Utility Damage Prevention and Natural Gas Safety Training

Vermont MUST Seminar

David Attig, CUSA

VGS Safety & Compliance Manager

April 2026

The power of pipelines…….

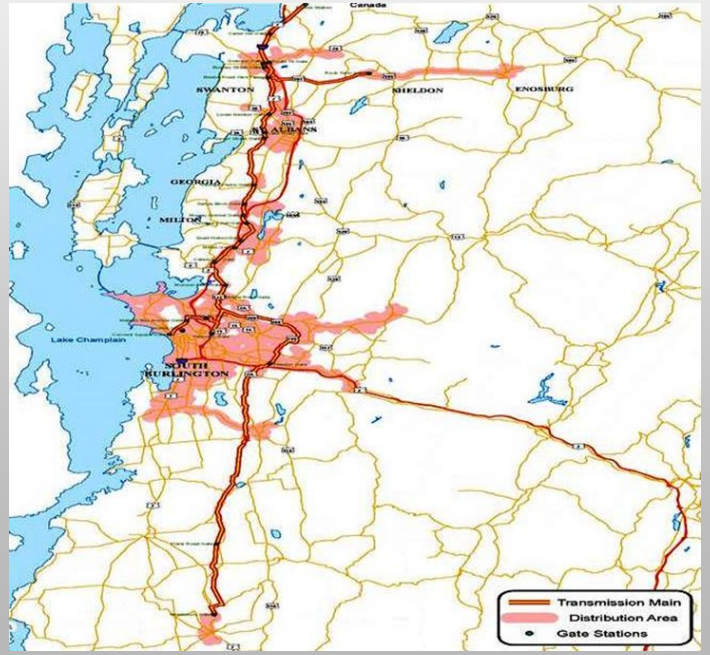
Click Link:

https://youtu.be/-gMR9pmPAPs?si=ivSIfYYjF-seCSih

OPERATING AREAS FOR VERMONT HIGH PRESSURE NATURAL GAS TRANSMISSION COMPANIES

VGS

Emergency 800-639-8081



ANY LEAK:
911

PMPL

Portland-Montreal Pipeline

Emergency 866-253-7351

WHAT IS A GAS TRANSMISSION PIPELINE?

- TRANSPORTS NATURAL GAS TO THE LOCAL DISTRIBUTION COMPANIES AND LARGE COMMERCIAL INDUSTRIES
- GENERALLY MUCH LARGER DIAMETER PIPES OPERATING AT VERY HIGH PRESSURES
- CAN BE IN VERY REMOTE RURAL LOCATIONS, NEIGHBORHOODS OR CITY STREETS

HOW CAN YOU KEEP THE TRANSMISSION PIPELINE SAFE?

➢ **WHEN WORKING AROUND A PIPELINE EASEMENT:**

- ENSURE THE PIPELINE COMPANY REP IS ONSITE DURING ALL ACTIVITIES WITHIN THE PIPELINE EASEMENT INCLUDING:
  - **ALL** CONSTRUCTION ACTIVITY
  - **ALL** EQUIPMENT CROSSINGS
  - **ANY** INSTALLATION OF MATTING OR BRIDGING
  - **ANY** PREAPPROVED BLASTING

HOW CAN YOU KEEP THE PIPELINE SAFE?

- **DO NOT USE THE PIPELINE EASEMENTS AREA FOR:**
  - TREES AND PLANTINGS
  - SHEDS, PLAYGROUND EQUIPMENT, SWIMMING POOLS
  - PARKING VEHICLES OR EQUIPMENT
  - STORAGE
  - LAYDOWN YARDS
  - USING THE EASEMENT AS ACCESS TO ANOTHER AREA

WHAT ARE PIPELINE CROSSINGS?

- CAN BE ABOVE GROUND
  - ROADS
  - DRIVEWAYS
  - CONSTRUCTION ACCESS
  - LOGGING OPERATIONS
  - FENCING
- CAN BE BELOW GROUND
  - UTILITY LINES
  - DOG FENCES
  - IRRIGATION

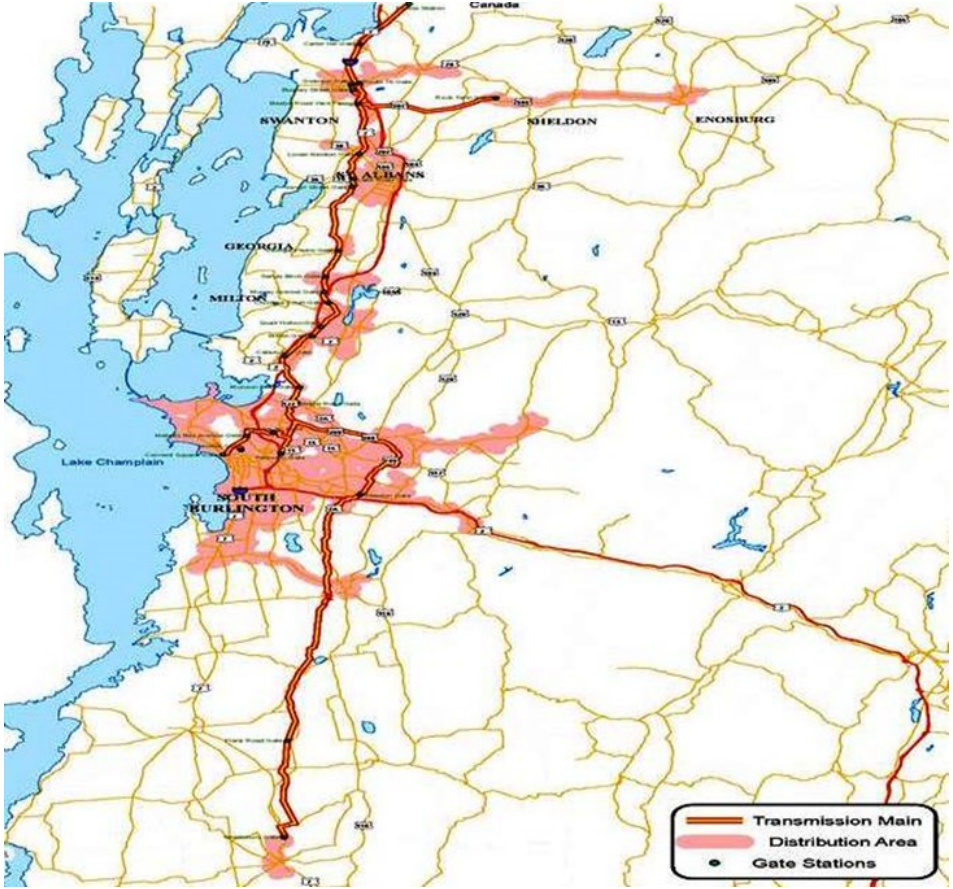
WHAT IS AN UNAUTHORIZED PIPELINE CROSSING?

WITHOUT PROPER REVIEW AND AUTHORIZATION, IT IS AN EVENT THAT COULD CAUSE SERIOUS IMPACT TO THE PIPELINE.

DON'T RISK IT!!

- Second vehicle got stuck over the pipeline
- Pipeline had to be excavated and checked for damage
- Picture was posted on a public Facebook page
- A pipeline easement is clearly NOT the place to go mudding!!

About VGS



- Vermont Gas Systems, Inc. established in 1965.
- Office located in South Burlington
- Employees approximately 150 employees
- Serving over 55,000 customers in Franklin, Chittenden and Addison Counties.

Service Area/Town Coverage Map Link:

https://www.vermontgas.com/account/coverage-map/

VGS Pipeline System - Border Station – Transmission Pipeline

- Odorant added to VGS system at the Border Station *(and temporarily in Williston, New Haven and Middlebury)*.

VGS Gate Stations

- Gas moves from transmission system to distribution system via “Gate Stations”.
- Gas Pressure is reduced from transmission pressure to distribution pressure < 100 psi.
- Large or small – they operate similarly.

Distribution Pipelines (Mains – typically located in street)

- Coated steel or polyethylene pipelines transport gas from gate stations to customers.
- Complex network of valves used to isolate sections of system when necessary.
- NO old cast iron or bare steel pipelines in the VGS system.

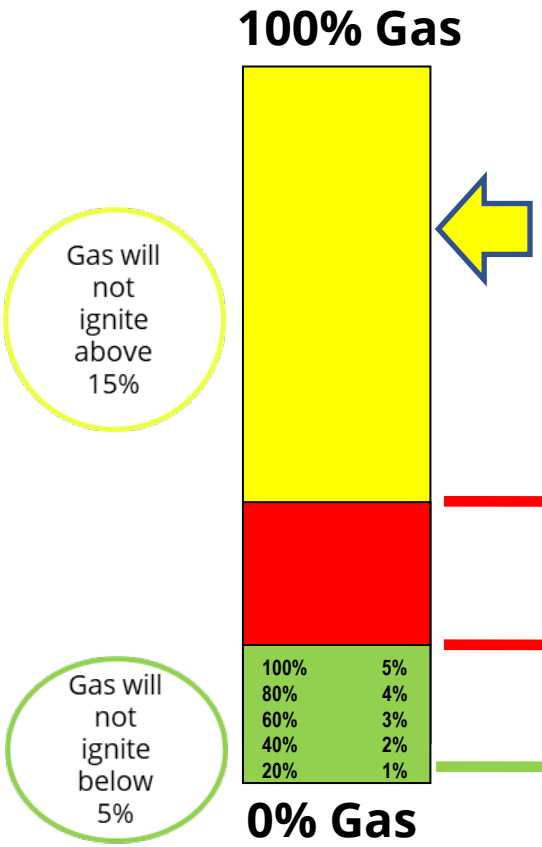
Distribution Service Lines

- Service lines run from distribution mains up to customer's meter(s)
- One service can serve multiple premises (Example - 8 premises, 1 service photo below)
- VGS has over 41,000 "Service Lines" and over 55,000 customers (premises)

Behaviors of Natural Gas

- Odorless – Mercaptan is added for rotten egg smell
- Lighter than air (propane-heavier than air)
- Follows path of least resistance
- Will rise through dirt – until hits pavement or frost – then moves laterally – possibly against a foundation, through cracks or openings – structure may fill with gas
- It will continue to travel until the source of damage is made safe by trained gas employees

Flammable Range of Natural Gas (ignites at 1100 F)



If gas concentration exceeds 15% an imminent danger exists when venting and ignition sources are present. When gas levels dissipate it will pass through the explosive range. Always secure power sources before venting if high gas levels exist.

15.0% Gas (U.F.L. – upper flammable limit)

5.0% Gas (L.F.L. – lower flammable limit)

1 % Gas = 20 % of the Lower Flammable Limit (LFL)
20% LFL is the odorization threshold – point where you can smell gas
20% open air LFL reading is the VGS evacuation threshold

Possible Ignition Sources

- Ringing the doorbell
- Turning light switch on or off
- House phone – cell phone – 2-Way radios
- Static electricity
- Lighting any smoking materials
- Vehicle engines or equipment

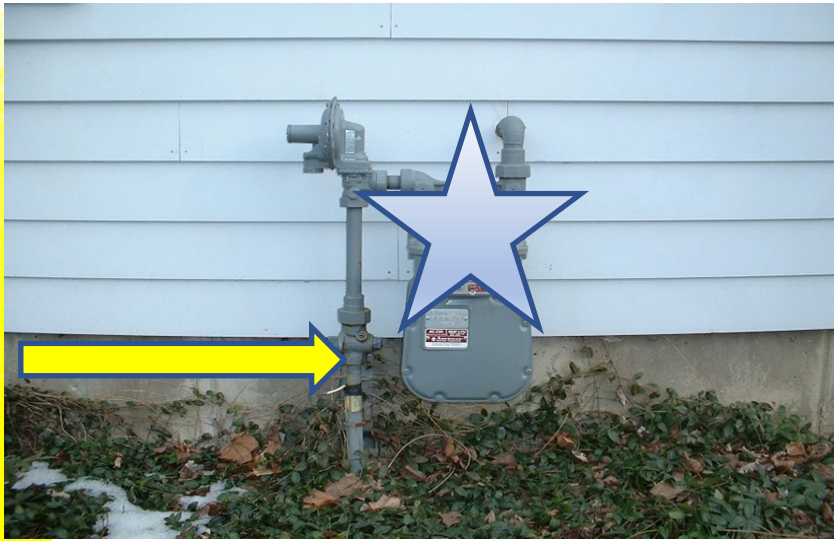
What gas pipes look like, they do not always run in a straight line

Private Gas and Master Meter Sets

- VGS marks facilities it owns
- Private gas after the meter must be located by a private utility company – propane is also not marked by VGS
- Some locations (often propane) have a master meter – anything after the master meter is considered private
- Generators, grills, fire pits are examples of structures that can have private gas

Live Service Tags

- Attached when the service is gassed up but there are no meters attached to the riser. May be used when service is new, and customer has not been turned on yet - or when customers have discontinued gas use.



Excess Flow Valves

Excess Flow Valve

- Excess Flow Valves (EFV's) are installed in many (but not all) services.
- They curtail the flow of gas if a serious leak occurs on the service line.
- Some gas continues to flow so the valve will reset when line is repaired. No effort should be made to stop any weeping gas from a damaged service line as this will reset the excess flow valve. Call VGS even if gas leakage is minimal.

Pipeline Markers

- Markers identify the general location of pipelines. Used at specific locations in the distribution system and along the transmission line right of way.
- Pipeline markers contain emergency contact information.
- Marking tape used where pipe installed via open trenching.

Safe Excavation Best Practices

- Review the job brief with all personnel and any potential hazards
- Pay attention to any changes in direction that the facilities may take – not all facilities run in a straight line!
- Don't put spoil piles over marks
- Use a spotter
- Protect the underground facility once it is exposed

Visual Cues of Gas Facilities in the Area

- Valve boxes
- Cathodic protection test boxes
- Trenches and/or repair patches
- Meters or regulator vents at buildings

- **Never Assume Anything - Especially Depths**
- **They can vary for variety of reasons.**

Pipelines (and other utilities) could be anywhere!

Don't rely entirely on markers:

- ❑ May not have markers because of the location (farm fields, etc.).
- ❑ Markers could have been destroyed (snowplows, ATV's, vandalism, etc.)

Special Concerns: Cross Bores

Damaging a natural gas line in a sewer service line creates a serious safety issue and can result in a gas leak, fire or explosion.

Protect yourself and others. CALL BEFORE YOU CLEAR a blocked sewer service line beyond the outside wall of a building.

If you suspect a natural gas leak, evacuate the building immediately and then call 911 and Vermont Gas Systems from a safe distance. The Vermont Gas emergency number is 1-800-639-8081

Signs that a gas line has been damaged during the clearing of a sewer service line could include bubbling water, a hissing sound, natural gas (rotten egg) odor or blowing dirt.

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

Before attempting to clear a blocked sewer service line beyond the outside wall of a building, call Dig Safe at 811.

- Available 24 hours a day, 7 days a week
- There is no charge for this service

Blocked sewer service line?

Avoid the risks.

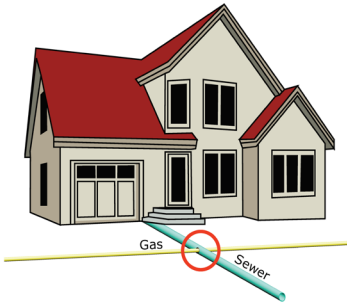
CALL BEFORE YOU CLEAR a blocked service line beyond the outside of a building.

Contact Dig Safe at 811.

Important SAFETY Message

VGS

Vermont Gas Systems wants to make you aware of a potential safety issue that could arise if you attempt to clear a blocked sewer service line beyond the outside wall of a building.



This photo, taken inside a sewer service line, shows a natural gas line that has penetrated the sewer service line.

- A blocked sewer line may be the result of a utility line (gas, electric, etc.) having been accidently "cross-bored" through a sewer line.
- Attempting to clear the blockage can result in a serious accident involving loss of life, injury and significant property damage.
- If the blockage involves a natural gas line and the gas line is damaged, natural gas can leak into the sewer service line, sewer mains, and nearby buildings, posing an immediate safety risk
- The potential safety risk exists for all building types including residential, commercial, institutional and industrial.
- Buildings without natural gas service lines may also be affected

Take the necessary precautions to protect yourself and others.

If unable to visually verify that a cross-bore blockage does not exist, follow these precautionary measures before you attempt to clear a sewer blockage beyond the outside of a building wall.

Call Dig Safe at 811 and request an emergency locate to get utility lines in the area marked. If the utility markings cross the known path of a sewer line, you may have a cross-bore blockage.

If you suspect or discover that the blockage is caused by a cross-bore:

- DO NOT attempt to clear the blockage with mechanical equipment.
- Get help from the involved utility operator. Vermont Gas can be reached at (800) 639-8081. If the blockage is the result of a cross-bored gas line, a Vermont Gas technician will provide assistance to help correct the problem
- Hand dig in the area where the blockage and/or cross-bore may exist.

REMEMBER:
Call Dig Safe at 811

VGS
802-863-4511
vgsvt.com
800-639-8081

VGS

Signs of a Hit Gas Pipe

- Blowing or hissing sound
- Dust blowing from the hole
- Continuous bubbling in wet area
- Rotten egg smell
- Flames (if gas has ignited)

What to Do If a Damage Occurs

- Shut down all machinery
- Move away from the affected area
- Do not do anything that could cause a spark
- Call 911
- Notify gas company
- Keep general public away from area
- Do not reenter excavation or attempt to stop the flow of gas
- Additional direction will be given by 911 and the gas company
- If natural gas is escaping inside a building or is entering a building through an opening, knock on the door to notify the building occupants to evacuate. **Do not ring the doorbell**.

What NOT to do when a gas line is damaged

- DON'T PANIC
- DON'T Look in or get in the hole
- DON'T Attempt to stop the flow of gas
- DON'T Operate any valves on the gas system
- DON'T Attempt to repair the damage
- DON'T Backfill. Wait until the gas company has made the repair and gives the OK to do so

Reporting Damages

- **Report all Damages to the Gas Company**
  (and 911 if there is a leak)
- **Coating Damage**
  - Could lead to future leaks.
- **Broken Tracer Wire or Warning Tape**
  - Plastic is not conductive so without traceable wire and tape gas facilities can't be located for future construction
- **Unmarked Gas Facilities**
  - Notify VGS immediately so we can correct possible mapping discrepancies

EXCAVATION & DEMOLITION NEAR VERMONT GAS FACILITIES

About Vermont Gas (VGS)

VGS operates a pipeline system located in Northwestern Vermont (Franklin, Chittenden & Addison counties). If you perform work in these areas, please review this information with employees who perform activities which could result in damage to natural gas facilities. If you have questions related to utility damage prevention, natural gas safety, or would like to arrange free training, email manderson@vermontgas.com - or go to the Dig Safe/MUST webpage at **www.must-ne.com** to find upcoming free regional seminars or request training materials.

Safety Tips - What should I do before I begin to work?

Pre-mark the boundaries of the work area with white paint, flags or stakes. Notify Dig Safe® at **811, 72 hours prior to beginning work, not including Saturday, Sunday, or legal VT holidays**. Dig Safe® is a free service that will notify VGS and other member utilities. VGS will then ensure its pipelines are located and marked with yellow paint, flags or stakes. In some cases, VGS Locators may write No VTGAS, or No VGS, on the ground to let the excavator know that VGS does not have buried lines in the identified work area. Permanent pipeline markers are sometimes used to indicate the presence of buried pipelines, but they are not everywhere and do not mark the exact facility location – so before you begin any work, notify Dig Safe® online via the Exactix portal **digsafe.com/exactix** OR call Dig Safe® at **811**.

The excavator is responsible for maintaining utility markings. If markings become obscured, contact Dig Safe® and request remarks. In Vermont Dig Safe® tickets are good for 30 days – so long duration projects will require monthly Dig Safe® requests.

If the work involves Demolition, notify Dig Safe® and then contact VGS directly to verify that gas service to the structure will be disconnected. DO NOT begin demolition activities if you see a gas meter or piping along the building – call VGS at (800) 639-8081 in such cases so we can verify if gas has been physically disconnected.

What precautions should I take while excavating near buried lines?

Pipeline markings indicate the approximate horizontal position of buried pipelines. Therefore, reasonable precautions (hand tools, vacuum excavating, or other safe methods) must be used to verify the exact horizontal and vertical location of pipelines before using backhoes or other earthmoving equipment (Note: make sure to locate the actual pipe, not just the tracer wire which VGS uses to locate its plastic pipelines. The natural gas pipe should be below or beside the wire and if it is not - contact VGS before using mechanized equipment).

Pipeline depths vary for a variety of reasons - grading, landscaping, erosion, etc. This is especially true for service lines which run from a main in the street to a structure. As such, verify pipeline depth at frequent intervals – NEVER ASSUME the depth remains constant. When boring, Vermont law requires that pipeline locations be visually verified at each crossing and at periodic intervals parallel to the marked utility.

What should I do if I damage a pipeline and there is No Leak?

Vermont State law requires excavators to notify utilities when buried facilities are damaged, even if there is no apparent leak and/or minimal damage. VGS will respond to verify there are no leaks and the area is safe.

Continued on Reverse

What should I do if I damage a pipeline and Gas Is Leaking?

1) Natural gas is lighter than air, non-toxic, flammable and has a rotten egg like odor. Move a safe distance away from the area (if you can smell, see or hear a gas leak - you are too close). Evacuate adjacent areas and do not allow anyone into the area. Divert automobile traffic if you must.
   From a safe location – **Immediately call the local Fire Department (911) and Vermont Gas (800-639-8081).** Make sure you talk to someone in person when reporting damage. Don't leave messages.
2) Eliminate all sources of ignition. Do not allow anyone to smoke.
3) If you suspect that gas is entering a building, you must evacuate the building:

   a) Do not ring doorbells since they could create a spark. Knock on doors instead.
   b) Do not turn on light switches or use phones in areas where gas is present.
   c) Ask the occupants to exit the building immediately.
   d) Do not allow people to re-enter the building until VGS and the fire department ensure it is safe.

4) Do not cover the leak with dirt. This may cause gas to migrate underground to unknown locations such as adjacent buildings – it is better to simply let the gas vent to atmosphere because it is lighter than air.
5) Do not attempt to crimp or plug a damaged pipeline because static electricity could ignite the gas.
6) If the gas begins to burn, unless it is necessary to do so, do not attempt to extinguish the fire. Burning natural gas will not explode. Move any flammable materials away from the area and wait for emergency response personnel.

There are other reasons why it is important to notify Vermont Gas when pipeline facilities are damaged. The reasons are:

1) Unseen buried fittings may have been damaged when the pipeline was struck or pulled. Gas may be leaking underground that you are not aware of. VGS has sensitive equipment that can detect such leaks.
2) Steel pipes are protected from corrosion with a special coating. If the coating is damaged and not repaired, a hazardous leak could develop later.
3) Plastic pipe has a small wire running adjacent to it. This wire enables VGS to locate the pipeline. If the wire is damaged, VGS will be unable to locate the line in the future.
4) If you discover damage to VGS facilities which appear to have occurred sometime ago, please contact VGS. This will enable VGS to make repairs and relieve you of potential future liability since you were excavating in the area.

You should also know that:

The ***State of Vermont requires all utilities*** to notify the Department of Public Service (DPS) whenever a buried facility is damaged – regardless of who may be at fault. The DPS then investigates the reported damage. As a result, utility personnel will need to collect information from you after the damage occurs.

Additional information about utility damage prevention and safety can be obtained at:

Dig Safe® - **digsafe.com**

Vermont Department of Public Service - **publicservice.vermont.gov/publications-resources/damage prevention**

National Pipeline Mapping System - **www.npms.phmsa.dot.gov**

Common Ground Alliance - **call811.com/Before-You-Dig**

Questions?