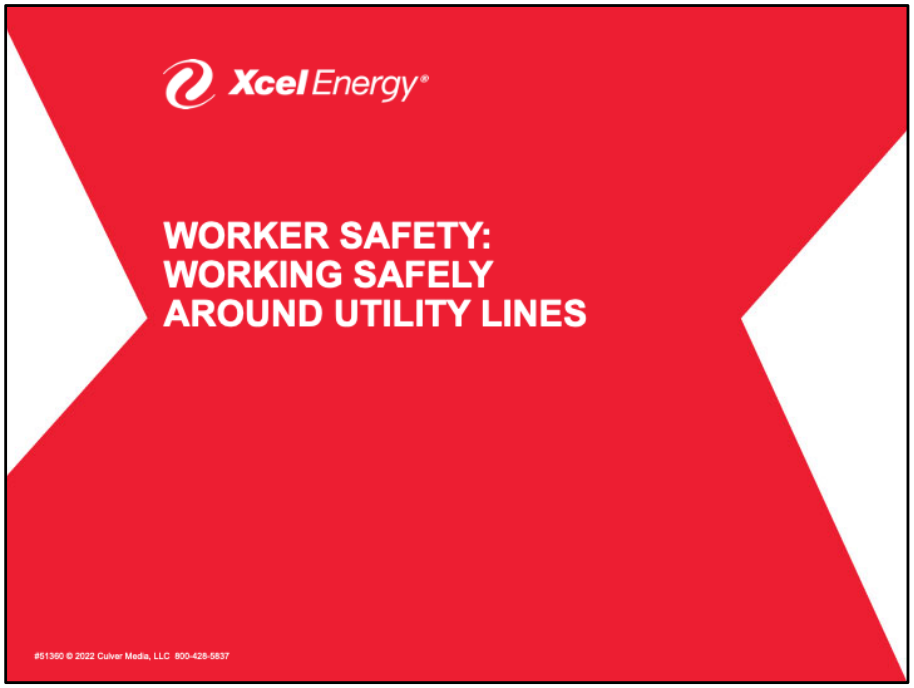
Presenter's Notes

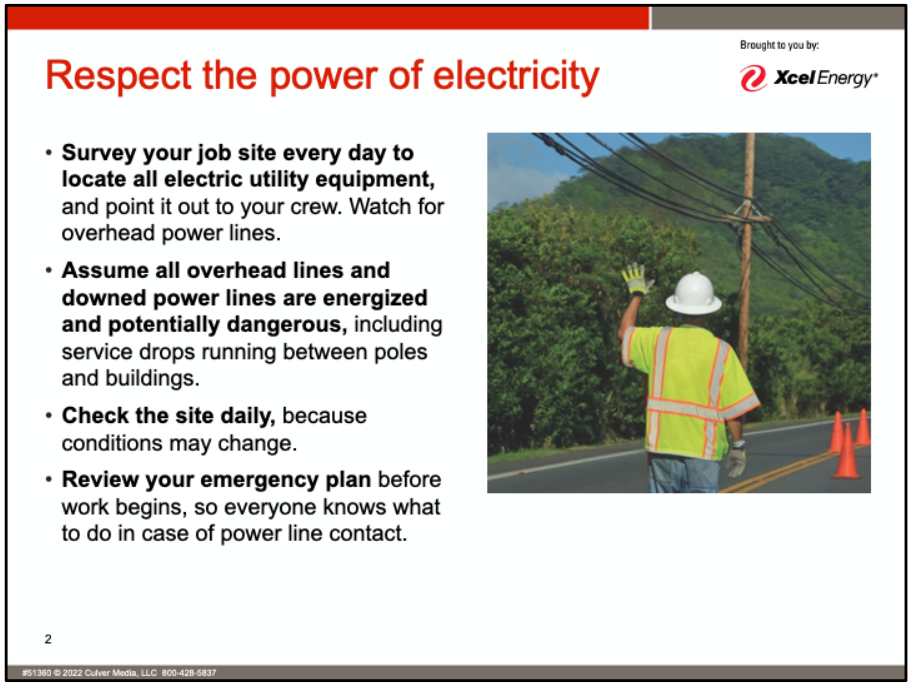


Before darkening the room, offer a welcome and overview. Begin by introducing the program and its topic:

- Today's training session focuses on working safely around overhead and underground electric power lines and near natural gas pipelines. Following the procedures we'll cover here today will assist you in keeping yourself and your crew safe and on the job. On the other hand, if you cut corners where utility 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.

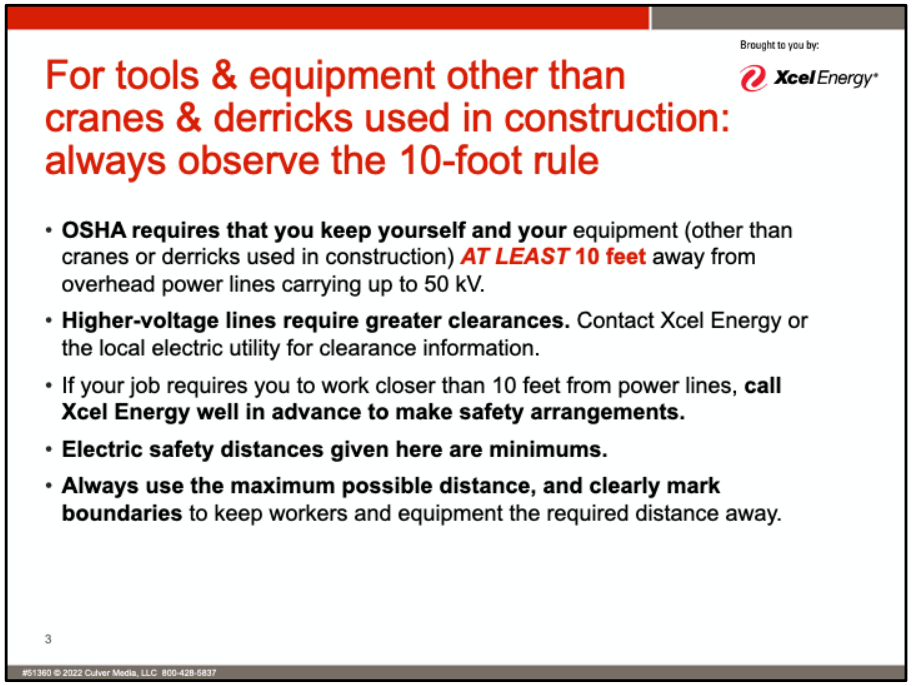
Presenter's Notes



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

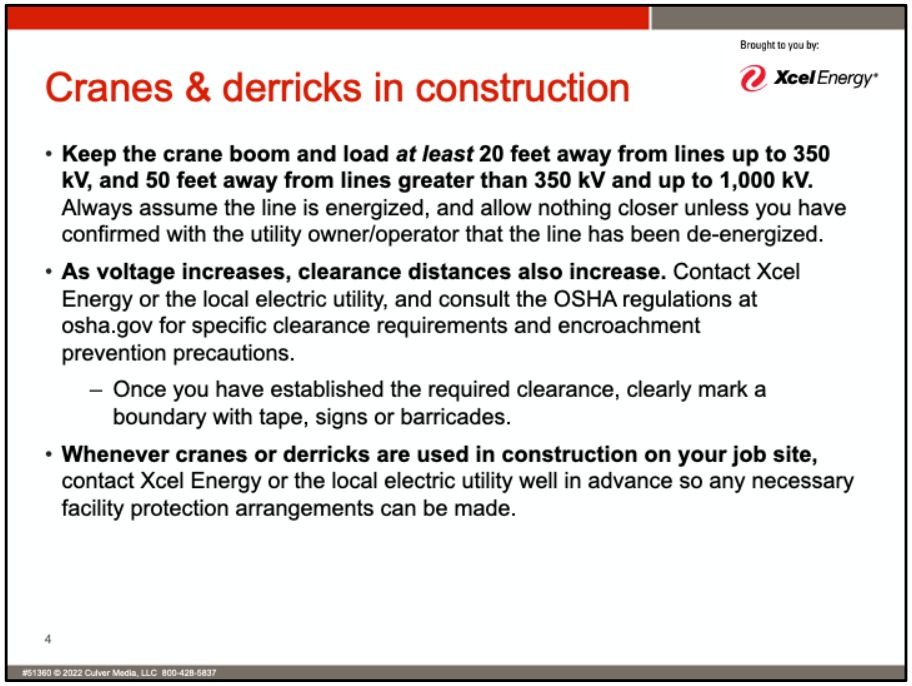
- Survey your job site every day to locate all electric utility equipment, and point it out to your crew. Watch for overhead power lines.
- Assume all overhead lines and downed power lines are energized and potentially dangerous, including service drops running between utility poles and buildings. These 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.

Presenter's Notes



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.)

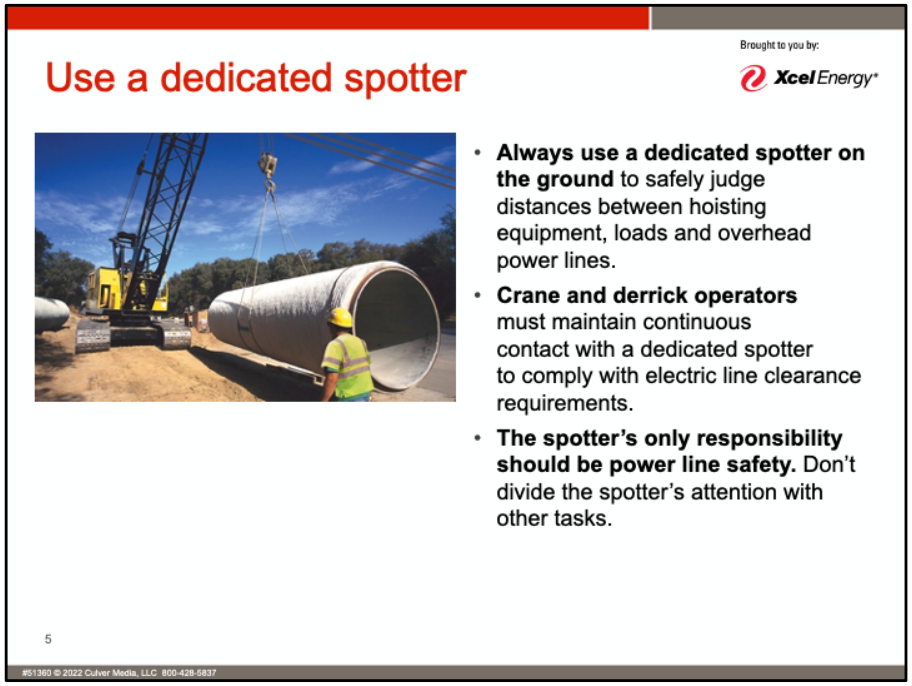
- OSHA requires that you keep yourself and your equipment at least 10 feet away from overhead power lines carrying up to 50 kV. This applies to all personnel, tools and equipment other than cranes or derricks used in construction. Be aware that wind can move long or tall equipment, so build in some extra distance in case of an unexpected shift.
- Higher-voltage lines require greater clearances. Contact Xcel Energy or 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 Xcel Energy 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- 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 and derricks used in construction require different safety precautions than other equipment.

- 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 and up to 1,000 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 Xcel Energy or the local electric utility, and consult the OSHA regulations at osha.gov 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 Xcel Energy or the local electric utility well in advance so any necessary facility protection arrangements can be made.

Presenter's Notes



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, loads and overhead power lines. From the ground, he or she will have the clearest vantage point and be best able to judge distances correctly.
- Cranes 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.

Presenter's Notes

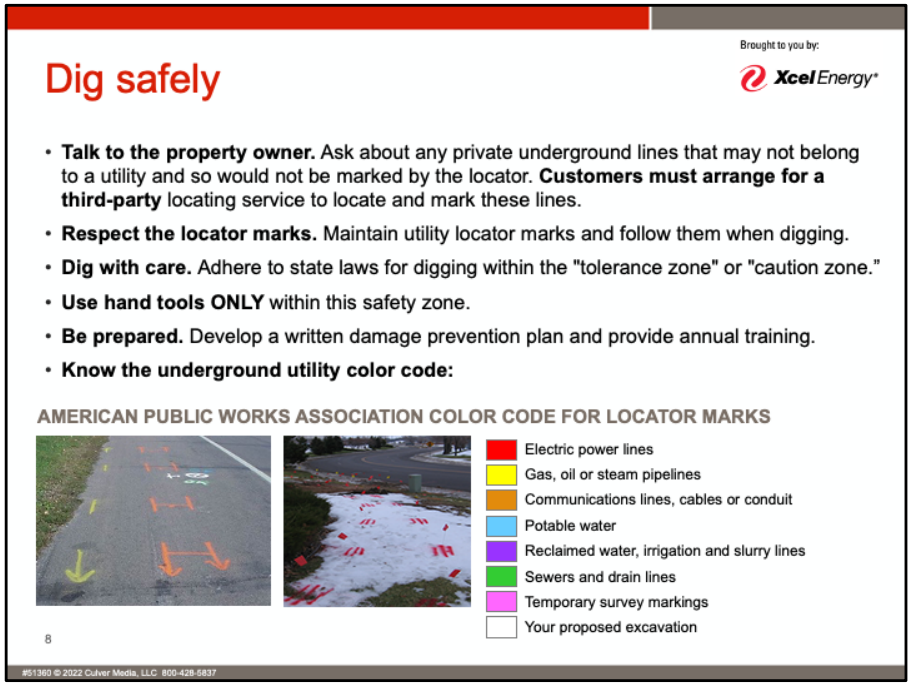
If heavy equipment contacts a power line, it's critical to follow proper safety procedures.

- Both the equipment and the line should be considered energized.
- Move equipment away from the line ONLY if you can do so safely.
- Stay on the equipment until utility workers tell you it is safe to leave. Anyone on the equipment is safe from shock as long as they stay put.
- Warn others to stay away from the line and anything it is touching. In a power line contact situation, people on the ground are in the greatest danger of shock.
- Immediately call 911 and Xcel Energy or the local electric utility. 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 to leave your 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.
  - Land with your feet together and shuffle away with small steps, keeping your feet close together and on the ground at all times. Resist the temptation to run or take long steps because this puts you at risk for shock.

Demonstrate the jump-off procedure, then click for the next slide.

Notify 811 before you dig. Underground power and natural gas lines can pose an unseen but very real danger.

- Call the underground utility locator service at 811 or place an online locate request. Wait your state's required time before digging. (MI and WI—3 business days; MN, NM, SD and TX—2 business days; CO and ND—2 business days, excluding the date of your request. Business days do not include weekends or legal holidays.) Your call arranges for utilities to mark their underground lines 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 utility-line accident. And remember, it's the law.
- Before you notify 811, pre-mark your dig area with white paint and/or flags, so locators can easily identify and mark affected utilities.
- For more information visit xcelenergy.com/811.
- If you don't notify 811, you risk hitting an underground natural gas and/or electric line. This could lead to gas leaks, explosions, loss of service or injury to customers and possible fines. You or your coworkers could be hurt or killed, and you may be held liable for damages and repair costs. Don't risk it. Notify 811 before you dig.
- Be sure to ask the property owner about any privately owned underground lines. The 811 locate request does not account for locating any customer-owned service lines (typically for pools or outbuildings)—anything on the customer side of the meter. These will require a private locating service.
- *Always contact your state 811 center before digging and for the most current requirements.*



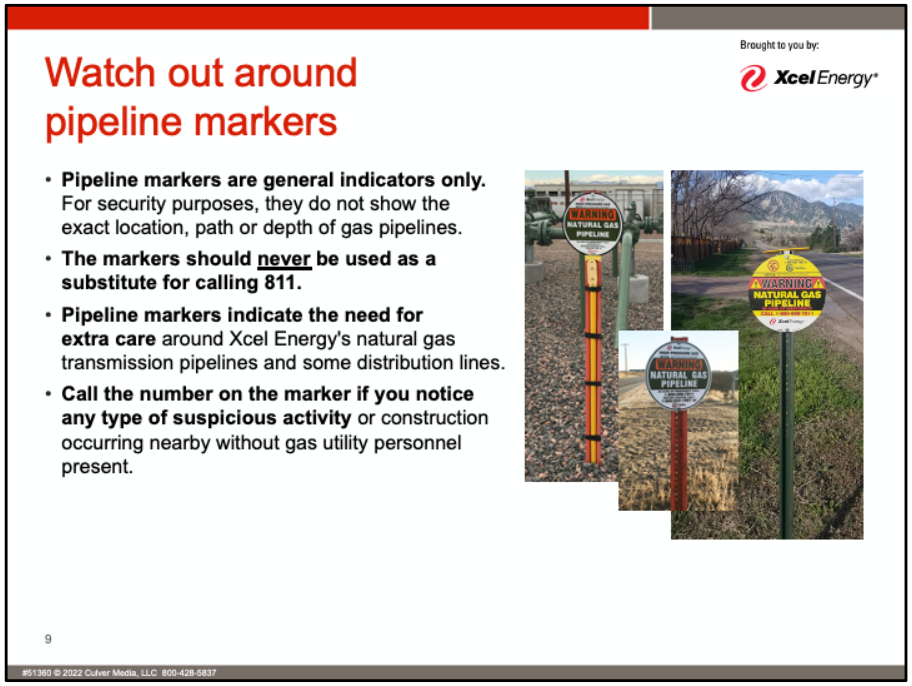
Dig safely. After you call 811 or place an online ticket request, the underground utility locator service will arrange for each utility to send someone out to mark underground lines.

- 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. The customer must arrange for a third-party locating service to locate and mark these lines.
- 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. Follow state laws for digging within the "tolerance zone" or "caution zone," a safety area that spans the width of a marked utility plus a state-mandated distance from each indicated outside edge.
- 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.
- Be prepared. Develop a written damage prevention plan and provide annual training.
- Know the underground utility code. Utilities use these colors to mark their lines. Learn the code to stay safe. These color codes are also listed on your vehicle visor safety cards (free to order from Xcel Energy's website).

Point to the chart as you speak.

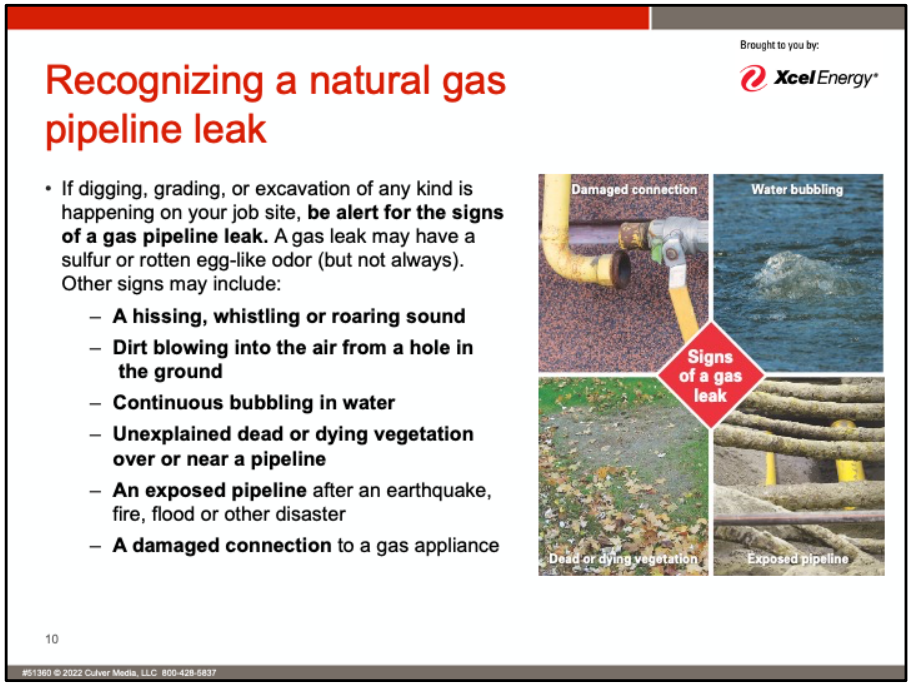
  - Red: Electric power lines
  - Yellow: Gas, oil or steam pipelines
  - Orange: Communications lines, cables or conduit
  - Blue: Potable water
  - Purple: Reclaimed water, irrigation and slurry lines
  - Green: Sewers and drain lines
  - Pink: Temporary survey markings
  - White: Your proposed excavation

Presenter's Notes



It's critical to be aware of gas transmission pipelines in the vicinity of your job site.

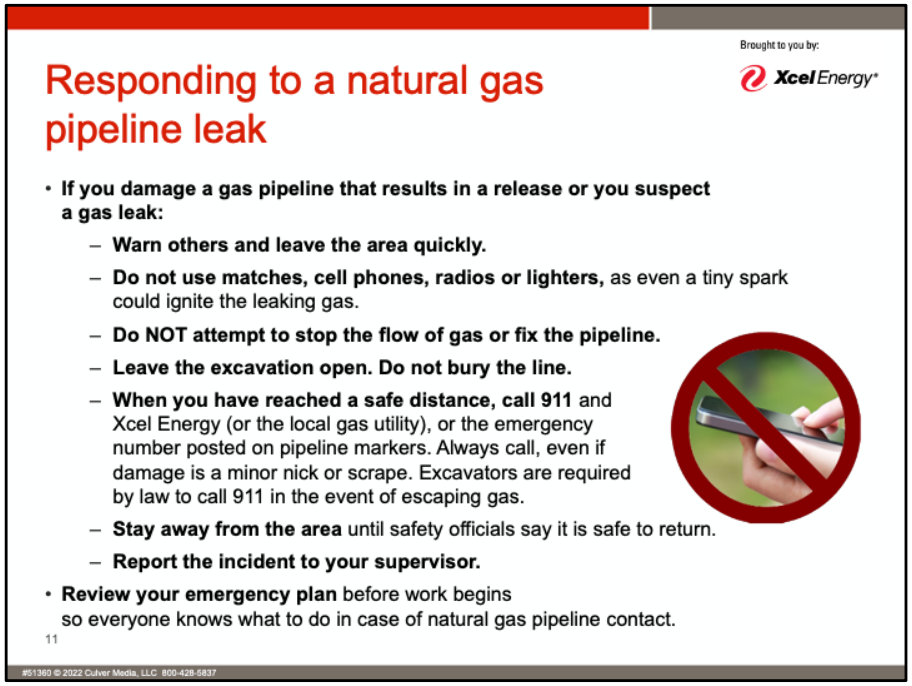
- Pipeline markers are general indicators only. For security purposes, they do not show the exact location, path, depth or number of gas pipelines in the area, and not all pipelines follow a straight course between markers. Maps can also be viewed to identify the approximate locations of major natural gas pipelines (but not gas distribution main lines or service lines). You can access them via the National Pipeline Mapping System website: https://www.npms.phmsa.dot.gov.
- The markers should never be used as a substitute for calling 811. Nor should you rely on the pipeline maps. 811 is your best resource for natural gas pipeline locates.
- Pipeline markers indicate the need for extra care around Xcel Energy's natural gas transmission pipelines and some distribution lines. These markers are usually found at roadways, railroad crossings and other points near the pipeline route.
- Call the number on the marker if you notice any type of suspicious activity or construction occurring nearby without gas utility personnel present.



When it comes to detecting natural gas leaks, you must use all your senses. Look, listen and smell.

- If digging, grading or excavation of any kind is happening on your job site, be alert for the signs of a gas pipeline leak. They include:
  - A distinctive, sulfur or rotten egg-like odor. (Not all gas is odorized, so do not rely on smell alone to detect a leak.)
  - A hissing, whistling or roaring sound. The sound will vary with the pressure in the line.
  - Dirt blowing into the air from a hole in the ground. This will vary with pressure as well.
  - Continuous bubbling in water.
  - Unexplained dead or dying vegetation over or near a pipeline.
  - An exposed pipeline after an earthquake, fire, flood or other disaster.
  - A damaged connection to a gas appliance.

Presenter's Notes

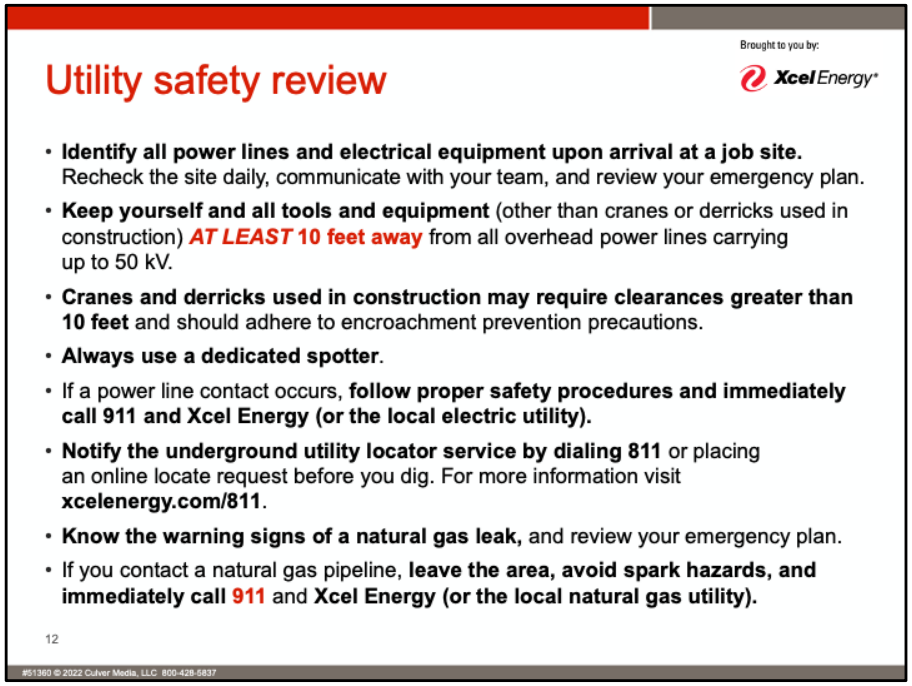


Even the smallest spark can ignite the leaking gas, and sparks can come from some unexpected sources. So if you damage a gas pipeline that results in a release or you suspect a gas leak, even if the leak is not obvious, assume there's danger and take these steps:

- Warn others and leave the area quickly. Leave your equipment and vehicles behind.
- Do not use matches, cell phones, radios or lighters, as even a tiny spark could ignite the leaking gas.
- Do NOT attempt to stop the flow of gas or fix the pipeline.
- Leave the excavation open. Do not bury the line.
- When you have reached a safe distance, call 911 and Xcel Energy (or the local gas utility), or the emergency number posted on pipeline markers. Always call, even if damage is a minor nick or scrape. Excavators are required by law to call 911 in the event of escaping gas.
- Stay away from the area until safety officials say it is safe to return.
- Report the incident to your supervisor.

Review your emergency plan before work begins, so everyone knows what to do in case of natural gas pipeline contact.

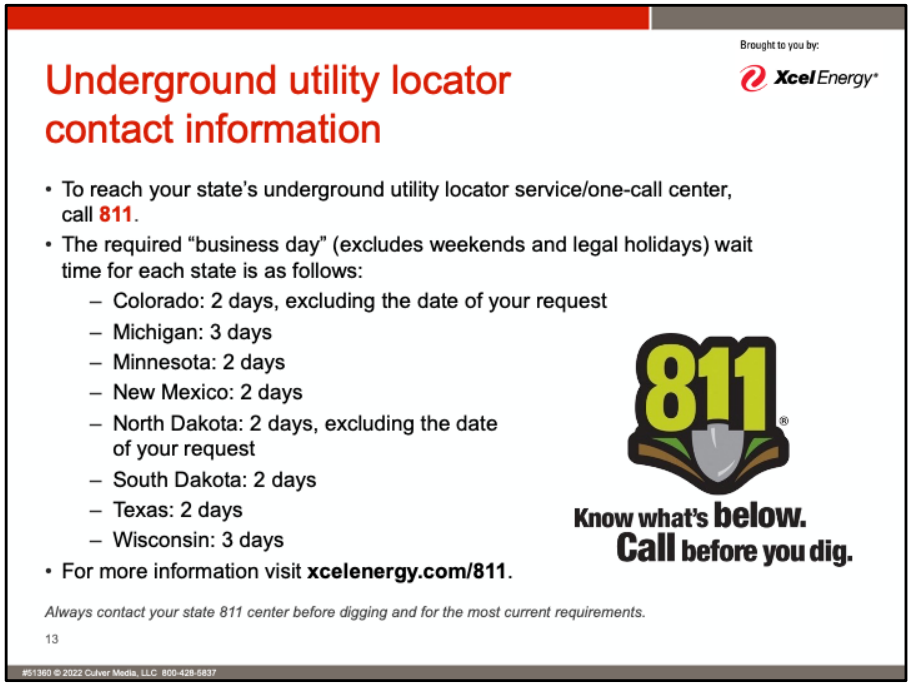
Presenter's Notes



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, and review your emergency plan. 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 should adhere to encroachment prevention precautions. Visit osha.gov for specific clearance requirements.
- Always use a dedicated spotter to monitor distances between equipment and overhead power lines.
- If a power line contact occurs, follow proper safety procedures and immediately call 911 and Xcel Energy or the local electric utility.
- Notify the underground utility locator service by dialing 811 or placing an online locate request before you dig. Be sure to call several days before any digging or other earth-moving operations. Respect the marks. Hand dig within the "tolerance zone" or "caution zone" around marked utility lines, in compliance with state law. For more information visit xcelenergy.com/811.
- Know the warning signs of a natural gas leak, and review your emergency plan.
- If you contact a natural gas pipeline, leave the area, avoid spark hazards, and immediately call 911 and Xcel Energy or the local natural gas utility. Even if a gas leak is not obvious, always follow the safety procedures presented here.

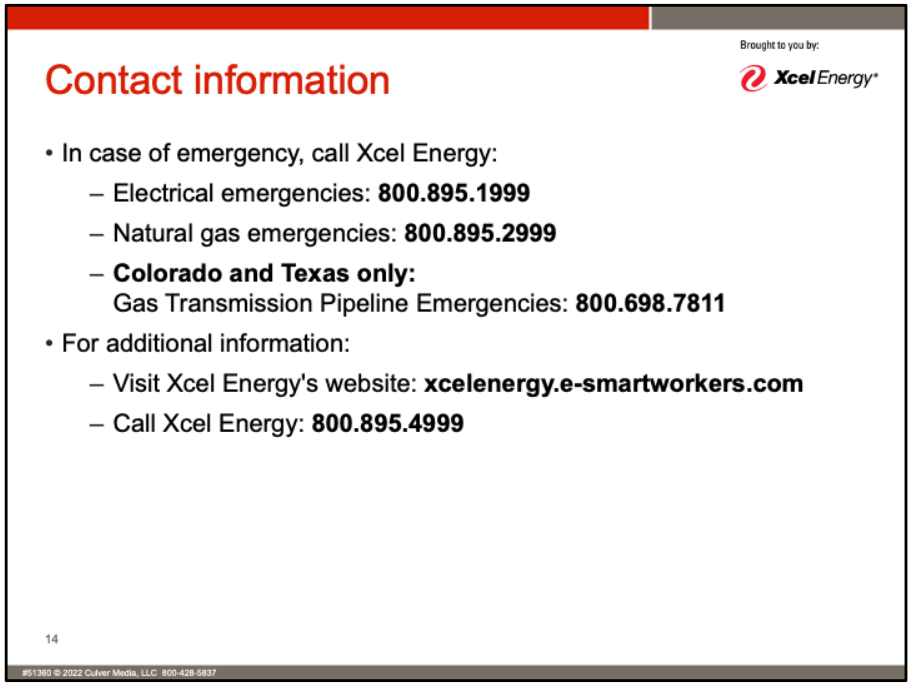
Presenter's Notes



To reach your state's underground utility locator service/one-call center, call 811.

- The required "business day" (excludes weekends and legal holidays) wait time for each state is as follows:
  - Colorado: 2 days, excluding the date of your request
  - Michigan: 3 days
  - Minnesota: 2 days
  - New Mexico: 2 days
  - North Dakota: 2 days, excluding the date of your request
  - South Dakota: 2 days
  - Texas: 2 days
  - Wisconsin: 3 days
- For more information visit xcelenergy.com/811.

Presenter's Notes



- In case of emergency, call Xcel Energy:
  - Electrical Emergencies: 800.895.1999
  - Natural Gas Emergencies: 800.895.2999
  - Colorado and Texas only: Gas Transmission Pipeline Emergencies: 800.698.7811
- For additional information:
  - Visit Xcel Energy's website: xcelenergy.e-smartworkers.com
  - Call Xcel Energy: 800.895.4999

Presenter's Notes

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 the properties of electricity and natural gas, when to contact Xcel Energy, and other information.

Discuss how this information conflicts with what your audience believed about electrical and natural gas 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

Xcel Energy thanks you for helping to keep workers safe.