

REGULAR

STATE OF CALIFORNIA—OFFICE OF ADMINISTRATIVE LAW

NOTICE PUBLICATION/REGULATIONS SUBMISSION

(See instructions on reverse)

For use by Secretary of State only

STD. 400 (REV. 01-2013)

OAL FILE NUMBERS	NOTICE FILE NUMBER Z-2019-0315-02	REGULATORY ACTION NUMBER 2019-1022-015	EMERGENCY NUMBER
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For use by Office of Administrative Law (OAL) only

RECEIVED DATE MAR 15 '19	PUBLICATION DATE MAR 29 '19	2019 OCT 22 A 10:20 OFFICE OF ADMINISTRATIVE LAW
Office of Administrative Law		
NOTICE		REGULATIONS

ENDORSED - FILED
in the office of the Secretary of State
of the State of California

DEC 05 2019

2:36 PM

AGENCY WITH RULEMAKING AUTHORITY Occupational Safety and Health Standards Board	AGENCY FILE NUMBER (if any)
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A. PUBLICATION OF NOTICE (Complete for publication in Notice Register)

1. SUBJECT OF NOTICE LVESO and HVESO, see attached	TITLE(S) Title 8	FIRST SECTION AFFECTED LVESO 2300	2. REQUESTED PUBLICATION DATE March 29, 2019
3. NOTICE TYPE <input checked="" type="checkbox"/> Notice re Proposed Regulatory Action <input type="checkbox"/> Other	4. AGENCY CONTACT PERSON Lara Paskins, SSM I	TELEPHONE NUMBER (916)-274-5721	FAX NUMBER (Optional) (916)-274-5743
OAL USE ONLY <input type="checkbox"/> Approved as Submitted <input type="checkbox"/> Approved as Modified <input type="checkbox"/> Disapproved/Withdrawn	NOTICE REGISTER NUMBER 2019, 13-2	PUBLICATION DATE 3/29/2019	

B. SUBMISSION OF REGULATIONS (Complete when submitting regulations)

1a. SUBJECT OF REGULATION(S) Electric Power Generation, Transmission and Distribution; Electrical Protective Equipment; Final Rule-Corrections	1b. ALL PREVIOUS RELATED OAL REGULATORY ACTION NUMBER(S)
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2. SPECIFY CALIFORNIA CODE OF REGULATIONS TITLE(S) AND SECTION(S) (Including title 26, if toxics related)
SECTION(S) AFFECTED (List all section number(s) individually. Attach additional sheet if needed.)
ADOPT
AMEND Sections 2300, 2305.2, and 2940.2 and Appendix A to Article 36
REPEAL
TITLE(S) 8

3. TYPE OF FILING
<input checked="" type="checkbox"/> Regular Rulemaking (Gov. Code § 11346) <input type="checkbox"/> Resubmittal of disapproved or withdrawn nonemergency filing (Gov. Code §§ 11349.3, 11349.4) <input type="checkbox"/> Emergency (Gov. Code, § 11346.1(b)) <input type="checkbox"/> Certificate of Compliance: The agency officer named below certifies that this agency complied with the provisions of Gov. Code §§ 11346.2-11347.3 either before the emergency regulation was adopted or within the time period required by statute. <input type="checkbox"/> Resubmittal of disapproved or withdrawn emergency filing (Gov. Code, § 11346.1) <input type="checkbox"/> Emergency Readopt (Gov. Code, § 11346.1(h)) <input type="checkbox"/> File & Print <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Changes Without Regulatory Effect (Cal. Code Regs., title 1, § 100) <input type="checkbox"/> Print Only

4. ALL BEGINNING AND ENDING DATES OF AVAILABILITY OF MODIFIED REGULATIONS AND/OR MATERIAL ADDED TO THE RULEMAKING FILE (Cal. Code Regs. title 1, § 44 and Gov. Code § 11347.1)

5. EFFECTIVE DATE OF CHANGES (Gov. Code, §§ 11343.4, 11346.1(d); Cal. Code Regs., title 1, § 100)
<input type="checkbox"/> Effective January 1, April 1, July 1, or October 1 (Gov. Code § 11343.4(a)) <input type="checkbox"/> Effective on filing with Secretary of State <input type="checkbox"/> \$100 Changes Without Regulatory Effect <input type="checkbox"/> Effective other (Specify) _____

6. CHECK IF THESE REGULATIONS REQUIRE NOTICE TO, OR REVIEW, CONSULTATION, APPROVAL OR CONCURRENCE BY, ANOTHER AGENCY OR ENTITY
<input type="checkbox"/> Department of Finance (Form STD. 399) (SAM § 6660) <input type="checkbox"/> Fair Political Practices Commission <input type="checkbox"/> State Fire Marshal <input type="checkbox"/> Other (Specify) _____

7. CONTACT PERSON Christina Shupe	TELEPHONE NUMBER (916)-274-5721	FAX NUMBER (Optional)	E-MAIL ADDRESS (Optional) cshupe@dir.ca.gov
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8. I certify that the attached copy of the regulation(s) is a true and correct copy of the regulation(s) identified on this form, that the information specified on this form is true and correct, and that I am the head of the agency taking this action, or a designee of the head of the agency, and am authorized to make this certification.

SIGNATURE OF AGENCY HEAD OR DESIGNEE <i>Christina Shupe</i>	DATE 6-21-19
TYPED NAME AND TITLE OF SIGNATORY Christina Shupe, Executive Officer	

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Office of Administrative Law

Subject of Notice – Continued

Item 1 of 1 continued

Low Voltage Electrical Safety Orders
Sections 2300 and 2305.2

High Voltage Electrical Safety Orders
Sections 2940.2 and Appendix A to Article 36

**STANDARDS PRESENTATION
TO
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TITLE 8, DIVISION 1, CHAPTER 4

Subchapter 5. Electrical Safety Orders
Group 1. Low-Voltage Electrical Safety Orders
Article 1. Definitions

Amend Section 2300 to read:

§2300. ~~Scope~~ Definitions.

(a) Only definitions of terms peculiar to and essential to the proper use of this Safety Order are included. In general, only those terms used in two or more Articles are defined in Article 1. Other definitions are included in the Article in which they are used but may be referenced in Article 1.

(b) Definitions.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Subchapter 5. Electrical Safety Orders
Group 1. Low-Voltage Electrical Safety Orders
Article 2. Administration

Amend Section 2305.2 to read:

§2305.2. Scope and Application.

(a) These Low-Voltage Electrical Safety Orders apply to all electrical installations and electrical equipment operating or intended to operate on systems of 600 volts, nominal, or less and to all work performed directly on or in proximity to such electrical installations, equipment or systems in all places of employment in the State of California as defined in Labor Code Section 6303.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Subchapter 5. Electrical Safety Orders
Group 2. High-Voltage Electrical Safety Orders
Article 36. Work Procedures and Operating Procedures

Amend Section 2940.2 to read:

§2940.2. Minimum Approach Distances.

(d) Working Position.

(1) When performing work with live line tools, minimum approach distances in accordance with subsection (a) shall be maintained. Conductor support tools, such as link sticks, strain carriers, and insulator cradles, shall be permitted to be used provided that the clear insulation is at least as long as the insulator string or the minimum approach distance specified in subsection (a).

Table 2940.2-1 AC Live-Line Work Minimum Approach Distance	
The minimum approach distance (MAD; in meters) shall conform to the following equations.	✕
For phase-to-phase system voltages of 601V to 5 kV: ¹	✕
$MAD = M + D$, where	
$D = 0.02$ m	D is the electrical component of the minimum approach distance
$M = 0.31$ m for voltages up to 750V and 0.61 m otherwise	M is the inadvertent movement factor
For phase-to-phase system voltages of 5.1 kV to 72.5 kV: ^{1,4}	✕
$MAD = M + AD$, where	
$M = 0.61$ m	M is the inadvertent movement factor
$A =$ the applicable value from 2940.2-7	A is the altitude correction factor
$D =$ the value from 2940.2-2 corresponding to the voltage and exposure or the value of the electrical component of	D is the electrical component of the minimum approach distance

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the minimum approach distance calculated using the method provided in Appendix A to this article					
For phase-to-phase system voltages of more than 72.5 kV, nominal: ^{2,4}	✕				
$MAD = 0.3048(C+a)V_{L-G}TA+M$, where					
$C =$	0.01 for phase-to-ground exposures that the employer can demonstrate consist only of air across the approach distance (gap), 0.01 for phase-to-phase exposures if the employer can demonstrate that no insulated tool spans the gap and the no large conductive object is in the gap, or 0.011 otherwise				
$V_{L-G} =$	phase-to-ground rms voltage, in kV				
$T =$	maximum anticipated per-unit transient overvoltage; for phase-to-ground exposures, T equals T_{L-G} , the maximum per-unit transient overvoltage, phase-to-ground, determined by the employer under subsection (a)(1)(A) of this section; for phase-to-phase exposures, T equals $1.35T_{L-G}+0.45$				
$A =$	altitude correction factor from 2940.2-7				
$M =$	0.31 m, the inadvertent movement factor				
$a =$	saturation factor, as follows:				
Phase-to-Ground Exposure ✕					
$V_{Peak} = T_{L-G}V_{L-G}\sqrt{2}$	635 kV or less	635.1 to 915 kV	915.1 to 1,050 kV	More than 1,050 kV	
Aa	0	$(V_{Peak}-635)/140,000$	$(V_{Peak}-645)/135,000$	$(V_{Peak}-675)/125,000$	
Phase-to-GroundPhase Exposure³ ✕					
$V_{Peak}=(1.35T_{L-G}+0.45)V_{L-g}\sqrt{2}$	630 kV or less	630.1 to 848 kV	848.1 to 1,131 kV	1,131.1 to 1,485 kV	More than 1,485 kV

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<u>Aa</u>	0	$(V_{Peak} - 630)/155,000$	$(V_{Peak} - 633.6)/152,207$	$(V_{Peak} - 628)/153,846$	$\frac{(V_{Peak} - 350.5)}{203,666}$
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² Employers may use the minimum approach distances in Table 2940.2-4 except that the employer may not use the minimum approach distances in Table 2940.2-4 for phase-to-phase exposures if an insulated tool spans the gap or if any large conductive object is in the gap. If the worksite is at an elevation of more than 900 meters (3,000 feet), see footnote 1 to Table 2940.2-4. Employers may use the minimum approach distance in ~~Table 14 through Table 21~~ Table 6 through Table 13 in Appendix A to this article, which calculated MAD for various values of T, provided the employer follows the notes to those tables.

~~⁴ Until October 1, 2018, employees may use the minimum approach distances in Table 6 in Appendix A of this Article.~~

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Subchapter 5. Electrical Safety Orders
Group 2. High-Voltage Electrical Safety Orders
Article 36. Work Procedures and Operating Procedures

Amend Appendix A to read:

Appendix A

WORKING ON EXPOSED ENERGIZED PARTS

V. Minimum Approach – Distance Tables

A. Legacy Tables. ~~Employers may use the minimum approach distances in Table 6 through 13 until October 1, 2018.~~

TABLE 6 – MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018				
Voltage range phase to phase (kV)	Phase to ground exposure		Phase to phase exposure	
	m	ft	m	ft
0.05 to 1.0	Avoid Contact		Avoid Contact	
1.1 to 15.0	0.64	2.10	0.66	2.20
15.1 to 36.0	0.72	2.30	0.77	2.60
36.1 to 46.0	0.77	2.60	0.85	2.80
46.1 to 72.5	0.90	3.00	1.05	3.50
72.6 to 121	0.95	3.20	1.29	4.30
138 to 145	1.09	3.60	1.50	4.90
161 to 169	1.22	4.00	1.71	5.70
230 to 242	1.59	5.30	2.27	7.50
345 to 362	2.59	8.50	3.80	12.50
500 to 550	3.42	11.30	5.50	18.10
765 to 800	4.53	14.90	7.91	26.00

Note: The clear live line tool distance must equal or exceed the values for the indicated voltage ranges.

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**TABLE 7 MINIMUM APPROACH DISTANCES UNTIL
OCTOBER 1, 2018,
72.6 TO 121.0 kV WITH OVERVOLTAGE FACTOR**

<u>T (p.u.)</u>	<u>Phase to ground exposure</u>		<u>Phase to phase exposure</u>	
	<u>m</u>	<u>ft</u>	<u>m</u>	<u>ft</u>
<u>2.0</u>	<u>0.74</u>	<u>2.42</u>	<u>1.09</u>	<u>3.58</u>
<u>2.1</u>	<u>0.76</u>	<u>2.50</u>	<u>1.09</u>	<u>3.58</u>
<u>2.2</u>	<u>0.79</u>	<u>2.58</u>	<u>1.12</u>	<u>3.67</u>
<u>2.3</u>	<u>0.81</u>	<u>2.67</u>	<u>1.14</u>	<u>3.75</u>
<u>2.4</u>	<u>0.84</u>	<u>2.75</u>	<u>1.17</u>	<u>3.83</u>
<u>2.5</u>	<u>0.84</u>	<u>2.75</u>	<u>1.19</u>	<u>3.92</u>
<u>2.6</u>	<u>0.86</u>	<u>2.83</u>	<u>1.22</u>	<u>4.00</u>
<u>2.7</u>	<u>0.89</u>	<u>2.92</u>	<u>1.24</u>	<u>4.08</u>
<u>2.8</u>	<u>0.91</u>	<u>3.00</u>	<u>1.24</u>	<u>4.08</u>
<u>2.9</u>	<u>0.94</u>	<u>3.08</u>	<u>1.27</u>	<u>4.17</u>
<u>3.0</u>	<u>0.97</u>	<u>3.17</u>	<u>1.30</u>	<u>4.25</u>

Note 1: The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)

Note 2: The distances specified in this table are the air, bare hand, and live-line tool distances.

**TABLE 8 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018,
121.1 TO 145.0 kV WITH OVERVOLTAGE FACTOR**

<u>T (p.u.)</u>	<u>Phase to ground exposure</u>		<u>Phase to phase exposure</u>	
	<u>m</u>	<u>ft</u>	<u>m</u>	<u>ft</u>
<u>2.0</u>	<u>0.84</u>	<u>2.75</u>	<u>1.24</u>	<u>4.08</u>
<u>2.1</u>	<u>0.86</u>	<u>2.83</u>	<u>1.27</u>	<u>4.17</u>
<u>2.2</u>	<u>0.89</u>	<u>2.92</u>	<u>1.30</u>	<u>4.25</u>
<u>2.3</u>	<u>0.91</u>	<u>3.00</u>	<u>1.32</u>	<u>4.33</u>
<u>2.4</u>	<u>0.94</u>	<u>3.08</u>	<u>1.35</u>	<u>4.42</u>
<u>2.5</u>	<u>0.97</u>	<u>3.17</u>	<u>1.37</u>	<u>4.50</u>
<u>2.6</u>	<u>0.99</u>	<u>3.25</u>	<u>1.40</u>	<u>4.58</u>
<u>2.7</u>	<u>1.02</u>	<u>3.33</u>	<u>1.42</u>	<u>4.67</u>
<u>2.8</u>	<u>1.04</u>	<u>3.42</u>	<u>1.45</u>	<u>4.75</u>

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2.9	1.07	3.50	1.47	4.83
3.0	1.09	3.58	1.50	4.92

Note 1: The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)

Note 2: The distances specified in this table are the air, bare-hand, and live-line tool distances.

**TABLE 9-MINIMUM APPROACH DISTANCES UNTIL
OCTOBER 1, 2018,
145.1 TO 169.0 kV WITH OVERVOLTAGE FACTOR**

T (p.u.)	Phase-to-ground exposure		Phase-to-phase exposure	
	m	ft	m	ft
2.0	0.91	3.00	1.42	4.67
2.1	0.97	3.17	1.45	4.75
2.2	0.99	3.25	1.47	4.83
2.3	1.02	3.33	1.50	4.92
2.4	1.04	3.42	1.52	5.00
2.5	1.07	3.50	1.57	5.17
2.6	1.12	3.67	1.60	5.25
2.7	1.14	3.75	1.63	5.33
2.8	1.17	3.83	1.65	5.42
2.9	1.19	3.92	1.68	5.50
3.0	1.22	4.00	1.73	5.67

Note 1: The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)

Note 2: The distances specified in this table are the air, bare-hand, and live-line tool distances.

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**TABLE 10 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018,
169.1 TO 242.0 kV WITH OVERVOLTAGE FACTOR**

T (p.u.)	Phase-to-ground exposure		Phase-to-ground exposure	
	m	ft	m	ft
2.0	1.17	3.83	1.85	6.08
2.1	1.22	4.00	1.91	6.25
2.2	1.24	4.08	1.93	6.33
2.3	1.30	4.25	1.98	6.50
2.4	1.35	4.42	2.01	6.58
2.5	1.37	4.50	2.06	6.75
2.6	1.42	4.67	2.11	6.92
2.7	1.47	4.83	2.13	7.00
2.8	1.50	4.92	2.18	7.17
2.9	1.55	5.08	2.24	7.33
3.0	1.60	5.25	2.29	7.50

Note 1: The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)

Note 2: The distances specified in this table are the air, bare hand, and live-line tool distances.

**TABLE 11 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018,
242.1 TO 362.0 kV WITH OVERVOLTAGE FACTOR**

T (p.u.)	Phase-to-ground exposure		Phase-to-ground exposure	
	m	ft	m	ft
2.0	1.60	5.25	2.62	8.58
2.1	1.65	5.42	2.69	8.83
2.2	1.75	5.75	2.79	9.17
2.3	1.85	6.08	2.90	9.50
2.4	1.93	6.33	3.02	9.92
2.5	2.03	6.67	3.15	10.33
2.6	2.16	7.08	3.28	10.75
2.7	2.26	7.42	3.40	11.17
2.8	2.36	7.75	3.53	11.58

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2.9	2.49	8.17	3.68	12.08
3.0	2.59	8.50	3.81	12.50

Note 1: The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)

Note 2: The distances specified in this table are the air, bare hand, and live line tool distances.

TABLE 12 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 362.1 TO 552.0 kV WITH OVERVOLTAGE FACTOR				
T (p.u.)	Phase-to-ground exposure		Phase-to-ground exposure	
	m	ft	m	ft
1.5	1.83	6.00	2.24	7.33
1.6	1.98	6.50	2.67	8.75
1.7	2.13	7.00	3.10	10.17
1.8	2.31	7.58	3.53	11.58
1.9	2.46	8.08	4.01	13.17
2.0	2.67	8.75	4.52	14.83
2.1	2.84	9.33	4.75	15.58
2.2	3.02	9.92	4.98	16.33
2.3	3.20	10.50	5.23	17.17
2.4	3.43	11.25	5.51	18.08

Note 1: The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)

Note 2: The distances specified in this table are the air, bare hand, and live line tool distances.

TABLE 13 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 552.1 TO 800.0 kV WITH OVERVOLTAGE FACTOR				
T (p.u.)	Phase-to-ground exposure		Phase-to-ground exposure	
	m	ft	m	ft
1.5	2.95	9.67	3.68	12.08
1.6	3.25	10.67	4.42	14.50
1.7	3.56	11.67	5.23	17.17

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1.8	3.86	12.67	6.07	19.92
1.9	4.19	13.75	6.99	22.92
2.0	4.55	14.92	7.92	26.00

Note 1: ~~The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)~~

Note 2: ~~The distances specified in this table are the air, bare hand, and live line tool distances.~~

~~B. Alternative minimum approach distances.~~ Employers may use the minimum approach distances in Table ~~146~~ through Table ~~2-13~~ provided that the employer follows the notes to those tables.

TABLE ~~146~~-AC MINIMUM APPROACH DISTANCES-72.6 TO 121.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-ground phase exposure	
	m	ft	m	ft
1.5	0.67	2.2	0.84	2.8
1.6	0.69	2.3	0.87	2.9
1.7	0.71	2.3	0.90	3.0
1.8	0.74	2.4	0.93	3.1
1.9	0.76	2.5	0.96	3.1
2.0	0.78	2.6	0.99	3.2
2.1	0.81	2.7	1.01	3.3
2.2	0.83	2.7	1.04	3.4

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2.3	0.85	2.8	1.07	3.5
2.4	0.88	2.9	1.10	3.6
2.5	0.90	3.0	1.13	3.7
2.6	0.92	3.0	1.16	3.8
2.7	0.95	3.1	1.19	3.9
2.8	0.97	3.2	1.22	4.0
2.9	0.99	3.2	1.24	4.1
3.0	1.02	3.3	1.27	4.2
3.1	1.04	3.4	1.30	4.3
3.2	1.06	3.5	1.33	4.4
3.3	1.09	3.6	1.36	4.5
3.4	1.11	3.6	1.39	4.6
3.5	1.13	3.7	1.42	4.7

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TABLE 157-AC MINIMUM APPROACH DISTANCES-121.1 TO 145.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-ground phase exposure	
	m	ft	m	ft
1.5	0.74	2.4	0.95	3.1
1.6	0.76	2.5	0.98	3.2
1.7	0.79	2.6	1.02	3.3
1.8	0.82	2.7	1.05	3.4
1.9	0.85	2.8	1.08	3.5
2.0	0.88	2.9	1.12	3.7
2.1	0.90	3.0	1.15	3.8
2.2	0.93	3.1	1.19	3.9
2.3	0.96	3.1	1.22	4.0
2.4	0.99	3.2	1.26	4.1
2.5	1.02	3.3	1.29	4.2
2.6	1.04	3.4	1.33	4.4
2.7	1.07	3.5	1.36	4.5

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2.8	1.10	3.6	1.39	4.6
2.9	1.13	3.7	1.43	4.7
3.0	1.16	3.8	1.46	4.8
3.1	1.19	3.9	1.50	4.9
3.2	1.21	4.0	1.53	5.0
3.3	1.24	4.1	1.57	5.2
3.4	1.27	4.2	1.60	5.2
3.5	1.30	4.3	1.64	5.4

TABLE 168-AC MINIMUM APPROACH DISTANCES-145.1 TO 169.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-ground/phase exposure	
	m	ft	m	ft
1.5	0.81	2.7	1.05	3.4
1.6	0.84	2.8	1.09	3.6
1.7	0.87	2.9	1.13	3.7
1.8	0.90	3.0	1.17	3.8
1.9	0.94	3.1	1.21	4.0
2.0	0.97	3.2	1.25	4.1

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2.1	1.00	3.3	1.29	4.2
2.2	1.03	3.4	1.33	4.4
2.3	1.07	3.5	1.37	4.5
2.4	1.10	3.6	1.41	4.6
2.5	1.13	3.7	1.45	4.8
2.6	1.17	3.8	1.49	4.9
2.7	1.20	3.9	1.53	5.0
2.8	1.23	4.0	1.57	5.2
2.9	1.26	4.1	1.61	5.3
3.0	1.30	4.3	1.65	5.4
3.1	1.33	4.4	1.70	5.6
3.2	1.36	4.5	1.76	5.8
3.3	1.39	4.6	1.82	6.0
3.4	1.43	4.7	1.88	6.2
3.5	1.46	4.8	1.94	6.4

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TABLE 179-AC MINIMUM APPROACH DISTANCES-169.1 TO 242.0 KV				
T (p.u.)	Phase-to-ground exposure		Phase-to-ground phase exposure	
	m	ft	m	ft
1.5	1.02	3.3	1.37	4.5
1.6	1.06	3.5	1.43	4.7
1.7	1.11	3.6	1.48	4.9
1.8	1.16	3.8	1.54	5.1
1.9	1.21	4.0	1.60	5.2
2.0	1.25	4.1	1.66	5.4
2.1	1.30	4.3	1.73	5.7
2.2	1.35	4.4	1.81	5.9
2.3	1.39	4.6	1.90	6.2
2.4	1.44	4.7	1.99	6.5
2.5	1.49	4.9	2.08	6.8
2.6	1.53	5.0	2.17	7.1
2.7	1.58	5.2	2.26	7.4
2.8	1.63	5.3	2.36	7.7

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2.9	1.67	5.5	2.45	8.0
3.0	1.72	5.6	2.55	8.4
3.1	1.77	5.8	2.65	8.7
3.2	1.81	5.9	2.76	9.1
3.3	1.88	6.2	2.86	9.4
3.4	1.95	6.4	2.97	9.7
3.5	2.01	6.6	3.08	10.1

TABLE 1810-AC MINIMUM APPROACH DISTANCES-242.1 TO 362.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-ground phase exposure	
	m	ft	m	ft
1.5	1.37	4.5	1.99	6.5
1.6	1.44	4.7	2.13	7.0
1.7	1.51	5.0	2.27	7.4
1.8	1.58	5.2	2.41	7.9
1.9	1.65	5.4	2.56	8.4
2.0	1.72	5.6	2.71	8.9
2.1	1.79	5.9	2.87	9.4

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2.2	1.87	6.1	3.03	9.9
2.3	1.97	6.5	3.20	10.5
2.4	2.08	6.8	3.37	11.1
2.5	2.19	7.2	3.55	11.6
2.6	2.29	7.5	3.73	12.2
2.7	2.41	7.9	3.91	12.8
2.8	2.52	8.3	4.10	13.5
2.9	2.64	8.7	4.29	14.1
3.0	2.76	9.1	4.49	14.7
3.1	2.88	9.4	4.69	15.4
3.2	3.01	9.9	4.90	16.1
3.3	3.14	10.3	5.11	16.8
3.4	3.27	10.7	5.32	17.5
3.5	3.41	11.2	5.52	18.1

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TABLE 1911-AC MINIMUM APPROACH DISTANCES-362.1 TO 420.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-ground phase exposure	
	m	ft	m	ft
1.5	1.53	5.0	2.40	7.9
1.6	1.62	5.3	2.58	8.5
1.7	1.70	5.6	2.75	9.0
1.8	1.78	5.8	2.94	9.6
1.9	1.88	6.2	3.13	10.3
2.0	1.99	6.5	3.33	10.9
2.1	2.12	7.0	3.53	11.6
2.2	2.24	7.3	3.74	12.3
2.3	2.37	7.8	3.95	13.0
2.4	2.50	8.2	4.17	13.7
2.5	2.64	8.7	4.40	14.4
2.6	2.78	9.1	4.63	15.2
2.7	2.93	9.6	4.87	16.0
2.8	3.07	10.1	5.11	16.8

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2.9	3.23	10.6	5.36	17.6
3.0	3.38	11.1	5.59	18.3
3.1	3.55	11.6	5.82	19.1
3.2	3.72	12.2	6.07	19.9
3.3	3.89	12.8	6.31	20.7
3.4	4.07	13.4	6.56	21.5
3.5	4.25	13.9	6.81	22.3

TABLE 2012-AC MINIMUM APPROACH DISTANCES-420.1 TO 550.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-ground phase exposure	
	m	ft	m	ft
1.5	1.95	6.4	3.46	11.4
1.6	2.11	6.9	3.73	12.2
1.7	2.28	7.5	4.02	13.2
1.8	2.45	8.0	4.31	14.1
1.9	2.62	8.6	4.61	15.1
2.0	2.81	9.2	4.92	16.1
2.1	3.00	9.8	5.25	17.2

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2.2	3.20	10.5	5.55	18.2
2.3	3.40	11.2	5.86	19.2
2.4	3.62	11.9	6.18	20.3
2.5	3.84	12.6	6.50	21.3
2.6	4.07	13.4	6.83	22.4
2.7	4.31	14.1	7.18	23.6
2.8	4.56	15.0	7.52	24.7
2.9	4.81	15.8	7.88	25.9
3.0	5.07	16.6	8.24	27.0

TABLE 2413-AC MINIMUM APPROACH DISTANCES-550.1 TO 800.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-ground phase exposure	
	m	ft	m	ft
1.5	3.16	10.4	5.97	19.6
1.6	3.46	11.4	6.43	21.1
1.7	3.78	12.4	6.92	22.7
1.8	4.12	13.5	7.42	24.3
1.9	4.47	14.7	7.93	26.0

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2.0	4.83	15.8	8.47	27.8
2.1	5.21	17.1	9.02	29.6
2.2	5.61	18.4	9.58	31.4
2.3	6.02	19.8	10.16	33.3
2.4	6.44	21.1	10.76	35.3
2.5	6.88	22.6	11.38	37.3

Notes to Table 146 through Table 213:

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.