



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 overhead and underground electric power lines. Following the procedures we'll cover here today will assist you in keeping 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 and high-voltage equipment, and point them out to your coworkers.**
- **Assume *all* overhead power lines are energized**, including service drops running between poles and 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. Follow some simple best practices before starting work.

- When you arrive at a job site, always identify power lines and high-voltage equipment and point them out to your coworkers. Review proper safety procedures before beginning work.
- Assume all overhead power lines are energized, including service drops running between poles and buildings. These wires may look insulated, but any coating you see is 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 & equipment other than cranes & derricks used in construction: always 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 Portland General Electric for clearance information.
- If your job requires you to work closer than 10 feet from power lines, call Portland General Electric well in advance to make safety arrangements.
- Electrical safety distances given here are minimums.
- Always use the maximum possible distance, and clearly mark boundaries to keep workers and equipment the required distance away.

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For tools and equipment other than cranes or 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, and equipment other than cranes and derricks used in construction. Be aware that wind can move long or tall equipment, so build in some extra distance in case of an unexpected shift.
- Higher-voltage lines require greater clearances. Contact Portland General Electric 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 Portland General Electric well in advance to make safety arrangements. They will take steps to help you work safely. 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 distance, and clearly mark boundaries with tape, signs, or barricades to keep workers and equipment the required distance away.

Cranes & derricks in construction

- **Keep the crane boom and load at least 20 feet away from the line if you don't know the line's voltage.** Always assume the line is energized, and allow nothing closer than 20 feet unless you have confirmed with the utility owner/operator that the line has been de-energized.
- **As voltage increases, clearance distances also increase.** Contact Portland General Electric and consult the OSHA regulations at www.OROSHA.org for specific clearance requirements and encroachment prevention precautions.
 - Once you have established the required clearance, clearly mark a boundary with tape, signs, or barricades.
- **Whenever cranes or derricks are used in construction on your job site,** contact Portland General Electric well in advance so any necessary facility protection arrangements can be made.

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Cranes and derricks used in construction require different safety precautions than other equipment, due to an OSHA rule.

- Keep the crane boom and load at least 20 feet away from the line if the voltage is unknown. Always assume the line is energized, and allow nothing closer than 20 feet unless you have confirmed with the utility owner or operator that the line has been de-energized.
- As voltage increases, clearance distances also increase. Consult Portland General Electric and the OSHA regulations at www.OROSHA.org for specific clearance requirements and encroachment prevention precautions. Reference the Oregon Overhead Safety Act for more information.
 - Once you have established the required clearance, clearly mark an obvious boundary to keep workers and equipment the required distance away.
- Whenever cranes or derricks are used on your job site, contact Portland General Electric well in advance so any necessary facility protection arrangements can be made.

Use a dedicated spotter



- **Always use a dedicated spotter on the ground** to safely judge distances between hoisting equipment and power lines.
- **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.

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

- Always use a dedicated spotter on the ground to safely judge distances between hoisting equipment and power lines. From the ground, he or she will have the clearest vantage point and be best 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 priority.

Call before you dig

- **Call the underground utility locator service at 811 at least two full business days before you dig or move earth in any way.** They will arrange to have the underground utilities marked so you can dig safely.
- **Before you call, WHITE LINE your excavation route** so locators can easily identify and mark affected utilities.
- **If you don't call and you hit an underground line,** you or your coworkers could be hurt or killed. You may also be held liable for damages.



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

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Call before you dig. Underground power lines can pose an unseen but very real danger.

- Call the underground utility locator service at 811 at least two full business days before you dig or move earth in any way. They will arrange to have underground utility lines marked so you can dig safely. 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 accident. And remember, it's the law.
- Before you call, white line your excavation route so locators can easily identify and mark affected utilities.
- If you don't call and you hit an underground line, you or your coworkers could be hurt or killed. You may also be held liable for damages. Don't risk it. Call before you dig.

Dig safely

- **Talk to the property owner.** Ask about any private underground lines that may not belong to a utility and so would not be marked by the locator.
- **Respect the locator marks.** Maintain utility locator marks and follow them when digging.
- **Dig with care.** Hand dig within **24** inches of each side of the marks. Local law may require a wider clearance. **Use hand tools ONLY** within this safety zone.
- **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
	Your proposed excavation

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Dig safely. After you call, the underground utility locator service will arrange for each utility to send someone out to mark underground lines.

- Talk to the property owner. Ask about any private underground lines that may not belong to a utility and so would not be marked by the locator.
- Respect the marks. Maintain utility locator marks and follow them when digging. Remember that calling for a locate is just the first step. This system works only if you follow the locator marks whenever you dig in the vicinity of underground utilities.
- Dig with care. Hand dig within 24 inches of each side of the marks. Local law may require a wider clearance. Use hand tools ONLY within this safety zone. Too many accidental utility contacts have occurred when someone dug with a backhoe instead of a shovel.
- Know the underground utility 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: Your proposed excavation

SLIDE 7

If heavy equipment contacts a power line

- Both the equipment and the line should be considered energized.
- If you can do so safely, move the equipment away from the line.
- Stay on the equipment.
- Warn others to stay away.
- Call **911** and **Portland General Electric**.
- If fire or other danger forces you off:
 - Jump clear, keeping both feet together and without touching the equipment and the ground at the same time.
 - Then shuffle away with small steps, keeping both feet together and on the ground at all times, or hop away on two feet, keeping both feet together.
 - Do not return to the equipment.



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

- Both the equipment and the line should be considered energized.
- If you can do so safely, move the equipment away from the line.
- Stay on the equipment. Anyone on the equipment is safe from shock as long as they stay put.
- Warn others to stay away. In a power-line-contact situation, people on the ground are in the greatest danger of shock.
- Call 911 and Portland General Electric 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 danger forces you off the equipment, follow the proper jump-off procedure.
 - Jump clear, keeping both feet together and without touching the equipment and the ground at the same time. If you touch the equipment and the ground at the same time, you could be shocked. Make every attempt to land on both feet at the same time.
 - Then shuffle away with small steps, keeping both feet together and on the ground at all times, or hop away on two feet, keeping both feet together. Resist the temptation to run or take long steps because this puts you at risk for shock
 - Do not return to the equipment. Wait for utility personnel to tell you it is safe.

Electrical safety review

- Identify all power lines and electrical equipment upon arrival at a job site. Recheck the site daily.
- Keep yourself and all tools and equipment other than cranes or derricks used in construction **AT LEAST 10 feet away** from *all* overhead power lines carrying up to 50 kV.
- Cranes and derricks used in construction may require clearances greater than 20 feet and encroachment prevention precautions. Contact PGE or Oregon OSHA for more information.
- Build in extra safety distances.
- Always use a dedicated spotter.
- Call the underground utility locator service at **811** before you dig.
- If a power line contact occurs, follow proper safety procedures and immediately call **911** and Portland General Electric.

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

- Identify all power lines and electrical equipment upon arrival at a job site. Recheck the site daily. Always alert your coworkers to the presence of power lines and electrical equipment.
- 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 may require clearances greater than 10 feet and encroachment prevention precautions. Contact PGE or Oregon OSHA for more information.
- Build in extra safety distances. Remember that wind can move equipment.
- Always use a dedicated spotter to monitor distances between equipment and overhead power lines.
- Call the underground utility locator service at 811 before you dig. Be sure to call at least two full business days before any digging or other earth-moving operations, and respect the marks. Hand dig within 24 inches of marked utilities.
- If a power line contact occurs, follow proper safety procedures and immediately call 911 and Portland General Electric.

Underground utility locator contact information

- To reach the underground utility locator service, call **811**.



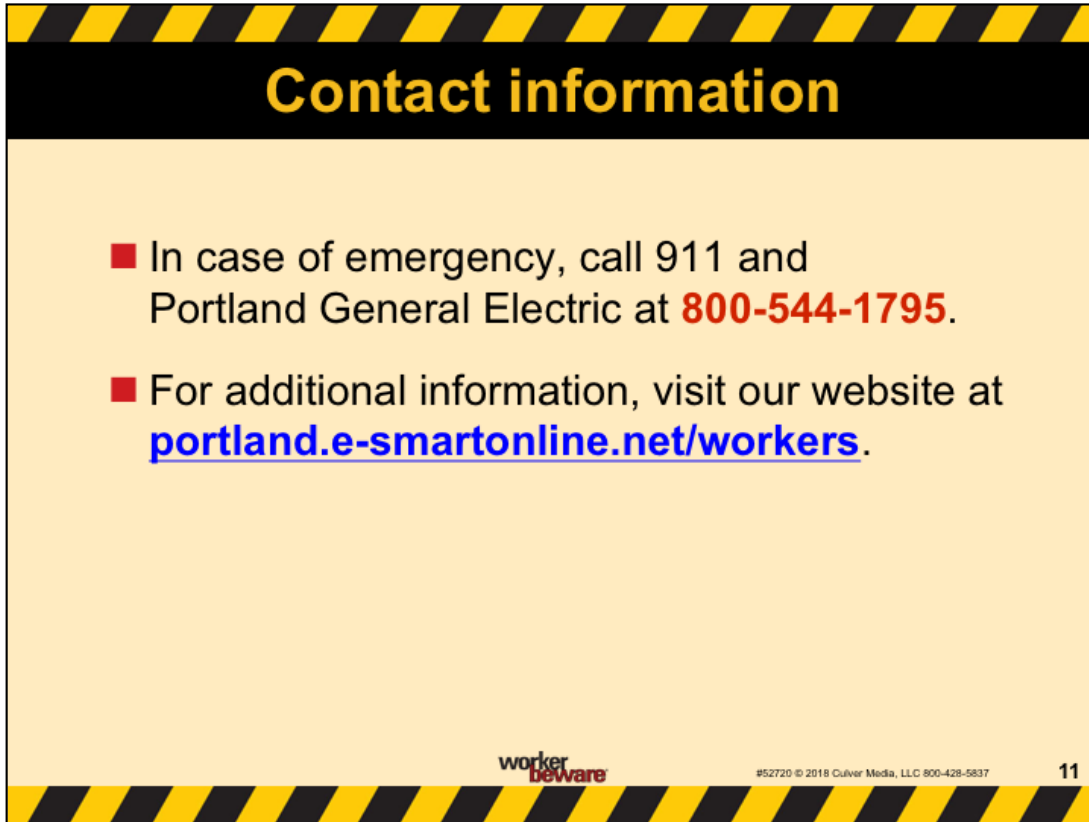
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- To reach the underground utility locator service, call 811.



Contact information

- In case of emergency, call 911 and Portland General Electric at **800-544-1795**.
- For additional information, visit our website at portland.e-smartonline.net/workers.

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- In case of emergency, call 911 and Portland General Electric at 800-544-1795.
- For additional information, visit our website at portland.e-smartonline.net/workers.



Thank you for your attention.

Take questions and begin discussion. If you are using the trainer's guide, in it you will find more detail about how electricity works, when to contact Portland General Electric, what sort of materials and objects conduct electricity, and other information.

Discuss how this information conflicts with what your audience believed about electricity, 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.

Portland General Electric thanks you for helping to keep workers safe.