400,000+ Customers
14,000+ Miles of Main
What is natural gas?

- 95% methane
- Other 5%:
  - Ethane
  - Propane
  - Water Vapor
  - Other heavier hydrocarbons
What is natural gas?

✓ Non-toxic
✓ Breathed without harm
✓ Simple Asphyxiant
What is natural gas?

✓ Odorless, colorless, and tasteless
✓ Mercaptan added
✓ Must be readily detectable to the average nose at 20% of the lower flammable limit
What is natural gas?

✓ Exists as a vapor inside the pipeline
✓ Boiling Point = -258° F
✓ Specific gravity = 0.6
  ✓ Lighter than air
  ✓ Quickly dissipates in the atmosphere
  ✓ Consider wind direction and vapors
What is natural gas?

Flammability Range

Too Lean to Burn

LFL

Too Rich to Burn

UFL

Natural Gas

Mixture %
What is natural gas?

- Ignition Temperature of 1,100° F
- Ignition Sources
  - ✓ Scuff of a shoe
  - ✓ Static discharge
  - ✓ Electronic devices like cell phones
  - ✓ Matches
  - ✓ Cigarettes and E-cigarettes
  - ✓ Combustion engines
  - ✓ Lightning
Natural Gas Transmission
Typical Distribution System

1200 PSIG

Gate Station
- Meter
- Regulators
- Odorizer
- Pressure Relief Device

<250 PSIG

Regulator Station
- Regulators
- Pressure Relief Device

<60 PSIG

Customer Meter

<2 PSIG
Distribution: Gate Station
Distribution: Plastic Pipe
Distribution: Steel Pipe
Distribution: Reg Station
Distribution: System Map
Hit lines

Damage Reports by Year

- 2017: 1,060 (External Contractor), 202 (PGS), 0 (PGS Contractor)
- 2018: 1,131 (External Contractor), 190 (PGS), 0 (PGS Contractor)
- 2019: 1,050 (External Contractor), 182 (PGS), 0 (PGS Contractor)
Call Before You Dig

✓ Regulatory Requirements
✓ Accurate Info
✓ Maintaining Marks
✓ Waiting Period (Two business days)

✓ Spotting Utilities
✓ Penalties
✓ 80/20 Split
Signs of Gas Facilities...
Signs of Gas Facilities...
Signs of Gas Facilities...
Signs of Gas Facilities...
Signs of Gas Facilities...
Signs of Gas Facilities...
Signs of Gas Facilities...
Signs of Gas Facilities...
Signs of Gas Facilities...

Marker colors...
Signs of Gas Facilities...

✓ Paint
✓ Flags
✓ Stakes
✓ Offsets
Inside Gas Leak Response

- Evacuate building
- Do not operate electrical switches
- Open windows and doors to ventilate
- Shut-off gas at meter (depending on severity)
- Do Not reopen a closed valve
Meter Shut-Off
Meter Shut-Off

Manifold Meterset
Relief
Relief
Hit Line Response

- Contact gas utility
- Evaluate risks and identify hazards
- If possible, eliminate ignition sources
- Do not operate valves, but if it occurs *do not* reopen!
- Establish a safe zone around the leak
  - Do not let anyone inside
  - Do not allow ignition sources inside
  - Evacuate businesses and residences
  - Establish traffic control
Excess Flow Valve (EFV)
Adding water...
Combustible Gas Indicator...
Static Electricity

- Oklahoma Incident
- Static Mitigation
  - Wet Burlap
  - Static Spray
Make Safe Operations

- PGS Emergency Response
  - Hot Zone
  - PPE
Make Safe Considerations

- Public safety (migration, evacuations, etc.)
- Damaged facility
- Number of feeds
- Pressure
- Impact to customers
- Options other than hot zone entry
Make Safe Options: Line Pack
Make Safe Options: By-pass
Make Safe Options: CNG
Make Safe Options: Squeeze & Clamp
Make Safe Options: Post Storm
Make Safe Considerations: Ignition

- **DO NOT** operate valves, but if valves have been operated, **DO NOT** reopen!
- **DO NOT** attempt to operate any equipment inside the safe zone.
- **DO NOT** attempt to extinguish fire unless gas supply can be shut-off.
Compressed Natural Gas
Normal Operations

- Two PGS call centers in Florida
- On-call employees available 24/7
- GOAL: Emergency response within 60 minutes