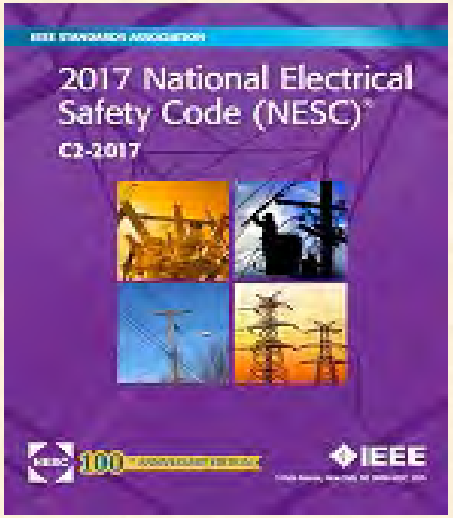
"The New 2017 National Electric Safety Code Overview and Significant Changes"



Presented by

Mickey Gunter

October 28, 2016

NESC Technical Subcommittees

Subcommittee 1 – Coordination, Definitions

Subcommittee 2 - Grounding Methods

Subcommittee 3 - Electric Supply Stations

Subcommittee 4 - Overhead Lines – Clearances

Subcommittee 5 - Overhead Lines - Strength and Loading

Subcommittee 7 - Underground Lines

Subcommittee 8 - Work Rules

Interpretations Subcommittee

NESC Membership

Privately Owned Communication
Privately Owned Electric Supply (GPC)
Public Electric Supply & Communication (EMC's, Cities)
Unions (IBEW)
Manufacturer Associations
Professional Organizations (IEEE)
Independent Electrical Contractors
Engineering Consultants
Consumers and Government

No group can have more than 33% represented on any Technical Subcommittee

2017 NESC

Change Proposals

678 submitted and acted upon in 2013

NESC Pre-print published in 2014

Public Comments

740 reviewed and resolved in 2015

Date Published - August 1, 2016

Date Effective - 180 days from August 1, 2016

(February 1, 2017)

Section 9
Grounding

Subcommittee 2

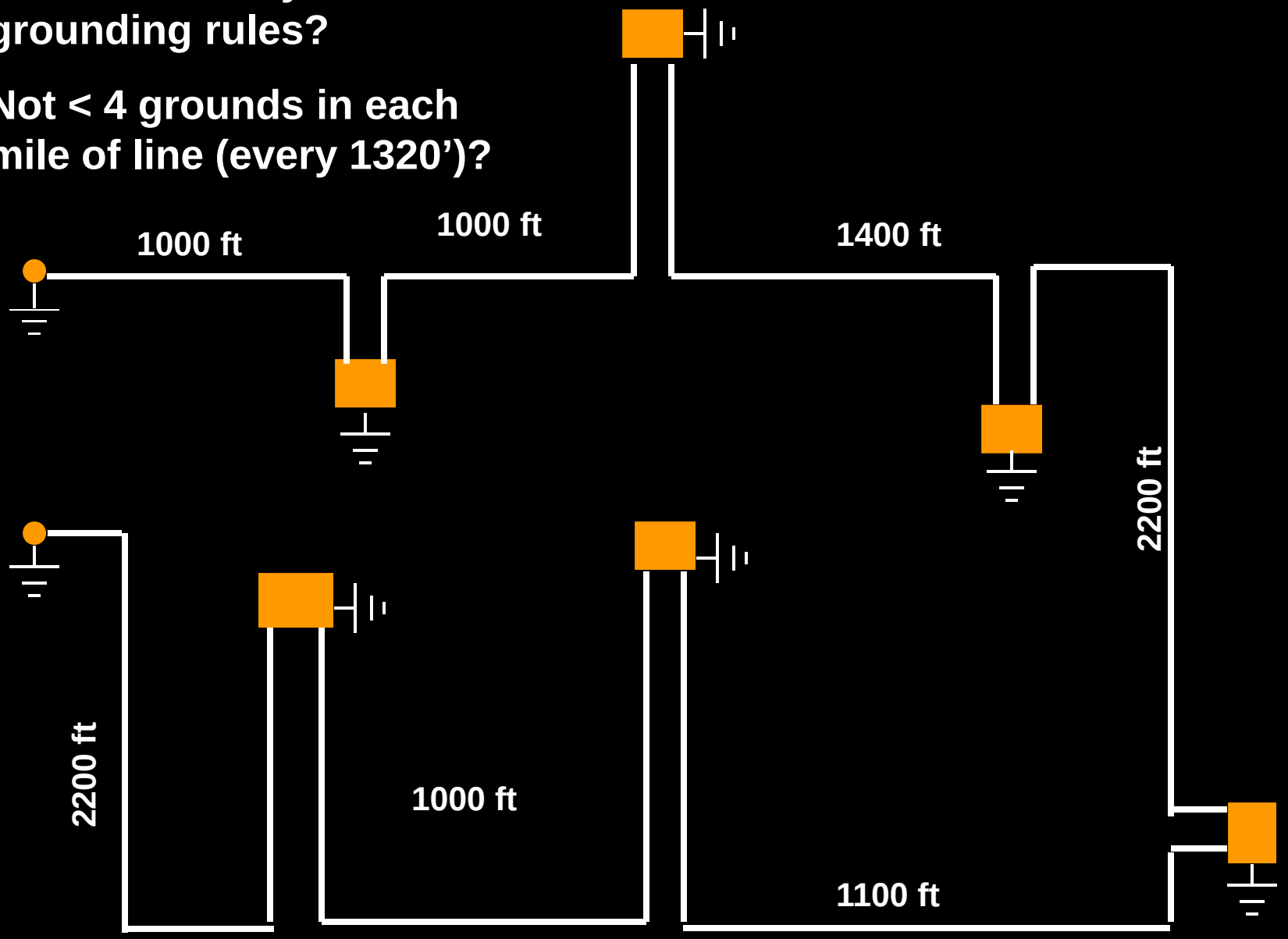
Rule 096C

C. Multi-grounded systems

The concentric neutral shall have not less than 4 grounds in each mile of overhead and underground lines:

Does this UD system meet grounding rules?

Not < 4 grounds in each mile of line (every 1320')?



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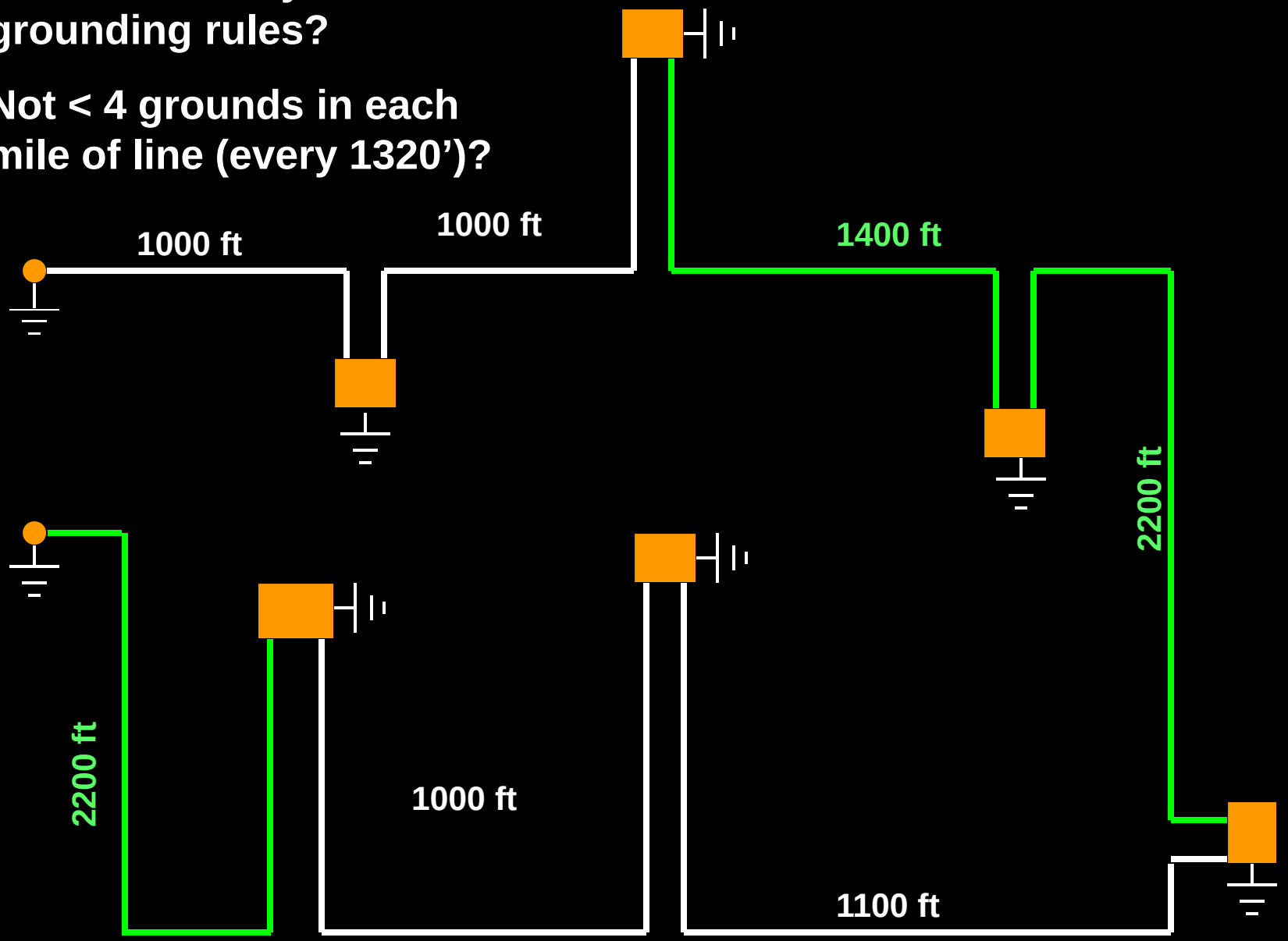


Rule 096C, EX 2 (New)

EXCEPTION 2:

For cable or cable in duct installed underground:

4 grounds in each mile not required if removing the protective jacket is the only reason to meet this rule

At all locations where the cable is accessible to personnel, the neutral *(and associated aboveground enclosures)* shall be effectively grounded.


460440
36
Ø1
WARNING
NOTICE
KEEP OUT
ELECTRICAL EQUIPMENT
1-3
22
WARNING
CALL 811

Part 2
Overhead Lines
Clearances

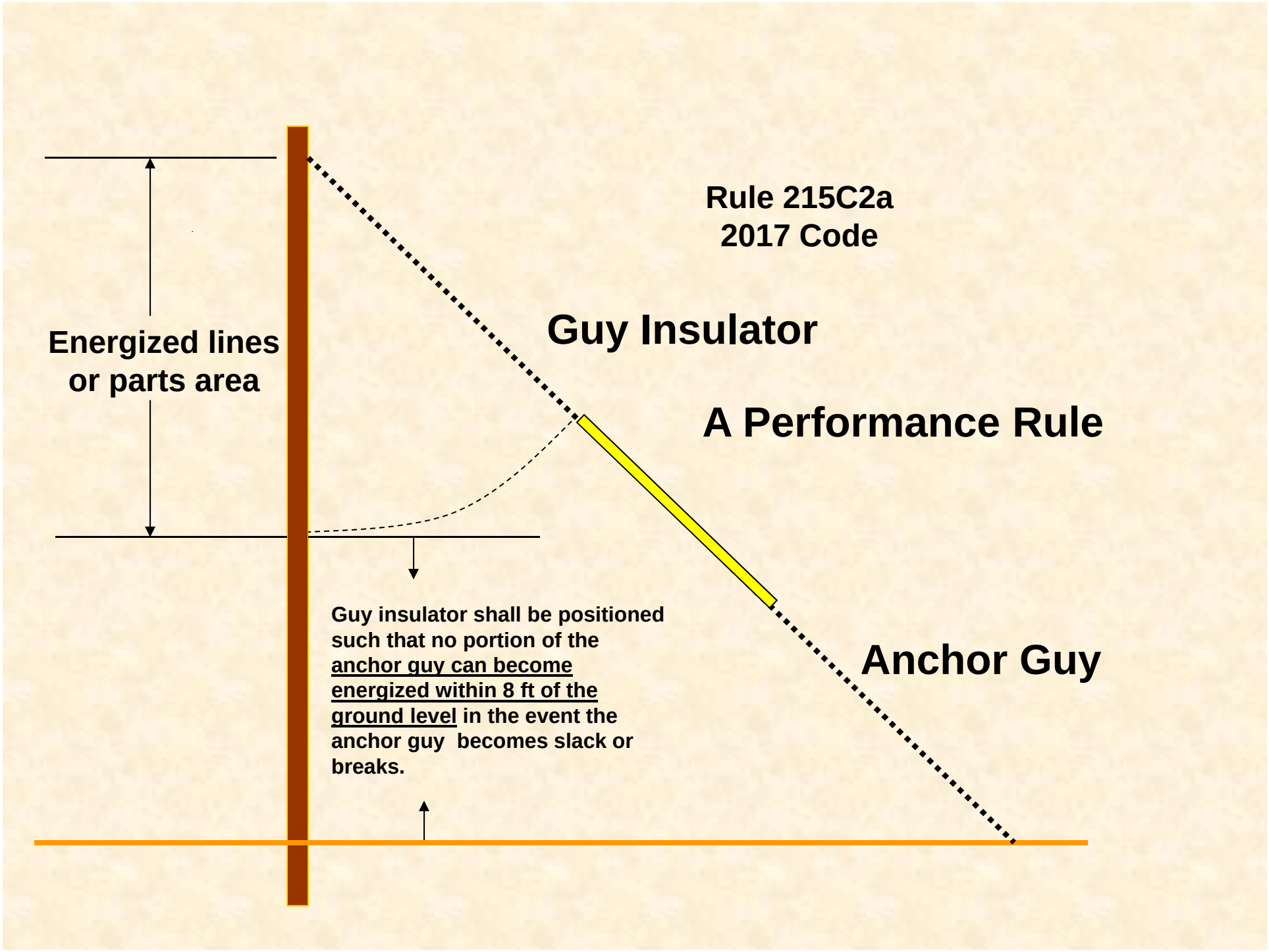
Subcommittee 4

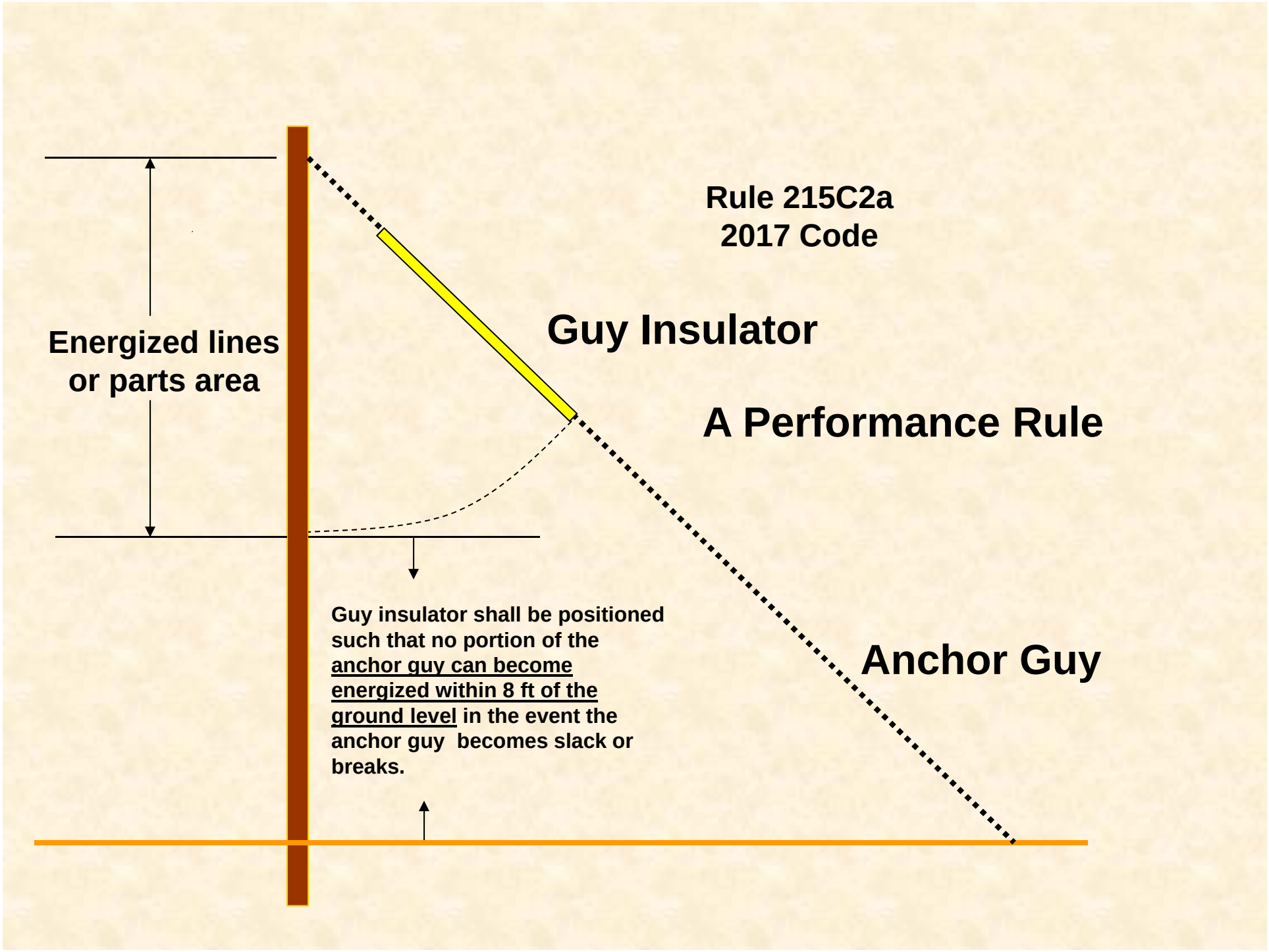
Rule 215C2a

2 Guys

a. Anchor guys

(2) Guy insulators shall be positioned so as to limit the likelihood of any portion of an anchor guy becoming energized within 8 ft of the ground level in the event that the anchor guy becomes slack or breaks.


Rule 215C2a
2017 Code
Guy Insulator
A Performance Rule
Energized lines or parts area
Guy insulator shall be positioned such that no portion of the anchor guy can become energized within 8 ft of the ground level in the event the anchor guy becomes slack or breaks.
Anchor Guy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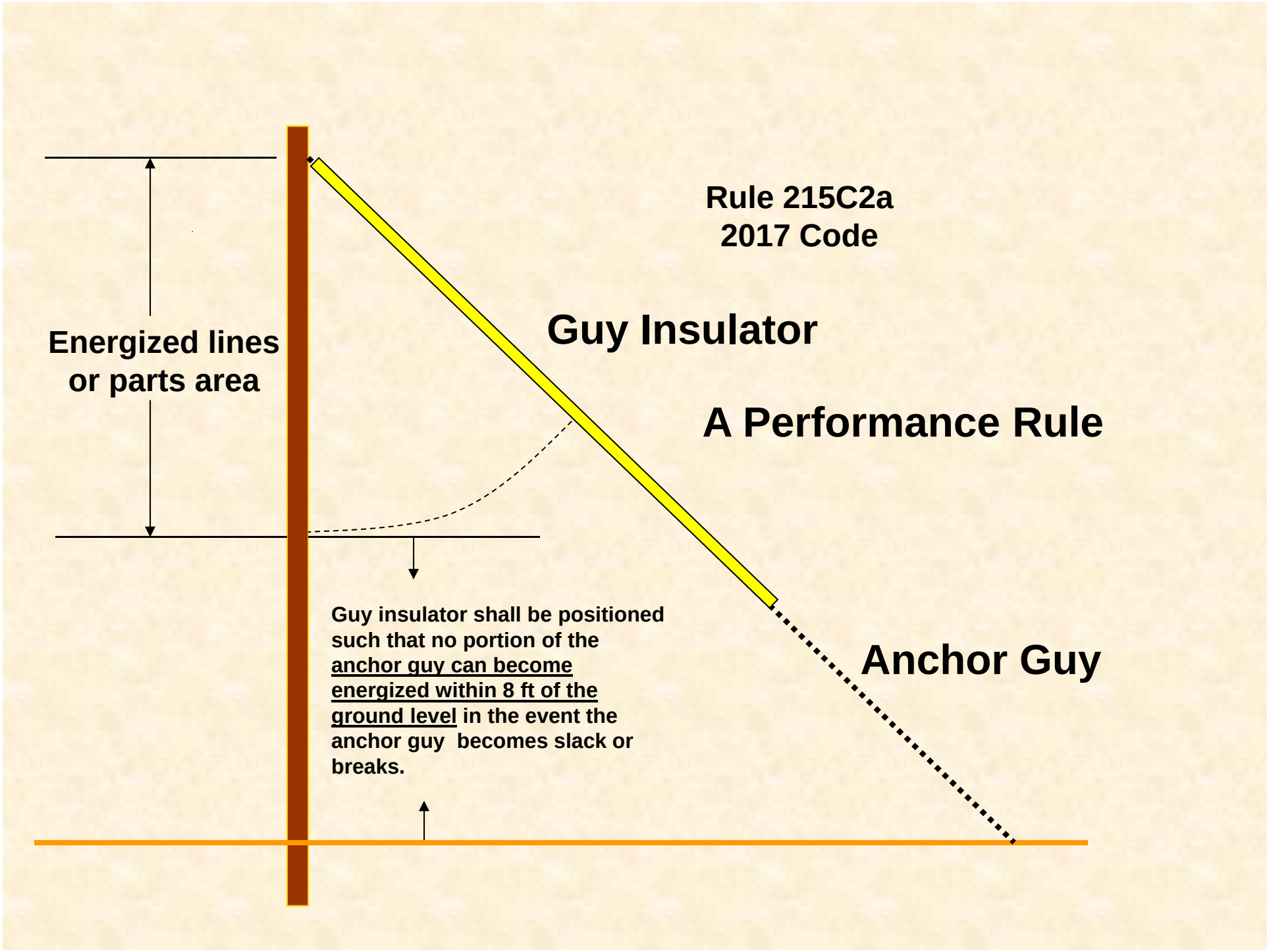
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Guy insulator shall be positioned such that no portion of the anchor guy can become energized within 8 ft of the ground level in the event the anchor guy becomes slack or breaks.
Anchor Guy

Rule 238C

C. Clearances for span wires or brackets

Street light brackets:

Vertical clearances from communication lines

Not less than Table 238-2

TABLE 238-2

PAGE 190

2012 NESC

Table 238-2—Vertical clearance of span wires and brackets from communication lines
(See also Rule 238C.)

	Carrying luminaires or traffic signals				Carrying trolley conductors			
	Not effectively grounded		Effectively grounded		Not effectively grounded		Effectively grounded	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Above communication support arms	500	20 [1]	500	20 [1]	500	20 [1]	500	20 [1]
Below communication support arms	1000	40 [3]	600	24	600	24	600	24
Above messengers carrying communication cables	500	20 [1]	100	4	300	12	100	4
Below messengers carrying communication cables	1000	40 [4]	100	4	300	12	100	4
From terminal box of communication cable	500	20 [1]	100	4	300	12 [2]	100	4
From communication brackets, bridle wire rings, or drive hooks	410	16 [1]	100	4	100	4	100	4

2017 NESC

Table 238-2—Vertical clearance of span wires and brackets from communication lines and equipment

(See also Rule 238C.)

	Carrying luminaires, traffic signals, or trolley conductors			
	Not effectively grounded		Effectively grounded	
	(mm)	(in)	(mm)	(in)
Above communication support arms	1000	40	500	20 ①
Below communication support arms	1000	40	600	24
Above messengers carrying communication cables	1000	40	100	4
Below messengers carrying communication cables	1000	40	100	4
From terminal box of communication cable	1000	40	100	4
From communication brackets, bridle wire rings, or drive hooks	1000	40	100	4


4” for
Effectively
grounded
bracket
40” for
Ungrounded
bracket

Part 2
Overhead Lines
Strength and Loading

Subcommittee 5

60 foot Exemption was Retained

Part 3
Underground

Subcommittee 7

Rule 354A2

2. Radial separation of supply cable and gas lines that shall be not less than 12 in.

EXCEPTION:

For supply cables operating at not more than 300 V between conductors:

Radial separation may be less than 12”

Provided supplemental mechanical protection is used to limit the likelihood of detrimental heat transfer to gas lines.

Agreement to the reduced separation by all utilities involved is required.

Part 4
Work Rules

Subcommittee 8

Rules 410A3b (New)

b. Require employees to cover the entire body with arc rated clothing and equipment.

Rules 410A3b, EX 1 (New)

Exceptions to the FR Clothing requirement and Arc rated equipment:

EXCEPTION 1:

Not required when additional or greater hazards than the possible exposure to the heat energy of the electric arc.

Rules 410A3b, EX 2 (New)

Exceptions to the FR Clothing requirement and Arc rated equipment:

***EXCEPTION 2*:**

Not necessary for the hands:

When the employee is wearing rubber insulating gloves with protectors.

or

Wearing heavy-duty leather work gloves with a weight of at least 12 oz / yd^2 if the estimated incident energy is no more than 14 cal/cm^2.

Rules 410A3b, EX 3 (New)

Exceptions to the FR Clothing requirement and Arc rated equipment:

***EXCEPTION 3*:**

Not necessary for the employee's feet when the employee is wearing heavy-duty work shoes or boots.

Rules 410A3b, EX 4 (New)

***EXCEPTION 4*:**

Arc rated equipment is not necessary for the employee's head or face with approved OSHA head protection when the estimated incident energy is

1. Less than 9 cal/cm^2 for single phase arcs in open air or

2. Less than 5 cal/cm^2 for other exposures.

Arc rated equipment is necessary for the protection of the head and face with approved OSHA head protection and a face shield with a minimum arc rating of 8 cal/cm^2 when the estimated incident energy is:

1. Greater than 9 cal/cm^2 and less than 13 cal/cm^2 for single-phase arcs in open air or

2. Greater than 5 cal/cm^2 and less than 9 cal/cm^2 for other exposures.

Rules 420K (Revised)

K. Fall protection

1. Working elevations changed from 10 feet to 4 feet and

2. Rigged in a manner that the employee cannot free fall more than 2 feet.

Anchorage equipment shall be capable of supporting at least twice the potential impact load of an employee's fall, or 3000 lb.-force), whichever is greater..

NOTE 1 – Discusses wood-pole fall-restriction devices.

NOTE 2– Discusses recognized and generally accepted good engineering practices concerning potential anchorages.

NOTE 3 – Discusses strength of anchorage points.

Rules 441A1

A. Minimum approach distance to energized lines or parts

1. General

Employees shall not approach or bring any conductive object within the minimum approach distance listed in Table 441-1 or Table 441-5 to exposed energized lines or parts unless one of the following is met:

Rules 441A1c (Revised)

c. **The energized line or part is insulated from the employee and from any other line or part at a different voltage.** ***Insulated lines and parts include those covered with suitable insulation and having metallic shield, sheath, or concentric neutral or semiconducting shield in combination with suitable metallic drainage bonded to an effective ground.***

***Editorial Error – The underlined red language was inadvertently omitted from the 2017 NESC and will be corrected with an errata Sheet*.**

Rules 441A1d, NOTE 4 (Added)

d. The employee is performing bare hand live-line work according to Rule 446.

***NOTE 4*:**
R*each* is defined as the range of anticipated motion of an employee while performing a task, and *extended reach* is defined as the range of anticipated motion of a conductive object being held by an employee while performing a task.

Tables 441-1, 2, 3, and 4 (New)

Table 441-1 – AC live work minimum approach distances

Several changes were made to the minimum approach distances for distribution voltages.

Page 299-306

Table 441-1—AC live work minimum approach distance [3]

(See Rule 441 in its entirety.)

Voltage in kilovolts phase-to- phase [1] [2] [3]	Distance to employee [4]			
	Phase-to-ground		Phase-to-phase	
	(m)	(ft-in)	(m)	(ft-in)
0 to 0.050	Not specified		Not specified	
0.051 to 0.300	Avoid contact		Avoid contact	
0.301 to 0.750	0.33	1-1	0.33	1-1
0.751 to 5.0	0.63	2-1	0.63	2-1
5.1 to 15.0	0.65	2-2	0.68	2-3
15.1 to 36.0	0.77	2-7 2-5	0.89	3-0 2-10
36.1 to 46.0	0.84	2-10	0.98	3-3
46.1 to 72.5	1.00	3-4	1.20	4-0

Rules 444C2 (New)

2. **Air gaps created (e.g., cut or open jumpers) for de-energizing equipment or lines:**

   Shall be tagged and

   Meet the minimum clearances as specified in Table 444-1

   or

   Separated by a properly rated insulator.

Table 444-1 (New)

Table 444-1—Minimum clearances for open air gaps

Voltage in kilovolts phase-to-phase ① ② ③	Electric supply stations		Overhead lines	
	(mm)	(in)	(mm)	(in)
1.0 to 8.3	178	7	127	5
8.4 to 15.5	305	12	178	7
15.6 to 27	381	15	229	9
27.1 to 38	458	18	305	12
38.1 to 48.2	534	21	534	21
48.3 to 72.5	788	31	788	31

① For single-phase lines off of three phase systems, use the phase-to-phase voltage of the system.
② For single-phase systems, use the highest voltage available.
③ Table values taken from IEEE Std C37.30.1™-2011 [B56].

Any Questions

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