

*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 coworkers 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 and begin the presentation.


CPS Energy Is Committed to Your Safety

CPS Energy delivers natural gas and electricity to customers throughout greater San Antonio. Here are some of their many initiatives to protect public safety:

- **They conduct regular natural gas pipeline testing, inspection, and repairs**, and monitor their pipelines 24/7 for potential leaks.
- **They educate excavators and the public** about safe digging practices to prevent utility line damage, such as contacting **811** for locates.
- **They bring added safety features to natural gas pipelines** in urban, suburban, and other high-population areas.
- **They trim vegetation within their power line and pipeline rights-of-way** to prevent fires and outages, and to provide visibility for gas leak detection.

Despite CPS Energy's best efforts, electrical contacts may occur that could lead to serious injuries, and natural gas leaks may occur that could lead to fires or explosions.

CPS Energy asks for your help to prevent electrical shock incidents and reduce the risk of dangerous gas leaks.



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CPS Energy delivers natural gas and electricity to customers throughout greater San Antonio. The utility has many initiatives to protect public safety, including the following:

- To ensure gas is delivered safely and reliably through their natural gas pipelines, CPS Energy conducts regular natural gas pipeline testing, inspection, and repairs, and monitors their pipelines 24/7 for potential leaks.
- They educate excavators and the public about safe digging practices to prevent utility line damage, such as contacting 811 for locates. They also provide electric and natural gas safety education programs to local schools.
- They bring added safety features to natural gas pipelines in urban, suburban, and other high-population areas.
- They trim vegetation within their power line and pipeline rights-of-way to prevent fires and outages, and to provide visibility for gas leak detection.

Despite CPS Energy's best efforts, electrical contacts may occur that could lead to serious injuries, and natural gas leaks may occur that could lead to fires or explosions. They ask for your help to prevent electrical shock incidents and reduce the risk of dangerous gas leaks.

Respect the Power of Electricity

- Survey your job site every day to find overhead power lines, poles, and guy wires, and point them out to 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.

- Survey your job site every day to find overhead power lines, poles, and guy wires, and point them out to 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 20-Foot Rule

- You must keep yourself and your equipment (other than cranes or derricks used in construction) **AT LEAST 20 feet away** from ALL overhead power lines.
- Higher-voltage lines require greater distances. Contact CPS Energy at 210-353-3939 for clearance information.
- If your job requires you to work closer than the required distance from power lines, call CPS Energy well in advance to make safety arrangements.
- Electrical safety distances given here are minimums.
- Always use the maximum possible distance.
- Clearly mark boundaries with tape, signs, or barricades to keep workers and equipment the required distance away.


worker
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For tools and equipment other than cranes and derricks used in construction, always observe the 20-foot rule. (Cranes and derricks on construction sites may require greater clearances, which we will discuss on the next slide.)

- You must keep yourself and your equipment **at least 20 feet away** from ALL overhead power lines. 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 distance. Contact CPS Energy at 210-353-3939 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 the required distance from power lines, call CPS Energy 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.
- 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 lines up to 350 kV and 50 feet away from lines greater than 350 kV but at or less than 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.
 - If voltage is unknown, contact CPS Energy before work begins.
- **As voltage increases, clearance distances also increase.** Contact CPS Energy and consult the OSHA regulations at www.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 CPS Energy well in advance so any necessary facility protection arrangements can be made.


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5

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 but at or less than 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.
 - If voltage is unknown, contact the local electric utility before work begins.
- As voltage increases, clearance distances also increase. Consult CPS Energy and the OSHA regulations at www.osha.gov for specific clearance requirements and encroachment prevention precautions.
 - Once you have established the correct clearances, mark an obvious boundary to keep workers and equipment the required distance away.
- Whenever cranes or derricks are used on your job site, contact CPS Energy 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.



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6


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, the spotter 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.

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.
- Remain on the equipment until utility workers signal you off.
- Warn others to stay away.
- Have someone call 911 and CPS Energy immediately.
- If fire or other danger forces you off:
 - **DO NOT TOUCH** the equipment and the ground at the same time. Jump clear, land with your feet together, and shuffle away with small steps, keeping both feet close together and on the ground at all times.
 - Do not return to the equipment.




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7


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.
- Remain on the equipment until utility workers signal you off. 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.
- Have someone call 911 and CPS Energy 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.
 - **DO NOT TOUCH** the equipment and the ground at the same time. Jump clear, land with your feet together, and shuffle away with small steps, keeping both 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.
 - Do not return to the equipment.


Demonstrate the jump-off procedure.

Call Before You Dig

- **Call 811** or use the online ticket system at texas811.org at least two full business days before you dig or move earth in any way. This free service will arrange to have underground utility lines marked so you can dig a safe distance away. Even small jobs require a call.
- **Before you call, pre-mark your proposed dig area with white paint, flags, or stakes** 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 be held liable for damages plus Railroad Commission fines.



Know what's below.
Call before you dig.


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8

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

- Call 811 or use the online ticket system at texas811.org at least two full business days before you dig or move earth in any way. (This wait time excludes weekends, federal holidays, and Texas state holidays). This free service will arrange to have underground utility lines marked so you can dig a safe distance away. Even small jobs require a call. The service is free, but the costs of not calling can be very high. Building in 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 call, pre-mark your proposed dig area with white paint, flags, or stakes 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 be held liable for damages plus Railroad Commission fines. 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.
- **Hand dig within the tolerance zone.** This safety area is 18" plus half the facility diameter outside each edge of the facility. If you must dig in this zone, hand dig only using non-mechanized tools or equipment, soft digging, or vacuum excavation.
- **Know the underground utility color code:**

AMERICAN PUBLIC WORKS ASSOCIATION COLOR CODE FOR LOCATOR MARKS



<ul style="list-style-type: none"> <li style="margin-bottom: 5px;">■ Electric power lines <li style="margin-bottom: 5px;">■ Gas, oil, or steam pipelines <li style="margin-bottom: 5px;">■ Communications lines, cables, or conduit <li style="margin-bottom: 5px;">■ Potable water <li style="margin-bottom: 5px;">■ Reclaimed water, irrigation, and slurry lines <li style="margin-bottom: 5px;">■ Sewers and drain lines <li style="margin-bottom: 5px;">■ Temporary survey markings <li style="margin-bottom: 5px;">■ Your proposed excavation



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9

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 locator marks. Maintain utility indicator 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.
- Hand dig within the tolerance zone. This safety area is 18" plus half the facility diameter outside each edge of the facility. If you must dig in this zone, hand dig only using non-mechanized tools or equipment, soft digging, or vacuum excavation.
- 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: sewers and drain lines
- Pink: temporary survey markings
- White: your proposed excavation

Beware of Pipelines

High-visibility markers with the CPS Energy 24-hour emergency phone number indicate the need for extra care around all high-pressure gas transmission pipelines and some distribution lines.

- These markers are usually found at roadways, railroad crossings, and other points along the pipeline route.
- These markers indicate the general location of natural gas transmission pipelines and some distribution lines. For security purposes, they do not show exact pipeline locations, path, or depth. Nor do they show the number of pipelines in the area.
- Never use pipeline markers or maps as a substitute for calling 811 to have all utility lines in your dig area located and marked.
- You can also find high-pressure transmission pipelines through the National Pipeline Mapping System (NPMS) at <https://www.npms.phmsa.dot.gov>.



worker
beware®

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10

High-visibility markers with the CPS Energy 24-hour emergency phone number indicate the need for extra care around all high-pressure gas transmission pipelines and some distribution lines.


- These markers are usually found at roadways, railroad crossings, and other points along the pipeline route. If you notice any type of suspicious activity near a pipeline marker, call CPS Energy.
- These markers indicate the general location of pipelines. For security purposes, they do not show the exact location, path, depth, or number of gas pipelines in the area. In addition, pipelines may not follow a straight course between markers.
- Never use pipeline markers or maps as a substitute for calling 811 to have all utility lines in your dig area located and marked. Pipelines are not always identified by pipeline markers, so 811 should always be notified at least two full business days (excluding weekends, federal holidays, and Texas state holidays) prior to any excavation activity.
- You can also find high-pressure transmission pipelines and the name(s) of the pipeline operator(s) near you through the National Pipeline Mapping System (NPMS) at <https://www.npms.phmsa.dot.gov>.

Recognizing a Natural Gas Pipeline Leak


- If digging, grading, or excavation of any kind is happening on your job site, **be alert for the signs of a gas pipeline leak:**
 - A distinctive, sulfur-like or rotten-egg odor
 - A hissing, whistling, or roaring sound
 - Dirt spraying or blowing into the air
 - Continuous bubbling in water
 - An exposed pipeline after an earthquake, fire, flood, or other disaster
 - A damaged connection to a gas appliance
 - Dead or dying vegetation (in an otherwise moist area) over or near a pipeline




Dirt being blown into the air




Dead or dying vegetation



Water bubbling



Exposed pipeline



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11


Recognizing a natural gas pipeline leak. It is important to learn the warning signs.

- 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-like or rotten-egg 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 spraying or blowing into the air. This will vary with pressure as well.
 - Continuous bubbling in water.
 - An exposed pipeline after an earthquake, fire, flood, or other disaster.
 - A damaged connection to a gas appliance.
 - Dead or dying vegetation (in an otherwise moist area) over or near a pipeline.

Responding to a Natural Gas Pipeline Leak

- **If you suspect a gas leak or if you contact a gas pipeline:**
 - **DO NOT attempt to make repairs** to a natural gas pipeline.
 - **Warn others and leave the area immediately.**
 - **DO NOT use matches, cell phones, radios, or lighters**, as even a tiny spark could ignite the gas.
 - **Leave the excavation open.** Do not operate any gas pipeline valves or bury the line.
 - If the body of the pipe or its coating is damaged but gas is not released, call 210-353-HELP (4357) immediately, then **contact 811** for a dig-up ticket within one hour.
 - If gas is released, in addition to the above you must **call 911** immediately and submit a report to the Texas Railroad Commission within 30 days.
- **Stay far away from the area** until utility workers say it is safe to return.
- **Review your emergency plan** before work begins, so everyone knows what to do in case of a natural gas pipeline contact.





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12

Responding to a natural gas pipeline leak requires great caution. The single greatest risk from natural gas leaks is explosion. Even the smallest spark can ignite the gas, and sparks can come from some unexpected sources.

- If you suspect a leak or if you contact a gas pipeline, even if a leak is not obvious, assume there's a danger:
 - Do not attempt to make repairs to a natural gas pipeline.
 - Warn others and leave the area immediately.
 - Do not use matches, cell phones, radios, or lighters, as even a tiny spark could ignite the gas.
 - Leave the excavation open. Do not operate any gas pipeline valves or bury the line.
 - If the body of the pipe or its coating is damaged but gas is not released, call 210-353-HELP (4357) immediately, then contact 811 for a dig-up ticket within one hour.
 - If gas is released, in addition you must call 911 immediately and submit a report to the Texas Railroad Commission within 30 days.
- Stay far away from the area until utility workers say it is safe to return.
- Review your emergency plan before work begins, so everyone knows what to do in case of a natural gas pipeline contact.

Utility Safety Review

- Identify all power lines, natural gas 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 20 feet away** from *all* overhead power.
- Cranes and derricks used in construction may require clearances greater than 20 feet and encroachment prevention precautions.
- Always use a dedicated spotter.
- If a power line contact occurs, follow proper safety procedures and immediately **call 911** and CPS Energy.
- Notify the underground utility locator service by **dialing 811** or visiting Texas811.org at least two full business days (excluding weekends, federal holidays, and Texas state holidays) before you dig.
- Know the warning signs of a natural gas leak.
- If you contact a natural gas pipeline, leave the area, avoid spark hazards, and call CPS Energy immediately, then **contact 811**. If gas is released, in addition to the above **call 911** immediately and submit a report to the Texas Railroad Commission within 30 days.


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13

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

- Identify all power lines, natural gas lines and electrical equipment upon arrival at a job site. Recheck the site daily. Always alert your coworkers to the presence of power lines, natural gas lines and electrical equipment.
- Keep yourself and all tools and equipment (other than cranes and derricks used in construction) *at least* 20 feet away from ALL overhead power lines. Always assume that lines are energized.
- Cranes and derricks used in construction may require clearances greater than 20 feet and encroachment prevention precautions. Visit www.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 CPS Energy.
- Notify the underground utility locator service by dialing 811 or visiting Texas811.org before you dig. After you notify the 811 service, be sure to wait at least two full business days (excluding weekends, federal holidays, and Texas state holidays) before any digging or other earth moving operations.
- Know the warning signs of a natural gas leak.
- If you contact a natural gas pipeline, leave the area, avoid spark hazards, and call CPS Energy immediately, then contact 811 for a dig-up ticket within one hour. If gas is released, in addition you must call 911 immediately and submit a report to the Texas Railroad Commission within 30 days.

Underground Utility Locator Contact Information

- To reach the underground utility locator service, dial **811** or visit **Texas811.org**.



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

To reach the underground utility locator service, dial 811 or visit Texas811.org.

Contact Information

- In case of emergency, call 911 and CPS Energy at **210-353-HELP (4357)**.
- For additional information, visit:
 - www.cpsenergy.com/safety
 - www.rrc.state.tx.us
 - www.phmsa.dot.gov

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- For additional information, visit:
 - www.cpsenergy.com/safety
 - www.rrc.state.tx.us
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The slide features a white background with a blue and yellow striped border at the top and bottom. In the center, the "worker beware" logo is displayed in blue and yellow. Below the logo, the text "Thank you." is written in blue. At the bottom of the slide, there is a dark blue horizontal bar containing the "CPS ENERGY" logo, which includes a stylized orange and yellow starburst icon. In the bottom right corner of this bar, the text "#53125 © 2022 Cuatrecasas, LLC 800-428-5837" is visible.

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 CPS Energy, and other information.

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

CPS Energy thanks you for helping to keep workers safe.