



In collaboration with Minnesota Rural Electric Association


Established 2014

Our Safety Foundation

- **Basic Life-Saving Rules**
- **Expected Safe Work Practices**



Co-op
Logo goes here



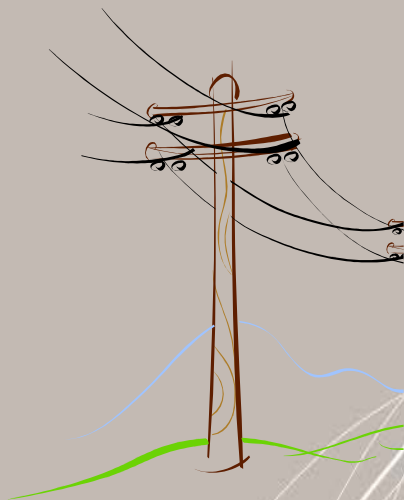
Understanding our daily actions are firmly grounded in our rules, and guided by our expected safe work practices, for which therefore, sets the foundation of our safety culture.



In collaboration with Minnesota Rural Electric Association

Established 2014

Our Basic Life Saving Rules





A New Approach for Safety Rules

MREA Safety and Loss Control Steering Committee

June 2014

This document addresses questions regarding a new approach to establishing safety rules for cooperatives and associated partners. For specific questions, please feel free to contact a member of the MREA Safety and Loss Control Steering Committee, or to contact Lidia Jacobson, Director of Safety and Loss Control at 218-639-5369 or Lidia@mrea.org.

What's wrong with the current safety manual?

- It hasn't been officially updated since 2001.
- Some statements in the manual are too general, in nature.
- Asking an employee to "sign off" on 79 pages of rules is overwhelming for the employee.
- We also ask employees to sign off on rules they don't know – an office employee signing the manual that includes pole top rescue actions?!
- Can we truly say we hold our employees accountable to ALL of the statements? And, if we don't, then are we sending the message that it is "OK" to NOT follow all of the rules.
- It makes it difficult to enforce the rules and/or apply discipline, as well.
For example - *Ladders shall be visually inspected before each use.* So, what do you do if you see an employee grab a ladder and climb on it without inspecting it? Do they get a letter in their file? Probably not. So, why would another employee receive a letter in their file if they violated a different rule?

What can we do?

- Establish a set of basic life-saving rules that are critical to safe practices. This set will carry the "true" weight of a "rule." Employees will abide by these rules and risk consequences for infractions.
- Move the rest of the current rules into a new format called Expected Safe Work Practices. Hold employees accountable by expecting them to perform their job according to these practices. Yet, also acknowledge that some jobs may require a deviation from the practice. We will allow employees to deviate from the expected safe work practice through a *conscious and calculated evaluation of the risk* associated with the deviation.

I'm not sure if I get it?

Here is an example we can all relate to - our state driving laws. So, to explain this better, let's take a look at how we follow our state driving rules.

- Did you go 55 mph today when driving to work? Or, did you go 57, 59, etc.? Most likely, a large percentage of us did not drive exactly 55 mph.
- So, then, let's ask this question. Did you blow through any stop signs today? Most likely, NOT ONE of us did that! In fact, we would not ever think of just driving through all the stop signs on our way to work.

So, why do we feel we can "break" the speed limit rule, but we wouldn't ever think about breaking the stop sign rule?

Let's go back to our rules

Most likely employees are following the majority of the rules all the time.

- Yet, we know there are some rules where employees have determined they don't need to be followed 100% of the time – these are your speed zone signs.
- We also know there are rules that are inherent to the basic safety actions and no employee would EVER think to violate one of those – these are your stop signs.

So, you see you most likely already have this structure in place – rules the employees follow all the time and rules where deviations naturally occur – your stop signs and your speed zones – your rules and your work practices.

So, how do implement this new approach?

For the RULES

- Establish your own set of basic life-saving rules using the list that has been generated, adding or deleting to it. The point will be to place emphasize on those rules you feel are critical, important and/or life-saving.
- Adopt them with a “phase-in” period, say 3-6 months, so employees can learn to embrace and follow these rules.
- At the end of the phase-in period, have employees sign an acknowledgement sheet.

For the EXPECTED SAFE WORK PRACTICES

- Obtain a master set of current safe work practices from MREA and over the course of 6 months, have groups, committees, individuals, etc. review them one at a time.
- For example, one safe work practice could be reviewed each Monday and discussed.
- Track the ones reviewed by recording on a log and/or changing the date on the reviewed document.

Basic Life-Saving Rules

February 2014

Cooperative:

- LSR-01 A job or task shall not be conducted unless the employee has been trained, or has the skills and experience, to safely perform.
- LSR-02 Prior to the start of a job, or if conditions change, a job briefing will be conducted by the person in charge; this job briefing will be documented.
- LSR-03 Personal protective equipment (PPE) is vital to safety; if an injury occurs as a result of failure to wear the proper PPE, this action will be considered an unsafe act.
- LSR-04 An employee shall wear the appropriate and designated clothing systems and Personal Protective Equipment (PPE) based on the calculated Hazard Risk Categories for arc flash protection.
- LSR-05 An employee shall not operate damaged, broken or defective equipment, tools and/or vehicles (if the vehicle has been deemed unworthy of road travel).
- LSR-06 An employee shall use tools and equipment only for the purpose to which it was designed; an employee shall not modify a tool or piece of equipment from the original design without proper approval from the manufacturer.
- LSR-07 Manufacturer's safety interlocks shall not be tampered with or altered in any way that renders the safety function inoperable.
- LSR-08 An employee shall not operate a vehicle or equipment or tool without proper authority and with the proper knowledge, experience or training.
- LSR-09 Every employee is required to conduct a walk-around inspection of the vehicle prior to operation.
- LSR-10 When backing up a vehicle, and two or more employees are present in the vehicle, one person will be designated the spotter and carryout the expected duties.
- LSR-11 An employee shall not use a cell phone while operating any vehicle unless a hands free/call talk system is available and used.
- LSR-12 No employee shall use a cell phone while performing hot work.
- LSR-13 All electrical equipment shall be considered energized at full line potential unless isolated, tested for potential and grounded. Failure to test for potential will be considered an unsafe act.
- LSR-14 A qualified employee shall maintain positive control of energized lines while the lines are being moved.

Cooperative:

- LSR-15 Before lifting a bucket out of its stowed position, the employee occupying the bucket shall be responsible for ensuring all tasks required to place an aerial device in operating position have been completed.
- LSR-16 No employee shall occupy an aerial device while the vehicle is in motion unless the bucket is stowed and slowly traveling a short distance.
- LSR-17 No employee shall ride on the tines of a forklift unless the person is in an approved lift.
- LSR-18 An employee shall conduct a visual inspection of trenches and excavations for signs of possible cave-ins, failure of protective systems, or other hazardous conditions.
- LSR-19 No employee shall stand beneath suspended loads.
- LSR-20 An employee shall not use controlled substances and/or alcohol while on duty, shall not report for duty while under the influence of controlled substances and/or alcohol, and shall not be relieved by another employee known to be under the influence of controlled substances and/or alcohol.
- LSR-21 An employee shall report injuries, near-misses, property damage and/or vehicle accidents, without delay and as soon as practical to their supervisor.
- LSR-22 An employee who promptly reports a near-miss, including those in which a violation of the Life-Saving Rules occurred, will not receive any disciplinary action as long as the employee did not willfully disregard the Life-Saving Rules.
- LSR-23 The wearing of electrical rubber gloves is a primary form of protection from electricity. Rubber gloves shall be worn when working on lines or equipment that are normally energized at 50 volts or more. Exceptions may be obtained only after making such request to person in charge prior to any action.
- LSR-24 The willful condoning the violation of any of the Life-Saving Rules will, in itself, be a rule violation.

*We acknowledge the foundation of our safety culture
is grounded firmly in our rules and guided by our expected safe work practices.*

This document is a collaboration between Minnesota Rural Electric Association (MREA) and our cooperative. This document has been prepared by Minnesota Rural Electric Association to assist the cooperative in developing their safety practices. MREA does not represent itself as having expertise with regard to the matters discussed herein, and furnish this document solely for use by the cooperative, as one resource among many to be chosen when working with employees for safety practices. The information contained herein is not intended to be complete in all aspects but is intended to be a guide for the development of your specific safety practices.

Those responsible for the development of this document cannot and do not assume any responsibility or liability for any compliance with applicable legal requirements regarding the development of your safety practices and procedures or the safety and training of anyone's employees and expressly disclaims any such responsibility and liability.

Figure 1 – Maintaining Minimum Approach Distance (From OSHA standards)

[illegible]

Table B – Opening URD Enclosures

Legend: **Yes** – indicates the item is required and must be worn.

When conducting this activity and these conditions exist	Removing Lock	Removing Penta Bolt (attached cover)	Removing Penta Bolt (detached cover)	Opening Enclosure
Visual inspection indicates no damage			rubber gloves required	rubber gloves required
Visual inspection DOES indicate damage			rubber gloves required	rubber gloves required
No power problems reported	rubber gloves required	rubber gloves required	rubber gloves required	rubber gloves required
YES power problems reported or indicated	rubber gloves required	rubber gloves required	rubber gloves required	rubber gloves required

Table C – Reporting Danger

	Co-op's System		Member's System	
	Immediate Danger to Life or Property	Potential Hazard or Code Violation	Immediate Danger to Life or Property	Potential Hazard or Code Violation
Any Co-op Employee	<ul style="list-style-type: none"> Secure area Contact Dispatch Remain on scene til relieved or scene is safe 	<ul style="list-style-type: none"> Report the hazard or code violation to their service coordinator 	<ul style="list-style-type: none"> Secure area Contact the member Contact Dispatch Remain on scene til relieved or scene is safe 	<ul style="list-style-type: none"> Report the hazard or code violation to their service coordinator
Co-op Contractor or Designee	<ul style="list-style-type: none"> Contact Dispatch to report danger If possible, secure the scene Remain on scene til relieved or scene is safe 	<ul style="list-style-type: none"> Report the hazard or code violation to the co-op contact The co-op contact will generate a work order or other tracking document. 	<ul style="list-style-type: none"> Contact Dispatch to report danger If possible, secure the scene Remain on scene til relieved or scene is safe 	<ul style="list-style-type: none"> Report the hazard or code violation to the co-op contact The co-op contact will generate report.
Dispatch/System Control	<ul style="list-style-type: none"> Contact appropriate personnel to correct the situation. Create work order or other tracking document Assign a followup task to the Service Coordinator. 		<ul style="list-style-type: none"> Contact appropriate personnel to correct the situation. Create a work order or other tracking document Assign a followup task to the Service Coordinator. 	
Service Coordinator	<ul style="list-style-type: none"> Complete the service order. 	<ul style="list-style-type: none"> Create work order or other tracking document. Assign task to the approp supervisor. 	<ul style="list-style-type: none"> Complete the service order. 	<ul style="list-style-type: none"> Create work order or other tracking document. Assign task to the approp supervisor.

Table D – Minimum Approach Distance

20672

Federal Register / Vol. 79, No. 70 / Friday, April 11, 2014 / Rules and Regulations

F. *Disabling automatic reclosing.* There are two reasons to disable the automatic-reclosing feature of circuit-interrupting devices while employees are performing live-line work:

- To prevent reenergization of a circuit faulted during the work, which could create a hazard or result in more serious injuries or

damage than the injuries or damage produced by the original fault;

- To prevent any transient overvoltage caused by the switching surge that would result if the circuit were reenergized.

However, due to system stability considerations, it may not always be feasible to disable the automatic-reclosing feature.

V. Minimum Approach-Distance Tables

A. *Legacy tables.* Employers may use the minimum approach distances in Table 6 through Table 13 until March 31, 2015.

TABLE 6—MINIMUM APPROACH DISTANCES UNTIL MARCH 31, 2015

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	2.10	0.64	2.20	0.66
15.1 to 36.0	2.30	0.72	2.60	0.77
36.1 to 46.0	2.60	0.77	2.80	0.85
46.1 to 72.5	3.00	0.90	3.50	1.05
72.6 to 121	3.20	0.95	4.30	1.29
138 to 145	3.60	1.09	4.90	1.50
161 to 169	4.00	1.22	5.70	1.71
230 to 242	5.30	1.59	7.50	2.27
345 to 362	8.50	2.59	12.50	3.80
500 to 550	11.30	3.42	18.10	5.50
765 to 800	14.90	4.53	26.00	7.91

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

TABLE 7—MINIMUM APPROACH DISTANCES UNTIL MARCH 31, 2015—72.6 TO 121.0 kV WITH OVERVOLTAGE FACTOR

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

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 MARCH 31, 2015—121.1 TO 145.0 kV WITH OVERVOLTAGE FACTOR

T (p.u.)	Phase-to-ground exposure		Phase-to-phase exposure	
	m	ft	m	ft
2.0	0.84	2.75	1.24	4.08
2.1	0.86	2.83	1.27	4.17
2.2	0.89	2.92	1.30	4.25
2.3	0.91	3.00	1.32	4.33
2.4	0.94	3.08	1.35	4.42
2.5	0.97	3.17	1.37	4.50
2.6	0.99	3.25	1.40	4.58
2.7	1.02	3.33	1.42	4.67
2.8	1.04	3.42	1.45	4.75
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 MARCH 31, 2015—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.

TABLE 10—MINIMUM APPROACH DISTANCES UNTIL MARCH 31, 2015—169.1 TO 242.0 KV WITH OVERVOLTAGE FACTOR

T (p.u.)	Phase-to-ground exposure		Phase-to-phase 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 MARCH 31, 2015—242.1 TO 362.0 KV WITH OVERVOLTAGE FACTOR

T (p.u.)	Phase-to-ground exposure		Phase-to-phase 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
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 MARCH 31, 2015—362.1 TO 552.0 KV WITH OVERVOLTAGE FACTOR

T (p.u.)	Phase-to-ground exposure		Phase-to-phase 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

TABLE 12—MINIMUM APPROACH DISTANCES UNTIL MARCH 31, 2015—362.1 TO 552.0 KV WITH OVERVOLTAGE FACTOR—Continued

T (p.u.)	Phase-to-ground exposure		Phase-to-phase exposure	
	m	ft	m	ft
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 MARCH 31, 2015—552.1 TO 800.0 KV WITH OVERVOLTAGE FACTOR

T (p.u.)	Phase-to-ground exposure		Phase-to-phase 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
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 14 through Table

21 provided that the employer follows the notes to those tables.

TABLE 14—AC MINIMUM APPROACH DISTANCES—72.6 TO 121.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-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
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

TABLE 15—AC MINIMUM APPROACH DISTANCES—121.1 TO 145.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-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

TABLE 15—AC MINIMUM APPROACH DISTANCES—121.1 TO 145.0 kV—Continued

T (p.u.)	Phase-to-ground exposure		Phase-to-phase exposure	
	m	ft	m	ft
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
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 16—AC MINIMUM APPROACH DISTANCES—145.1 TO 169.0 kV

T (p.u.)	Phase-to-ground exposure		Phase-to-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
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

TABLE 17—AC MINIMUM APPROACH DISTANCES—169.1 TO 242.0 kV

T (p.u.)	Phase-to-ground exposure		Phase-to-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
2.9	1.67	5.5	2.45	8.0
3.0	1.72	5.6	2.55	8.4

TABLE 17—AC MINIMUM APPROACH DISTANCES—169.1 TO 242.0 kV—Continued

T (p.u.)	Phase-to-ground exposure		Phase-to-phase exposure	
	m	ft	m	ft
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 18—AC MINIMUM APPROACH DISTANCES—242.1 TO 362.0 kV

T (p.u.)	Phase-to-ground exposure		Phase-to-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
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

TABLE 19—AC MINIMUM APPROACH DISTANCES—362.1 TO 420.0 kV

T (p.u.)	Phase-to-ground exposure		Phase-to-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
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 20—AC MINIMUM APPROACH DISTANCES—420.1 TO 550.0 kV

T (p.u.)	Phase-to-ground exposure		Phase-to-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
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

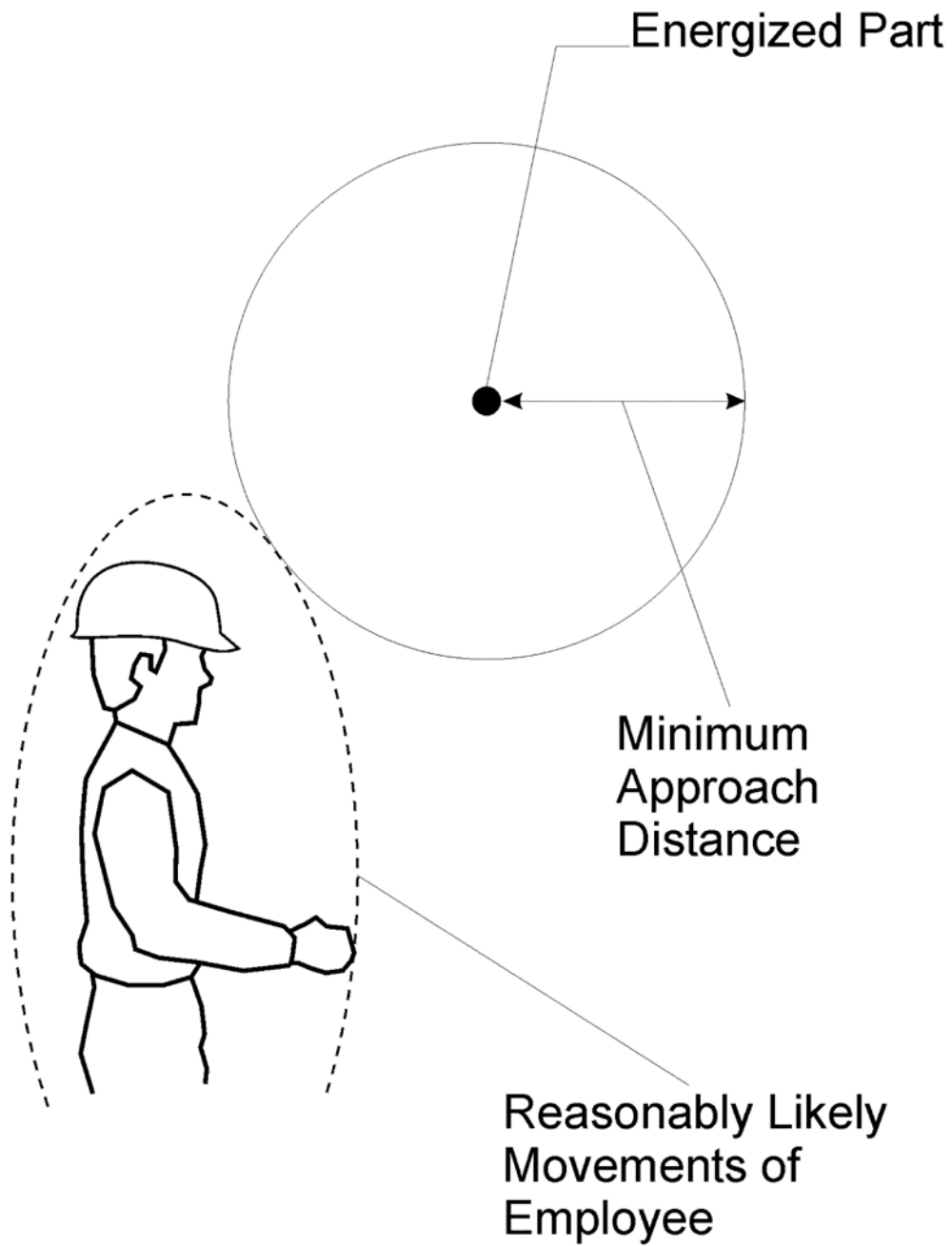
TABLE 21—AC MINIMUM APPROACH DISTANCES—550.1 TO 800.0 kV

T (p.u.)	Phase-to-ground exposure		Phase-to-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
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 14 through Table 21:

1. The employer must determine the maximum anticipated per-unit transient overvoltage, phase-to-ground, through an engineering analysis, as required by § 1910.269(l)(3)(ii), or assume a maximum anticipated per-unit transient overvoltage, phase-to-ground, in accordance with Table R-9.
2. For phase-to-phase exposures, the employer must demonstrate that no insulated tool spans the gap and that no large conductive object is in the gap.
3. The worksite must be at an elevation of 900 meters (3,000 feet) or less above sea level.

Figure 1 – Maintaining Minimum Approach Distance

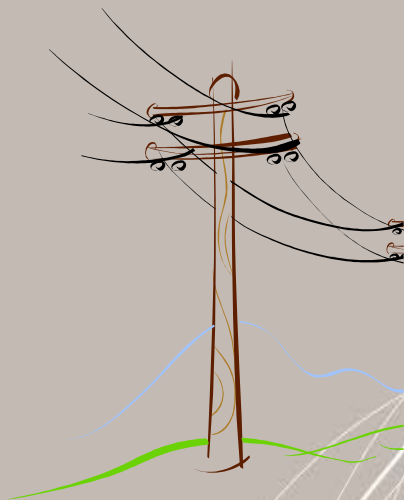




In collaboration with Minnesota Rural Electric Association

Established 2014

Our Expected Safe Work Practices



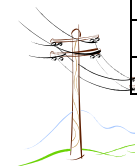


Expected Safe Work Practices

This document has been prepared for our cooperative in collaboration with Minnesota Rural Electric Association.

Cooperative:

EXPECTED SAFE WORK PRACTICES	Date	Notes/Comments
Building Section		
• Inspections		
Communication Section		
• Cell Phones		
• Radio		
Employee Designations Section		
• Apprenticeship		
• Designations for Employees		Updated 9/8/14
• Responsibilities		
Field Activity Section		
• Elevated Structures – Working On		
• Grounding & Barricading		
• Horizontal Directional Drilling		
• Job Briefing		
• Meters – Installing and Servicing		
• Overhead Distribution – Working On		
• Poles - Climbing/Working		
• Poles - Handling/Setting		
• Roofs - Accessing		
• Substation - Working In/Inspecting		
• Switching and Tagging		
• Tree Trimming and Felling		
• Trenching and Excavating		
• Underground Distrib.-Working On		
Field Equipment Section		
• Capacitors		
• Circuit Breaker		
• Regulators		Need to write
• Transformers		
• “Tree Jib”		Need to write

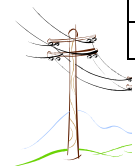




Expected Safe Work Practices

Cooperative:

EXPECTED SAFE WORK PRACTICES	Date	Notes/Comments
Field Tools & Materials Section		
• Cover-Up		
• Live-Line Tools		
• Protective Grounds - Application		
Field Zones Section		
• Arc Flash Zones		Need to verify
• Test Areas		
• Work Area Protection		
Fit for Duty Section		
• Drug & Alcohol		Need to write
• Medications		
• Return to Work		
Incidents Section		
• General Actions for Response		
• Injury		
• Near-Miss		
• Property Damage		
• Vehicle Accident		
Materials of Concern Section		
• Asbestos		
• Batteries		
• Blood and Bodily Fluids (aka Exposure Control Plan)		
• Chemicals		
• Flammable & Combustible Products		
• Leaking Oil Containers		
• Lighting (fluorescent)		
• Paints and Solvents		
Non-Road Vehicles Section		
• All-Terrain Vehicles (ATVs)		
• Bombardier		
• Forklifts		
• Skid-Steer Loader		Need to write

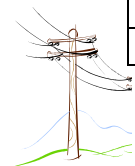




Expected Safe Work Practices

Cooperative:

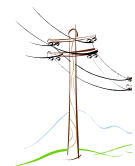
EXPECTED SAFE WORK PRACTICES	Date	Notes/Comments
Office Environment Section		
• Candles and Other Open Flames		
• Ergonomics		
• Front Desk Actions		
• Laptop Computers		
PPE & Clothing Section		
• Arc-Rated Clothing		
• Body Protection – Traffic Vests		
• Climbing Ensemble		
• Ear Protection		
• Eyes/Face Protection		
• Fall Protection Equipment		Need to write
• Foot Protection		
• General Clothing		
• General PPE Safety		
• Hand Protection		
• Head Protection		
• Respiratory Protection		
Programs and Leadership Section		
• AWAIR Program		
• Incentives		Need to write
• Safety Committee		
• Safety Engagement		Need to write
• Wellness Committee		
Public Safety Section		
• Hazard Recognition		
• Treated Poles for Public		
Safety Equipment Section		
• Automated External Defibrillators (AEDs)		
• Eye Wash and Showers		
• Fire Extinguishers		
• First Aid Kits		



Expected Safe Work Practices

Cooperative:

EXPECTED SAFE WORK PRACTICES	Date	Notes/Comments
Security Section		
• Safety in the Building		Need to write
• Safety in the Field		Need to write
• Two-man Crews		Need to write
• Working Alone		Need to write
Universal Actions Section		
• Cold/Heat Stress		
• Dog Attacks		
• Lockout-Tagout of Equipment		
• Mechanic's Work Tasks		
• Moving and Lifting Items		
• Welding		
Universal Equipment Section		
• Chain Saws		
• Compressed Gas Cylinders		
• Extension Cords		
• Grinders		
• Ladders		
• Lifting and Pulling Equipment		
• Portable Gas Containers		
• Portable Heaters		
• Tools - Hand and Power		
Vehicle Section		
• Accident . . . see Incidents		
• Aerial Lifts		
• Aerial Lifts in Winter		
• Backing Up		
• Commercial Motor Vehicles		
• Driving		
• Load Securement		
• Trailers		
• Vehicle Inspections		





OUR SAFETY FOUNDATION

Basic Life-Saving Rules & Expected Safe Work Practices

Established 2014



Cooperative