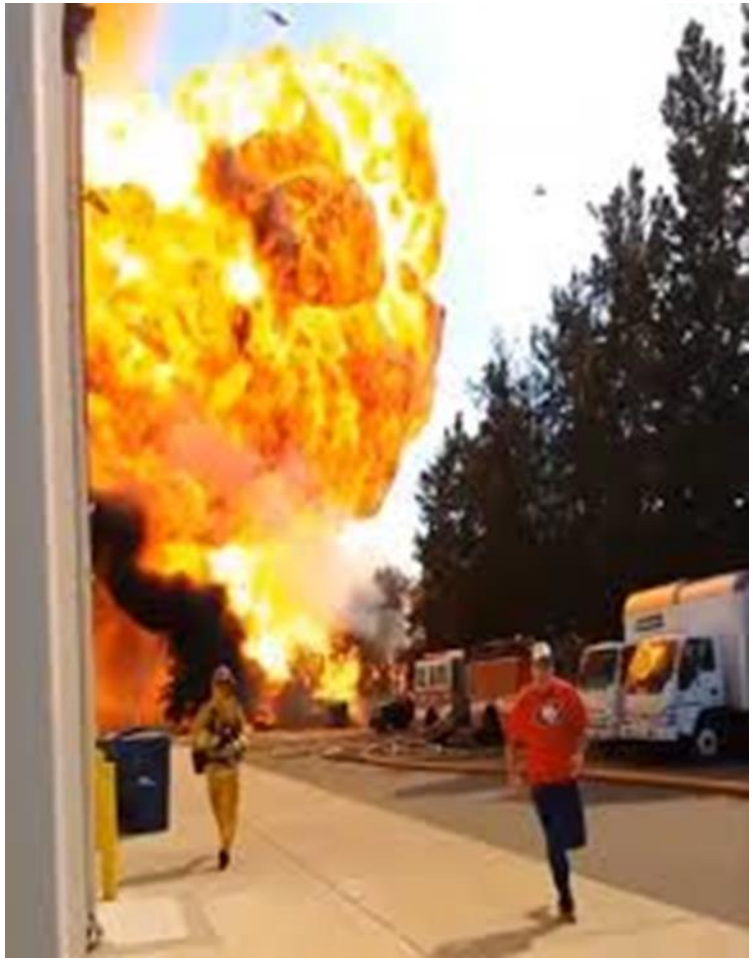


Firefighter training for: BLEVEs, Highway, Rail and Pipeline Transportation of Hazardous Substances

BLEVE

BLEVE situations can and do present themselves through different scenarios such as rail tank car, highway tanker or standing tank. BLEVES are NOT associated with flammable chemicals. Any gas or liquid stored in a pressurized container can BLEVE.

- LP Gas or other hydrocarbons AND
- Oxygen
- Water

Firefighters are killed or injured at these types of incidents because we rarely respond to them

- lack of training
- "invincibility mode“
- tunnel vision

CSB

SAFETY VIDEO

How does a BLEVE happen?

- What's going on inside the tank?
- What's the condition of the tank?
- Is there flame impingement?
- How long?
- What's going on around the tank?

Aurora FD

Cleveland BLEVE 1944

- Two liquid gas tanks explode in Cleveland, Ohio, killing 130 people, on this day in 1944. It took all of the city's firefighters to bring the resulting industrial fire under control.
- At 2:30 p.m., laboratory workers at the East Ohio Gas Company spotted white vapor leaking from the large natural gas tank at the company plant near Lake Erie. The circular tank had a diameter of 57 feet and could hold 90 million cubic feet of the highly flammable gas. Ten minutes later, a massive and violent explosion rocked the entire area. Flames went as high as 2,500 feet in the air. Everything in a half-mile vicinity of the explosion was completely destroyed

Cleveland BLEVE 1944

Cleveland BLEVE 1944

Cleveland BLEVE 1944


Training

HIGHWAY

Highway-Ohio

- Aug 4 2014 - Gasoline tanker closes SR 30 for several days
- June 19 2015 - Crews on worked for more than 10 hours on I-75 to clear tanker truck crash Thursday night.
- April 1, 2016 - 2,600 gallon propane rollover Lexington Twp., Ohio

RAIL

Rail

- Ethanol and Bakken Crude are being transported through and around Stark County in “Unit Trains” –carrying 1 million or more gallons of flammable substances in a single train.

Other Potential pressurized tanks you may encounter

- Chlorine
- Anhydrous Ammonia
- Acetylene
- Air
- Carbon dioxide
- Hydrogen
- LPG
- Oxygen

PERRY TOWNSHIP 2005

Railcars

Perry FD derailment 2005

- 6 cars derailed
- HazMat
- Fire
- Multi-agency

UTLX 202293
CAPY 30000 GAL US
111562L
SPEC D-5 7 OUTER-6 INNER
36 WHLS
1090
3


BOTTOM OPERATING VALVE


GATX 31202
LD LMT 196800 LB 89250 KG
30050 KG NEW 8-97
LITH LC-34
LINED CAR
APPLIED 1-87 LITH


LD LMT 196800LB 89250KG
LT WT 66200LB 30050KG NEW 8-97

Underground Pipelines

There are 5 basic types

Old and new in our county

Pipelines: Flowlines

Flowlines move natural gas from the wellhead to nearby storage tanks, transmission compressor stations, or processing plant booster stations. Flowlines are relatively narrow pipes that carry **unodorized** raw gas at a pressure of approximately 250 psi (pounds per square inch). Typically, they are buried four feet underground and can corrode, especially if they are carrying wet gas. They are also prone to methane leakage — according to the EPA, "Methane leakage from flowlines is one of the largest sources of emissions in the gas industry."

Pipelines: Gathering

- collect gas from multiple flowlines and move it to centralized points, such as processing facilities, tanks, or marine docks.
- medium size steel pipes (usually under 18" diameter) that carry **unodorized,** raw gas at a pressure of approximately 715 psi. Typically, gathering lines are buried four feet underground and carry corrosive content that can affect pipeline integrity within a few years.

Pipelines: Transmission

Transmission pipelines carry natural gas across long distances and occasionally across interstate boundaries, usually to and from compressors or to a distribution center or storage facility. Transmission lines are large steel pipes (usually 2" to 42" in diameter; most often more than 10" diameter) that are federally regulated. They carry **unodorized** gas at a pressure of approximately 200 to 1,200 psi.

Pipelines: Distribution

Also known as "mains," are the middle step between high pressure transmission lines and low pressure service lines. Distribution pipelines operate at an intermediate pressure. This type of pipeline uses small to medium sized pipes (2" to 24" in diameter) that are federally regulated and carry odorized gas at varying pressure levels, from as little as 0.3 up to 200 psi. Distribution pipelines typically operate below their carrying capacity and are made from a variety of materials, including steel, cast iron, plastic, and occasionally copper.

Pipelines: Service

Connect to a meter that delivers natural gas to individual customers. Service pipelines are narrow pipes (usually less than 2" diameter) that carry odorized gas at low pressures, such as 6 psi. Service pipelines are typically made from plastic, steel, or copper.

Pipelines – Aging Infrastructure

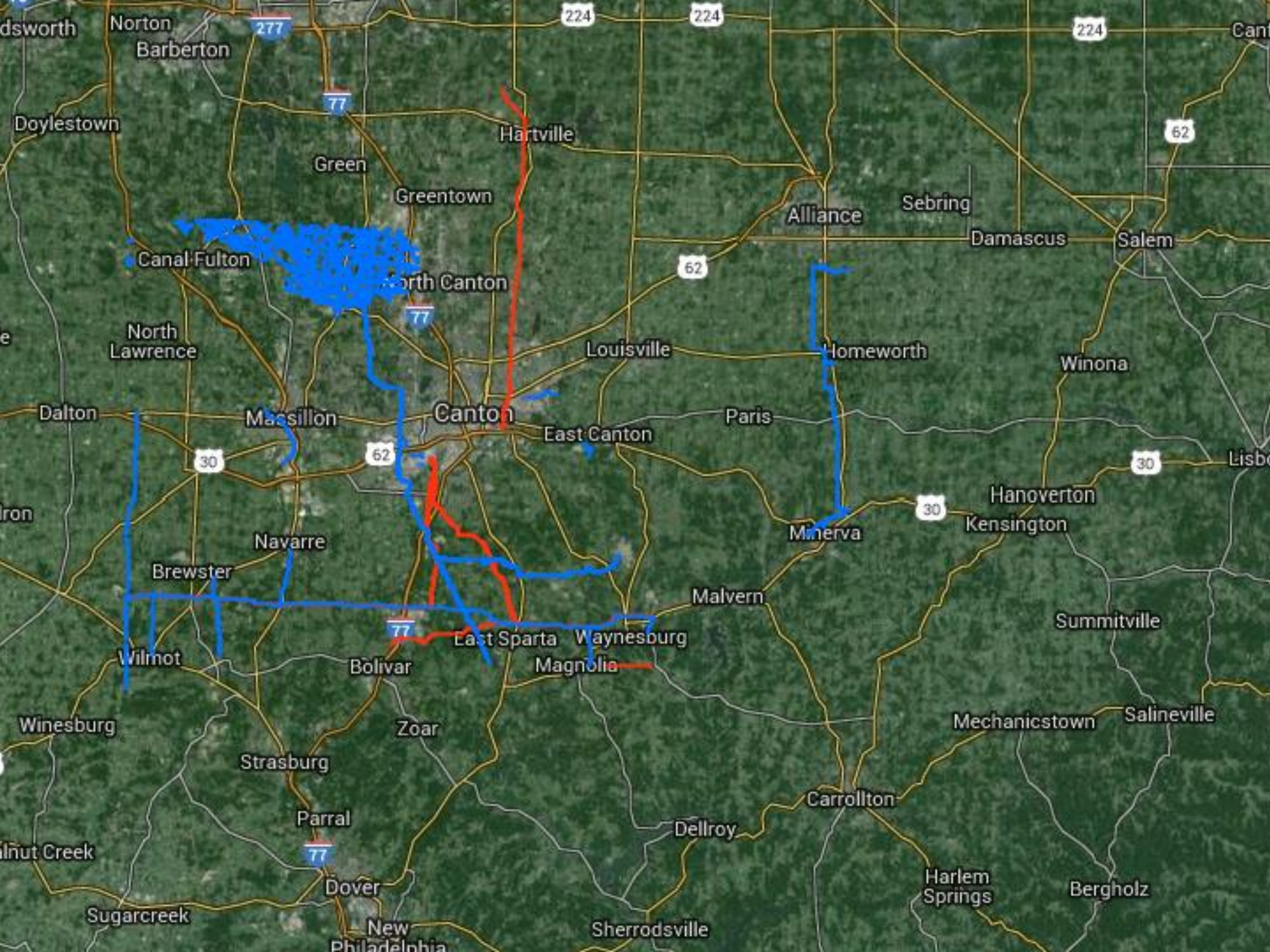
- You have responded to “odor” calls and are already aware of the hazards associated with “leaks” from gas pipelines.
- Numerous pipelines
- Old and Deteriorating pipe

County Pipelines

- The following slide shows all major pipelines running through Stark County according to the National Pipeline Mapping System (NPMS).
- In the NPMS, red lines designate hazardous liquids and blue lines designate gas transmission.
- Not all of these pipelines are active, some are abandoned or empty.
- We will point out some of these pipelines to identify the owner, size of the pipe, and product transported through the pipe.

NPSM

- Understand that individual home service pipelines in your jurisdiction or district will not show up on these maps.
- You may be able to locate lines coming from individual wells in the field going back to major lines.


Norton
Barberton
Doylestown
Hartville
Green
Greentown
Alliance
Sebring
Damascus
Salem
Canal Fulton
North Canton
North Lawrence
Louisville
Homeworth
Winona
Dalton
Massillon
Canton
Paris
East Canton
Hanoverton
Kensington
Minerva
Navarre
Brewster
Malvern
Summitville
East Sparta
Waynesburg
Wilmot
Bolivar
Magnolia
Winesburg
Zoar
Mechanicstown
Salineville
Strasburg
Carrollton
Parral
Dellroy
Dover
Harlem Springs
Bergholz
Sugarcreek
New Philadelphia
Sherrodsville
224
277
77
62
30

Massillon

- The following slide shows the only major pipeline in the NPMS within the city of Massillon. It is currently abandoned. There is some question whether it is owned by Dominion or Northeast Ohio Gas.

Jackson Township

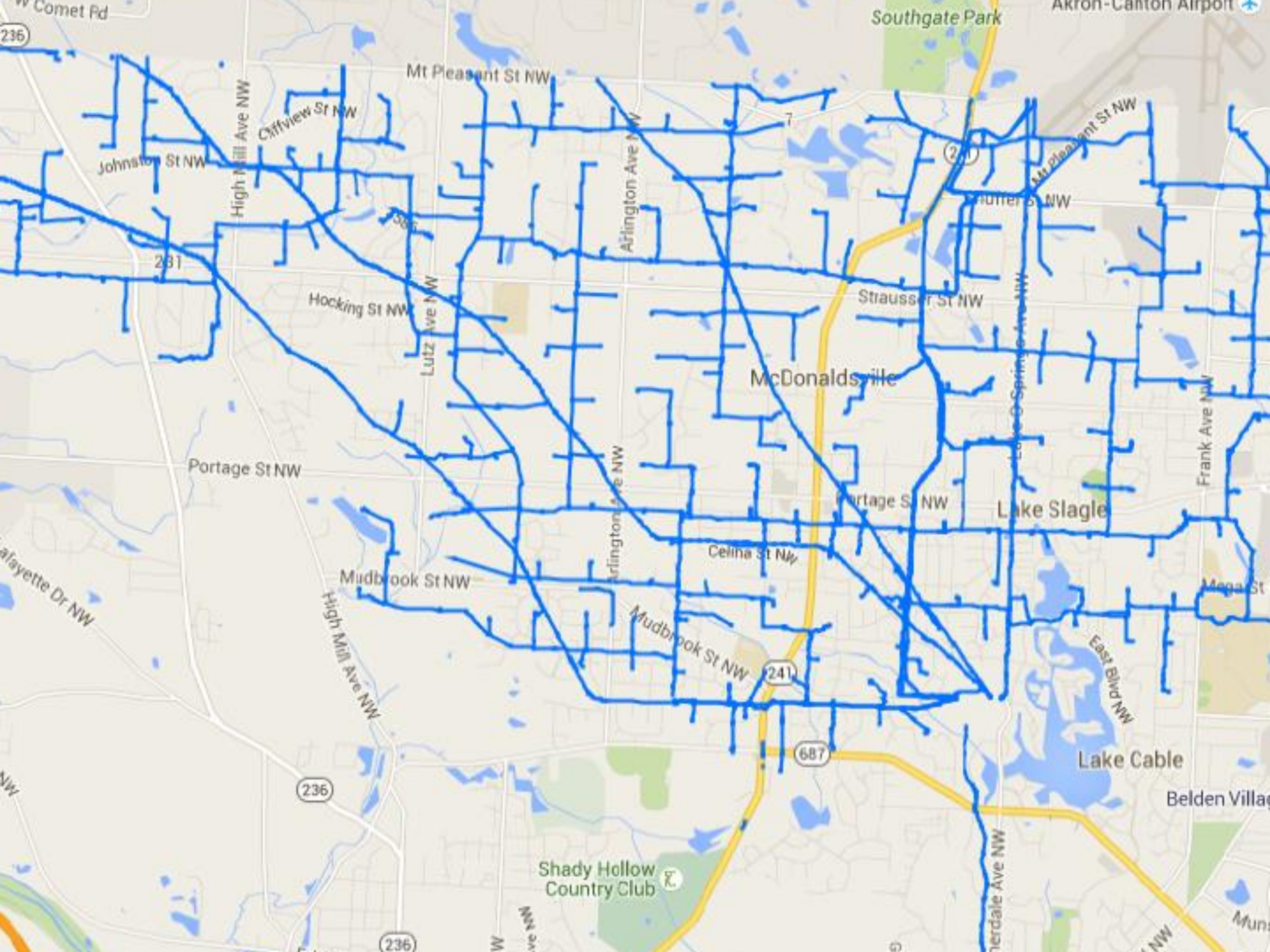
- The following slides show the most concentrated area of underground pipelines in the County. Ownership is with Dominion East Ohio.
- Pipelines range between 4” and 20”, all carrying natural gas.
- A 20” pipeline coming from the south terminates at Robinson Station on West Boulevard.

Jackson Township (cont'd)

- Many of the pipelines coming out of Robinson Station and proceeding northward carry natural gas into underground storage caverns during the summer.
- During the winter, gas is removed from these caverns for distribution.

Jackson Township (cont'd)

- A 20" line running north and south along Lake O'Springs Boulevard exploded in the 1960's, resulting in the death and injury of several people.



Comet Rd
236
Southgate Park
Akron-Canton Airport
Mt Pleasant St NW
Cliffview St NW
High Mill Ave NW
Johnston St NW
Arlington Ave NW
Mt Pleasant St NW
241
Shuffel St NW
231
Hocking St NW
Lutz Ave NW
Strausser St NW
McDonaldsville
Lake O Springs Ave NW
Frank Ave NW
Portage St NW
Portage St NW
Lake Slagle
Celina St NW
Arlington Ave NW
Lafayette Dr NW
Mudbrook St NW
High Mill Ave NW
Mudbrook St NW
Mega St
East Blvd NW
241
687
Lake Cable
236
Belden Villag
Shady Hollow
Country Club
236

Pipelines (cont'd)

- The following slide shows a hazardous liquid pipeline running north and south through the county adjacent to St. Rte. 43.
- It enters the county just north of Hartville and terminates at the BP Bulk Storage in Canton, just north of Rt. 30 at 7th St. SE.
- This is possibly a 5" line owned by INLAND Corporation.
- It carries petroleum products.

Pipelines (cont'd)

- The following slide shows two pipelines originating or terminating at the Marathon Refinery.
- A 6" hazardous liquid line runs from the Refinery to the Bulk Storage Plant in East Sparta. It then converts to an 8" line and turns WSW and goes under

  I 77 and Sherman Church Rd and terminates just NE of Bolivar

Pipelines (cont'd)

- The other red line is a 16" crude oil pipe running north and south out of the refinery for 18.5 miles. It proceeds southward from the refinery to a point near the intersection of Downing St. SW. and Dueber Ave., where it turns sharply westward and proceeds across St. Rte. 91 and 93 to the west side of the county.

Pipelines (cont'd)

- A 6" gas line runs E and W from the American Landfill to a point where it joins a 20" gas line heading NW into Jackson Twp.
- Another Red line (haz liquids) runs E&W from a point just E of Waynesburg across the county to a point where it joins a 5" gas line running N. It also then runs S in a 24" gas line going south past Wilmot.

Pipelines (cont'd)

- The proposed route for the Rover lines (2-42" gas line running parallel) will enter the county in Sandy Twp and head WNW across the county.
- The Nexus gas line route is proposed (at this time) to cross the northern portion of the county E to W just S of the airtport.

Alliance Pipeline

- The following slide shows a natural gas pipeline 12 inches in diameter owned by Columbia Gas Transmission. It is the only “major” pipeline according to the NPMS running through the City of Alliance.

Pipelines – Size up

- Fire-No Fire

  Which is better? Why?
- Heavier than air or lighter
- Put it out-Don’t put it out
- Deny entry
- Establish contact with pipeline owner – identified on marker

Routine - “Smell of gas”

- We’ve all responded to this type of call. Let’s think for a minute about what may be happening as we “wait for the gas company”.
- Gas migration underground
- Settling into basements and sewers
- Seeking ignition source
- Explosions spreading from house to house

New Pipelines Coming across Ohio

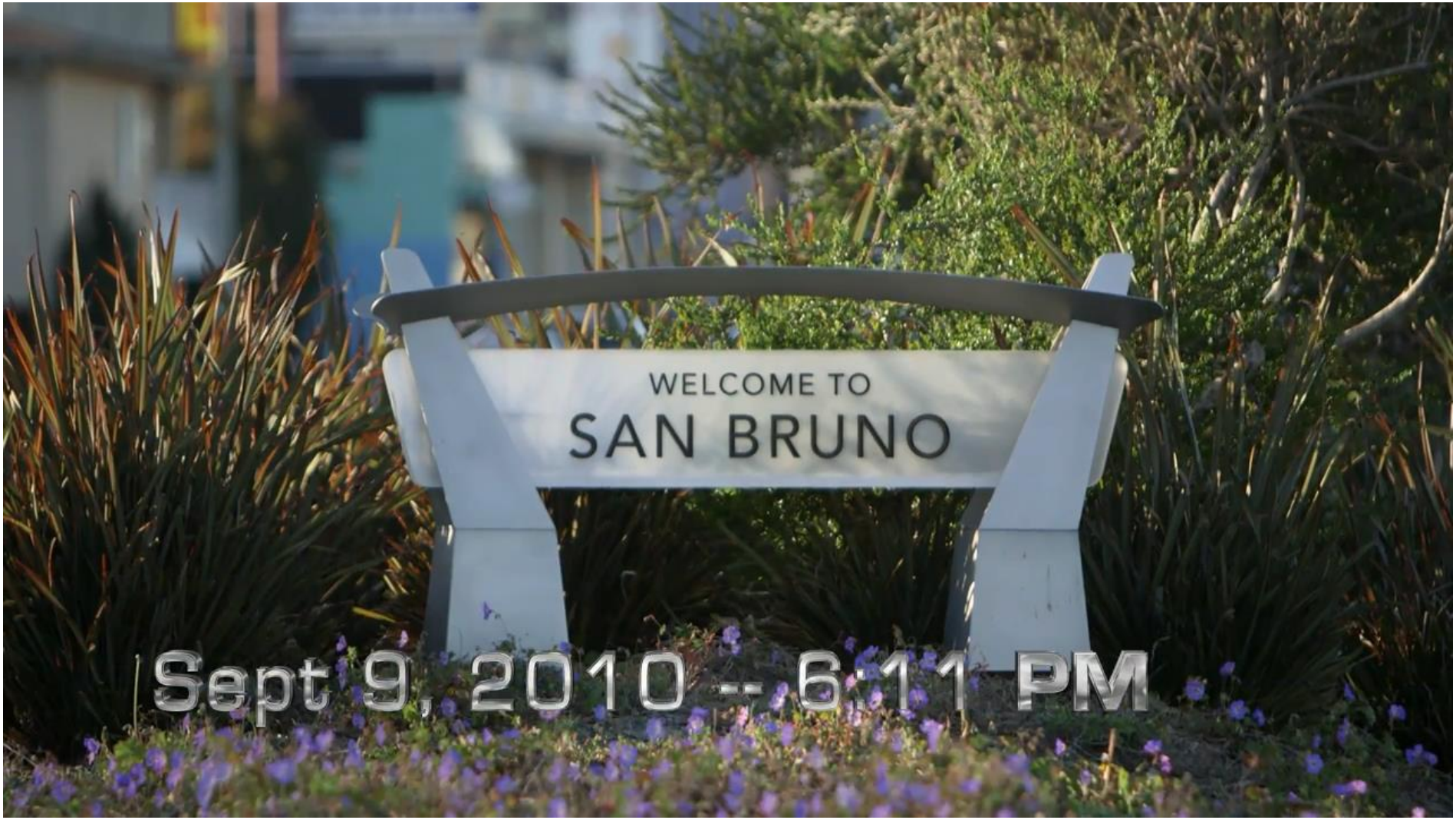
- Rover – 2-42” high pressure lines
- Nexus – 1-36” high pressure line
- Utopia – 1-12” high pressure line
- Marathon – 1-8” line and other
- Moving BILLIONS of Cubic Feet of gas more per day through the county

Additional causes of line break/rupture

- Construction = #1 cause of release
- Corrosion
- Lightning
- Brush fire
- Criminal acts – terrorism, revenge
- Collapse during placement or repair– confined space rescue – RESCUE OR RECOVERY

SAN BRUNO

- On September 9, 2010 a high pressure gas pipeline exploded in San Bruno, California, a suburb of San Francisco. The blast destroyed 38 houses and damaged 120 houses. Eight people died and many were injured.
- High Pressure Line 390 psi


WELCOME TO
SAN BRUNO
Sept 9, 2010 -- 6:11 PM

Training Sources

- Pipeline Emergency Preparedness & Training - Kinder ...
- PHMSA - Preparedness & Response
- NPMS
- Propane Emergencies textbook Third Edition
- Propane Emergencies Program- on line