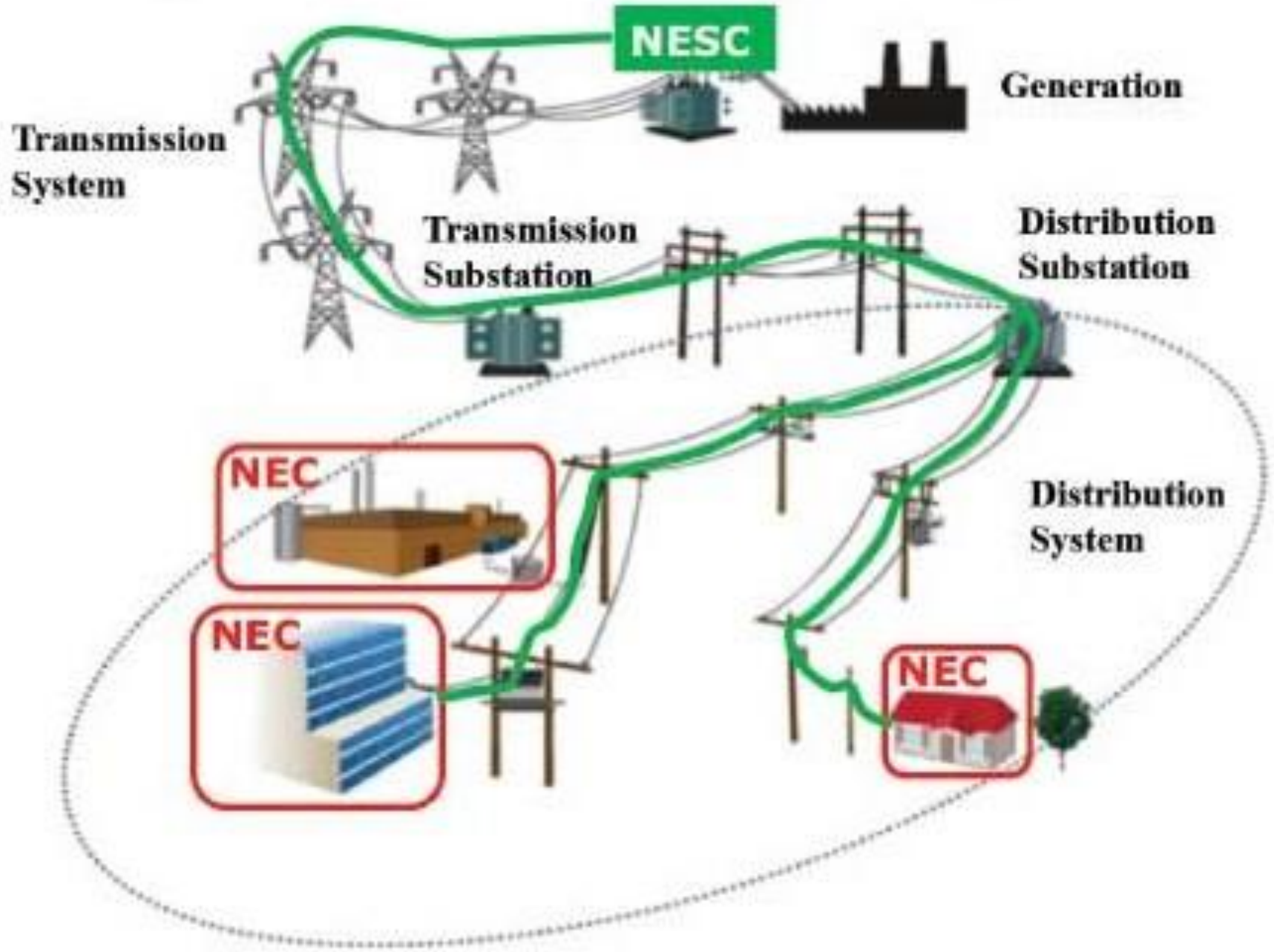
Benedict
Tarr (NW)



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ELECTRIC SAFETY FIELD ACTIVITIES

FOCUS OF PRIORITIZING OUR ACTIVITIES

Field Activities in Priority

1. Incidents

- Fatalities

- Contact Injuries

- Property Damage

2. Complaints

- BCS Complaints

- Legislative Referrals

3. Compliance Activities

- Filings Review

- Construction Field Observations

- Field Observed NESC Violations

Fatality

	2017	2018	2019	2020	2021 (Jan-Sept)
Total	7	13	5	2	2
General Public	4	11	3	2	1
Utility Contractor	1	0	1	0	1
Utility Employee	2	2	1	0	0

Contact Injury

	2017	2018	2019	2020	2021 (Jan-Sept)
Total	31	35	26	24	15
General Public	17	20	15	18	5
Utility Contractor	11	9	5	4	5
Utility Employee	3	6	6	2	5

Property Damage

	2017	2018	2019	2020	2021 (Jan-Sept)
Total	7	15	9	18	13

Customer Complaints

Via the Bureau of Consumer Services (BCS)

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	2017	2018	2019	2020	2021 (Jan-Sept)
Total	79	115	144	139	100

Legislative Referral

	2017	2018	2019	2020	2021 (Jan-Sept)
Total	5	3	6	10	13

Filings Review

	2017	2018	2019	2020	2021 (Jan-Sept)
Total	6	14	9	25	49

- ▶ Rate Cases
- ▶ Long-Term Infrastructure Improvement Plan (LTIIIP's)
- ▶ Asset Allocations
- ▶ Reliability Reports
- ▶ Risk Assessment
- ▶ and Other EDC filings

Construction Observations



	2021 (Jan-Sept)
Total	8

Non-Compliance Observations

	2017	2018	2019	2020	2021 (Jan-Sept)
Total	158	268	262	383	267

- ▶ Field Observations of EDC infrastructure
 - ▶ Transmission & Distribution Overhead
 - ▶ Substation
 - ▶ Underground
- ▶ Grandfather Clause
 - ▶ NESC Rules 013B2 and 013B3

OVERHEAD FACILITIES NESC VIOLATIONS

A FOCUS ON OVERHEAD ISSUES

Non-Compliance Observations

16

1. Crossarm & braces
2. Poles
3. Distribution grounding
4. Clearances
5. Vegetation management

#5. Vegetation Management

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NESC Section 21. General Requirements

218. Vegetation Management

A. General

1. Vegetation management should be performed around supply and communication lines as experience has shown to be necessary. Vegetation that may damage ungrounded supply conductors should be pruned or removed.

Vegetation Overgrowth Into Climbing Spaces





#5. Vegetation Management

#4. Clearances

NESC Section 232: Vertical Clearances of Wires

NESC Section 23: Clearances

232.B.1 Clearance to wires, conductors and cables.

The Vertical clearance of wires, conductors, and cables aboveground in generally accessible places, roadway, rail, or water surfaces, shall be not less than that shown in Table 232-1.

Table 232-1 3. Driveways, parking lots and alleys. 15.5 feet.

Vertical Clearance Above a Roadway



#4. Clearances

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NESC Section 234.
Clearance from buildings

C. Clearance of wires, conductors, cables, and rigid live parts from buildings, signs, billboards, chimneys, radio and television antennas, tanks, flagpoles and flags, banners, and other installations except bridges

Distance determined by voltage

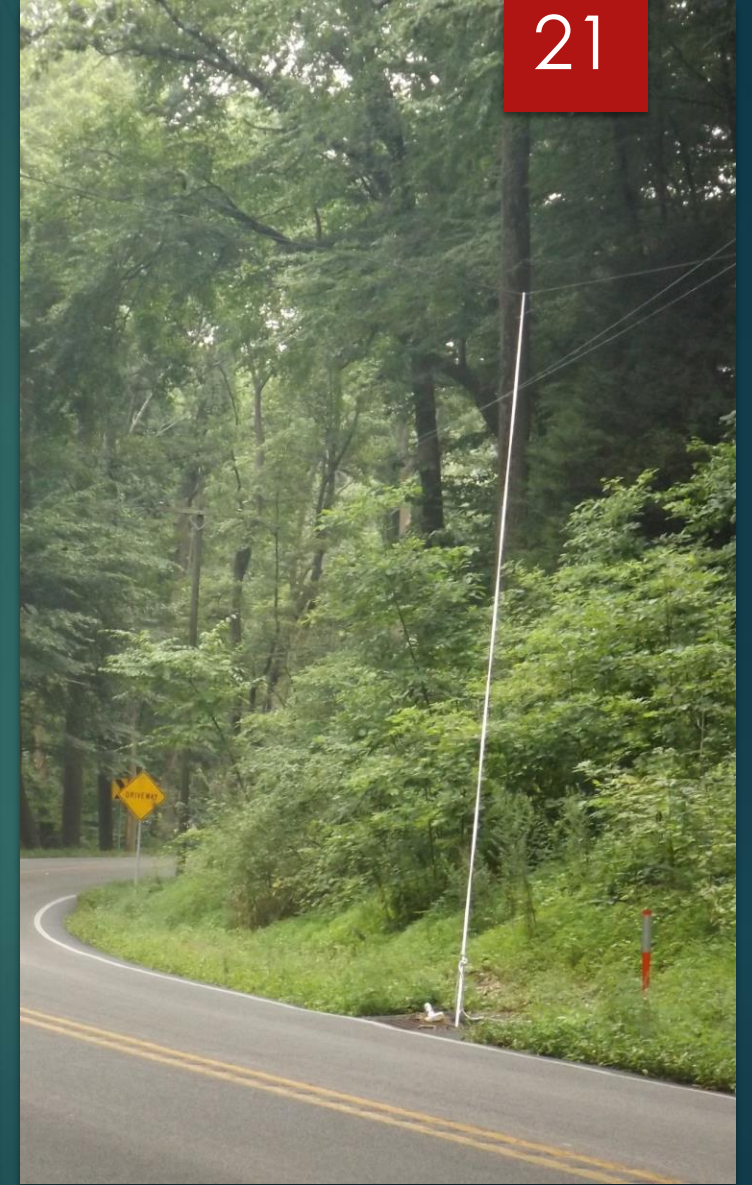
Horizontal Clearance from Buildings



#4. Clearances

NESC Section 233.
Clearance of wires,
conductors, cables carried
on different supporting
structures

NESC Section 235.
Clearance for wires,
conductors, or cables
carried on the same
supporting structure



#3. Distribution Grounding

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NESC Section 9. Grounding Methods

096. Grounding resistance

C. Multi-grounded systems

The neutral shall be connected to a made or existing electrode at each transformer location and at a sufficient number of additional points not less than 4 grounds per mile.

Service Transformer Ground Wire Cut





#3. Distribution Grounding

#2. Poles

NESC Section 261. Grades B and C Construction

A. Supporting structures

2. Wood Structures

a. Wood structures shall be designed to withstand the loads in Rule 252 multiplied by the appropriate load factors in table 253-1 without exceeding the permitted stress level at the point of maximum stress.

Broken Pole





#2. Poles



#2. Poles



#2. Poles

#1. Crossarm and braces

NESC Section 26: Strength Requirements.

Table 261-1

Note (2): Wood and reinforced structures shall be replaced or rehabilitated when deterioration reduces the strength to $\frac{2}{3}$ of that requires when installed.

Splitting Crossarm at Insulator Pin





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#1. Crossarm and braces



#1. Crossarm and braces



31

#1. Crossarm and braces



#1. Crossarm and braces



Temporary Repairs



Temporary Repairs

Temporary Repairs

35

NESC Rule 014 – Waiver
for emergency and
temporary installations

In the case of
emergency or temporary
installation, clearances,
burial depth, and
strength of materials may
be decreased.

Moving Forward

A FOCUS ON FINDING SOLUTIONS

Moving Forward

PUC's Role

- ▶ Observe trends of equipment or failure types
- ▶ Discuss national and industry standards
- ▶ Reviewing EDC's overhead inspections process
- ▶ Validate company improvements are completed through field observations
- ▶ Risk Assessment data review

Moving Forward Companies Role

- ▶ Contractor Education and Outreach
- ▶ Communication with other Facility Owners
- ▶ Enhanced Overhead Inspection and Maintenance Programs
 - ▶ Timely, Accurate, & Correct
 - ▶ Frequent inspection cycles?
 - ▶ Personnel adequately trained
 - ▶ Improved record keeping
 - ▶ Issues swiftly corrected

Thank you.