



Presenter's Notes

The slide content is framed by yellow and black diagonal hazard stripes at the top and bottom. The background is a light yellow color. At the top left is the Rochester Public Utilities logo, which consists of a blue stylized 'R' icon followed by the text 'ROCHESTER PUBLIC UTILITIES' in blue and 'WE PLEDGE, WE DELIVER™' in yellow below it. In the center is the 'worker beware' logo. At the bottom, a black horizontal bar contains the text 'Work Safely Around Electric Lines' in yellow and 'Click on each slide to advance.' in white. A small copyright notice is visible at the very bottom of the slide.

**ROCHESTER
PUBLIC UTILITIES**
WE PLEDGE, WE DELIVER™

**worker
beware®**

Work Safely Around Electric Lines
Click on each slide to advance.

#53020 © 2023 Culver Media, LLC 800-428-5837

Before darkening the room, offer a welcome and overview. Begin by introducing the program and its topic:

Today's training session focuses on working safely around electric power lines. By following the procedures we'll cover here today, you can keep yourself and your coworkers safe and on the job. On the other hand, if you cut corners where power lines are concerned, you put yourself and your coworkers at risk of serious injury and even death. Please pay careful attention, and ask questions if you don't understand.

Darken the room.

Click for the next slide. (Throughout this presentation you will need to click to bring up new slides.)

Respect the Power of Electricity

- **When you arrive at a job site, always identify power lines, poles, guy wires, and pad-mounted equipment**, and point them out to coworkers.
- **Look for overhead lines** hidden by trees or buildings.
- **Consider *all* overhead lines to be energized and potentially dangerous**, including the service drops that run from utility poles to buildings.
- **Check the site daily** because conditions may change.
- **Review your emergency plan** before work begins so everyone knows what to do in case of power line contact.



Respect the power of electricity and follow some simple best practices before starting work.

- When you arrive at a job site, always identify power lines, poles, guy wires, and pad-mounted equipment, and point them out to coworkers. Review proper safety procedures before beginning work.
- Look for overhead lines hidden by trees or buildings.
- Consider all overhead lines to be energized and potentially dangerous, including the service drops that run from utility poles to buildings. These wires may look insulated, but any coating you see may be designed to protect the lines from weather, not to protect you from shock. Contact can still be deadly, so keep your distance.
- Check the site daily because conditions may change. Always survey the site before beginning the day's work.
- Review your emergency plan before work begins so everyone knows what to do in case of power line contact.

**For Tools and Equipment Other than Cranes and Derricks
Used in Construction, Observe the 10-Foot Rule**

- OSHA requires that you keep yourself and your equipment (other than cranes or derricks used in construction) **AT LEAST 10 feet** away from overhead power lines carrying up to 50 kV.
- Higher-voltage lines require greater clearances. Contact the local electric utility for clearance information.
- If your job requires you to work closer than 10 feet from power lines, call the local electric utility well in advance to make safety arrangements.
- Electrical safety distances given here are minimums.
- Always use the maximum possible clearance, and clearly mark boundaries to keep workers and equipment the required distance away.

For tools and equipment other than cranes and derricks used in construction, always observe the 10-foot rule. (Cranes and derricks on construction sites may require greater clearances, which we will discuss on the next slide.)

- OSHA requires that you keep yourself and your equipment at least 10 feet away from overhead power lines carrying up to 50 kV. This applies to all personnel, tools, materials, and equipment other than cranes or derricks used in construction. Be aware that wind can move equipment so build in some extra distance in case of an unexpected shift. A good rule of thumb is to maintain a buffer zone of the minimum required clearance plus 1.5 times the length of your tools or material.
- Higher-voltage lines require greater clearances. Contact the local electric utility for clearance information. Remember that your best practice is always to stay as far away as possible from power lines.
- If your job requires you to work closer than 10 feet from power lines, call the local electric utility well in advance to make safety arrangements. Cutting corners and failing to call could have life-threatening and livelihood-threatening consequences.
- Electrical safety distances given here are minimums.
- Always use the maximum possible clearance, and clearly mark boundaries with tape, signs, or barricades to keep workers and equipment away.

Cranes and Derricks in Construction

- **Keep the crane boom and load at least 20 feet away** from lines up to 350 kV and **50 feet away** from lines greater than 350 kV but at or less than 1000 kV. Always assume the line is energized, and allow nothing closer unless you have confirmed with the utility owner/operator that the line has been de-energized.
- **As voltage increases, clearance distances also increase.** Contact the local electric utility and consult the OSHA regulations at [osha.com](https://www.osha.com) for specific clearance requirements and encroachment prevention precautions.
 - Once you have established the required clearance, mark a safety boundary with tape, signs, or barricades.
- **Whenever cranes or derricks are used on your job site,** contact the local electric utility well in advance. They will confirm safety clearances and make any necessary facility protection arrangements.

Cranes and derricks used in construction require different clearances than other equipment.

- You must keep the crane boom and load at least 20 feet away from lines up to 350 kV and 50 feet away from lines greater than 350 kV but at or less than 1000 kV. Always assume the line is energized, and allow nothing closer unless you have confirmed with the utility owner/operator that the line has been de-energized.
- As voltage increases, clearance distances also increase. Contact the local electric utility and consult the OSHA regulations at [osha.com](https://www.osha.com) for specific clearance requirements and encroachment prevention precautions.
 - Once you have established the required clearance, mark a safety boundary with tape, signs, or barricades.
- Whenever cranes or derricks are used on your job site, contact the local electric utility well in advance. They will send a representative to your job site to confirm voltages and safety clearances and to make any necessary facility protection arrangements.

Use a Dedicated Spotter



- **Always use a dedicated, qualified spotter on the ground** to safely judge distances between heavy equipment and power lines.
- **Crane and derrick operators:** You must maintain continuous contact with a dedicated spotter to comply with line clearance requirements.
- **The spotter's only responsibility should be power line safety.** Don't divide the spotter's attention with other tasks.

Use a dedicated spotter when working with hoisting equipment around overhead lines.

- Always use a dedicated, qualified spotter on the ground to safely judge distances between heavy equipment and power lines. From the ground, he or she will have the clearest vantage point and best be able to judge distances correctly.
- Crane and derrick operators must maintain continuous contact with a dedicated spotter to comply with electric line clearance requirements.
- The spotter's only responsibility should be power line safety. Don't divide the spotter's attention with other tasks. To be effective, the spotter must make spotting and clear communication with the equipment operator the top priorities.

If Your Equipment Contacts a Power Line

- **Both the equipment and the line should be considered energized.**
- **Move the equipment away from the line, if you can do so safely.**
- **Stay on the equipment.**
- **Warn others to stay far away.**
- **Have someone call 911 and the local electric utility immediately.**
- **If fire or other imminent danger forces you off:**
 - Do NOT touch the equipment and the ground at the same time.
 - Jump clear, and land with your feet together.
 - Shuffle away with small steps, keeping both feet together and on the ground at all times.
 - Do not return to the equipment.
- **Never touch fallen power lines or anything they may be contacting.**



If your equipment contacts a power line, it's critical to follow proper safety procedures.

- Both the equipment and the line should be considered energized.
- Move the equipment away from the line, if you can do so safely.
- Stay on the equipment until utility workers say it's safe to get off. Anyone on the equipment is safe from shock as long as he or she stays put.
- Warn others to stay far away. Anyone who touches the equipment or even the ground nearby may be injured or killed.
- Have someone call 911 and the local electric utility immediately. Their personnel will respond, switch off the power, and tell you when it is safe to leave or move the equipment. Wait for their instructions.
- If fire or other imminent danger forces you off the equipment, take these steps:
 - Do NOT touch the equipment and the ground at the same time.
 - Jump clear, and land with your feet together.
 - Shuffle away with small steps, keeping both feet together and on the ground at all times.
 - Do not return to the equipment.
- Never touch fallen power lines or anything they may be contacting. Stay far away, and call 911 and the local electric utility to report the emergency.

Notify 811 Before You Dig



**Know what's below.
Call before you dig.**

- **Dial 811 or enter an online locate request well in advance of digging or moving earth in any way.** This free service will arrange to mark underground utility lines so you can dig safely.
- **Before you call, pre-mark your proposed excavation area** with white paint, flags, and/or stakes so locators can easily identify and mark affected utilities.
- **If you don't notify 811, you risk hitting an underground line.** You, your coworkers, or others could be hurt or killed. You may be held liable for damages and repairs.

Underground power lines can pose an unseen but very real danger. By law, and for your safety, you must notify the 811 service before you dig.

- Dial 811 or enter an online locate request well in advance of digging or moving earth in any way. This free service will arrange the marking of underground power lines and other buried utilities in your dig area, so you can work a safe distance away from them. Be sure to leave adequate time in your job schedule. The service is free, but the costs of not calling can be very high. Building in a few extra days for the job costs less in the long run than spending months or years recovering physically and financially from a power line incident. And remember, it's the law.
- Before you call, pre-mark your proposed excavation area with white paint, flags, and/or stakes so locators can easily identify and mark affected utilities.
- If you don't notify 811, you risk hitting an underground line. You, your coworkers, or others could be hurt or killed. You may be held liable for any resulting damages or repair costs.

Wait the Required Time

- **This wait time varies from state to state** and does not include weekends and legal holidays.
- **Do not dig until all utility owners have marked their lines or advised you that the area is clear to dig.**
- **If you wait the required time and the locate is not completed, do not dig.** Notify 811 to place another locate request.



Wait your state's required time for buried utility lines to be marked before you start any digging project, even a small job:

- This wait time varies from state to state and does not include weekends and legal holidays.
- Do not dig until all utility owners have marked their lines or advised you that the area is clear to dig.
- If you wait the required time and the locate is not completed, do not dig. Notify 811 to place another locate request.

Conduct a Visual Site Survey



- **Do not rely exclusively on the locate marks.** Look for visual indicators of underground facilities that have not been marked.
- **Check with property owners about any private underground lines** that would not have been marked by the locator.
- **Also check for signs of something buried after the locate was completed,** such as a fresh trench.
 - If you find a newly installed or unmarked facility, call 811.


Conduct a visual site survey before beginning any digging.









- Do not rely exclusively on the locate marks. Look for visual indicators of underground facilities that have not been marked, such as meters and pad-mounted transformers. Use your common sense and industry knowledge.
- Check with property owners about any private underground lines that would not have been marked by the locator because they do not belong to a utility.
- Also check for signs of something buried after the locate was completed, such as a fresh trench.
 - If you find a newly installed or unmarked facility, call 811.

Respect the Marks, and Dig with Care

- **Not all utilities are 811 members.** You are responsible for notifying non-member utilities about your project. Check with 811 for more information.
- **Respect the locator marks.** Maintain utility indicator marks, and follow them when digging.
- **Dig with care.** Exercise extreme caution when digging near buried utilities, and have a spotter present to observe the excavation whenever heavy equipment is used.
- **Know the underground utility color code:**

AMERICAN PUBLIC WORKS ASSOCIATION COLOR CODE FOR LOCATOR MARKS



	Electric Power Lines
	Gas, Oil, or Steam Pipelines
	Communications Lines, Cables, or Conduit
	Potable Water
	Reclaimed Water, Irrigation, and Slurry Lines
	Sewer and Drain Lines
	Temporary Survey Markings
	Proposed Excavation

After you contact 811, the underground utility locator service will arrange for each member utility to send someone out to your dig site to mark the underground lines.

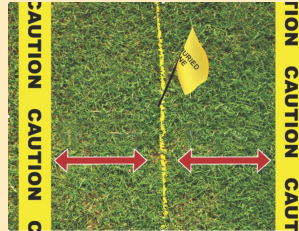
- Not all utilities are 811 members and may not be notified. You are responsible for notifying non-member utilities. Check with 811 for more information.
- Respect the locator marks. Maintain utility indicator marks for the duration of the job, and follow them when digging. If lines become indistinguishable, notify 811 to refresh them—do NOT use paint to refresh fading marks yourself.
- Dig with care. Exercise extreme caution when digging near buried utilities, and have a spotter present to observe the excavation whenever heavy equipment is used.
- Know the underground utility color code. Utilities use these colors to mark their lines. Learn the code to stay safe.

Point to the chart as you speak:

- Red: Electric power lines
- Yellow: Gas, oil, or steam pipelines
- Orange: Communications lines, cables, or conduit
- Blue: Potable water
- Purple: Reclaimed water, irrigation, and slurry lines
- Green: Sewer and drain lines
- Pink: Temporary survey markings
- White: Proposed excavation

Respect the Tolerance Zone

- **Adhere to state laws for digging within the "tolerance zone."** This safety area spans the width of a marked utility plus a state-mandated distance from each indicated outside edge.
- **Hand dig prudently in this zone** until you have determined the exact location of the lines.
- **Once visual identification has been achieved,** you may use mechanized digging equipment. Use a spotter to observe the excavation and help prevent damage when heavy equipment is used near power lines.
- **The tolerance zone is a *minimum* safety clearance.** Protect yourself by using the maximum possible distance.



Respecting the tolerance zone protects buried utility lines from damage and also protects you from injury.

- Adhere to state laws for digging within the tolerance zone, a safety area that spans the width of a marked utility plus a state-mandated distance from each indicated outside edge.
- Hand dig prudently in this zone until you have determined the exact location of the lines. Use extreme care and caution. Too many accidental utility contacts have occurred when someone dug with a backhoe or other power-operated equipment instead of a shovel.
- Once visual identification has been achieved, you may use mechanized digging equipment. Use a spotter to observe the excavation and help prevent damage when heavy equipment is used near power lines.
- The tolerance zone is a minimum safety clearance. Locator marks are only the locator's most reasonable interpretation of the equipment's signal. Protect yourself by using the maximum possible distance.

Know When to Stop Digging



- **If there are no locate marks after you have waited the required time**, do NOT dig. Notify 811, and wait until utility lines are marked or you have been notified that the area is clear of lines.
- **If you do not understand the locate marks**, do NOT dig. Ask your supervisor what you must do to work safely.
- **If you cannot visually verify the location of marked utility lines by hand digging**, STOP digging and contact the local utility immediately.
- **If you find unmarked, mismarked or seemingly abandoned facilities**, STOP digging. Assume all utility lines are in service, and report them to 811.
- **If you see signs of something buried after the locate was complete**, such as a fresh trench, STOP digging. Notify 811.
- **If the marks fade or are destroyed**, STOP digging and contact 811 to request a new ticket. Do not resume digging until the area is re-marked.

When you work around buried power lines, knowing when to stop a job could save your life.

- If there are no locate marks after you have waited the required time, do NOT dig. Notify 811, and wait until utility lines are marked or you have been notified that the area is clear of lines.
- If you do not understand the locate marks, do NOT dig. Ask your supervisor what you must do to work safely.
- If you cannot visually verify the location of marked utility lines by hand digging, STOP digging and contact the local utility immediately.
- If you find unmarked, mismarked or seemingly abandoned facilities, STOP digging. Assume all utility lines are in service, and report them to 811.
- If you see signs of something buried after the locate was complete, such as a fresh trench, STOP digging. Notify 811.
- If the marks fade or are destroyed, STOP digging and contact 811 to request a new ticket. Do not resume digging until the area is re-marked.

Utility Safety Review

- Identify all power lines and electrical equipment upon arrival at a job site. Recheck the site daily, and review your emergency plan.
- Keep yourself and all tools and equipment (other than cranes and derricks used in construction) *at least 10 feet away* from *all* overhead power lines carrying up to 50 kV. Always assume that lines are energized.
- Cranes and derricks used in construction must remain *at least 20 feet away* from lines up to 350 kV and **50 feet away** from lines greater than 350 kV but at or less than 1000 kV. Always assume the line is energized, and allow nothing closer unless you have confirmed with the utility owner/operator that the line has been de-energized.
- Always use a dedicated spotter.
- If a power line contact occurs, follow proper safety procedures, and immediately call **911** and the local electric utility.
- Notify the underground utility locator service by dialing 811 or using the online ticket-entry system before you dig.

So let's review the key safety points of this presentation.

- Identify all power lines and electrical equipment upon arrival at a job site. Recheck the site daily, and review your emergency plan.
- Keep yourself and all tools and equipment (other than cranes and derricks used in construction) **AT LEAST 10 feet** away from all overhead power lines carrying up to 50 kV. Always assume that lines are energized.
- Cranes and derricks used in construction must remain at least 20 feet away from lines up to 350 kV and 50 feet away from lines greater than 350 kV but at or less than 1000 kV. Always assume the line is energized, and allow nothing closer unless you have confirmed with the utility owner/operator that the line has been de-energized.
- Always use a dedicated spotter.
- If a power line contact occurs, follow proper safety procedures and immediately call 911 and the local electric utility.
- Notify the underground utility locator service by dialing 811 or using the online ticket-entry system before you dig.

Contact Information

- In case of an electrical emergency, call **911** and the local electric utility:
 - RPU: 507.280.9191
- For additional information, visit our website at RPU.org/construction-center/safety.php.

Last but not least, here is some important contact information to keep handy:

- In case of an electrical emergency, call 911 and the local electric utility:
 - RPU: 507.280.9191
- For additional information, visit our website at RPU.org/construction-center/safety.php.



Presenter's Notes

The slide content is framed by yellow and black diagonal hazard stripes at the top and bottom. It features the Rochester Public Utilities logo (a blue stylized 'R' with a yellow arrow) and the slogan 'WE PLEDGE, WE DELIVER™'. The 'worker beware' logo is prominently displayed in the center. At the bottom, a black bar contains the text 'Work Safely Around Electric Lines' in yellow. A small copyright notice is visible at the very bottom: '#53020 © 2023 Culver Media, LLC 800-428-5837'.

Thank you for your attention.

Take questions, and begin discussion. If you are using the trainer's guide, in it you will find discussion topics, an electrical safety quiz, and more information about the properties of electricity and the electric delivery system.

Discuss how this information conflicts with what your audience believed about electrical safety, and ask how they may have put themselves or others at risk in the past. Ask what they would have done differently had they had this training before.

Your local electric utility thanks you for helping to keep workers safe.