



Presenter's Notes

The slide features a yellow background with a black and yellow hazard stripe border at the top and bottom. At the top left is the NW Natural logo, a stylized blue and green 'N' shape. To its right is the text 'NW Natural' in a bold, black, sans-serif font. Below this is the 'worker beware' logo. At the bottom of the slide, the text 'Work Safely Around Natural Gas Lines' is written in a bold, yellow, sans-serif font on a black background. A small copyright notice is visible at the bottom right of the slide.

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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 underground natural gas pipelines. By following the procedures we'll cover here today, you can keep yourself and your crew members safe and on the job. On the other hand, if you cut corners where gas pipelines are concerned, you put yourself, your crew, and the public 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.

Natural Gas Basics


- **Natural gas travels through pressurized underground pipelines of varying diameters.** The size of a gas line is NOT a reliable indicator of the internal pressure.
- **NW Natural adds a distinctive, sulfur-like odor to natural gas to assist in the detection of leaks.** However, in certain conditions, you may not be able to smell this odorant.
- **Leaking natural gas can be ignited by a tiny flame or spark—even from a lit cigarette or a phone.**



Understanding natural gas basics will help you prevent accidents around natural gas pipelines.

- Natural gas travels through pressurized underground pipelines of varying diameters. These pipelines range from 1 inch to 4 feet wide. There are three types of pipes used in the system: transmission pipelines, main lines, and service lines. It pays to be careful around ALL types of pipelines. Pipeline pressure can vary from ¼ pound to 1,000 pounds per square inch. The pressure is what moves the gas through the pipes. It's also what makes damaging a pipeline so dangerous.
- NW Natural adds a distinctive, sulfur-like odor to natural gas to assist in the detection of leaks. However, in certain conditions, this smell may not be apparent. Additionally, weather and soil conditions can strip the odorant from the gas.
- Leaking natural gas can be ignited by a tiny spark or flame—even from a lit cigarette or a phone. To avoid spark hazards, do not turn anything electrical on—or off—in the vicinity of a gas leak.

Notify 811 Before You Dig. It's the Law!



**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 notify 811, 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, as well as outage and repair costs.

Always contact your state 811 center before digging and for the most current requirements.

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

- Call the underground utility locator service at 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 natural gas 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 a few extra days for the job costs less in the long run than spending months or years recovering physically and financially from a gas line accident. And remember, it's the law.
- Before you notify 811, 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 utility line. You, your crew members, or others could be hurt or killed. You may be held liable for any resulting damages, as well as outage and repair costs.
- *Always contact your state 811 center before digging and for the most current requirements.*

Wait the Required Time

- In Oregon and Washington wait at **least two full business days**, for lines to be marked before you dig.
- **If you wait the required time and the locate is not completed, do not dig.** Notify the 811 service that your locate request has not been fulfilled.



After you notify 811, wait the required time for buried utility lines to be marked before you dig.

- This wait time varies from state to state. In Oregon and Washington wait at least two full business days, not counting the date you notify 811, weekends, and legal holidays.
- If you wait the required time and the locate is not completed, do not dig! You must notify the 811 service that your locate request has not been fulfilled.

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 valves. 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. 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
	Sewers 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 the marks become confusing, faded, or illegible, call 811 to refresh them—do NOT use paint to refresh fading marks yourself! Be sure to renew and update your 811 ticket per state regulations.
- 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: Sewers 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 line plus a state-mandated distance from each indicated outside edge of the line: 24 inches in Oregon and Washington.
- Hand dig prudently in this zone.
- 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 gas lines.
- The tolerance zone is a *minimum safety clearance*. Protect yourself by using the *maximum* possible distance.



Always contact your state 811 center before digging and for the most current requirements.

Respecting the tolerance zone not only protects buried utility lines from damage, but it 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 line plus a state-mandated distance from each indicated outside edge of the line.
 - Oregon state law defines this zone as 24 inches surrounding the outside dimensions of all sides of an underground facility.
 - Washington state law defines it a little differently, as 24 inches from the outside dimensions of both sides of an underground facility.
- Hand dig prudently in this zone. 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 gas lines.
- The tolerance zone is a minimum safety clearance. Locator marks are only the locator's most reasonable interpretation of the equipment's signal. So 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.**
- **If you do not understand the locate marks, do NOT dig.**
- **If you cannot visually verify the location of marked utility lines by hand digging, STOP digging.**
- **If you find unmarked, mismarked, or seemingly abandoned facilities, STOP digging.**
- **If you see signs of something buried after the locate was completed, such as a fresh trench, STOP digging.**
- **If the marks fade or are destroyed, STOP digging and contact 811 to request a new ticket.**

When you work around buried natural gas 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 the 811 service that your locate request has not been fulfilled.
- 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 notify 811 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.

Watch Out Around Pipeline Markers

- Pipeline markers indicate the need for **extra care** around natural gas transmission pipelines and some distribution lines.
- These markers are **general indicators only**. For security purposes, they do not show the exact location, path, or depth of natural gas pipelines.
- The markers should **never be used as a substitute for calling 811**.
- Call the number on the marker **if you notice any type of suspicious activity** or construction occurring nearby without gas utility personnel present.



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

- Pipeline markers indicate the need for extra care around natural gas transmission pipelines and some distribution lines. These markers are usually found along roadways, at railroad crossings, and at other points along the pipeline route.
- These markers are general indicators only. For security purposes, they do not show the exact location, path, depth, or number of natural 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.
- Call the number on the marker if you notice any type of suspicious activity or construction occurring nearby without gas utility personnel present.

Natural Gas Leak Detection: Look, Listen, and Smell

- **NW Natural adds a distinctive, sulfur-like odor to natural gas to assist in leak detection.** However, this odor may fade or be difficult to distinguish, and not all gas transmission lines are odorized.
- **Don't rely on your nose alone. Use your senses of sight, hearing, and smell to detect a natural gas leak.** Here are the signs:
 - The distinctive odor of natural gas
 - Dead or dying vegetation (in an otherwise moist area) over or near a pipeline
 - Continuous bubbling in water
 - A hissing, whistling, or roaring sound
 - Dirt blowing into the air from a hole in the ground
 - An exposed pipeline after an earthquake, fire, flood, or other disaster
 - A damaged connection to a gas appliance



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

- NW Natural adds a distinctive, sulfur-like odor to natural gas to assist in leak detection. However, this odor may fade or be difficult to distinguish. Additionally, gas in some transmission pipelines may not be odorized.
- So don't rely on your nose alone. Use your senses of sight, hearing, and smell to detect a natural gas leak. Here are the signs:
 - The distinctive odor of natural gas. This smells like sulfur or rotten eggs.
 - Dead or dying vegetation (in an otherwise moist area) over or near a pipeline.
 - Continuous bubbling in water.
 - 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.
 - An exposed pipeline after an earthquake, fire, flood, or other disaster.
 - A damaged connection to a gas appliance.

Natural Gas Emergencies

- **If you contact a natural gas pipeline or suspect a gas leak, take these steps:**
 - **Warn others and leave the area immediately.**
 - **Do not use matches or lighters, start an engine, or operate any electrical device—even a phone.** A spark could ignite leaking gas, causing a fire or explosion.
 - **Do NOT attempt to stop the flow of gas or fix the pipeline.** Leave the excavation open.
 - **When you have reached a safe distance, report the incident:**
 - Call **911** immediately if you suspect a gas leak. Federal code requires this.
 - Call **NW Natural** if you suspect a gas leak or contact a pipeline, even if damage is not apparent.
 - **Stay far away from the area** until safety officials say it is safe to return.
 - **Report the incident to your supervisor.**



A natural gas pipeline may become compromised even when damage is not visible, and the smallest spark can ignite leaking gas and cause a fire or explosion.

So if you contact a natural gas pipeline or suspect a natural gas leak, assume there's a danger and take these steps:

- Warn others, and leave the area immediately.
- Do not use matches or a lighter, start an engine, or operate any electrical device—even a phone. A spark could ignite leaking gas.
- Do not attempt to stop the flow of gas or fix the pipeline. Leave the excavation open.
- When you have reached a safe distance, report the incident:
 - **Call 911 immediately if you suspect a gas leak.** Federal code requires this.
 - Call NW Natural if you suspect a gas leak or contact a pipeline, even if damage is not apparent. Remember: A pipeline that is pulled or bumped could break some distance away from the contact point. A scrape to a pipeline coating can lead to corrosion that causes a future gas leak. And a cut tracer wire on a plastic pipeline can make the line unlocatable in the future. So report any and all natural gas pipeline contacts to NW Natural immediately.
- Stay far away from the area until safety officials say it is safe to return.
- Report the incident to your supervisor.

Natural Gas Safety Review

- Notify 811 before you dig. It's required by law.
- Pre-mark your dig area with white paint, flags, and/or stakes.
- Wait the required amount of time.
- Conduct a visual site survey before digging.
- Respect the marks and dig with care.
- Watch out around pipeline markers.
- Know the warning signs of a natural gas leak.
- In a natural gas emergency, warn others and leave the area immediately, avoid spark hazards, and call **911** and **NW Natural**.

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

- Notify the underground utility locator service by dialing 811 or using the online ticket-entry system before you dig.
- Pre-mark your dig area with white paint, flags, and/or stakes. This makes it easier for locators to identify and mark affected utility lines.
- Wait the required amount of time for lines to be marked. In Oregon and Washington that's at least two full business days.
- Conduct a visual site survey before digging. You might find something that the locator overlooked.
- Respect the marks and dig with care. Exercise extreme caution when digging near buried utilities. Follow hand-excavating rules and have a spotter present whenever heavy equipment is used.
- Watch out around pipeline markers. Report any suspicious activity nearby.
- Know the warning signs of a natural gas leak.
- In a natural gas emergency, warn others and leave the area immediately, avoid spark hazards, and call 911 and NW Natural.

Contact Information

- In case of a natural gas emergency, call **911** and NW Natural at **800-882-3377**.
- For additional information, visit the NW Natural website at **nwnatural.e-smartworkers.com**.

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

In case of a natural gas emergency, call 911 and NW Natural at 800-882-3377.

For additional information, visit the NW Natural website at nwnatural.e-smartworkers.com.

NW Natural®

**worker
beware®**

Work Safely Around Natural Gas Lines

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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, a gas safety quiz, and more information about the properties of natural gas and the gas delivery system.

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

NW Natural thanks you for helping to keep workers safe.