



**Environmental Health and Environmental Justice in Pennsylvania**  
**Fuel Transportation and Safety**  
**September 30, 2014**

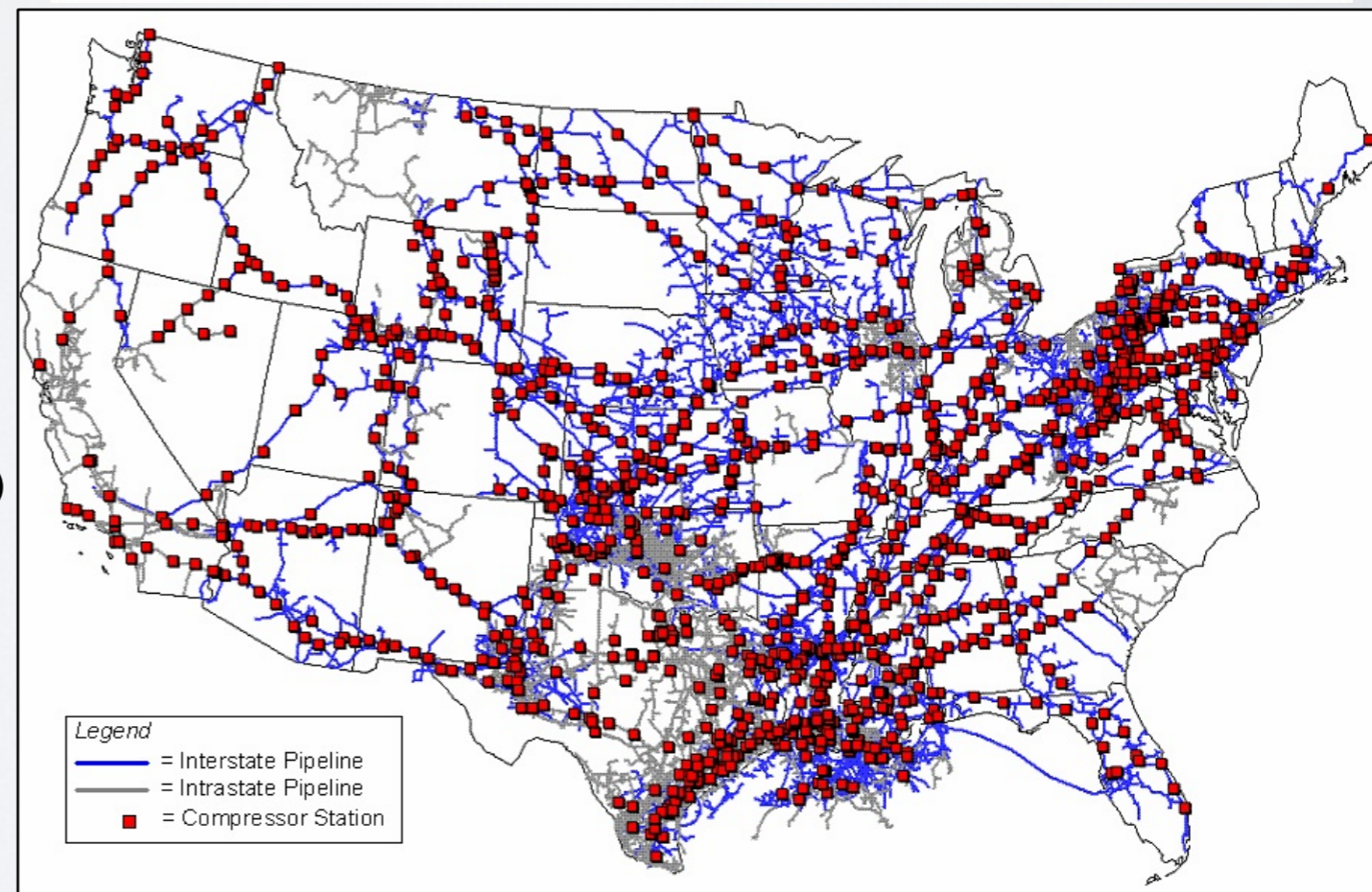
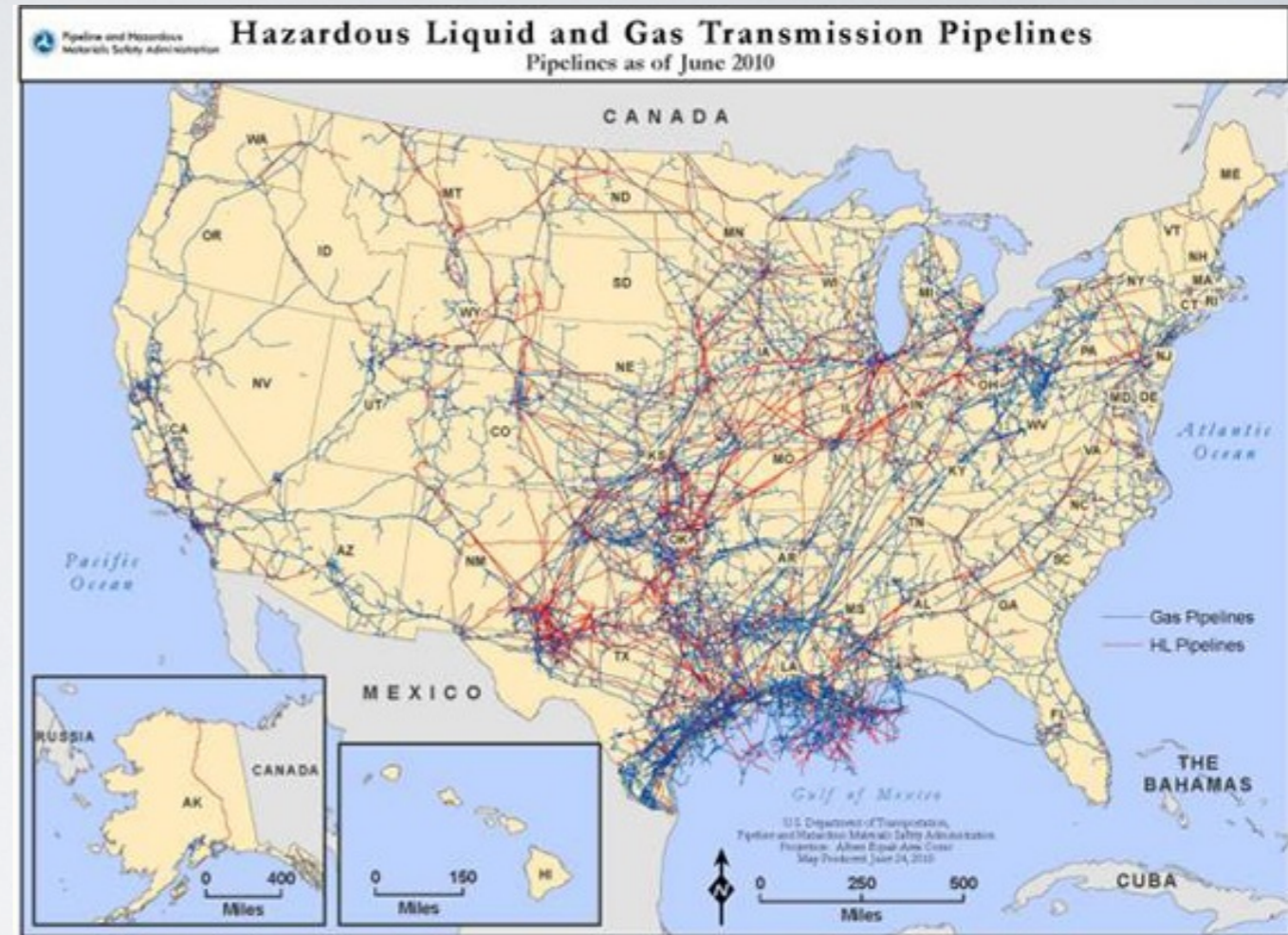


# Pipeline Infrastructure Mapping

## Piecemeal Databases

Table 1

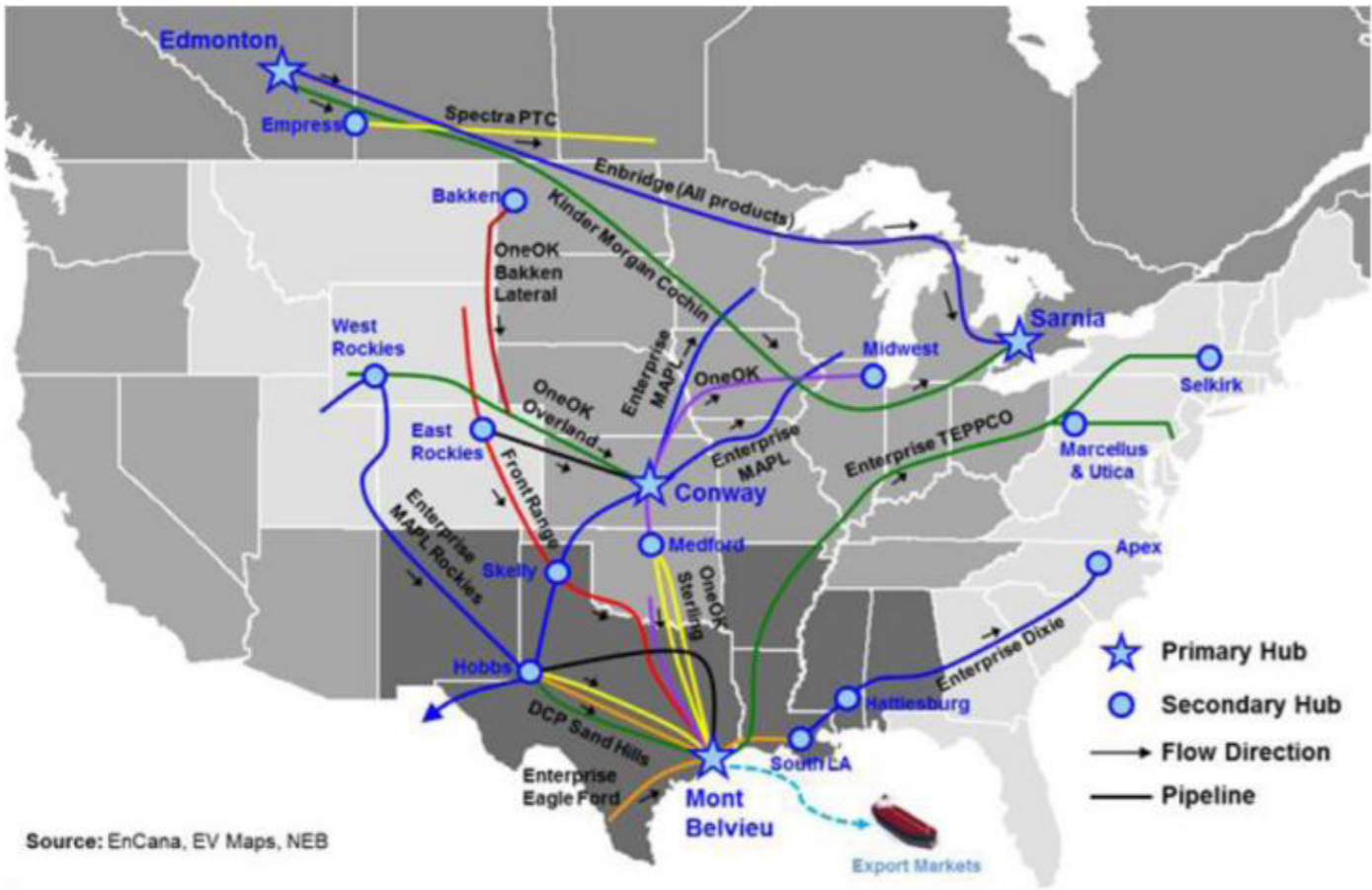
Well pad  
Gathering Pipelines  
Fresh and Waste Water Pipelines  
Processing Plants  
Transmission Pipelines  
Compressor Stations/Pump Stations  
Midstream Pipelines  
Storage Facilities  
Smart Pig Launchers  
Valves  
City Gates



Nature Conservancy estimates: 60,000 new PA wells (2030)

25,000 additional miles of natural gas pipelines

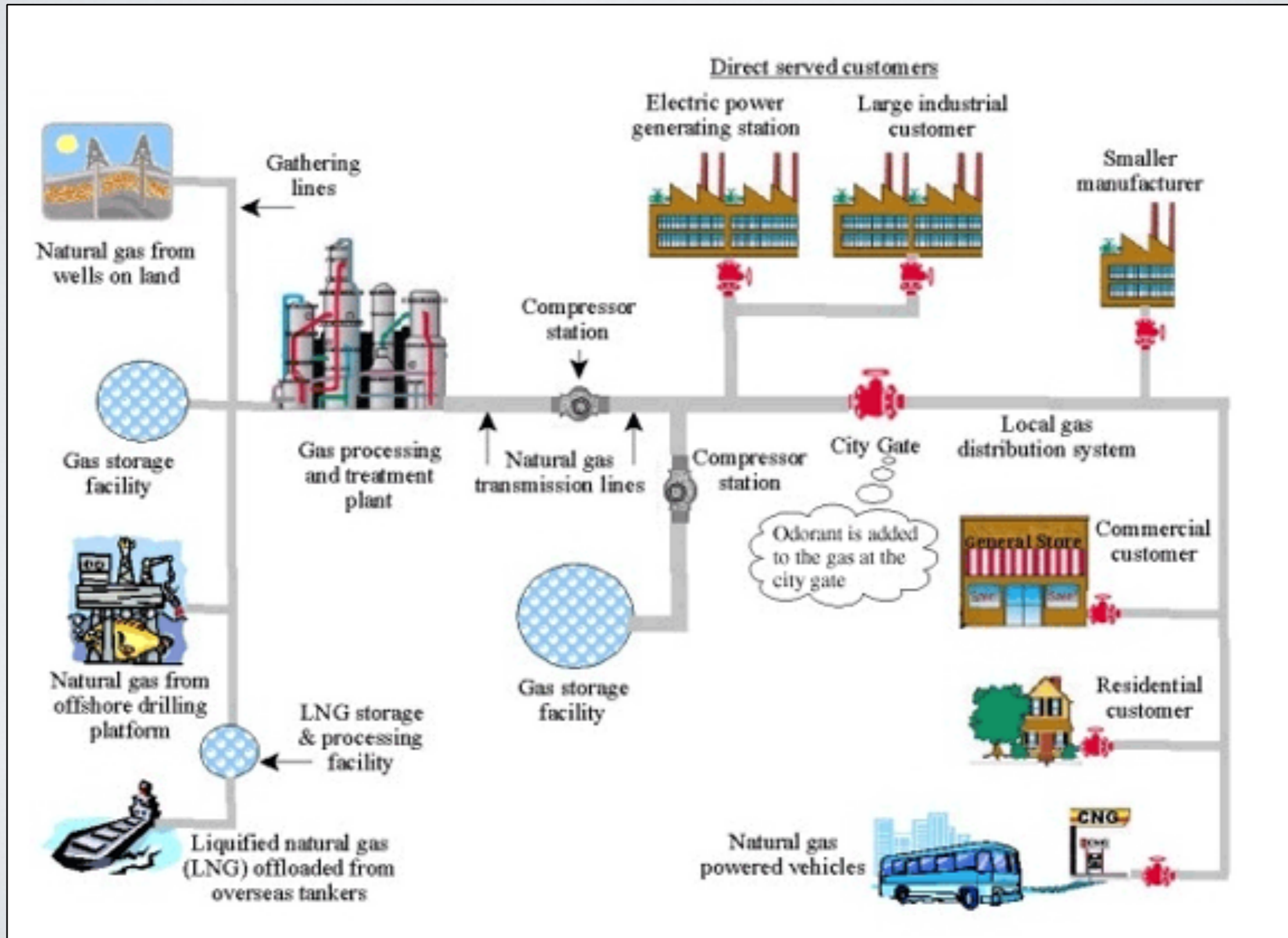
# 2014 Rail Infrastructure Rail, Terminals, Hubs



# NATURAL GAS PIPELINE INFRASTRUCTURE

## WELL HEAD TO CUSTOMER

(Source: [PHMSA](http://PHMSA.gov))



## Pipeline Infrastructure: Who Regulates What



**Well Pads:** 3+ acres

Sited: by Industry and resource

Regulated: DEP /EPA

**Roads/water impoundments/pipelines:** 5.7+ acres

Sited: Industry and resource

**Average acreage:** 9+ acres

(excluding transmission infrastructure)



From Cabot 2008  
Annual Report  
Pennsylvania frac job

## Pipeline Infrastructure & Who Regulates What

**Gathering Lines:** Transport raw natural gas to processing plant or to transmission line

- Sited: by Well
- One gathering line *per well head*
- **Class One (rural)** sited and regulated by **Industry**
- Act 127 (12/2011): PA PUC authority to inspect/provide oversight of intrastate non-utility pipelines under federally regulated class, including **Class 2-4** gathering lines / midstreams.
- Diameter/Pressure can be equal to transmission lines



## Pipeline Infrastructure & Who Regulates What

Processing Plants: Separate impurities, non-methane hydrocarbons & fluids to produce pipeline quality dry natural gas

- Sited: Industry, well locations, type of extracted fuel, market use of fuel
- Regulations: State DEP, EPA



**Washington County, PA:**  
28 acres of 106 acres  
Taken off Clean and Green  
(2010)  
County taxes increased:  
\$103/yr  
\$8,732/yr

## Pipeline Infrastructure & Who Regulates What

More murky areas

### Midstream Lines

- Start at gathering system
- Upstream and Downstream
- Process
- Store
- Transport
- MAOP/PSI - vary by fuel and function

### Bidirectional Lines

- Move gas upstream and/or downstream
- Direction changes with market conditions



Commonwealth Midstream



- 20" to 60" diameter: steel

#### Transmission Pipelines

- Existing 30" - 42" Infrastructure
- Maximum operating pressure (MAOP)
- Existing: built for average 1,000 psi
- Marcellus Shale: 900-1300 psi
- Coated to inhibit corrosion
- Buried: Minimum requirement: 30" average: 3 - 6 feet



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

# Pipeline Infrastructure & Who Regulates What

## Transmission lines

**Intrastate:** do not cross state boundaries

- Sited by Industry: No FERC application
- Act 127: PA PUC established a registry of all pipeline operations and provides authority to enforce Federal pipeline safety standards and regulations *based on registry*
- PUC may enforce pipeline safety standards and regulations

**Interstate:** cross state or national boundaries

- Natural Gas siting: Federal Energy Regulation Commission (FERC)
- Hazardous Liquids: No siting authority
- US Department of Transportation, Pipeline Hazardous Materials Safety Administration (PHMSA) oversees safety





## Compressor Stations / Pump Stations

- Natural Gas - Compressor Stations
- Hazardous Liquids: Pump Stations
- Fueling turbines/engines byproducts:
  - air pollution
  - water pollution
  - soil contamination
  - noise pollution
- Located 40 to 100 miles

Compressor Station north Pittsburgh, PA: Photograph: Pipeline Safety Coalition



Sunoco Mariner One Pump Station Marcus Hook



### Valves:

- Sited: Industry: technical requirements, fuel, pipeline diameter, MAOP, distance between stations
- Usually open: allow natural gas to flow
- Closed: replacement, maintenance, or if a leak is detected
- Average placement: 5 to 20 miles
- Regulated by PHMSA safety codes



### Smart Pig & Smart Pig Launchers

"Smart pig" hunt for corrosion inside gas lines

Sited by and Subject to PHMSA safety codes

## Pipeline Infrastructure & Who Regulates What

City Gate: part of the transmission system: Feeds the distribution systems of towns, cities

**Sited:** Utility

**Regulated:** PA PUC for safety

- Pressure reduced:  
from 200 /1,500 psi  
to consumer (as low as 3 psi)
- odorant (mercaptan) added



## Pipeline Infrastructure & Who Regulates What



### **Distribution Lines or Mains**

Smaller lines: 2" - 24" diameter

Steel, cast iron, plastic, wood

Intermediate Pressures: 3 - 200 psi

Deliver fuel to:

residents

industry

schools

hospital

**Siting: Utility**

**Safety: PA PUC**





## ☒ FACTORS IN SITING GAS PIPELINES

Siting begins with Operator “General Route Evaluation and Project Feasibility Analysis,” when Operators connect point ‘A’ to point ‘B’ and evaluate potential routes from ‘A’ to ‘B’

### **FERC:**

Interstate Natural Gas

### **No FERC Siting Oversight:**

Gathering Lines

Interstate Hazardous Liquids

Intrastate Natural Gas

Intrastate Hazardous Liquids

Midstreams

Distribution

Fresh/Flowback Water Pipelines

HAZARDOUS LIQUIDS

PA DEP: Issues permits for pipeline crossings of wetlands, waterways, areas of endangered species, historic value



*Terry Wild Stock Photography, Williamsport, PA 17701*



**Pipeline safety  
affects us all.**

Pipeline Safety Coalition (PSC) is a Pennsylvania Non Profit and federally recognized public charity under section 501(c)(3).

Our roots were planted by disenfranchised citizens in their search for factual information during a pipeline project affecting their homes, community, environment and watershed.

Pipeline Safety Coalition's relationships focus on improving public, personal and environmental safety in pipeline issues by providing a high level of equal access to information, providing community mentoring and by facilitating respectful and productive conversations between citizens, environmental groups, local/state and government officials and pipeline operators.

#### **Our Mission**

*"To gather and serve as a clearinghouse for factual, unbiased information; to increase public awareness and participation through education; to build partnerships with residents, safety advocates, government and industry; and to improve public, personal and environmental safety in pipeline issues."*

We welcome your **questions, suggestions, support** and **donations**.

#### **Contact Us**