



Richard H. Finan  
Mayor

# VILLAGE OF EVENDALE

10500 Reading Road • Evendale, Ohio 45241-2574 • Phone 513-563-2244

June 9, 2017

Ohio Power Siting Board  
180 East Broad Street, 11<sup>th</sup> Floor  
Columbus, Ohio 43215

Attn: Ms. Barcy F. McNeal, Secretary  
OPSB Docketing Division

RE: Village of Evendale's Response to the Ohio Power Board Staff Report  
On Duke Energy Central Corridor Pipeline Expansion Project  
Case No. 16-253-GA-BTX

Members of the Ohio Power Siting Board:

Please find enclosed the Village of Evendale's Written Response and Exhibits for the Public Hearing on the case referenced above. The Village of Evendale opposes the proposed project within the corporation limits of the Village and the reasons and issues are listed herein.

## OAC 4906-5-02 Project Summary - General Purpose of the Facility

The proposal states that even with this proposed main, that Line A, which goes through the heart of our residential district, will need to be upgraded or replaced in the near future. From Page 2-3<sup>1</sup> of the Duke Energy application –

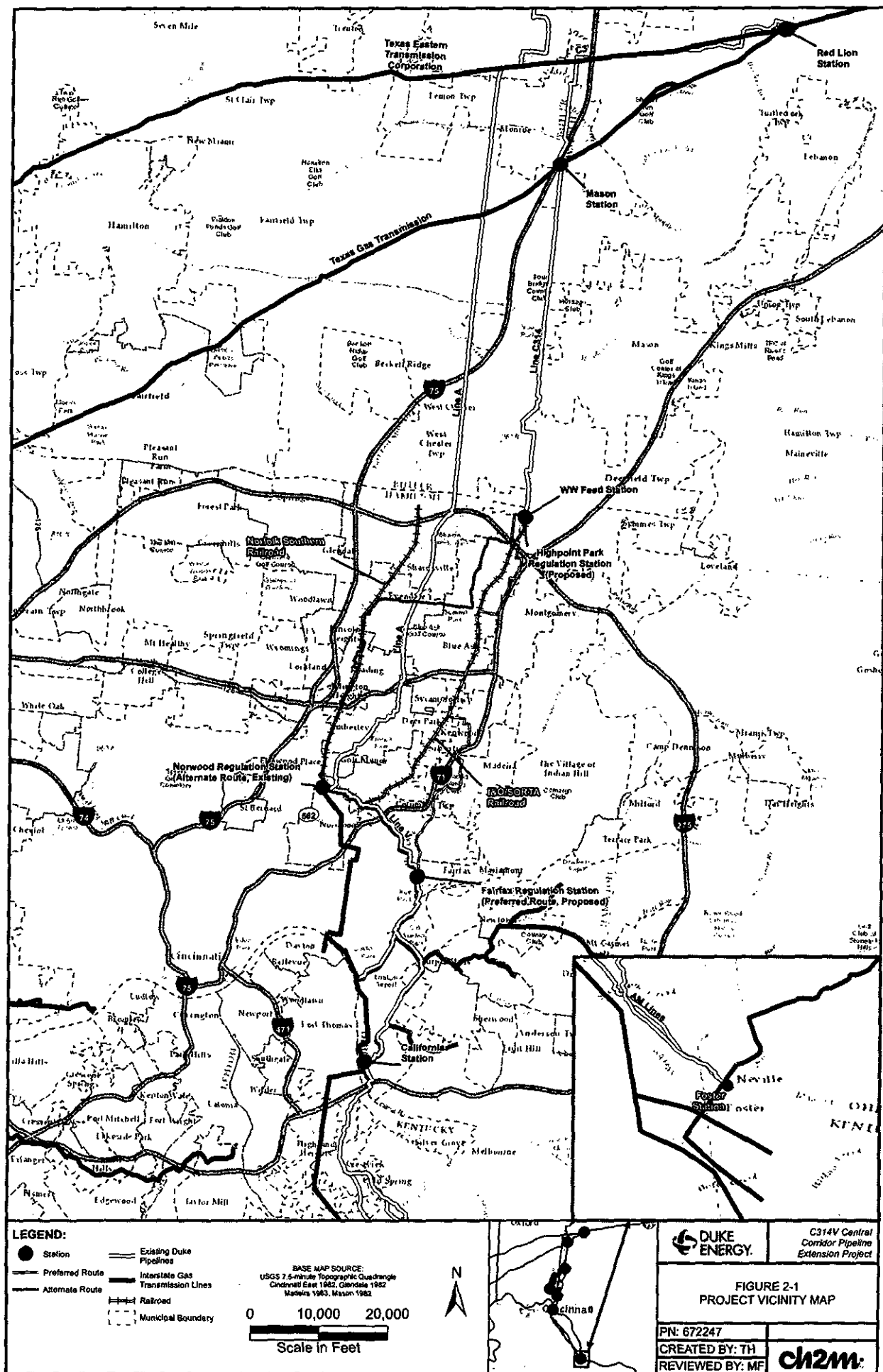
*Duke Energy Ohio is actively inspecting, testing, and replacing older natural gas pipelines that were not designed to meet the current requirements. Furthermore, Duke Energy Ohio needs to inspect, test and upgrade portions of its "backbone" system that brings gas from both north and south into the central Hamilton County area. Key elements of this backbone include Line A, which runs north to south through central area neighborhoods in Hamilton County ... (See Figure 2-1 attached).<sup>2</sup>*

*Line A varies in diameter (18-24 inches) and carries natural gas at a maximum pressure of 150 PSIG. Much of Line A was constructed in the 1950s and 1960s, so is also approaching the end of its useful life and will need to be upgraded. Lateral natural gas pipelines that branch from Line A provide natural gas supply to the residential and industrial customer base in the central area. Duke Energy Ohio must begin to replace aging infrastructure that has the potential to place these customers*

1 – Duke Energy Central Corridor Pipeline Extension Project, Page 2-3

2 - Duke Energy Central Corridor Pipeline Extension Project, Figure 2-1

This is to certify that the images appearing are an accurate and complete reproduction of a case file document delivered in the regular course of business.  
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*at risk of outage. Construction of the proposed Project will allow Duke Energy Ohio to conduct the required inspections and will support replacement of Line A while continuing to supply natural gas to residential and industrial customers in the area. More broadly, pressure verification efforts have led to the need to complete integrity-related work on many of Duke Energy Ohio's older lines, including critical infrastructure (AM lines) from Foster Station extending north to Ohio River crossings at Cincinnati. Improved system redundancies provided by the proposed Project will allow Duke Energy Ohio to replace aging infrastructure while maintaining service.*

Line A currently traverses through our main residential area, from north to south. All of the Village of Evendale Residential property is located to the east of Reading Road, directly affecting 34 residential properties and another 96 properties within 100 feet. The current proposal will directly affect 68 property owners, 56 of which are residential and 57 other properties, 46 of which are residential within 100 feet. The Village of Evendale has approximately 1,100 residential properties and this proposal, combined with the replacement of Line A, will affect almost 20% of the households within the residential district. This is an undue burden upon the residents of the Village of Evendale.

## **CONDITION #1 – The Primary Route should be selected for this improvement.**

### **Project Summary – General Location, Size & Operating Characteristics**

On Page 2-4, the proposed 20" Pipeline is "planned" to operate at 400 PSIG pressure, but could operate at up to 500 PSIG. From page 5-8:

#### *(a) Maximum Allowable Operating Pressure*

*The proposed pipeline is proposed at a MAOP of 400 PSIG and is planned to operate up to this pressure. The pipeline will be designed to a MAOP of 500 PSIG. <sup>3</sup>*

This is a significant amount of pressure on a pipeline system, as compared to other mains located within residential areas including Line A, which operates at 150 PSIG. Since the initial request of the pipeline was for a 30" line at 600 PSIG (Page 4-5), it wouldn't be difficult to change to a higher pressure to achieve some of the results the reduction in size and pressure would have to the final proposed main.

*Initially, Duke Energy Ohio selected a 30-inch diameter pipeline engineered to an operating pressure of 600 PSIG. <sup>4</sup>*

3 – Duke Energy Central Corridor Pipeline Extension Project, Page 5-8

4 - Duke Energy Central Corridor Pipeline Extension Project, Page 4-5



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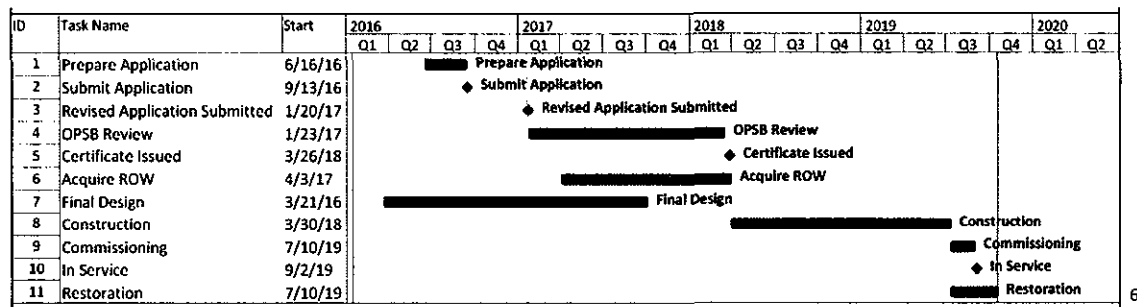
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Furthermore, the current C314 Transmission Main, from the Mason Station, operates at 670 PSIG (Maximum Allowable Operating Pressure – MAOP) and wouldn't be difficult to up the pressure of this proposed pipeline system.

**CONDITON #2 - The OPSB should add a condition that the MAOP of 400 PSIG is the maximum that the Central Pipeline can operate.**

## **OAC 4906-5-03 - Review of Need -Project Summary – Review of Need and Schedule**

On Page 3-11 of the Duke proposal, the schedule for the project indicates that restoration will not occur until after the pipeline is installed along the entire project. We understand the need to let the trench settle, but a reasonable amount of time should be employed, so that portions of the properties remain unrestored up to 12-16 months. Furthermore, there are no guidelines on restoration of the affected sites. It should be incumbent upon the installer to ensure that the restoration is completed as weather permits and that any restoration work ensures that the property is back to original conditions.



**CONDITION – The restoration shall be performed with 30 days of installation. In addition, the contractor shall be responsible for repairs on the trench and seeding for up to one year after approval of the project.**

From the OPSB staff report the project will eliminate the propane peaking plants within the current Duke supply system. However, these peaking plants only contribute about 10-15% of the supply during peak load. The proposed pipeline will reduce the dependence on the Foster Station the same 10-15% during peak demand. From the OPSB staff report page 25:

*Natural gas supply for the system is received from 22 stations that connect to interstate pipelines. All of the stations are in the northern section of the Applicant's service territory except for the Foster Station, which is in Kentucky. The Foster Station is a critical station that typically serves up to 55 percent of the Ohio customer load and up to 60 percent of the peak design day load in Ohio. A loss of supply from the Foster Station on a high demand day would result in widespread service outages.*





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*With the installation of the proposed pipeline facilities, the Applicant's modeling shows that the Foster Station would serve 45 percent of the Ohio customer load.* <sup>7</sup>

According to a report prepared for the US Department of Homeland Security in 2012<sup>8</sup>, on a propane backup system for Anchorage, Alaska, there appears to be 56 plants currently operating within the US and the cost for the plant to provide 6 days of backup natural gas for Anchorage is approximately 8 million dollars. This would be a significant reduction in cost and interruption to property owners for installation of a new pipeline.

In a previous case in front of the Public Utilities Commission of Ohio, Case No. 15-218-GA-GCR, Paragraph 22 of the Opinion and Order, it states that Duke is to assess the potential of the loss of the peaking plants.

*Observing that Duke's Dicks Creek Plant propane facility is no longer operational, because of a geological failure at the Todhunter Propane Cavern, Exeter states 15-218-GA-GCR, etal. -8- that the potential exists for the Company's Eastern Avenue and Erlanger Plant propane facilities also to become unavailable. Exeter states that Duke should assess the potential for this circumstance to occur and evaluate and determine its optimal interstate pipeline capacity portfolio. Exeter states that the Company's assessment and evaluation should be considered in any future decisions to adjust its interstate pipeline contract storage capacity entitlements, because it is unlikely that any storage turned back by Duke could be reacquired in the future. (Comm.-ordered Ex. 2 at vii, 48.)*<sup>9</sup>

The OPSB staff report on page 26 states that the report was completed.

*These system conditions, including the potential loss of supply, were observed in a prior PUCO case. Specifically, in Case No. 15-218-GA-GCR, the Commission ordered a management/ performance audit be performed on the Applicant's gas procurement practices and policies for the audit period of September 2012 through August 2015. In the management and performance audit report, the auditor observed that the Applicant's Dicks Creek Plant propane facility is no longer operational and that the potential exists for the Applicant's Eastern Avenue and Erlanger Plant propane facilities to also become unavailable. The auditor recommended that the Applicant assess the potential for this to occur and evaluate and determine its optimal interstate pipeline capacity portfolio if this were to occur. The Applicant agreed to*

7- OPSB Staff Report of Investigation Central Corridor Pipeline, Page 25

8 – Argonne National Laboratory, Preliminary Assessment of Propane-Air Backup System for the Anchorage, Alaska, Area, February 2012

9- PUCO Case No. 15-218-GA-GCR Opinion and Order September 7, 2016, Paragraph 22, Page 7-8



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*conduct this evaluation, through a stipulation, which was adopted by the Commission in its final order in the case.<sup>10</sup>*

However, the report didn't address the condition of the plants. Instead the audit states that the capacity of the system was evaluated based upon "if" the plants were no longer available

*Any decision to adjust current storage levels should also consider the results of the Company's capacity portfolio evaluation in the event that its propane facilities are no longer available. As indicated previously, DE-Ohio should not adjust its interstate pipeline contract storage capacity entitlements until the Company has evaluated the changes to its capacity portfolio that would be appropriate if its propane facilities were no longer available.<sup>11</sup>*

**REQUEST – We would request that Duke Energy provide a report that explores the cost to replace the existing peaking plants and the impact to the overall capacity of the system.**

## **OAC 4906-5-04 Project Summary – Suitability of Preferred and Alternate Routes**

Duke Energy's selection of the primary and alternate routes were a result of an initial assumption that resulted in the predicament that we find ourselves in today. They assumed that the proposed system would be able to be located within a railroad easement from the WW station to Fairfax. Unfortunately, Duke Energy claims this is not viable. From Page 4-5

*Duke Energy Ohio maintains a legacy agreement with I&O/SORTA, originally negotiated with the I&O/SORTA Railroad, that allows for development of electric and natural gas pipeline and distribution infrastructure within the railroad ROW.<sup>12</sup>*

Line C314 was installed to end within a residential neighborhood and not in a commercial/industrial area that could have been used to transport gas to central Hamilton County. We would encourage the OPSB/Duke Energy to a closer examination of the starting point being located with a residential district.

The best scored plan, Route 3, was one that used Interstate 71 for construction of the proposed pipeline. According to the proposal on page 4-15:

*Duke Energy Ohio investigated the potential of occupying the ROW along I-71, which included discussions with ODOT regarding existing regulations and policies. As that investigation confirmed, ODOT generally does not allow "longitudinal" placement of utilities in ROW for several reasons, including maintenance access, potential road expansions, public safety related to moving traffic, and utility construction and repair activities within interstate ROW.<sup>13</sup>*

10 - OPSB Staff Report of Investigation Central Corridor Pipeline, Page 26

11- Exeter Associates Management & Performance Audit Case No. 15-218-GA-GCR, December 8, 2015, Page 80

12 - Duke Energy Central Corridor Pipeline Extension Project, Page 4-5

13 - Duke Energy Central Corridor Pipeline Extension Project, Page 4-15



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Although ODOT “generally” doesn’t allow utilities longitudinally on the interstate, there are several instances where this occurs in southwest Ohio (i.e. gas line on Interstate 74 (Hamilton County), Telecommunication line on Interstate 71 (Warren County). Federal Highway Administration Highway Utility Guide Publication FHWA SA-93-049 provides the basis for installation of utilities on the interstate system. Furthermore, the Ohio Department of Transportation policy 8106 states:

*Section 8106 General Guidelines, and section 8106.01 location (b) which states, longitudinal underground utility facilities are prohibited within the area designated for the placement of highway signs, mailboxes, unless the utility is constructed of material which will with-stand penetration by support post or guardrail and is installed with a minimum cover of 96 inches. (Minimum depth has been modified to allow sufficient cover between the bottom of a sign post and a proposed utility).<sup>14</sup>*

The Limited Access Right of Way for Interstate 71 is quite sizable and should easily accommodate the gas pipeline. By installing within the Interstate the impact to properties would be minimized and will allow for terminating the project in Fairfax as requested by the applicant.

Based upon the criteria used by Duke, the interstate project was dismissed. According to the proposal Route Selection Study by CH2M (Appendix 4-1), the criteria set a limit on the route designations as listed below as shown on pages 2-5 & 2-6:

*Preliminary centerlines were placed based on the constraint mapping, review of aerial photography, topographic maps, and the collected attribute and constraint data. The intent when placing these centerlines was to avoid residences, sensitive land uses, existing structures, wetlands, forested areas, and, where practical, to follow existing developed corridors such as roads and existing transmission/distribution lines. Terrain was also an important factor as steep slopes were avoided to the extent practical. Duke Energy Ohio’s technical preferences included:*

- *Structures were to have a minimum of 15 feet separation distance from the centerline of the pipeline. Where routes follow Interstate Highways, they must be outside Ohio Department of Transportation*
- *(ODOT) ROW by a minimum of 10 feet.*
- *On other roads in the area, try to remain outside the road ROW and away from existing water and sewer lines except where crossing.*

14 – Ohio Department of Transportation Utility Manual, Section 8106.01



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- *When crossing a road ROW, crossings are to be perpendicular to the extent feasible.*
- *Terrain with a slope over 25 percent was considered to need additional engineering and environmental controls for construction, with a preference to avoid where possible.<sup>15</sup>*

Based on this criteria, the Interstate and Railroads, the largest parcels on contiguous property within the project limits, were eliminated from consideration. With this set of criteria, it forces the project to be constructed within residential, commercial, industrial, park & recreation areas, governmental, medical, and educational districts affecting all manners of operation of a community.

In addition, Duke Energy did not look at installation of the main within the roadway surface and/or ROW. By installing the pipeline within the roadway limits, the need to take property and disrupt property would be greatly reduced. Glendale Milford Road is a wide street with few utility runs located within the pavement section. There are utility crossings, but Duke would have to work around these also within the property limits. In addition, the sidewalk is located on the north side and would provide additional space without damaging the yards.

**REQUEST – OPSB reject the route selection and require the project to be installed with the roadway and/or along the interstate.**

Duke's proposal on Page 2-7 states that the primary route satisfies their needs better than the alternate routes.

*Duke Energy Ohio has determined that the Orange Route is the best alternative because it meets the three purposes of the Project while being one of the most favorable scoring routes, using the scoring approach that considers current, sensitive land uses, as well as the environment and technical/engineering factors. Of the three routes, the Orange Route best allows for the retirement of the propane-air facilities, improves the north/south balance of gas in the central Hamilton County area, and advances the ability to perform integrity testing on the natural gas pipeline system. Furthermore, connecting Line C314V to the Line V in the Fairfax area (i.e., at the Orange Route connection) provides the most favorable flow balance both east and west on Line V. The Orange option also provides more pressure and flow towards the California Station, providing the ability to more directly offset flows from the Foster Station through natural gas pipeline AM04. With additional gas capacity provided by the Orange Route to the central Hamilton County area, it relieves the dependency on other natural gas pipelines in the area, thereby providing the ability to test and replace aging infrastructure without loss of service.*

15 - Duke Energy Central Corridor Pipeline Extension Project, Page 2-5 & 2-6



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*The Green Route was selected as the Alternate Route as it would also allow for retirement of the propane-air facilities and would generally improve the north/south supply balance. However, because the Green Route would connect to Line V at Norwood Station, it offers less opportunity to directly offset gas flow from the south through the California Station, and would increase the system dependency on the Norwood Station, which limits the flexibility for natural gas pipeline testing and replacement.* <sup>16</sup>

Based upon the above information, Duke Energy, and its ratepayers would receive greater benefits having the pipeline terminate in Fairfax. By constructing the orange route, the entire gas network would be better balanced than the green route. In addition, the pipeline would be nearly linear from north to south when you incorporate C314 into the network.

**We would request that the OPSB opt to the primary route, as requested by the applicant.**

## OAC 4906-5-05 – Project Description

On page 5-1 of the Duke proposal, Table 5-1 indicates that the total number of properties crossed by the project is 675 for the primary and 452 for the alternate. From Table 7-5 on page 16 of the CH2M Application for Certificate of Environmental Compatibility and Public Need, the number of residential properties is 115 for the primary and 166 for the alternate.

**TABLE 5-1**

**Right-of-way Area, Length, and Number of Properties Crossed for the Preferred and Alternate Routes**

	Route Alternatives	
	Preferred	Alternate
Proposed Construction ROW area (acres)	<u>130136</u>	<u>126125</u>
Length (miles)	<u>13.414.0</u>	13.0
Number of properties crossed (by the Construction ROW)	<u>594675</u>	<u>440452</u>

17

16 - Duke Energy Central Corridor Pipeline Extension Project, Page 2-7

17 - Duke Energy Central Corridor Pipeline Extension Project, Table 5-1



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**TABLE 7-5**  
**Number of Land Use Features Near the Route Alternatives**

	Route Alternatives	
	Preferred	Alternate
Length (in miles)	13.9	13.0
<b>Features within 100 feet of Route Alternatives (centerline)</b>		
Historic Structures (Ohio Historic Structures)	31	4
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	0	0
Residences	115	166
Other Sensitive Land Uses*	5	10
<b>Features within 1,000 feet of Route Alternatives (centerline)</b>		
Historic Structures (Ohio Historic Structures)	229	115
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	0	5
Residences	3,153	2,170
Other Sensitive Land Uses*	45	38
<b>Structures within 200 feet of the Edge of Preliminary Permanent ROW (preliminary ROW is 30-foot wide)</b>	<b>638</b>	<b>653</b>

18

From the Duke Energy proposal Route Selection Study by CH2M (Appendix 4-1), the criteria set a limit on the route designations as listed below as shown on pages 2-5 & 2-6:

*Preliminary centerlines were placed based on the constraint mapping, review of aerial photography, topographic maps, and the collected attribute and constraint data. The intent when placing these centerlines was to avoid residences, sensitive land uses, existing structures, wetlands, forested areas, and, where practical...<sup>19</sup>*

However, based upon the charts above, the percentage of residential properties affected by the project are 17% for the primary and 37% for the alternate. There are a greater number of affected residents on the alternate route. This doesn't include public parks, schools or medical facilities.

18 - Duke Energy Central Corridor Pipeline Extension Project, Table 7-5

19 - Duke Energy Central Corridor Pipeline Extension Project, Page 2-5 & 2-6



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On Page 5-3 of the Duke request is for easement widths:

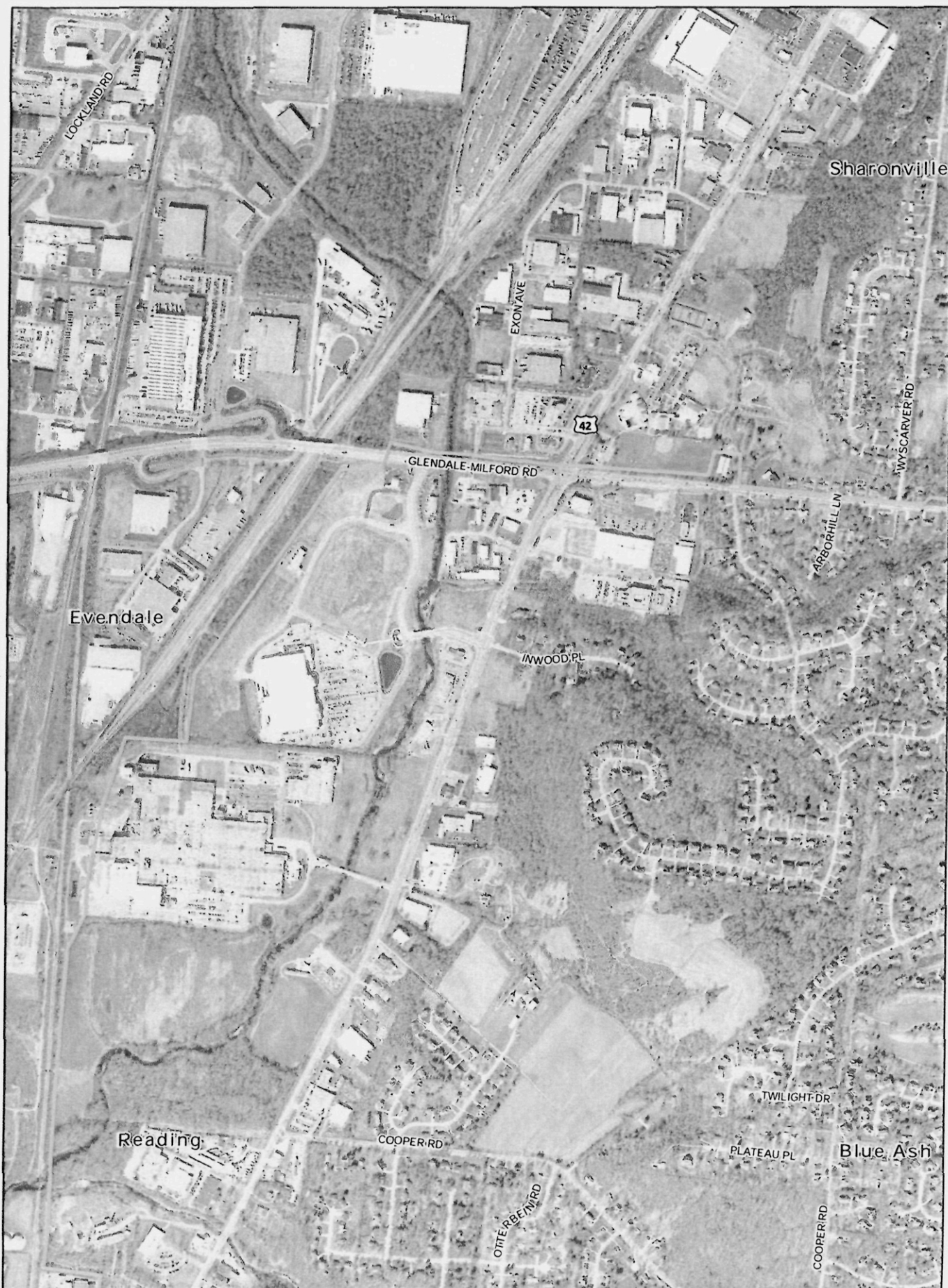
*The pipeline ROW may be graded, as necessary, to provide a safe work area for construction equipment and personnel. Ideally, a 30-foot wide permanent ROW will be obtained for the Project. For construction purposes only, additional workspace will be requested from property owners if there are no adjacent ROW, such as roads or other utilities, to provide workspace. In general, the total workspace width may be up to 50 feet during construction but will be less where adjacent to public roads. The ROW will be cleared of vegetation, where necessary, and tree stumps cut or removed to permit construction equipment access and excavation.<sup>20</sup>*

Easement widths are planned for 50 feet for the construction easements and 30 feet for permanent easements on the route. If the pipeline is installed outside of the existing ROW, this will clear every front yard of the residential district. Prior to the Village of Evendale incorporating, the north side of Glendale Milford Road was a tree nursery. Some of the trees along this route are over 100 years old. This project will eliminate older trees along the north side of Glendale Milford Road that will not be replaced. Furthermore, this project will dramatically change the appearance of neighborhood. The Village has created a tree line boulevard street along Glendale Milford and this would take the entire north side to the same visual as a newly created subdivision with new grass and very little decorative trees and shrubs. See photos attached to the end of this report.

The property shown in the report as parcel 770, has a permanent wildflower restriction on the deed. The Village accepted this parcel from the Trosset family a number of years ago and the pipeline would have a major impact on this natural preserve. Furthermore the property at parcel 773 was destroyed by fire and is adjacent to the Griffin Family Nature Preserve. The Village has been in discussion with the Griffin heirs to determine if this parcel will become a part of this park. This project could significantly impact the appearance of the potential entrance to a natural park.

The soccer field just east of the intersection of Glendale Milford Road and Reading Road was purchased in the 1970's with a federal Soil and Water Conservation Grant that is now administrated by ODNR NatureWorks program.

In addition, the project will surround the existing Service Building on three sides. The Village has been working on a plan to reconstruct the Service Building and this may have an impact on construction of the needed new facility (See photo on next page).







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Other construction projects on the green route that are currently being constructed and will affect the location of the pipeline is Kinetic Vision & JN Building and Pond projects on the Evendale Commons property. Kinetics' new building is approximately 30 feet off the property line and the outlet structure emergency overflow for the pond is 25 feet off the property line.

**We would request that the OPSB opt to the primary route, as requested by the applicant.**

## **OAC 4906-5-07 – Health and safety, land use and regional development**

Currently, the Ohio Department of Transportation is reconstructing Interstate 75 from north of Glendale Milford Road to south of Shepard Lane. This project just started earlier this month and is scheduled to continue for three years. This work will include reconstruction of the Glendale Milford Road Bridge over I-75 and widening of the existing Glendale Milford Road. With any significant interstate construction, drivers will seek alternate routes to navigate the area. Glendale Milford Road will handle a significant amount of traffic as a direct link to Interstate 71 to the east. To have the pipeline scheduled during this same construction period will create significant disruption to traffic patterns.

On Page 7-1 the Duke proposal states that the project may include compliance with Federal Spec Title 49 CFR 192.

*The construction, operation, and maintenance of the Project will comply with or exceed specifications in all applicable safety regulations. These may include, but are not limited to, Code of Federal Regulations (CFR) Title 49, Part 191, "Transportation of Natural and Other Gas by Pipeline: Annual reports, Incident Reports, and Safety Related Condition Reports", Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards," and Part 199, "Drug and Alcohol Testing," Ohio Administrative Code Rule 4901:1-16.<sup>21</sup>*

**CONDITION – OPSB should condition the approval on following all aspects of Title 49, Part 192.**

There are several conflicts within the green route that have been discussed within this response. The following properties will potentially impact the route and installation of the proposed main.

- a. Turn Lane at the intersection of Plainfield and Glendale Milford
- b. Trosset Property – Nature preserve
- c. Service Building – surrounding on three sides
- d. Fiber Optics along Glendale Milford from Kingsport to Norwood Hardware – The Village has installed an underground fiber optic system that ties all of our intersections together. This must be protected.



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- e. Utilities within Reading Road – There are a myriad of utilities within the intersection of Glendale Milford and Reading Road.
- f. Drainage channel along Burger King/Goldstar/Union Hall – If the slope at the Municipal complex wasn't able to construct, the slope at the west side of Reading Road will be difficult to construct
- g. Access to cross the Millcreek
- h. Access on Evendale Commons
- i. Kinetic Vision
- j. Retention Pond Park on Evendale Commons
- k. J & N
- l. Access on Formica Property
- m. Crossing of Railroad on Formica/GE

## **OAC 4906-10(A) (6) – Public Interest, Convenience, and Necessity**

### Questions from Duke Energy Pipeline Report

#### OPSB Staff Report Questions:

On Page 52 of the OPSB Staff Report, the OPSB spends a page to justify calling the proposed pipeline a "distribution line" instead of a "transmission line". What requirements change in 49 CFR 192 for this designation? In addition, the project is designated as Class 4 – does this require anything if it is designated as distribution/transmission?

*The definition of a Gathering Line found in 49 C.F.R. 192.3 is "a pipeline that transports gas from a current production facility to a transmission line or main." Since the Central Corridor Pipeline would not transport gas from a current production facility, it would not be classified as a Gathering Line.*

*The definition of a Transmission Line found in 49 C.F.R. 192.3 is "a pipeline, other than a gathering line, that: (1) Transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not downstream from a distribution center; (2) operates at a hoop stress of 20 percent or more of SMYS; or (3) transports gas within a storage field."*

*First, the term "distribution center" in the definition of Transmission Line is not defined within the Pipeline Safety Regulations. However, PHMSA has defined the term "distribution center" through written interpretations as "the point where gas enters piping used primarily to deliver gas to customers who purchase it for consumption as opposed to customers who purchase it for resale."*



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*The Applicant is a local distribution company (LDC) that provides gas to customers who purchase it for consumption as opposed to customers who purchase it for resale. The Central Corridor Pipeline would be supplied from the Highpoint Park Station equipped with overpressure protection separating the line from the upstream 24-inch transmission line. The proposed pipeline is not transporting gas to a storage field or single large volume customer and appears to be downstream of a distribution center, and therefore would not fit the first part of the Transmission Line definition.<sup>22</sup>*

As it was Duke Energy that made this a condition of approval at several public meetings, we would request that the safety standards that a transmission line require be made part of the project. What regulations does Ohio have different from 49 CFR 192? If Duke is constructing a system that can be used for higher pressure, what stops them from changing the "distribution" to "transmission" at a later date?

**CONDITION – Safety Standards should comply with all provisions of transmission mains as defined in 49 CFR 192.**

This project is to be constructed along the southern edge of the Municipal Complex. In the event of a gas emergency, the entire complex could be within the "Exclusion Zone". This would affect all of the emergency/public services as they are all located within the Complex. In addition, our recreation center is the emergency shelter for the community and would also be included within the Zone.

**We would request that the OPSB opt to the primary route, as requested by the applicant.**

## Conclusion

We appreciate the opportunity to present our concerns and requests for this project. If you have any questions, or need additional information, please contact us at your convenience.

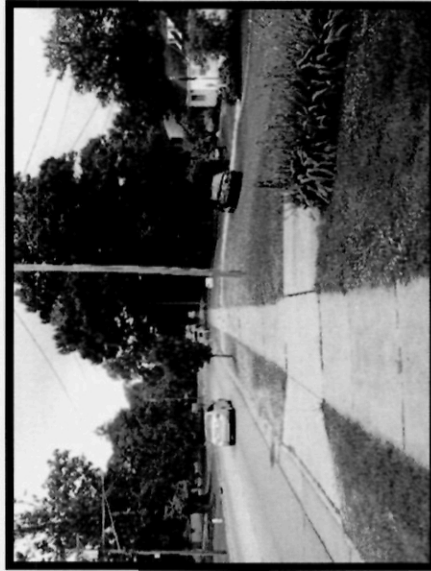
Sincerely,

James R. Jeffers, P.E.  
Service Director/Engineer

PHOTOS OF GLENDALE  
MILFORD ROAD PROPERTIES  
ON PROPOSED PIPELINE  
ROUTE IN EVENDALE, OHIO



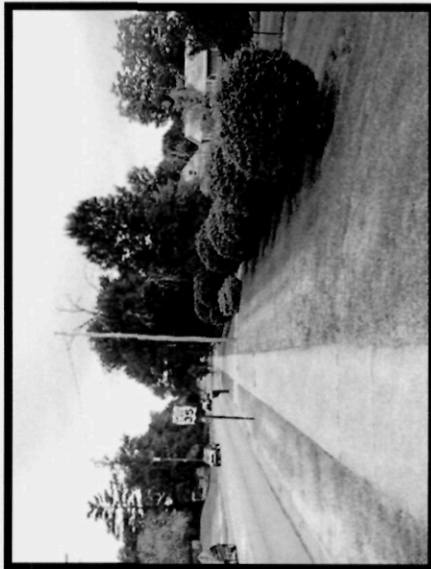
PLAINFIELD PARK



4060 GM RD



PLAINFIELD ROAD CROSSING



4072 GM RD



4000 WOODLEIGH LN



3932 GM RD



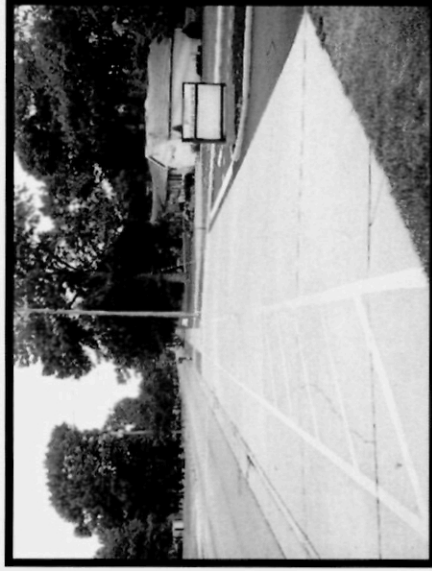
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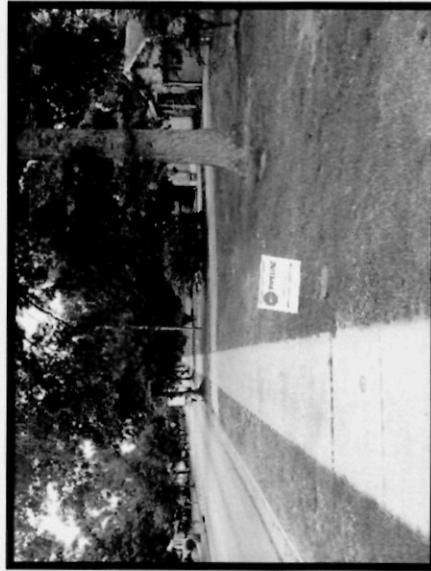
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ENTRANCE EVENDALE ELEM. SCHOOL



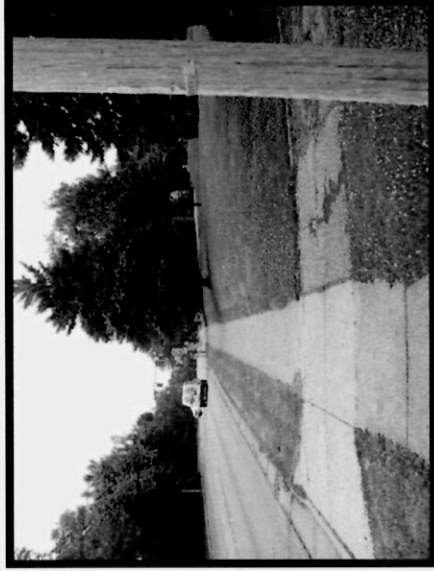
3852 GM RD



3832 GM RD



3804 GM RD



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3810 GM RD



3780 GM RD





3720 GM RD



3696 GM RD



3736 GM RD



3706 GM RD



TROSSET PRESERVE



3630 GM RD



3680 GM RD



TROSSET PRESERVE



3590 GM RD



3550 GM RD



3610 GM RD



3570 GM RD



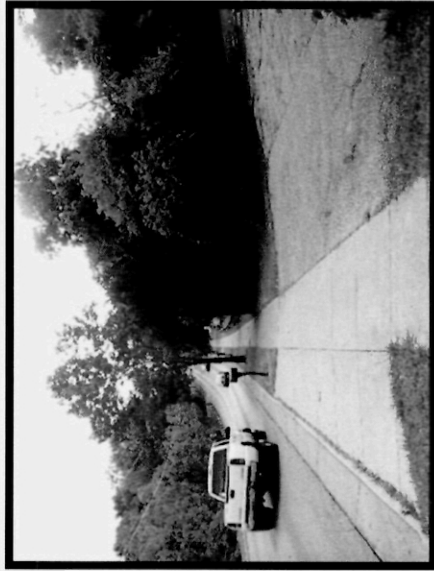
LINE A SOUTH



3490 GM RD



LINE A NORTH



3520 GM RD



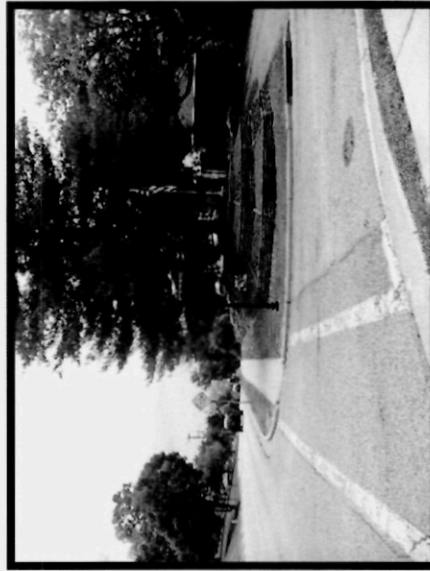
3460 GM RD



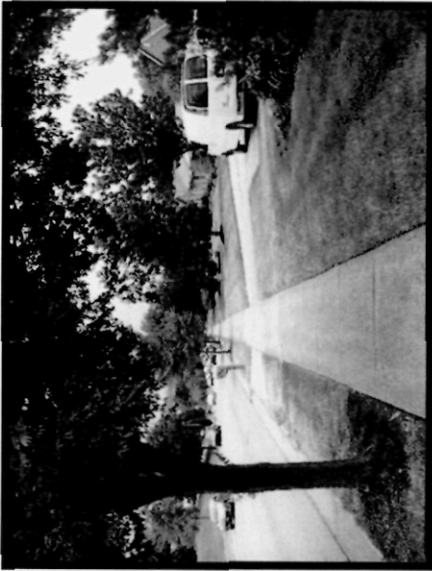
3370 GM RD



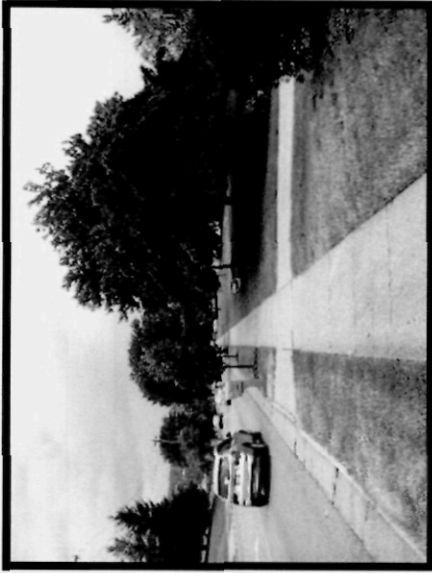
3480 GM RD



10415 WYSCARVER RD



3344 GM RD



3304



3270 GM RD



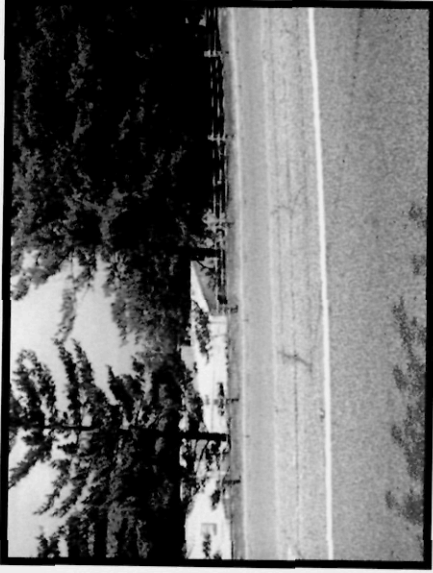
REAR ENT TO MUNICIPAL COMPLEX



SOUTH SIDE OF SERVICE BLDG



FRONT OF SERVICE BLDG



SOUTH SIDE OF SERVICE BLDG



FRONT OF SERVICE BUILDING





WEST SIDE OF SERVICE BLDG



SOCCER FIELDS SW MUNI COMPLEX



SOCCER FIELDS SW MUNI COMPLEX



## Young Family: How the pipeline will impact our family and community.

Lindsey Young

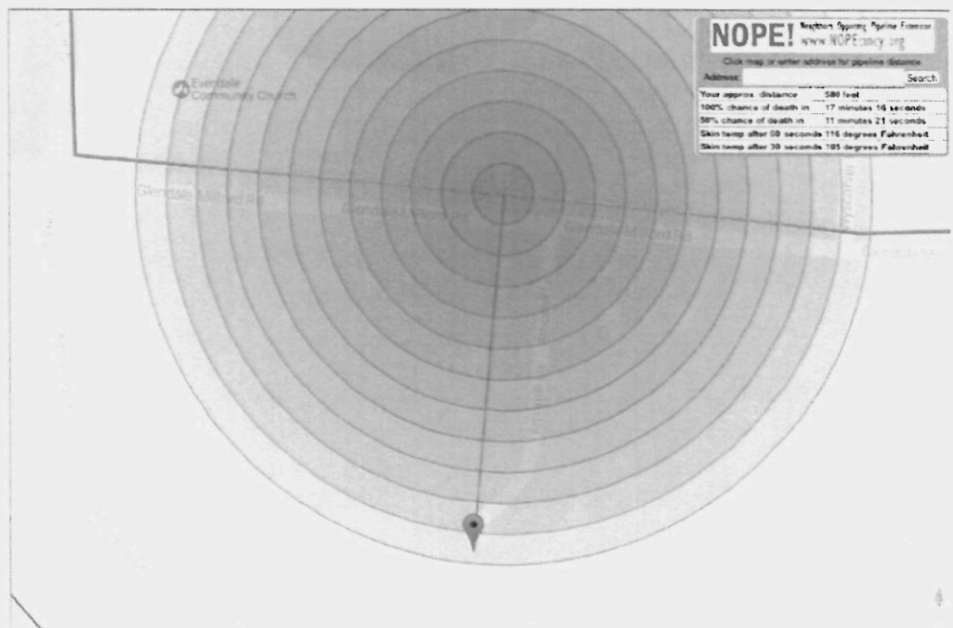


My name is Lindsey Young. This is my family, and this is our house. The 6 of us live here approximately 580 feet from the proposed pipeline, which is within the evacuation zone if there were to be a pipeline emergency. We are concerned about the safety for all people along the proposed pipeline routes not just the green line, which more directly affects our family. The following photos, help illustrate how this affects our daily lives and puts us at significant risk for the majority of our day. **I want to know why the NEED for this pipeline is more important than the SAFETY of thousands of citizens who live, work, and play within these risk zones.**

I am deeply concerned about the safety of my family and community. After researching the need for this pipeline, I do not feel that Duke has sufficiently explained why this large pipeline is needed. I do not understand how this pipeline will benefit Hamilton county residents when the need in Hamilton County has actually declined in recent years and should continue to do so. The identified need to help serve the power demand especially during the winter can be solved with other less costly and less risky means. I am not comfortable footing the bill for an expensive pipeline when repairs to the current peak shaving plants would be safer and less costly for all residents.

The image to the right shows our street. We live on a cul-de-sac. There are 11 houses on this street. All of us (children and elderly included) are within 600 feet and would not survive an explosion at the end of the street. If there was an emergency, there would be no way for us to evacuate. There is a steep hill behind our house and no other access.

**Pipeline incidents happen on average 2 times a day in the United States!**  
**This is too often to make it worth the risk in a densely populated area!**



Below is Evendale Elementary School. This photo is just the 4<sup>th</sup> grade from 2016-2017 which includes my son. There are approximately **275 students and 65 staff members** that are at great risk if the pipeline follows the green route on Glendale Milford Rd. It is concerning that all these people would die if a malfunction with the pipeline did occur. As a teacher myself, we are trained what to do in dangerous situations like fires, tornados, lock-downs, and even active shooter situations. The school is not in control of any of these situations, but can deal with them in different ways.

For comparison's sake, active shooter situations are on the rise in the United States. According to the FBI, between 2000 and 2006 there was an average of 6.4 active shooter incidents per year. Between 2007 to 2013 the average number of active shooter incidents per year has increased to 16.4 incidents annually. This is minor in comparison to the average of 2 pipeline incidents per day in the United States and 4,215 pipeline incidents since 2010 (according to the Pipeline and Hazardous Materials Safety Administration)! Since 2010, that is over 470 injuries, 100 fatalities, 635 fires, 230 explosions, and over \$3.4 billion dollars of damages!!!! This is way more significant than the isolated active shooter situations that schools are trained to deal with.



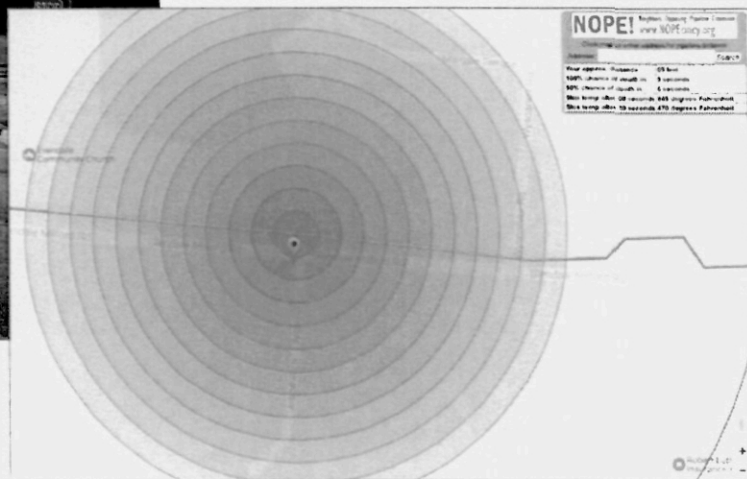
In our school district, both Evendale (~330 people) and Stewart (over 500 people) Elementary Schools are affected by the pipeline. In addition to these schools, there are 24 other schools, preschools, and daycares along the routes. There are also an additional 62 nursing homes, hospitals, hospice centers, places of worship, parks, recreation facilities and hotels within a quarter mile of one of the routes (OKI Regional Planning Database).

How will the emergency departments, schools and other facilities be prepared for pipeline incidents? Will anyone actually survive if an explosion were to occur near one of these facilities? Why should we force this many residents, employees and children into such an unsafe situation? Why add one more thing to the growing list of worries for teachers, parents and students in schools? How can the school be prepared for a situation like this when the Evendale fire and police stations are also at risk? **Is this the BEST and ONLY way for Duke to accomplish their goal?**

Where will my kids' bus stop be when this is going on? How can we let them stand at the bus stop with this going on?



**Bus Stop**  
 <65 feet from  
 pipeline





Throughout the year, my family and I spend a majority of our free time participating in activities in Evendale that are also less than 500 feet from the pipeline. Here are just a few examples of our activities that will be a safety risk if this pipeline is approved.



**Pool & Recreation Center all within 400 feet of the proposed pipeline.**

**Soccer fields right on top of pipeline!!!**



*Above:* Almost 200 children swim on the Evendale swim team. We hang out at the pool all summer long.

*Below:* Childcare & Preschool Classes at the Evendale Rec. Center. My son below joins at least 25 other kids there regularly for classes on weekdays.

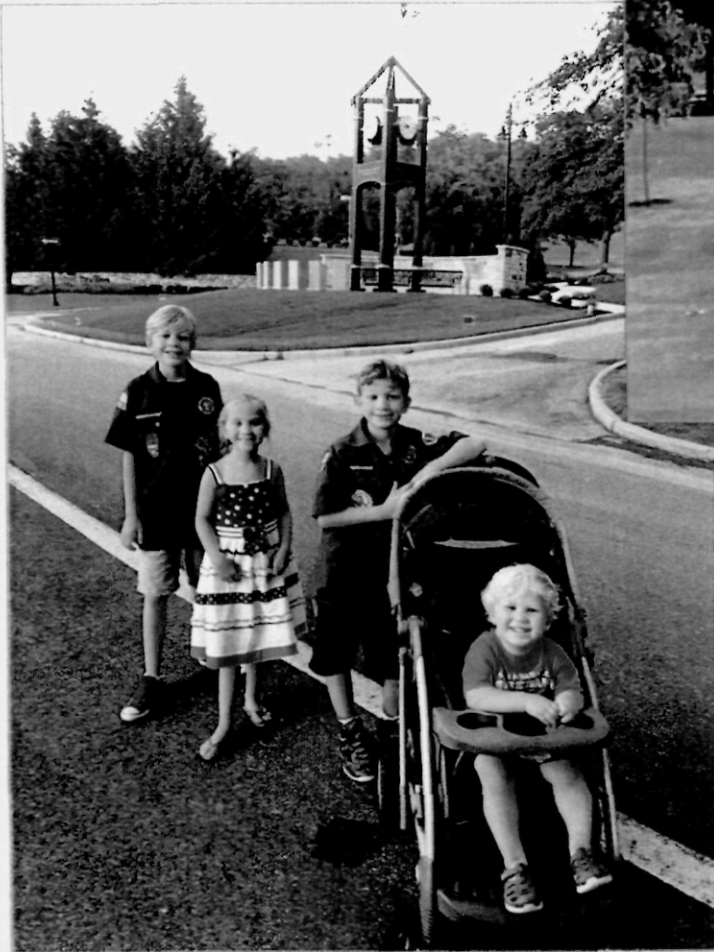


*Above:* My husband and I join at least 100 people a day who workout in the facilities at the rec. center.

*Left:* Hundreds of children and adults play sports on fields, courts, and in the gym at the Evendale Rec. Center.



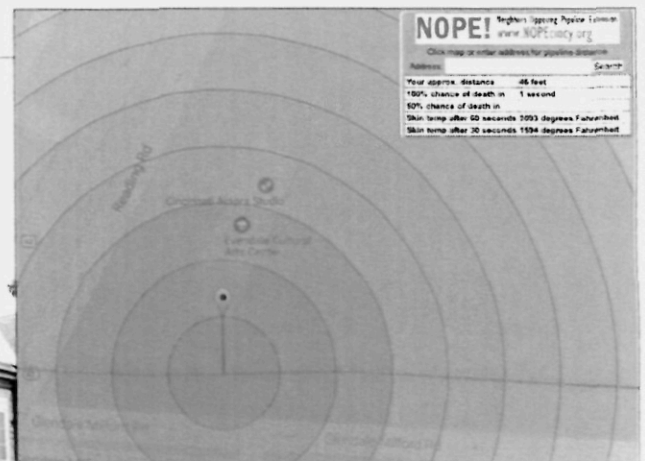
In the summer more than 225 children attend the summer camp program at the Evendale Recreation Center. That is A LOT of children to put at risk!!!



Above: The shelter (~200 ft away) where the Evendale Cub Scouts meet regularly for meetings. This facility is often in use when I drive by.

Left: The new memorial (~275 ft away) constructed to honor our veterans, fire and police. Anyone walking the neighborhood or using the nearby playground should be concerned for their safety.

Below: The Evendale Cultural Arts Center (less than 20 ft away) is where my children go for music lessons. An average of 1,500 people a month also utilize the cultural arts center and will be at risk while in the building.



In conclusion, I am concerned about the NEED for this large, high-pressure, high-capacity pipeline that will go through densely populated areas within Hamilton County. I want to make sure that Duke is RESPONSIBLE with our taxpayer money and, most importantly, our SAFETY.

As a property owner, I am concerned about my neighborhood. If this pipeline does go through Hamilton County, I do expect it to affect our property values. We will have to move in order to feel safe. However, it will become difficult to sell our home when it is in the danger zone of a high-pressure, high capacity pipeline. This will not benefit Hamilton County in any way.

As a parent and teacher, I am concerned for the safety of all children who cannot advocate for themselves. We have so much to worry about in this day and age. Why add one more thing to this ever-growing list? Duke needs to prove to you and the residents why this NEED is the greater than the safety of thousands of individuals who live, work, attend school and play in these areas. Is this really the BEST and ONLY way to accomplish Duke's goals? I have not been convinced that it is.

Thank you for taking the time to review my statement. Please consider all the families like mine who want to rest easy each night as you make a decision that will critically affect each and every one of us.

Sincerely,

*Lindsey Young, 6/15/17*

Lindsey & Nick Young  
10351 Arborhill Lane  
Evendale, OH 45241

## **Challenges to OPSB Staff Report on Pipeline Safety (Pages 52-53 of OPSB Staff Report)**

Ethan Boger, Blue Ash, 13 June 2017

The OPSB staff report allots one half of its short discussion on public safety to analysis of whether the proposed pipeline is a transmission line or a distribution line. The difference is of importance to public safety because the operation, maintenance and inspection regime as defined by law for a transmission line is much more stringent (but therefore much more costly to the operator). Staff determined that the proposed pipeline be categorized as a distribution line.

This study challenges that determination on the following points:

1. Challenge the distinction based on interpretation of 49CFR 192.3 (p.52)
2. Challenge the distinction based on pipe wall thickness (p.53)
3. Challenge the distinction between construction and operation (p.53)

### **Quoted from Staff Report, Considerations for R.C. 4906.10(A)(6)/Pipeline Safety:**

"Pipeline safety regulations are promulgated by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA) at 49 C.F.R. 192 et seq, and adopted by Ohio in Ohio Adm. Code 4901:1-16-03 (Pipeline Safety Regulations). The Pipeline Safety Regulations contain construction and operation standards for pipelines that differ depending on whether the pipeline is classified as Gathering, Transmission, or Distribution lines. Staff reviewed the classification of this pipeline and its impact on pipeline safety.

The Pipeline Safety Regulations define Distribution Lines as "a pipeline other than a gathering or Transmission line." Since the Central Corridor Pipeline is a pipeline but is not a Gathering Line or a Transmission Line, it should be classified as a high-pressure Distribution Line.

The definition of a Transmission Line found in 49 C.F.R. 192.3 is "a pipeline, other than a gathering line, that: (1) Transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not down-stream from a distribution center; (2) operates at a hoop stress of 20 percent or more of SMYS; or (3) transports gas within a storage field."

First, the term "distribution center" in the definition of Transmission Line is not defined within the Pipeline Safety Regulations. However, PHMSA has defined the term "distribution center" through written interpretations as "the point where gas enters piping used primarily to deliver gas to customers who purchase it for consumption as opposed to customers who purchase it for resale."

The Applicant is a local distribution company (LDC) that provides gas to customers who purchase it for consumption as opposed to customers who purchase it for resale. The Central Corridor Pipeline would be supplied from the Highpoint Park Station equipped with overpressure protection separating the line from the upstream 24-inch transmission line. The proposed pipeline is not transporting gas to a storage field or single large volume customer and appears to be downstream of a distribution center and therefore would not fit the first part of the Transmission Line definition."

### **Why is the distinction between distribution line vs. transmission line important?**

Safety is intimately tied to the manner in which a pipeline is operated, maintained and inspected. The federal government mandates that these factors be controlled through an integrity management plan (IMP). The IM requirements for a transmission line are laid out in 49CFR Part 192, Subpart O, and for a distribution line in 49CFR Part 192, Subpart P. See Appendix A at end of this study for a summary of each subpart. The IM requirements for a distribution line are far less stringent and thorough and far less expensive than those for a transmission line, even a transmission line operating at <30% YS (a special subset of transmission line as defined in 49 CFR 192.941), as shown in the following table.

### Comparison of Integrity Management Plans

Integrity Management Requirement	Transmission Line	Distribution Line
Define high consequence areas (HCAs)	Yes	No
Identify potential threats to pipeline integrity	Yes	Yes
A baseline assessment plan (§ 192.919 and § 192.921)	Yes	No
External Corrosion Direct Assessment (ECDA)?	Yes	No
Internal Corrosion Direct Assessment (ICDA)?	Yes	No
Stress Corrosion Cracking Direct Assessment (SCCDA)?	Yes	No
Reassessment at specified intervals by pressure test or other means (ECDA, ICDA, SCCDA, etc)	Yes	No

#### **Challenge the distinction based on interpretation of 49CFR 192.3 (p.52)**

According to the OPSB report, the proposed pipeline "...appears to be downstream of a distribution center". In its application (entered into the docket between 1/10/17 and 3/3/17) Duke characterized the proposed pipeline as an extension of line C314, a transmission line:

"Line C314 has capacity available, as is needed in the central core area. Line C314 was designed and constructed with future expansion to the south in mind. In the current system, there is a notable operating pressure drop from 600 PSIG to 150 PSIG where Line C314 connects with the WW Feed Station. This pressure reduction limits the capability of Line C314 pipeline to bring greater quantities of natural gas into the heart of the pipeline system from the north. An extension of Line C314 has been part of Duke Energy Ohio's long-term plans for the system, and the proposed Project will bring increased volumes and pressure of natural gas into the system from the north, eliminating some of the existing system constraints. As originally designed and engineered, Duke Energy Ohio planned that the Project as a 30-inch pipe with an operating pressure of 600 PSIG. However, based on the concerns and input from elected representatives, community leaders, and members of the public, Duke Energy Ohio performed further system analyses and determined that it could reduce the size and scope of the proposed Project, as discussed in this Application." (Application, Rev 1, p. 3-4).

As characterized by Duke itself, the purpose of the proposed pipeline is to extend transmission line C314 down to the Cincinnati distribution terminus. Thus for all intents and purposes the proposed pipe is a high pressure transmission line, operating at <30% YS. By characterizing it as a distribution line, OPSB is placing the population in the path of the pipe at greater risk. When pipeline definition has a substantial impact on public safety, courts have challenged 49CFR 192.3 - see Appendix B for a listing of relevant case law - citing Congress's intent that the regulation be interpreted in the best interest of public safety.

#### **Challenge the distinction based on pipe wall thickness (p.53)**

"If the pipeline would operate at a pressure that is 20 percent or more of the calculated SMYS the pipeline is classified as a Transmission Line. This is due to the behavior of steel in the event of a pipeline failure. At pressures greater than 20 percent of SMYS, gas may exit the pipe with enough force to increase the size of the defect in the pipe, resulting in a pipeline rupture. At less than 20 percent of SMYS, defects remain stable, resulting in a gas leak. The proposed Central Corridor Pipeline would be constructed from API 5L X-60 Grade pipe with a wall thickness of 0.438 inches. Pipe with this tensile strength and wall thickness, at the given MAOP, would operate at 19 percent of SMYS, and therefore would not fit the second part of the Transmission Line definition."

First of all, there are several common modes of pipeline failure which have nothing to do with pipe wall thickness but plenty to do with the high pressure in the system. Examples of other failure modes include valve failure, third party damage (e.g. excavation damage), shifts in ground support and lightning strikes. Therefore, the definition in 49CFR 192.3, which relies solely on pipe wall stress, is troublesome.



Second, the above quote from the staff report indicates a fundamental misunderstanding of how pipelines fail by crack growth. Crack behavior is driven not by “gas exiting the pipe” as stated, but rather by the amount of stored energy in the pipe wall (think the energy in a stretched rubber band), size of the crack and stress level in the pipe. These factors are bundled together in a term called “stress intensity” which is weighed against a material characteristic called fracture toughness. Once stress intensity exceeds fracture toughness the crack will suddenly grow rapidly, resulting in massive release of gas.

Third, the statement “At less than 20 percent of SMYS, defects remain stable, resulting in a gas leak” is simply incorrect. Pipeline walls are made from ductile steels that are quite crack tolerant, so whether the stress level is 19% of YS or 22% of YS (for the 0.38-inch wall originally proposed by Duke) makes little difference. Steel becomes much more susceptible to cracking at welds and in areas where corrosion reduces the wall thickness and embrittles the metal (see Appendix C). Changing wall thickness by 1/16<sup>th</sup> inch does not meaningfully reduce the chance of a catastrophic rupture. Nor does this difference matter when a giant backhoe crashes into the pipe, causing a massive crack that will clearly become unstable regardless of wall thickness. This is clearly only a ruse by Duke to obtain a distribution line definition, which greatly reduces its maintenance costs.

### **Challenge the distinction between construction and operation (p.53)**

In the short section of its report devoted to safety, OPSB recommends only that pipeline construction, as opposed to pipeline operation, should follow the guidelines for a transmission line (“Staff recommends the Applicant construct the Central Corridor Pipeline in accordance with requirements for Transmission Lines to provide extra margin of safety, above and beyond the construction activities already listed in the application for Distribution Lines”). Safety is left entirely in the hands of Duke Energy, with almost no government oversight. While the pipeline may be safe for the first five or ten years, what happens in the second, third, fourth and fifth decade? Requiring that the pipeline be operated, maintained and inspected as a distribution line puts the public unnecessarily at risk.

## **Appendix A: 49CFR Part 192, Subparts O and P**

### **49 CFR Part 192, Subpart O - Gas Transmission Pipeline Integrity Management**

- § 192.901 What do the regulations in this subpart cover?
- § 192.903 What definitions apply to this subpart?
- § 192.905 How does an operator identify a high consequence area?
- § 192.907 What must an operator do to implement this subpart?
- § 192.909 How can an operator change its integrity management program?
- § 192.911 What are the elements of an integrity management program? [see below]
- § 192.913 When may an operator deviate its program from certain requirements of this subpart?
- § 192.915 What knowledge and training must personnel have to carry out an integrity management program?
- § 192.917 How does an operator identify potential threats to pipeline integrity and use the threat identification in its integrity program?
- § 192.919 What must be in the baseline assessment plan?
- § 192.921 How is the baseline assessment to be conducted?
- § 192.923 How is direct assessment used and for what threats?
- § 192.925 What are the requirements for using External Corrosion Direct Assessment (ECDA)?
- § 192.927 What are the requirements for using Internal Corrosion Direct Assessment (ICDA)?
- § 192.929 What are the requirements for using Direct Assessment for Stress Corrosion Cracking (SCCDA)?
- § 192.931 How may Confirmatory Direct Assessment (CDA) be used?
- § 192.933 What actions must be taken to address integrity issues?
- § 192.935 What additional preventive and mitigative measures must an operator take?

- § 192.937 What is a continual process of evaluation and assessment to maintain a pipeline's integrity?
- § 192.939 What are the required reassessment intervals?
- § 192.941 What is a low stress reassessment?
- § 192.943 When can an operator deviate from these reassessment intervals?
- § 192.945 What methods must an operator use to measure program effectiveness?
- § 192.947 What records must an operator keep?
- § 192.949 How does an operator notify PHMSA?
- § 192.951 Where does an operator file a report?
- Appendix E to Part 192 - Guidance on Determining High Consequence Areas and on Carrying out Requirements in the Integrity Management Rule

**§ 192.911 What are the elements of an [transmission line] integrity management program?**

An operator's initial integrity management program begins with a framework (see § 192.907) and evolves into a more detailed and comprehensive integrity management program, as information is gained and incorporated into the program. An operator must make continual improvements to its program. The initial program framework and subsequent program must, at minimum, contain the following elements. (When indicated, refer to ASME/ANSI B31.8S (incorporated by reference, see § 192.7) for more detailed information on the listed element.)

- (a) An identification of all high consequence areas, in accordance with § 192.905.
- (b) A baseline assessment plan meeting the requirements of § 192.919 and § 192.921.
- (c) An identification of threats to each covered pipeline segment, which must include data integration and a risk assessment. An operator must use the threat identification and risk assessment to prioritize covered segments for assessment ( § 192.917) and to evaluate the merits of additional preventive and mitigative measures ( § 192.935) for each covered segment.
- (d) A direct assessment plan, if applicable, meeting the requirements of § 192.923, and depending on the threat assessed, of §§ 192.925, 192.927, or 192.929.
- (e) Provisions meeting the requirements of § 192.933 for remediating conditions found during an integrity assessment.
- (f) A process for continual evaluation and assessment meeting the requirements of § 192.937.
- (g) If applicable, a plan for confirmatory direct assessment meeting the requirements of § 192.931.
- (h) Provisions meeting the requirements of § 192.935 for adding preventive and mitigative measures to protect the high consequence area.
- (i) A performance plan as outlined in ASME/ANSI B31.8S, section 9 that includes performance measures meeting the requirements of § 192.945.
- (j) Record keeping provisions meeting the requirements of § 192.947.
- (k) A management of change process as outlined in ASME/ANSI B31.8S, section 11.
- (l) A quality assurance process as outlined in ASME/ANSI B31.8S, section 12.
- (m) A communication plan that includes the elements of ASME/ANSI B31.8S, section 10, and that includes procedures for addressing safety concerns raised by -
  - (1) OPS [Office of Pipeline Safety]; and
  - (2) A State or local pipeline safety authority when a covered segment is located in a State where OPS has an interstate agent agreement.
- (n) Procedures for providing (when requested), by electronic or other means, a copy of the operator's risk analysis or integrity management program to -
  - (1) OPS; and
  - (2) A State or local pipeline safety authority when a covered segment is located in a State where OPS has an interstate agent agreement.
- (o) Procedures for ensuring that each integrity assessment is being conducted in a manner that minimizes environmental and safety risks.
- (p) A process for identification and assessment of newly-identified high consequence areas. (See § 192.905 and § 192.921.)

#### **49 CFR Part 192, Subpart P - Gas Distribution Pipeline Integrity Management (IM)**

- § 192.1001 What definitions apply to this subpart?
- § 192.1003 What do the regulations in this subpart cover?
- § 192.1005 What must a gas distribution operator (other than a master meter or small LPG operator) do to implement this subpart?
- § 192.1007 What are the required elements of an integrity management plan?
- § 192.1009 What must an operator report when a mechanical fitting fails?
- § 192.1011 What records must an operator keep?
- § 192.1013 When may an operator deviate from required periodic inspections under this part?
- § 192.1015 What must a master meter or small liquefied petroleum gas (LPG) operator do to implement this subpart?
- Appendix A to Part 192 [Reserved]
- Appendix B to Part 192 - Qualification of Pipe
- Appendix C to Part 192 - Qualification of Welders for Low Stress Level Pipe
- Appendix D to Part 192 - Criteria for Cathodic Protection and Determination of Measurements

#### **§ 192.1007 What are the required elements of an [distribution line] integrity management plan?**

A written integrity management plan must contain procedures for developing and implementing the following elements:

**(a) Knowledge.** An operator must demonstrate an understanding of its gas distribution system developed from reasonably available information.

(1) Identify the characteristics of the pipeline's design and operations and the environmental factors that are necessary to assess the applicable threats and risks to its gas distribution pipeline.

(2) Consider the information gained from past design, operations, and maintenance.

(3) Identify additional information needed and provide a plan for gaining that information over time through normal activities conducted on the pipeline (for example, design, construction, operations or maintenance activities).

(4) Develop and implement a process by which the IM program will be reviewed periodically and refined and improved as needed.

(5) Provide for capture and retention of data on any new pipeline installed. The data must include, at a minimum, the location where the new pipeline is installed and the material of which it is constructed.

**(b) Identify threats.** The operator must consider the following categories of threats to each gas distribution pipeline: corrosion, natural forces, excavation damage, other outside force damage, material or welds, equipment failure, incorrect operations, and other concerns that could threaten the integrity of its pipeline. An operator must consider reasonably available information to identify existing and potential threats. Sources of data may include, but are not limited to, incident and leak history, corrosion control records, continuing surveillance records, patrolling records, maintenance history, and excavation damage experience.

**(c) Evaluate and rank risk.** An operator must evaluate the risks associated with its distribution pipeline. In this evaluation, the operator must determine the relative importance of each threat and estimate and rank the risks posed to its pipeline. This evaluation must consider each applicable current and potential threat, the likelihood of failure associated with each threat, and the potential consequences of such a failure. An operator may subdivide its pipeline into regions with similar characteristics (e.g., contiguous areas within a distribution pipeline consisting of mains, services and other appurtenances; areas with common materials or environmental factors), and for which similar actions likely would be effective in reducing risk.

**(d) Identify and implement measures to address risks.** Determine and implement measures designed to reduce the risks from failure of its gas distribution pipeline. These measures must include an effective leak management program (unless all leaks are repaired when found).

**(e) Measure performance, monitor results, and evaluate effectiveness.**

(1) Develop and monitor performance measures from an established baseline to evaluate the effectiveness of its IM program. An operator must consider the results of its performance monitoring in periodically re-evaluating the threats and risks. These performance measures must include the following:

(i) Number of hazardous leaks either eliminated or repaired as required by § 192.703(c) of this subchapter (or total number of leaks if all leaks are repaired when found), categorized by cause;

(ii) Number of excavation damages;

(iii) Number of excavation tickets (receipt of information by the underground facility operator from the notification center);

(iv) Total number of leaks either eliminated or repaired, categorized by cause;

(v) Number of hazardous leaks either eliminated or repaired as required by § 192.703(c) (or total number of leaks if all leaks are repaired when found), categorized by material; and

(vi) Any additional measures the operator determines are needed to evaluate the effectiveness of the operator's IM program in controlling each identified threat.

**(f) Periodic Evaluation and Improvement.** An operator must re-evaluate threats and risks on its entire pipeline and consider the relevance of threats in one location to other areas. Each operator must determine the appropriate period for conducting complete program evaluations based on the complexity of its system and changes in factors affecting the risk of failure. An operator must conduct a complete program re-evaluation at least every five years. The operator must consider the results of the performance monitoring in these evaluations.

**(g) Report results.** Report, on an annual basis, the four measures listed in paragraphs (e)(1)(i) through (e)(1)(iv) of this section, as part of the annual report required by § 191.11. An operator also must report the four measures to the state pipeline safety authority if a state exercises jurisdiction over the operator's pipeline.

## **Appendix B: Case Law**

### **Hamman v. Southwestern Gas Pipeline, Inc., 721 F.2d 140 (1983)**

[4] In interpreting a statute, a court should construe the language so as to give effect to the intent of Congress. Legislative history can evidence congressional intent. *Solomon v. United States*, 559 F.2d 309 (5th Cir.1977). Congress specifically stated that the purpose of the Act was to provide for "the prescription and enforcement of minimum federal safety standards for the transportation of natural and other gas by pipeline." H.R.Rep. No. 1390, 90th Cong., 2d Sess., reprinted in 1968 U.S.Code Cong. & Ad.News 3223. Indeed, the House Report specifically discusses deaths caused by bulldozers or plows cutting pipelines that were buried too close to the surface. *Id.* at 3225. Safety legislation is to be liberally construed. *Whirlpool Corp. v. Marshall*, 445 U.S. 1, 13, 100 S.Ct. 883, 891, 63 L.Ed.2d 154 (1980). Keeping in mind that Congress meant the Act to minimize accidents caused by natural gas pipelines, we hold that a pipeline...etc

### **Illinois Commerce Commission on Its Own Motion vs. US Steel, 2016 WL 7426752... 12/20/2016**

\*4 U.S. Steel notes that a "transmission line" is defined as: a "pipeline, other than a gathering line, that: (1) transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not downstream from a distribution center; (2) operates at a hoop stress of 20 percent or more of SMYS; or (3) transports gas within a storage field."

A "distribution line" is defined as "a pipeline other than a gathering or transmission line." 49 C.F.R.

§192.3. According to U.S. Steel, the DOT was clear that it intended the "distribution line" to mean mains and service lines: "[t]he terms "gathering line," "transmission line," and "distribution line" are defined as various types of pipelines. "Distribution line" is further divided into "main" and "service line." 35 Fed.

Reg. 13248 at 13251 (August 19, 1970). A "service line" is a pipe that connects to a main and delivers gas to an individual customer, at the meter." 73 Fed. Reg. 36016 (June 25, 2008). Meanwhile, a "main" is defined as a "distribution line that serves as a common source of supply for more than one service line." 49

C.F.R. §192.3. A service line "ends at the outlet of the customer meter or at the connection to a customer's piping, whichever is further downstream, or at the connection to customer piping if there is no meter." 49 C.F.R. §192.3....According to U.S. Steel, this reading is contradicted by both the plain language of the definition (which simply means that a pipe connecting a transmission line to an end user is a transmission line), and further because PHMSA has indicated that once gas reaches a "large volume customer" that point marks "the end of transmission under the definition." 61 Fed. Reg. 28770 (June 6, 1996).

**In re Yankee Gas Services Co., 2002 WL 31399470 (2002)**




In this case before the Connecticut Dept of Public Utility Control, plaintiff asked that a 16-inch pipeline routed through a densely populated area, operated at 749 psi (19.97% of YS) be classified as a distribution line. The commission ruled that the pipeline must meet the integrity requirements for the more stringent of distribution or transmission line management practices.




**Re T&F Operating, Inc. f/k/a Phoenix Energy Sales Company (00-1722-G-PC) May 30, 2002**




Staff maintained that T&F transports gas from a gathering line (the connection with the CNG gathering system) to a distribution center (connection to Bluefield Gas), and therefore under (a) is a transmission line. Further, Staff cited case law stating that 'Keeping in mind that Congress meant [the Natural Gas Pipeline Safety Act] to minimize accidents caused by natural gas pipelines, [the U.S. Court of Appeals, 5th Circuit]...

**Other case Law**

Cases that define "Transmission Line"

-  Hamman v Southwestern Gas Pipeline Inc.pdf (228 KB)
-  TAndF OPERATING INC fka PHOENIX ENERGY SALES COMPANY.pdf (440 KB)
-  In re Yankee Gas Services Co.pdf (686 KB)

-  Illinois Commerce Commission On Its Own... v United States Steel Corporation.pdf (492 KB)
-  In re Arkansas Gas Pipeline Code.pdf (716 KB)
-  IN RE INTERSTATE POWER AND LIGHT COMPANY.pdf (118 KB)

-  In re TAndF Operating Inc.pdf (455 KB)
-  Rev Proc 2002-41 GUIDRY.pdf (272 KB)
-  IN RE JO-CARROLL ENERGY INC (1).pdf (120 KB)

## Appendix C: Crack growth analysis due to internal corrosion in a 20-inch diameter pipe

In a nominal 20-inch diameter pipe operating at 500 psi, the size of crack that would grow uncontrollably (i.e., cause a pipe rupture) is several inches in length. However, under the influence of stress corrosion, the pipe wall is simultaneously thinned, embrittled and subject to stress concentrations not present in the nominal pipe. Under these conditions the pipe may rupture much sooner than anticipated, as happened in a recent pipeline accident (Spectra Energy pipeline in Westmoreland County, PA on 29 April 2016).

This example reinforces the notion that any high pressure pipeline, especially in Class 3 and 4 locations, must be subject to strict integrity management under 49 CFR 192, Subpart O.

### Example

Pipe material is 0.438 thk X60 steel. Assume  $KIC=40 \text{ ksi-in}^{1/2}$  in the corroded area.

Nominal hoop stress is 12 ksi.

What happens when internal corrosion reduces wall thickness by 50% as shown below?

Corrosion also causes local stress concentration so local stress can be closer to 40 ksi.

Under these conditions a through crack can lead to sudden failure when crack length is <1 inch:

$KIC=40 \text{ ksi-in}^{1/2} = 40 * \sqrt{\pi a} \Rightarrow a_{\text{critical}} = 1/\pi = 0.318 \text{ inch} \Rightarrow \text{crack length} = 2a = 0.64 \text{ inch}.$

Will this crack be identified before growing to critical size?

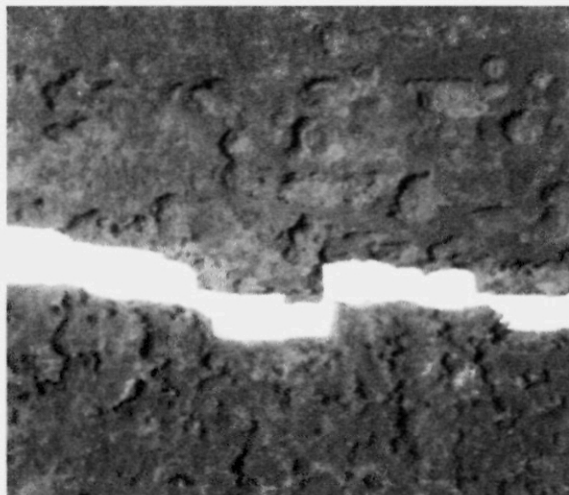


Figure 6. Inside surface at the failure origin of a 20-inch pipeline.

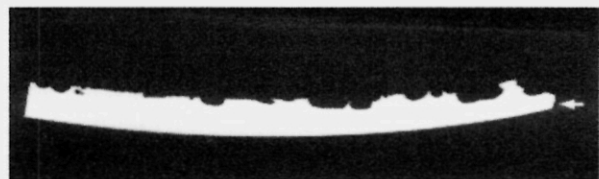


Figure 7. Cross section taken adjacent to the fracture shown in Figure 6. The arrow identifies the fracture surface in the pipeline.

A few (rhetorical?) questions for consideration:

1. What happens to the existing line?
2. Why can't it go through a less-populated area?
3. Has an impact study been completed on the following issues:

1. home values?
2. neighborhoods - "blast circles"?
3. potential for construction and post-construction leaks, accidents, etc.

4. What kind of monitoring is done?

5. I was told last year the pipe will be 4 ft. below surface. I have a sewer pipe in my backyard that was installed 6 ft. below surface. Why would a potentially hazardous product be closer to the surface than a hollow pipe that carries rain water?

6. Attached is a 29-page list of pipeline accidents, including property damage, human injury & death, and a 7-page list of natural gas/oil pipelines. How can Duke guarantee safety in light of so many accidents?

Thank you,  
Maxine K. Bookbinder  
10653 Kenridge Dr  
Blue Ash, OH 45242  
513-985-9950

## Alabama [ edit ]

- November 8, 2013 – Pickens County, Crude oil train derails, fire, one person evacuated<sup>[1]</sup>

## Alaska [ edit ]

- March 24, 1989 - The Exxon Valdez oil spill occurred in Prince William Sound, Alaska.
- December 31, 2012 – Offshore drilling rig breaks loose from tow, 18 evacuated<sup>[2]</sup>
- 2016–2017 Cook Inlet natural gas leak

## Arizona [ edit ]

- State had active oil and or gas wells as of April 2015 but no accidents have been uncovered.<sup>[3]</sup>

## Arkansas [ edit ]

- September 2010 – March 2011 – Near Greenbrier, earthquake swarm near injection wells, largest 4.7<sup>[4]</sup>
- March 29, 2013 – Mayflower – "Exxon-Pegasus" oil pipeline spill, 22 homes evacuated<sup>[5]</sup>
- November 12, 2014 – earthquake, see Kansas

## California [ edit ]

- September 16, 1928 - George F. Getty Inc. well exploded at the Santa Fe Springs oil fields, igniting a fire that burned for almost two months.<sup>[6]</sup>
- 1969: The 1969 Santa Barbara oil spill. In January and February 1969, in the Santa Barbara Channel, near the city of Santa Barbara, in Southern California. It was the largest oil spill in United States waters at the time, and now ranks third after the 2010 Deepwater Horizon and 1989 Exxon Valdez spills. It remains the largest oil spill to have occurred in the waters off California.
- May 15, 2014 – Los Angeles, pipeline rupture, 4 sickened<sup>[7]</sup>
- February 18, 2015 – Torrance, refinery explosion, four injured<sup>[8]</sup>
- May 19, 2015 – Santa Barbara – Pipeline rupture, large oil spill <sup>[9]</sup>

## Colorado [ edit ]

- Oil spill data are available on Colorado Oil and Gas Conservation Commission Spill Analysis website
- August 2001 through 2012 – Trinidad, earthquakes up to magnitude 5.3 <sup>[10]</sup>
- February 26, 2006 - Fire at a gas compressor station, southwest of Fort Lupton
- September 11, 2012 - A malfunction and fire at a gas compressor station, in Colorado.<sup>[11]</sup>
- May 9, 2014 – Weld county, derailment, oil spill <sup>[12]</sup>
- November 13, 2014 – Weld County explosion, one dead, two injured,<sup>[13]</sup>
- April 17, 2017 - A severed flow line, from a gas well, leads to a gas explosion in a home, killing 2 people, in Firestone, Colorado.<sup>[14]</sup>
- May 8, 2017 - Fire broke out at a tank for a fracking well near Greely.<sup>[15]</sup>
- May 25, 2107 - An oil tank explosion and fire in northern Colorado killed a worker, and burned three others.<sup>[16]</sup>

## Florida [ edit ]

- State had active oil and or gas wells as of April 2015 but no accidents have been uncovered.<sup>[3]</sup>

## Idaho [ edit ]



- State had active oil and or gas wells as of April 2015 but no accidents have been uncovered.<sup>[3]</sup>

## Illinois [ edit ]

- November 20, 2012 – Mokena, Pipe rupture, oil spill in tank farm<sup>[17]</sup>
- March 5, 2015 – Galena, train derailment, fire, evacuations<sup>[18]</sup>

## Indiana [ edit ]

- About March 26, 2014 – Whiting – Crude oil spill from refinery<sup>[19]</sup>

## Kansas [ edit ]

- November 12, 2014 – Sumner County, epicenter of magnitude 4.8 earthquake<sup>[20]</sup>
- January 19, 2015 – see OK

## Kentucky [ edit ]

- January, 2005 – Carrollton, Crude oil pipeline rupture, oil spill,<sup>[21]</sup>
- October, 2008 – Burlington, Crude oil pipeline rupture, oil spill, 80 homes evacuated<sup>[21]</sup>

## Louisiana [ edit ]

- July 20, 2010 – Deepwater Horizon oil spill, in the Gulf of Mexico, 11 dead<sup>[22]</sup>
- July 22, 2013 – Offshore gas well, 44 workers evacuated<sup>[23]</sup>
- April 14, 2017 - Well blowout in Red River Parish, Louisiana.<sup>[24]</sup>
- April 18, 2017 - One worker was killed, and, 2 others injured, by a well tank explosion, in Mansfield, Louisiana.<sup>[25]</sup>

## Maryland [ edit ]

- State had active oil and or gas wells as of April 2015 but no accidents have been uncovered.<sup>[3]</sup>
- On October 6, 1979, LNG vapors at the Dominion Cove Point LNG facility leaked from a pump, causing an explosion leading to 1 death, 1 critical injury, and, major damage to the facility.<sup>[26]</sup>

## Michigan [ edit ]

- July 25, 2010 – Near Marshall, massive spill of dilbit (diluted bitumin) from Canada<sup>[27]</sup>
- September 16, 2014- Benton Harbor, pipeline gas leak, 500 residents evacuated<sup>[28]</sup>

## Mississippi [ edit ]

- June 5, 2006 – Raleigh, oil field explosion, three dead, one injured<sup>[29]</sup>

## Missouri [ edit ]

- April 30, 2013 – Ripley County, crude oil spill from pipeline,<sup>[30]</sup>
- November 29, 2013 - An explosion and fire at a natural gas compressor station, near Houstonia.

## Montana [ edit ]

- July 2, 2011 – 10 miles from Billings, pipeline spill, evacuations<sup>[31]</sup>
- January 16, 2015 – near Glendive, pipeline rupture <sup>[32]</sup>

## Nebraska [ edit ]

- State had active oil and or gas wells as of April 2015 but no accidents have been uncovered.<sup>[3]</sup>

## Nevada [ edit ]

- State had active oil and or gas wells as of April 2015 but no accidents have been uncovered.<sup>[3]</sup>

## New Mexico [ edit ]

- 18,622 reported spills as of January 13, 2015 on the State of New Mexico Oil Conservation Division web site
- May 26, 1983 - Explosion and fire at a gas compressor station near Bloomfield. Two employees were severely burned.<sup>[33]</sup>
- July, 2016 - Explosion in New Mexico, 36 Oil Tanks Catch Fire<sup>[34][35]</sup>

## New York [ edit ]

- List of NYC gas explosions; most are likely in distribution lines and not associated with production <sup>[36]</sup>

## 1979-2009 [ edit ]

- 270 Accidents in the state<sup>[37]</sup>

## After 2009 [ edit ]

- August 20, 2014 – Albany, crude oil spill from pipeline,<sup>[38]</sup>

## North Carolina [ edit ]

- State had active oil and or gas wells as of April 2015 but no accidents have been uncovered.<sup>[39]</sup>

## North Dakota [ edit ]

## 2006 through Oct. 2014 [ edit ]

- Numerous spills, mainly western part of state, at least four injuries<sup>[40]</sup>
- February 13, 2014 - A fracing well blew out.<sup>[41]</sup>

## 2015 [ edit ]

- January 6, 2015 – near Williston, large brine spill (reference to this article contains links to stories of earlier spills)<sup>[42]</sup>

## Ohio [ edit ]

## Before 2014 [ edit ]

- **October 20, 1944 - The Cleveland East Ohio Gas explosion: An LNG tank suffered a seam failure, leading to LNG vapors entering sewers. The vapors later exploded, causing 130 deaths, and, destroying of square mile of Cleveland, Ohio.**
- **December 15, 2007 – Geauga County, gas well explosion,**<sup>[43]</sup>
- **September 29, 2008 – Medina county, water well pollution**<sup>[44]</sup>
- **March 17 – December 24, 2011 – Youngstown, 11 earthquakes near injection wells**<sup>[45]</sup>
- **September 2012 to November 2013 –Four eastern Counties, repeated drilling-slurry spills**<sup>[46]</sup>
- **November 1, 2012 to January 31, 2013 – Mahoning River, Illegal dumping of fracking waste**<sup>[47]</sup>
- **September 30, 2013 – Harrison County, 400 micro-earthquakes**<sup>[48]</sup>

Franklin Township (now called **New Franklin**) fracking incidents contaminates drinking water wells along Center Rd, Bolender Rd and others. BP quietly paid off homeowners without disclosing all the information about the risks, dates and other critical information. Real estate values and health risks were minimized by BP to a largely blue collar population. Public information regarding this remains hidden. Residents have annual well tests for decades, and still recommended not to drink the well water. Homeowners and past residents, as well as children of homeowners may be adversely affected from consuming toxic well water.

## 2014 [ edit ]

- **Twelve accidents, earthquakes, one dead, two injured, about 1000 evacuated** <sup>[49]</sup>
- **June 28, 2014 - The Eisenbarth well in Monroe County has numerous explosions and fire.**<sup>[50]</sup>

**March 10, 2014 – Poland Township, Mahoning County, earthquakes,** "New Research Links Scores of Earthquakes to Fracking Wells Near a Fault in Ohio", New York Times, January 8, 2015: ; **March 17, 2014 – Oak Glen Nature Preserve, Hamilton County, Crude oil pipeline rupture, oil spill** "Oil spill at nature preserve 'absolutely terrible'", Cincinnati Enquirer, March 19, 2014 ; **May 4, 2014 – Morgan County, Well leak, Seven evacuated,** "Shale well leaks during drilling process, forcing evacuations in Morgan County", Columbus Dispatch, May 8, 2014 ; **June 28, 2014 - Monroe County, fire, one injured** "Fracking fire points out failings", Columbus Dispatch, August 31, 2014 ; **About August 31, 2014 – near Warren, Injection wells, Earthquake,** , "Ohio halts injections at two wells for fracking wastewater after quake" Columbus Dispatch, September 8, 2014 ; **Early September, 2014 – Carroll County, Air pollution, two houses evacuated** "Commissioners learn of emissions violation at Blue Racer Plant", News Leader, September 24, 2014 ; **October 19, 2014 – Guernsey County, explosion, one injured** "Drilling worker injured in Guernsey County explosion", Akron Beacon Journal, October 27, 2014 ; **October 28, 2014 – Jefferson County, Well blowout, 400 families evacuated,** "Most allowed back home after fracking-well blowout in eastern Ohio", Columbus Dispatch, October 30, 2014 ; **Columbus Dispatch, October 30, 2014; October 28, 2014 – Monroe County, pipeline fire** Eastern Ohio pipeline hauling toxic mix catches fire", Columbus Dispatch, October 23, 2014 ; **November 12, 2014 – Noble County, Explosion, one dead** "Worker killed in explosion at Noble County oil and gas facility", Columbus Dispatch, November 14, 2014 ; **December 13, 2014 – Monroe County, Large leak, several families evacuated** "Evacuated families in Monroe County await answers on fracking-well gas leak", Columbus Dispatch, December 22, 2014  </ref>

## 2015 [ edit ]

- **January 10, 2015 – Lima, Refinery explosion,**<sup>[51]</sup>
- **April 3, 2015 – Vienna – Oil spill, water pollution, fish and animal kills**<sup>[52]</sup>
- **July 24, 2015 –Trumbull County – Crude oil spill** <sup>[53]</sup>

## 2016 [ edit ]

- **February 1, 2016 - Crooksville, Gas leak, 500 evacuated** <sup>[54]</sup>
- **March 9, 2016 - Near Barnsville, truck accident, waste water spill** <sup>[55]</sup>

## 2017 [ edit ]

- **April 2, 2017 - Wayne National Forest, Earthquake** <sup>[56]</sup>

## Oklahoma [ edit ]

### Accidents [ edit ]

- November 17, 2009 – Elk City, Crane failure,<sup>[57]</sup>
- December 17, 2014 – Coal County, 2 dead, 2 injured<sup>[58]</sup>
- February 16, 2016 - One person was injured in an explosion, at a Pittsburg County oil field. Fire spread to 3 other wells.<sup>[59]</sup>

### Earthquakes [ edit ]

- The state has posted a list, giving date, location, and magnitude of induction-well-caused earthquakes.
- February 16, 2014 – Richter 3.8<sup>[60]</sup>
- November 12, 2014 – Earthquake, see Kansas
- January 19, 2015 – Northern Oklahoma<sup>[61]</sup>
- January 13, 2016 - A fire at a hydrofracking well in Grady County, Oklahoma.<sup>[62]</sup>

## Oregon [ edit ]

- State had active oil and or gas wells as of April 2015 <sup>[63]</sup> but no accidents have been uncovered.
- Major crude oil train derailment in Mosier, a small town in the Columbia gorge spilled and burst into flames June 2016. The accident was due to railway dysfunction and bad parts. As of now, groundwater contamination is found at the site impacting wildlife.

## Pennsylvania [ edit ]

- Records of violations and spills are posted on the Pennsylvania Department of Environmental Protection Web page
- February, 2011 – Avila, explosion, 3 injured<sup>[64]</sup>
- April 19, 2011 - Well blowout in Bradford County, Pennsylvania.<sup>[65]</sup>
- March 28 2012 - An explosion at a natural gas compression station in Susquehanna County.<sup>[66]</sup>
- May 19, 2012 – Leroy Twp., Contamination from leaking gas well,<sup>[67]</sup>
- May 15, 2013 - A fire and possible explosion, at a Susquehanna County gas compressor station.<sup>[68]</sup>
- January 11, 2014 – Susquehanna County, Explosion, 1 injured<sup>[69]</sup>
- February 11, 2014 - Greene County explosion, one injured, one dead. Later, the well owner, Chevron, apologized to area residents by giving out free pizza. Chevron also blocked PA DEP personnel from the site for two days after the fire.<sup>[70][71][72]</sup>
- September 6, 2014 – Mercer County – Fire, 15 to 20 homes evacuated<sup>[73]</sup>
- December 1, 2014 - A gauge leaking methane most likely caused an explosion and fire, in a Susquehanna County natural gas compressor station.<sup>[74]</sup>
- December 13, 2016 - Fire at a natural gas compressor station, located outside the village of Wharton Township, Potter County, Pennsylvania.<sup>[75]</sup>
- December 25, 2016 - A fire broke out at a gas compressor station, in Armstrong County.<sup>[76]</sup>
- January 1, 2017 - Fire erupts at Marcellus Shale pad in Somerset Township, Washington County.<sup>[77]</sup>
- March 9, 2017 - A fire at a Susquehanna County gas compressor station.<sup>[78]</sup>

## South Dakota [ edit ]

- State had active oil and or gas wells as of April 2015 <sup>[63]</sup> but no accidents have been uncovered.

## Tennessee [ edit ]

- State had active oil and or gas wells as of April 2015 <sup>[63]</sup> but no accidents have been uncovered.

## Texas [ edit ]

- October, 1998 - During heavy rainfall, the roof and sides of a Koch 50,000 barrel (2,100,000 gallon) above-ground storage tank buckled, discharging approximate 24,700 gallons of crude oil into Marcelinas Creek, which is a tributary of the San Antonio River. The spill occurred 1 mile northwest of Falls City, Karnes County, Texas, and entered Marcelinas Creek at flood stage. The spill was generally contained about three miles downstream. The floodwaters transported the oil laterally well beyond the banks of the creek, coating vegetation in these areas with oil as the floodwaters receded. The three miles of creek and adjacent riparian corridor, consisting of mature hardwood trees and improved pasture, provide essential habitat to numerous species of fish, birds, mammals, and reptiles. It took 17 years for the terms of settlement to be reached with regulators.<sup>[79][80]</sup>
- March 23, 2005 – The Texas City Refinery explosion; 15 dead, 180 injured<sup>[81]</sup>
- April 5, 2013 – West, blowout, two dead, two injured<sup>[82]</sup>
- April 19, 2013 - Gas well blowout in Denton, Texas.<sup>[83]</sup>
- April 30, 2014 – Loving County, explosion, 2 dead, 9 injured<sup>[84]</sup>
- August 2014 - Methane leaked into a water well in Palo Pinto County, causing an explosion that burned 3 people. Later the methane was linked to nearby fracking operations.<sup>[85][86]</sup>
- January 1, 2015 – Irving, earthquake<sup>[87]</sup>
- May 19, 2015 - Fracing well blew out in Karnes County, Texas, spraying a toxic mix of chemicals, and forcing the evacuation of 20 families.<sup>[88][89]</sup>
- August 20, 2015 – Crude oil storage fire <sup>[90]</sup>
- April 4, 2017 - Fire at a oil well site, in northern Howard County. One firefighter was injured.<sup>[91]</sup>

## Utah [ edit ]

- March 6, 1935 - Five miles south of St. George, 70 to over 100 local townspeople gathered to watch the shooting of an Arrowhead Petroleum Company's Escalante oil, well unaware of impending danger. The explosion occurred about 9:40 pm while six 10 foot long torpedoes, each loaded with nitroglycerin and TNT and hanging from the derrick, were being lowered into the well. All told, 2,500 pounds of nitroglycerin exploded and sent a shaft of fire into the night that was seen as far as 18 miles away. Ten people lost their lives, and more were injured.<sup>[92]</sup>
- June 10, 2012 – Salt Lake City, crude oil pipeline rupture, significant pollution.
- January 22, 2013 - A natural gas well fire, in Roosevelt, Utah forces evacuations.<sup>[93]</sup>

## Virginia [ edit ]

- April 9, 2014 – Lynchburg, Train derailment, explosion, fire, 300 people evacuated, oil spill<sup>[94]</sup>

## Washington [ edit ]

- State had active oil and or gas wells as of April 2015 <sup>[63]</sup> but no accidents have been uncovered.

## West Virginia [ edit ]

- List of spills is posted on West Virginia Department of Environmental Protection database . Company name is needed to search database.
- June 7, 2010 through January 26, 2015 – Ohio River Valley, Numerous accidents, 2 dead, 7 injured, about 1000 evacuated<sup>[64]</sup>
- September 9, 2010 - Explosion and a fire that burned for 9 days, in Wetzel County.
- February 5, 2012 – Taylor County, Explosion, One dead<sup>[95]</sup>
- April 11, 2013 - 2 workers died from injuries sustained in an explosion at a natural gas operation, in Tyler County

- - July 7, 2013 – Dodridge County, Well fire, Five injured,<sup>[96]</sup>
  - February 16, 2015 – Mount Carbon – derailment, one injured, 85 evacuated <sup>[97]</sup>

## Wisconsin   [ edit ]

- - July 29, 2012 – Pipeline oil spill, one evacuation<sup>[98]</sup>

## Wyoming   [ edit ]

- - August 2006 - A fracking well blowout near Clark forced many in 25 nearby homes to evacuate.<sup>[99]</sup>
  - December 6, 2011 - An explosion at a Falcon natural gas compressor station, south of Pinedale.<sup>[100]</sup>
  - September 24, 2012 – Well blowout<sup>[101]</sup>
  - December 25, 2013 - An explosion, and flash fire, at a Legacy Resources Natural Gas Compressor Station, injured one man, near Riverton.<sup>[102]</sup>

## References   [ edit ]

1. ^

## 2000 [ edit ]

- On January 10, approximately 100 barrels of jet fuel were discharged from Plantation Pipeline in Newington, Virginia, some of which entered into Accotink Creek and its adjoining shorelines. The failure resulted from a failed gasket on an interface detector.<sup>[1]</sup>
- On January 21, a Chevron pipeline leaked from a welding flaw near Corinne, Utah, spilling about 100 barrels of Diesel fuel. The product spread over 38 acres of salt flat and wetlands used by birds. About 75% to 80% of the spill was intentionally burned to eliminate it.<sup>[2][3]</sup>
- On January 21, an Equilon Pipeline Co. crude oil line was ruptured off of the Louisiana coast, by an eight-ton anchor dropped by a ship. About 94,000 gallons of crude oil were spilled, creating a slick 2 miles wide by 7 miles long.<sup>[4][5]</sup>
- On January 27, in Winchester, Kentucky, a Marathon Oil pipeline accident released about 490,000 US gallons (1,900,000 L) of crude oil. NTSB investigators found a dent on the bottom of the pipe in the rupture area. Marathon spent about \$7.1 million in response to the accident.<sup>[6][7]</sup>
- On February 5, a pipeline failed and spilled over 192,000 US gallons (730,000 L) of crude oil in the John Heinz National Wildlife Refuge in Pennsylvania. The source of the spill was a break in a miter bend in the pipe, which was estimated to be at least 50 years old.<sup>[8][9]</sup>
- On March 9, an Explorer petroleum products pipeline failed in Greenville, Texas. The 28-inch pipeline ruptured and released 13,436 barrels (2,136.2 m<sup>3</sup>) of gasoline. The released gasoline eventually reached East Caddo Creek. The banks of the tributary and creek contained the escaping gasoline as it flowed away from the ruptured pipe. The probable cause of the pipeline failure was corrosion-fatigue cracking that initiated at the edge of the longitudinal seam weld at a likely preexisting weld defect. Contributing to the failure was the loss of pipe coating integrity.<sup>[10]</sup>
- On April 7, a pipeline released fuel oil at Chalk Point near Aquasco, Maryland. The Piney Point Oil Pipeline system, which was owned by the Potomac Electric Power Company (Pepco), experienced a pipe failure at the Chalk Point Generating Station in southeastern Prince George's County, Maryland. The release was not discovered and addressed by the contract operating company, Support Terminal Services, Inc., until the late afternoon. Approximately 140,400 US gallons (531,000 L) of fuel oil were released into the surrounding wetlands and Swanson Creek and, subsequently, the Patuxent River as a result of the accident. No injuries were caused by the accident, which cost approximately \$71 million for environmental response and clean-up operations.<sup>[11]</sup>
- On May 19, a Colonial Pipeline Co. line failed near Greensboro, North Carolina. At least 714 gallons (17 barrels) of kerosene spilled, some of which entered a pond that flows into a tributary of the East Fork Deep River. The kerosene spill caused a sheen about 40 feet by 40 feet in the pond. As a result of this, and six other previous Colonial Pipeline accidents, the EPA fined Colonial \$34 million in 2003.<sup>[12]</sup>
- On June 7, a stopple fitting weld failed on a Wolverine Pipeline Company line, causing a rupture releasing 75,000 US gallons (280,000 L) of gasoline into the environment, and causing the evacuation of more than 500 houses in Blackman Charter Township, Michigan. The failure caused the shutdown of 30% of Michigan's gasoline supplies for nine days, contaminated a creek which flows into the Grand River, and a railroad track near the failure site was shut down for a week. Later tests found 715 anomalies in this pipeline. Wolverine later agreed to pay for switching houses in the area from local water wells to a city water source.<sup>[13][14]</sup>
- On July 5, two boats hit a Southern Natural Gas pipeline off the coast of Plaquemines, Louisiana, causing a gas fire that burned five members of the boat crews. The fire could be seen at 35 miles away from it.<sup>[15][16]</sup>
- On August 19, a 30-inch diameter El Paso Natural Gas pipeline rupture and fire near Carlsbad, New Mexico killed 12 members of an extended family camping over 600 feet (180 m) from the rupture point. The force of the escaping gas created a 51-foot (16 m)-wide crater about 113 feet (34 m) along the pipe. A 49-foot (15 m) section of the pipe was ejected from the crater, in three pieces measuring approximately 3 feet (0.91 m), 20 feet (6.1 m), and 26 feet (7.9 m) in length. The largest piece of pipe was found about 287 feet (87 m) northwest of the crater. The cause of the failure was determined to be severe internal corrosion of that pipeline. On July 26, 2007, a USDOJ Consent Decree was later entered into by the pipeline owner to perform pipeline system upgrades to allow better internal pipeline inspections.<sup>[17][18]</sup>
- On August 20, a gas pipeline exploded and burned in Concord, North Carolina. A nearby shopping mall was evacuated, but, there were no injuries.<sup>[19]</sup>
- On August 24, a 6-inch pipeline operated by Chevron failed from alleged external corrosion, spilling 126,000 gallons of crude oil into an unnamed creek, near Snyder, Texas. The creek was dry at the time. Later, a Federal Court ruled that the Clean Water Act did not apply, since there was no water flowing in the creek at the time.<sup>[20][21]</sup>

- On September 7, a bulldozer ruptured a 12-inch diameter NGL pipeline on State Route 36 south of Abilene, Texas. An Abilene police detective, with 21 years of service, was severely burned when the vapors ignited, and he later died. Nearby, a woman saved herself by going underwater in her swimming pool. Her house was destroyed by the explosion and fire. The owner of the pipeline, ExxonMobil, was later fined by the Texas Railroad Commission for the pipeline not being marked.<sup>[22][23][24][25]</sup>
- On November 3, a front end loader punctured an 8-inch pipeline carrying Diesel fuel in Lancaster County, Pennsylvania. Diesel fuel sprayed 40 feet (12 m) into the air. The fuel flowed for over 2 hours before stopping, and contaminating the area with more than 40,000 US gallons (150,000 L) of Diesel fuel.<sup>[26]</sup>

## 2001  [edit]

- On January 17 and 18, a series of gas explosion hit downtown Hutchinson, Kansas, resulting in 2 deaths, and 2 buildings being destroyed. Later, it was discovered that gas was leaking from an underground gas storage cavern in the area.<sup>[27][28]</sup>
- On April 1, a Dome Pipeline in North Dakota carrying gasoline ruptured and burst into flames a few miles west of Bottineau, North Dakota. An estimated 1.1 million US gallons (4,200 m<sup>3</sup>) of gasoline burned before the pipeline could be shut down. The company attributed the break to damage by an "outside force", which A Bottineau County Sheriff said appeared to be frost that melted at uneven rates, twisting and breaking the pipeline.<sup>[29]</sup>
- On April 14, a 6-inch petroleum productions failed near Harwood, North Dakota, spilling 40 barrels of fuel oil. There were no injuries. The failure was due to an ERW seam failure, with this particular pipeline having had other ERW seam failures in the past in 1987 and 1993.<sup>[30]</sup>
- On May 1, a MAPCO 10-inch propane pipeline exploded and burned, in Platte County, Missouri. 13,500 barrels of propane were burned.<sup>[31][32][33]</sup>
- On May 24 bulldozer being used in Taylor County, Texas hit a petroleum pipeline, causing a large petroleum fire. There were no injuries.<sup>[34]</sup>
- On June 13, in Pensacola, Florida, at least ten persons were injured when two natural gas lines ruptured and exploded after a parking lot gave way beneath a cement truck at a car dealership. The blast sent chunks of concrete flying across a four-lane road, and several employees and customers at neighboring businesses were evacuated. About 25 cars at the dealership and ten boats at a neighboring business were damaged or destroyed.
- On July 24, a pipeline ruptured and spread burning gasoline near Manheim, Pennsylvania.<sup>[35][36]</sup>
- On August 11, at approximately 5:05 a.m. MST, an El Paso Natural Gas 24-inch gas transmission pipeline failed near Williams, Arizona, resulting in the release of natural gas. The natural gas continued to discharge for about an hour before igniting. Stress corrosion cracking was determined to be the cause of the failure.<sup>[37][38]</sup>
- On August 12, a bulldozer hit a 14-inch LP gas pipeline near Weatherford, Texas, causing a massive fire. One person was injured.<sup>[39][40]</sup>
- On August 17, an Oklahoma crude oil pipeline ruptured after being struck by a machine cleaning roadside ditches, sending oil 30 feet (9.1 m) into the air and damaging nearby cotton crops with up to 150,000 US gallons (570,000 L) spilled.<sup>[41]</sup>
- On September 3, at approximately 1 p.m. CST, a rupture occurred near the intersection of the 22-inch T-ML Pipeline and the Black Bayou in Louisiana, resulting in the release of an estimated 8.00 mmcf to 13.00 mmcf of natural gas. In addition, the liquids loss is estimated to be 15,000 gallons.<sup>[42]</sup>
- On October 4, a drunken man used a rifle to shoot a hole in the Alaskan Pipeline. More than 285,000 gallons of crude oil were spilled, costing more \$13 million to clean up. The man was later convicted and sentenced to 16 years in prison.<sup>[43][44]</sup>
- On October 15, a 6-inch ConocoPhillips LPG pipeline failed near Sweeny, Texas, forcing 2 dozen residents to evacuate. About 195,000 gallons of LPG were lost.<sup>[45][46]</sup>
- On or about November 27, approximately 2,575 barrels of Jet A Kerosene (Jet Fuel) discharged from the P-62 pipeline of the TEPPCO Pipeline System into tributaries of the Neches River and the Neches River itself. The release occurred 4 miles southeast of Vidor, Texas. This spill was caused by disbanded coating and external corrosion on the pipeline. This incident was later part of a U.S. Environmental Protection Agency consent decree.<sup>[47]</sup>
- On December 14, an anhydrous ammonia spill near Algona, Iowa killed nearly 1.3 million fish, the largest fish kill on that state's record-to-date, Iowa state officials said. More than 58,000 US gallons (220,000 L) of anhydrous ammonia over a nine-hour period spilled into Lotts Creek and the Des Moines River, killing minnows, bass and other game fish. Koch Industries owned the 8-inch pipeline, and was doing maintenance



work on a valve on the pipeline. The plume drifted over a six-mile (10 km) area causing officials to evacuate residents in its path.<sup>[48]</sup>

## 2002 [ edit ]

- On February 8, a trenching machine with a new rock bit being tested hit a 20-inch gas transmission pipeline in Noble County, Oklahoma, causing an explosion that killed the trencher operator.<sup>[49]</sup>
- On March 6, an explosion and a massive fire hit a Tennessee Gas Pipeline natural gas substation near Mount Sterling, Kentucky. 30 families in the area voluntarily evacuated. There were no injuries.<sup>[50][51]</sup>
- On March 13, a Buckeye Partners pipeline ruptured due to internal corrosion in Wren, Ohio, spilling about 1500 gallons of gasoline.<sup>[52]</sup>
- On or about March 13, approximately 20 barrels of oil or jet fuel were discharged from a portion of the Plantation Pipeline in Alexandria, Virginia, some of which entered into an unnamed tributary of Hooff Run and its adjoining shorelines. The pipeline failure appears to have resulted from a hole in the pipeline caused by high-voltage arcing between the pipeline and a utility pole anchor.<sup>[1]</sup>
- On March 15, a failure occurred on a 36-inch gas pipeline near Crystal Falls, Michigan. The failure resulted in a release of gas, which did not ignite, that created a crater 30 feet (9.1 m) deep, 30 feet (9.1 m) wide, and 120 feet (37 m) long. There were no deaths or injuries.<sup>[53]</sup>
- On April 6, a BP-Amoco pipeline ruptured and released about 100,000 US gallons (380,000 L) of oil into a coastal area known as Little Lake in Louisiana.<sup>[41]</sup>
- On May 22, an 8-inch petroleum products pipeline failed, spilling about 2,000 barrels of unleaded gasoline on to a wheat field near Ottawa, Kansas. Booms had to be deployed in nearby creeks. The pipe failed along a seam, possibly due to LF-ERW pipeline failure issues.<sup>[54]</sup>
- On June 20, PHMSA ordered Columbia Gas Transmission Company to do extensive repair to one of their gas transmission pipelines in the states of Pennsylvania and New York, after finding extensive wall thinning on sections of that pipeline system caused by external corrosion. Approximately 800 anomalies with wall thickness losses of greater than 65 percent were found during a smart pig examination, with 76 of the found anomalies having a wall thickness loss of greater than 80 percent. Many of the affected sections of pipe were older sections lacking coating, which is known to reduce external corrosion on pipelines.<sup>[55]</sup>
- On July 4, there was a rupture of an Enbridge Pipeline, and release of crude oil near Cohasset, Minnesota. The pipeline ruptured in a marsh in Itasca County, spilling 6,000 barrels (950 m<sup>3</sup>) of crude oil. In an attempt to keep the oil from contaminating the Mississippi River, the Minnesota Department of Natural Resources set a controlled burn that lasted for one day and created a smoke plume about 1 mile (1.6 km) high and 5 miles (8 km) long. The pipe failed due to cracking caused by train shipping induced cracking of the pipe being delivered.<sup>[56]</sup>
- On July 24 a gas explosion leveled a Hopkinton, Massachusetts house, killing a 4-year-old girl and her 5-year-old sister. A failed sleeve on the gas line in the basement of the house was suspected of being the cause.<sup>[57]</sup>
- On August 5, a natural gas pipeline exploded and caught fire west of Rt. 622, on Poca River Road near Lanham, West Virginia. Emergency workers evacuated three or four families. Kanawha and Putnam Counties in the area were requested to shelter in place. Parts of the pipeline were thrown hundreds of yards away, around, and across Poca River. The fire was not contained for several hours because valves to shut down the line did not exist. The Orange Glow from the fire at 11 PM; could be seen for several miles.<sup>[58]</sup> The explosion and fire caused in \$2,735,339 property damage.<sup>[59]</sup>
- On September 20, at around 22:10 a gasoline leak from an 8-inch pipeline operated by Cenex Pipeline (terminal) was discovered near Glendive, Montana. The release of bout 1,000 barrels (160 m<sup>3</sup>) of unleaded gasoline flowed into Seven Mile Creek, and then downstream to its confluence with the Yellowstone River. Several trenches were constructed near the ruptured pipe for product collection points. As of September 25, 2002, a vacuum truck had recovered approximately 21,000 US gallons (79,000 L) of gasoline [and water] from the boomed locations and trenches.<sup>[60][61]</sup>
- On November 2, a Chevron pipeline ruptured near Corinne, Utah, spilling about 450 barrels of petroleum. The cause was from external corrosion.<sup>[62]</sup>
- On December 10, a farmer plowing a field hit and ruptured a Williams Companies pipeline, near Lawrence, Kansas. About 4,700 gallons of gasoline were spilled. Later, it was noted that particular pipeline lacked soil coverage in places, including some exposed spots. There were no injuries.<sup>[63][64]</sup>

## 2003 [ edit ]

- On January 24, an Enbridge crude oil pipeline ruptured at a terminal in Douglas County, Wisconsin. Some of the crude oil flowed into the Nemadji River. Over 100,000 US gallons (380,000 L) were spilled.<sup>[29]</sup>
- On February 2, a natural gas pipeline ruptured near Viola, Illinois, resulting in the release of natural gas which ignited. A 16-foot section of the pipe fractured into three sections, which were ejected to distances of about 300 yards from the failure site.<sup>[65]</sup>
- On February 20, a 24-inch gas transmission pipeline started leaking in Scott County, Missouri, underneath the Mississippi River. A shifted pipeline weight has caused damage to the pipeline.<sup>[66]</sup>
- On or about February 22, 2003, approximately 788 barrels of gasoline were discharged from a portion of Plantation Pipeline in Hull, Georgia, some of which entered into an unnamed tributary of East Sandy Creek and its adjoining shorelines. The spill resulted from a failed gasket on a buried block valve.
- On February 27, dropping temperatures caused an Enbridge pipeline to fail in Samaria, Michigan. 130 barrels of crude oil were spilled.
- On March 13, a seam failed on an 8-inch Dixie Pipeline propane line near Appling, Georgia, releasing about 110,000 gallons of propane. There were no injuries. The pipe split due to seam failure.<sup>[67][68]</sup>
- On March 23, a 24-inch El Paso Natural Gas pipeline near Eaton, Colorado exploded. The explosion sent flames 160 meters in the air, forcing evacuations. No one was injured. The heat from the flames melted the siding of two nearby houses and started many smaller grass fires.<sup>[69]</sup>
- On April 1, a 12-inch ConocoPhillips petroleum products pipeline ruptured, spilling about 1,000 barrels of Diesel fuel near Ponca City, Oklahoma, with of the fuel getting into Doga Creek. There were no injuries. Low Frequency ERW pipe seam failure was suspected as the cause.<sup>[70]</sup>
- On May 1, a 26-inch Williams Companies natural gas transmission pipeline failed near Lake Tapps, Washington. A neighboring elementary school, a supermarket, and 30 to 40 houses in approximately a 4-mile (6.4 km) area were evacuated. There was no fire or injuries. Land movement was suspected at first, but the failure was later determined to be from stress corrosion cracking. There were four previous failures on this pipeline in the preceding eight years.<sup>[71][72]</sup>
- On May 8, an 8-inch LPG pipeline failed near Lebanon, Ohio. About 80 houses and one school in the area were evacuated. There was no fire or injuries.<sup>[73]</sup>
- On May 20, a 30-inch gas pipeline exploded and burned near Nederland, Texas. The cause of the failure was internal corrosion, and the damages were estimated to be \$6,901,322.<sup>[74][75]</sup>
- On July 2, excavation damage to a natural gas distribution line resulted in an explosion and fire in Wilmington, Delaware. A contractor hired by the city of Wilmington to replace sidewalk and curbing, dug into an unmarked natural gas service line with a backhoe. Although the service line did not leak where it was struck, the contact resulted in a break in the line inside the basement of a nearby building, where gas began to accumulate. A manager for the contractor said that he did not smell gas and therefore did not believe there was imminent danger and that he called an employee of the gas company and left a voice mail message. At approximately 1:44 p.m., an explosion destroyed two residences and damaged two others to the extent that they had to be demolished. Other nearby residences sustained some damage, and the residents on the block were displaced from their houses for about a week. Three contractor employees sustained serious injuries. Eleven additional people sustained minor injuries.<sup>[76]</sup>
- On July 3, a jury found Texas-New Mexico Pipeline (TNMP) Company guilty of fraud, gross negligence and willful misconduct in concealing a 1992 crude oil pipeline leak beneath a Midland, Texas residential subdivision, before selling the pipeline to EOTT Energy in 1999. Oil was discovered in the water table in late 2000, and in March 2001 a group of Midland residents sued EOTT, TNMP and Equilon. Residents living on affected land also received settlements. The spill was estimated in 2003 to be 9,000–13,000 barrels. 190 boxes full of TNMP documents about the pipeline dating from the late 1980s to early 1990s (prior to EOTT Energy taking over the pipeline) were dug up from a 45-foot-deep hole at a site along the company's pipeline in New Mexico.<sup>[77][78]</sup>
- On July 10, a 16-inch Citgo petroleum products pipeline failed in Cook County, Illinois. About 25 barrels of gasoline were spilled from the pipeline. A crack in the pipe had developed at a dent. There was no fire or injured reported.<sup>[79]</sup>
- On July 16, a 12 3/4-inch pipeline burst in Barnes County, North Dakota, releasing 9,000 barrels of propane, which ignited. There were no casualties. During repairs, mechanical damage was seen on 2 nearby section of this pipeline.<sup>[80]</sup>
- On July 30, a Kinder Morgan pipeline in Tucson, Arizona ruptured, and sprayed 16,548 gallons of gasoline on five houses under construction, and flooding nearby streets with gasoline. The resulting pipeline closure caused major gas shortages and price increases in the state. The failure at first was thought to be from LF-ERW flaws, but tests showed it was due to stress corrosion cracking. A hydrostatic test that was performed on this pipeline after repairs failed again 40 feet (12 m) from the first failure.<sup>[81][82][83][84][85]</sup>

- On August 8, a 26-inch Kinder Morgan and Myria Holdings Natural Gas Pipeline Company of America transmission pipeline ruptured in Caddo County, Oklahoma, releasing about 84,000 MCF of natural gas. A 54-foot long section of 26" diameter pipe had blown out and landed 30 feet from the ditch. Evacuations took place within 3/4 of a mile from the release, but there was no fire or casualties. Stress corrosion cracking was identified as the pipe failure's cause.<sup>[86]</sup>
- On September 26, a propane pipeline at the Phillips Petroleum storage facility in Cahokia, Illinois ruptured, sending flames high into the air and sparking small grass fires in the area.
- On October 6, a 12-inch petroleum products pipeline ruptured in Johnson County, Kansas, spilling about 100 to 200 barrels of Diesel fuel. Some of the Diesel contaminated a nearby waterway. There were no injuries.<sup>[87]</sup>
- On October 13, a failure on an Enbridge pipeline near Bay City, Michigan spilled 500 barrels of crude oil.<sup>[88][89]</sup>
- On October 14, a leak on what was originally the Big Inch 24-inch of natural gas occurred in Orange County, Indiana. There were no injuries or evacuations. The pipeline had been installed in 1943.<sup>[90]</sup>
- On November 2, a Texas Eastern Transmission natural gas pipeline exploded in Bath County, Kentucky, about 1.5 km south of a Duke Energy pumping station. A fire burned for about an hour before firefighters extinguished it. No one was injured and no property damage was reported.<sup>[29]</sup>
- On November 9, an 8-inch Buckeye Partners pipeline failed near Mazon, Illinois. While repairs were being tested on this pipeline on November 14, another section of this pipeline failed about 1500 feet from the first leak. About ten barrels of gasoline and Diesel fuel were spilled by the two leaks, requiring soil removal. External corrosion caused both failures. There were no injuries.<sup>[91]</sup>
- On December 13, another section of the same Williams Companies gas transmission pipeline that failed on May 1, 2003, failed in Lewis County, Washington. There was no fire this time. Gas flowed for three hours before being shut off. Gas pressure had already been reduced 20% on this pipeline after the May 1 explosion. External corrosion and stress corrosion cracking were seen in this failed area of pipe.<sup>[72]</sup>

## 2004 [ edit ]

- On January 25, a TEPPCO 8-inch propane pipeline failed, near Davenport, New York. The propane ignited, destroying a trailer house, and forcing evacuations. About 5,000 barrels of propane were burned. There were no injuries. The incident resulted from a through-wall failure of the pipe material at a fitting that was attached to the top of the pipe.<sup>[92][93]</sup>
- On March 12, a TEPPCO pipeline spilled about 500 barrels of unleaded gasoline spilled into the Moro Creek, which flows into the Sabine River near Kingsland, Arkansas. The cause was corrosion of a 1/2-inch bleeder line, that was part of a 20-inch pipeline block valve used to equalize pressure across the valve.<sup>[47]</sup>
- On April 28, a petroleum pipeline of Kinder Morgan Energy Partners ruptured, and spilled an estimated 103,000 gallons of Diesel fuel into marshes, adjacent to Suisun Bay, in Northern California. The line failed from external corrosion. The company failed to notify California authorities about the spill for 18 hours, a failure for which it was later cited.<sup>[29][94][95]</sup>
- On May 23, a leak in a sampling tube on a pipeline in Renton, Washington spilled several thousand gallons of gasoline, which ignited.<sup>[96]</sup>
- On August 19, a series of explosions starting hit an underground natural gas storage cavern in Moss Bluff, Texas, resulting in evacuations for a 3-mile radius. The first blast, about 4 a.m., sent flames 150 to 200 feet into the air. The second explosion was seen as far as 20 miles away. Some type of equipment failure was suspected. The cavern had just been expanded using the SMUG (solution mining under gas) process, which permits salt cavern expansion without interrupting gas storage operations. There were no injuries reported.<sup>[97]</sup>
- On August 21, a natural gas explosion destroyed a residence in DuBois, Pennsylvania. Two residents were killed in this accident. The NTSB determined that the probable cause of the leak, explosion, and fire was the fracture of a defective butt-fusion joint.<sup>[98]</sup>
- On September 26, a vandal started up a trackhoe at a construction site in New Caney, Texas, and dug into a propylene pipeline. The escaping propylene ignited, causing nearby residents to evacuate. There were no injuries reported.<sup>[99]</sup>
- On September 27, 2004, near Blair, Nebraska, an ammonia pipeline failed, releasing 193,213 pounds of ammonia, resulting in the hospitalization of one individual and emergency responders evacuated houses within a one-mile circumference of the break. An estimated 1,000 fish were killed along North Creek and in a golf course pond.<sup>[100]</sup>
- On September 28, a pipeline failed in Hughes County, Oklahoma, spilling an estimated 1,500 barrels (240 m<sup>3</sup>) of Diesel fuel.<sup>[101]</sup>
- In October, crews from Shell Oil Company recovered 100,000 of an oil seawater mix. Hurricane Ivan had damaged a crude oil pipeline off of the Louisiana Coast.<sup>[102]</sup>

- On October 27, an anhydrous ammonia pipeline ruptured near Kingman, Kansas, and released approximately 4,858 barrels (772.4 m<sup>3</sup>) of anhydrous ammonia. Nobody was killed or injured due to the release. The anhydrous ammonia leak killed more than 20,000 fish along a 12.5-mile section of Smoots Creek, including some from threatened species. The pipeline had previous damage to it. The pipeline controller had misinterpreted the leak as other problems with the system operation, causing the leak to go on longer. As a result of this, and another ammonia pipeline leak the month before, the pipeline owner and its two operating companies were later fined \$3.65 million.<sup>[100][103]</sup>
- On November 1, construction crew ruptured a high-pressure gas line in Little Rock, Arkansas, near one of the state's busiest intersections Monday, triggering a fire that melted traffic lights that hung overhead. No one was injured.<sup>[104]</sup>
- On November 8, a NGL pipeline failed in a housing division in Ivel, Kentucky. The vapor cloud from the leak ignited, seriously burning a Kentucky State Trooper evacuating those living in the area. Eight others were injured and five houses were destroyed. The pipeline, only 65 miles (105 km) long, had 11 previous corrosion failures.<sup>[105][106]</sup>
- On November 9, in Walnut Creek, California, a petroleum pipeline carrying gasoline to San Jose, California, owned and operated by Kinder Morgan Energy Partners (KMEP) was struck by a backhoe used by Mountain Cascade, Inc., a contractor operating in the construction of a water pipeline for the East Bay Municipal Utility District (EBMUD). A large gasoline spill was subsequently ignited, resulting in an explosive fireball that caused the deaths, by burns, of four workers and one supervisor and the severe injury of five others. A Kinder Morgan worker had misread an as-built map, and had incorrectly marked the pipeline's route before the accident.<sup>[107]</sup>
- On November 21, a 14-inch petroleum products pipeline sprung a leak while it was shipping gasoline in the Mojave Desert. The Calnev Pipeline, owned and operated by the California-Nevada Pipeline Company, a subsidiary of Kinder-Morgan Energy Partners, is the main source of petroleum fuel products for the Las Vegas Valley, Nevada. An 80-foot (24 m) geyser of gasoline was discovered on the next morning, after numerous complaints of a strong gasoline odor along Interstate 15 in northern San Bernardino County, CA.<sup>[108][109]</sup>
- On December 15, employees were performing maintenance on a propane pipeline near Mantador, North Dakota, when a gasket on the pipeline's valve failed, causing a leak. Nearby resident were evacuated, and a rail line was shut down temporarily. There were no injuries.<sup>[110]</sup>
- On December 24, as much as 5,000 gallons of crude oil spilled from a ConocoPhillips pipeline south of Laurel, Montana near the Yellowstone River. Hydrogen sulfide gas from the oil could have posed a major danger, but "the wind helped immensely" to dissipate the gas.<sup>[111]</sup>

## 2005   [ edit ]

- In January, a Mid-Valley owned and Sunoco operated pipeline ruptured, spilling 260,000 US gallons (980,000 L) of oil into the Kentucky and Ohio rivers. The U.S. Environmental Protection Agency fined the companies \$2.5 million for the spill.<sup>[112]</sup>
- On January 18, an Enbridge pipeline failed from temperature problems, causing a spill of 100 barrels of crude oil in Bay City, Michigan. The pipe was just two years old at the time.<sup>[89][113]</sup>
- On January 26, a Mid Valley 22-inch pipeline ruptured in Carrollton, Kentucky, spilling about 290,000 gallons of crude oil. Some of the crude entered the Ohio River. The pipe failure was caused by earth movement.<sup>[114][115]</sup>
- On February 1, an ExxonMobil gasoline pipeline fire forced 43 families from their houses near Allentown, Pennsylvania. The fire burned for over 72 hours. There were no reported injuries.<sup>[116][117]</sup>
- On or about February 28, 2005, approximately 2,497 barrels of Jet A Kerosene discharged from a 14-inch TEPPCO pipeline, reaching the Big Cow Creek, flowing into the Sabine River, near Newton, Texas. The discharge was caused by the over-tightening of a coupling at a 3/8-inch cooling line at the top of a 14-inch mainline pump.<sup>[147]</sup>
- On March 16, a crew installing a communications cable nicked a gas distribution pipeline in Moon Township, Pennsylvania. The crew then notified the local One Call center, but, failed to alert first responders. two hours after the nick, gas exploded in a house, burning two teenagers there.<sup>[118]</sup>
- On April 1, a Kinder Morgan Energy Partners petroleum products pipeline was found to be leaking gasoline, near Truckee, California. Gasoline spread into Summit Creek, then, into Donner Lake. About 300 gallons spilled.<sup>[119][120]</sup>
- On May 4, a petroleum products pipeline failed near El Dorado, Kansas, spilling about 78,000 gallons of diesel fuel, of which about 46,000 gallons was lost. The pipeline failed from external corrosion.<sup>[121][122]</sup>
- On May 13, an underground natural gas pipeline exploded near Marshall, Texas, sending a giant fireball into the sky and hurling a 160-foot (49 m) section of pipe onto the grounds of a nearby electric power generating plant. Two people were hurt. The OPS concluded that stress corrosion cracking was the culprit.<sup>[123]</sup>

- On May 13, the 30-inch Seaway Pipeline, operated by TEPPCO at the time, failed in Bryan County, Oklahoma, spilling approximately 898 barrels of crude oil. Oil reached Eastman Creek. The discharge was caused by a 6-inch longitudinal seam split on the pipeline that resulted from a stress crack that may have been induced by conditions occurring during rail transport of the pipe, and enlarged by pressure-cycle-induced stresses over years of operation of the pipeline.<sup>[47][124]</sup>
- On May 23, a Magellan Pipeline petroleum products pipeline broke near Kansas City, Kansas, spilling gasoline into the nearby Missouri River. About 2,936 barrels of gasoline were spilled, with about 2,400 barrels being lost.<sup>[125][126]</sup>
- On May 28, a 12-inch (300 mm) Kinder Morgan Energy Partners pipeline ruptured in El Paso, Texas, releasing gasoline.<sup>[127]</sup>
- On August 11, a bulldozer hit a crude oil pipeline north of Lufkin, Texas. The escaping crude ignited, injuring the bulldozer operator. About 18,500 gallons of crude oil were lost.<sup>[128][129]</sup>
- On August 18, a leak was detected in an insulating flange along the BP Amoco Whiting to River Rouge pipeline at a monitoring well in Granger, Indiana. Initially, the bolts and nuts were replaced around the flange to mitigate any leaks; on August 25, when supply concerns diminished, the insulating flange was cut out and replaced with a straight section of pipe. Approximately 21 gallons of gasoline were removed from the ground, with no injuries or fatalities. Metallurgical analysis revealed that the fiber ring joint gasket had evidence of a prior leak.<sup>[130]</sup>
- On August 29 Hurricane Katrina caused a protective levee to fail near Nairn in Plaquemines Parish, Louisiana, causing a Shell 20-inch pipeline to rupture. About 13,400 gallons were spilled, with about 10,500 gallons of this spill reaching the shoreline, and coastal marshes.<sup>[131]</sup>
- On September 18, a pipeline pumping station employee was killed in Monroe, Ohio, when leaking propane was ignited and exploded by an arcing pump on September 18. Flames reached 300 feet (91 m) high in the following fire.<sup>[132]</sup>
- On December 6, a natural gas compressor station exploded near Rifle, Colorado, about 200 yards from Interstate 70. There was only one minor injury to a nearby truck driver.<sup>[133]</sup>
- On December 13, workers removing an underground oil tank in Bergenfield, New Jersey undermined a 1 1/4-inch steel gas pipeline. The gas line later failed, causing an explosion. Three residents of a nearby apartment building were killed. Four other residents and a tank removal worker were injured. Failure to evacuate the apartment building after the gas line ruptured was listed as a contributing factor.<sup>[134]</sup>

## 2006  [edit]

- On January 13, a pipeline leak near Independence, Kansas spill about 135,000 gallons of petroleum product, of which about 93,000 gallons was lost. The pipeline failed from external corrosion.<sup>[135]</sup>
- On February 28, a gas compressor station explosion severely burned a worker, and set off a raging fire near De Beque, Colorado. A second explosion at that site soon after caused no injuries.<sup>[136]</sup>
- The Prudhoe Bay oil spill: On March 2, a surveillance crew discovered a crude oil spill from a BP crude pipeline near North Slope Borough, Alaska. The pipeline failure resulted in a release currently estimated at 5,000 barrels (790 m<sup>3</sup>) of processed crude oil, impacting the arctic tundra and covering approximately 2 acres (8,100 m<sup>2</sup>) of permafrost. The pipeline's leak detection system was not effective in recognizing and identifying the failure. Failure to run cleaning pigs to remove internal corrosive build up. The failure caused crude oil price to spike throughout the World.<sup>[137][138]</sup>
- On March 23, a pipeline failed west of Toledo, Ohio, spilling about 200 barrels (32 m<sup>3</sup>) of unleaded gasoline. During the repair work, another smaller nearby leak was also found.<sup>[139]</sup>
- On April 17, a Plantation Pipeline line experienced a failure in Henrico County, near Richmond, Virginia. The failure resulted in the release of 23,226 gallons of jet fuel in a residential area. The jet fuel sprayed for approximately 14 minutes and the spray traveled the distance of approximately 200 feet (61 m). The jet fuel did not ignite.<sup>[140][141]</sup>
- On June 27, a Koch Industries pipeline carrying crude oil failed near the town of Little Falls, Minnesota. The pipeline estimated that approximately 3,200 barrels (510 m<sup>3</sup>) of crude oil were released. The pipeline failed from previous mechanical damage to the pipeline.<sup>[142][143]</sup>
- On July 22, a Tennessee Gas Pipeline Company gas transmission pipeline ruptured, resulting in an estimated release of 42,946,000 cu ft (1,216,100 m<sup>3</sup>) of natural gas near Clay City in Clark County, Kentucky. The gas ignited, but there were no injuries, and just minor property damage. External corrosion was suspected.<sup>[144][145]</sup>
- On August 7, a leak from a pump, on a pipeline, released about 241,000 gallons of HVL's, in Jennings, Louisiana.<sup>[146][147]</sup>
- On August 12, a Kinder Morgan petroleum pipeline failed in Romeoville, Illinois. About 59,000 US gallons (220,000 L) of butane were lost. External corrosion was the cause, but there were no injuries.<sup>[148][149]</sup>

- On September 8, a leak on a pump on an LPG pipeline in Apex, North Carolina spilled about 12,000 gallons of propane, forcing evacuations.<sup>[150]</sup>
- On September 29, a crew replacing an old pipeline hit a high pressure gas pipeline in Labette County, Kansas, killing a crewman. Resident with a milre of the incident were evacuated for a time.<sup>[151]</sup>
- On October 12, a pipeline exploded when a tugboat pushing two barges hit that pipeline Thursday in West Cote Blanche Bay, about two miles (3 km) from shore and 100 miles (160 km) southwest of New Orleans, Louisiana. Four crew members were killed, and two were missing and later presumed dead.<sup>[152][153]</sup>
- On October 25, an ammonia pipeline failed from corrosion near Clay Center, Kansas, releasing about 4500 barrels of ammonia. two people were injured by the fumes.<sup>[154]</sup>
- On November 11, a jet-black, 300-acre (1.2 km<sup>2</sup>) burn site surrounded the skeletal hulk of a bulldozer that struck a natural-gas pipeline during construction of another pipeline, and produced a powerful explosion near Cheyenne, Wyoming. The bulldozer operator was killed. The company building the new pipeline was fined \$2.3 million for failing to obtain a locate on the other pipeline.<sup>[155][156]</sup>
- On or about November 27, 2006, approximately 97 barrels of gasoline were discharged from a portion of Plantation Pipeline in Mecklenburg County, North Carolina, into Paw Creek and its adjoining shorelines. The leak resulted from a failed gasket on an above-ground block valve.<sup>[1]</sup>
- 2006 Falk Corporation explosion: Leaks in a Milwaukee, Wisconsin propane pipe running below an apartment building caused an explosion. Three people were killed and forty-seven others injured.
- On December 19, a lineman for Midwest Energy hit a natural gas transmission pipeline near Mason, Michigan. The lineman was killed in the following explosion and fire.<sup>[157][158]</sup>
- On December 24, a Plains All American Pipeline ruptured, spilling about 23,856 gallons of crude oil in the Gulf of Mexico, about 30 miles southeast of Galveston, Texas.<sup>[159][160]</sup>

## 2007 [ edit ]

- On January 1, an Enbridge pipeline that runs from Superior, Wisconsin to near Whitewater, Wisconsin failed, resulting in a spill of 1,500 barrels of crude oil onto farmland and into a drainage ditch. Incomplete fusion of a longitudinal weld at the pipe maker that failed as pressure cycle was established as the cause.<sup>[161][162]</sup>
- On February 2, a construction crew struck an Enbridge pipeline in Rusk County, Wisconsin with equipment, spilling 4,800 barrels (760 m<sup>3</sup>) of crude oil, of which only 2,066 barrels were recovered.<sup>[163]</sup> Some of the oil filled a hole more than 20 feet (6.1 m) deep and was reported to have contaminated the local water table.<sup>[164]</sup>
- On February 17, in a rural area of Harris County, Texas, a Tennessee Gas Pipeline transmission pipeline was damaged, and later exploded and burned. Grass fires spread across a three-square mile rural area.<sup>[165]</sup> The 31-inch natural gas pipeline leaked after a bulldozer hit it. Residents reported a loud explosion that shook houses enough to set off car alarms, as well as a rumbling sound and a bright orange fireball in the sky. Firefighters "backfilled" the break with nitrogen.<sup>[166]</sup> PHMSA reported 1 person injured.<sup>[167]</sup>
- On March 29, near Yutan, Nebraska, a pipeline was hit by construction equipment. About 1,697 barrels of natural gasoline were lost.<sup>[168][169]</sup>
- On April 27, a 22-inch gas transmission pipeline failed near Pawnee, Illinois. The failure ejected a 109 inch long section of pipe, and, releasing 38 mmcf of natural gas that ignited. The rupture and resulting fire required the evacuation of a residence and the death of farm animals. The failure was due to external corrosion.<sup>[170]</sup>
- On May 4, a backhoe helping to lay a gas pipeline hit another gas pipeline in Weatherford, Texas. The gas ignited, sending flames hundreds of feet into the air. Vehicles, equipment, and power lines in the area were destroyed, but, there were no injuries.<sup>[171]</sup>
- On May 16, about 63,000 US gallons (240,000 L) of gasoline spilled into an old stripping pit that covers a three-acre area in Coal Township, Pennsylvania. The Kerris and Helfrick company owns the property where the gas leak occurred, and the excavator, was working for the company when he accidentally ruptured the Sunoco Logistics 14-inch petroleum pipeline. The gasoline was mostly absorbed into areas of soil, fill and coal strippings at the site.<sup>[172]</sup> Several residents made U.S. Rep. Christopher P. Carney aware of complaints about gasoline odors in residential basements. "Moreover, many residents are legitimately concerned about groundwater contamination as well as a host of future problems associated with the spill", Carney wrote to Department of Environmental Protection Secretary Kathleen McGinty.<sup>[citation needed]</sup> The pipeline was installed in 1964 by the Atlantic Richfield Co.(ARCO) and purchased in 1990 by Sunoco. On September 29, the PADEP Environmental Cleanup program finalized a consent order and agreement with Mallard Contracting, which included a \$45,000 civil penalty covering both DEP's response costs and a fine for violations of the Pa. Solid Waste Management Act.<sup>[173]</sup>
- In August, a gas compressor turbine caught fire inside BP's Gathering Center 1 in Alaska, after an oil hose ruptured and spewed flammable liquid across the motor. A mechanic on patrol in the facility — seeing smoke

- fled the room as the turbine burst into flames. Automatic fire and gas alarms were never triggered. A subsequent investigation by Alaska state authorities found that a ruptured hydraulic oil hose was Jerry-rigged in a position that chafed against the turbine's hot engine. The investigation also found that the facility's fire and gas detectors were not powered on at the time.<sup>[174]</sup>
- On October 8, a gas pipeline at a gas storage facility in Salem, Michigan ruptured and caught fire. Siding was melted on nearby houses.<sup>[175]</sup>
- On October 18, an ethylene pipeline explosion early, was heard for miles around Port Arthur, Texas, waking residents. The following fire spread to a nearby butadiene pipeline, causing it to rupture and burn. Later, over 300 residents sued the pipeline's owners for health issues claimed to be caused from the chemicals released by the accident. External corrosion of the ethylene pipeline caused the first pipeline failure.<sup>[176][177]</sup>
- On November 1, a 12-inch propane pipeline exploded, killing two people, and injuring five others, near Carmichael in the southeast portion of Clarke County, Mississippi. The NTSB determined the probable cause was an LF-ERW seam failure. During hydrostatic testing of the pipeline after repair, another LF-ERW seam failed nearby. Inadequate education of residents near the pipeline about the existence of this pipeline, and how to respond to a pipeline accident, were also cited as a factors in the deaths.<sup>[178]</sup>
- On November 12, three teenaged boys drilled into an ammonia pipeline, in Tampa Bay, Florida, causing a major ammonia leak. They later claimed they did it due to stories of money being hidden inside that pipeline. The leak took two days to be capped. One of the teens had serious chemical burns from the ammonia. Residents within a half miles from the leak were evacuated. PHMSA later noted the pipeline company failed to adequately plan for emergencies with the local Fire Agency, as required by CFR 195.402(c)(12).<sup>[179]</sup>
- On November 13, Enbridge discovered a leak on their 34-inch Line 3, at Mile Post 912, near Clearbrook, Minnesota. Later, the pipeline exploded during repairs, on November 27, causing the deaths of two employees. DOT officials said that two Enbridge workers died in a crude oil explosion as they worked to make repairs on the former Lakehead system pipeline. Enbridge was cited for failing to safely and adequately perform maintenance and repair activities, clear the designated work area from possible sources of ignition, and hire properly trained and qualified workers.<sup>[180][181]</sup>
- On November 21, a 30-inch gas transmission pipeline failed, near Haven, Kansas. The gas ignited, resulting in road closures.<sup>[170]</sup>
- On December 14, two men were driving east in a pickup truck, on Interstate 20, Near Delhi, Louisiana, when a 30-inch gas transmission pipeline exploded. One of the men were killed, and the other injured. External corrosion was later identified as the cause of the failure.<sup>[182][183]</sup>

## 2008 [ edit ]

- On January 5, 2008, a pipeline ruptured at a filet weld, leaking natural gasoline in Oologah, Oklahoma. About 45,000 gallons of the gasoline was spill, with about 29,000 gallons being lost.<sup>[184]</sup>
- On January 7, a pipeline split open, near Denver City, Texas, spilling 1.3 million US gallons (4,900 m<sup>3</sup>) of crude oil. The pipeline company failed to detect and stop the leak for more than 24 hours. ERW seam failure appears to be the cause.<sup>[185][186]</sup>
- On January 11, a Belle Fourche maintenance crew damaged its own pipeline, spill about 11,100 gallons of crude in Alexander, North Dakota.<sup>[187]</sup>
- On February 5, a natural gas pipeline compressor station exploded and caught fire, near Hartsville, Tennessee, and was believed to have been caused by a tornado hitting the facility.<sup>[188]</sup>
- On February 15, a 20-inch distillate pipeline exploded and burned in Hidalgo County, Texas, closing road FM490.<sup>[189]</sup>
- On March 14, a house in a Columbia, Missouri neighborhood exploded in an explosion that could be felt for miles, causing fatal injuries to the elderly couple living there. Problems with the gas distribution line there were blamed for the explosion. Another house nearby also suffered damage.<sup>[190]</sup>
- On May 16, a crew boring to install a new gas main hit an existing 4-inch gas line in McKinney, Texas. Escaping gas caused two houses to explode, and one other house to catch fire. Three people were burned from this incident.<sup>[191]</sup>
- On July 28, the U.S. District Court for the Southern District of Illinois ordered Apex Oil Company Inc., to clean up ground water and soil contamination, at an expected cost of at least \$150 million. During the period 1967 through 1988, Apex Oil's legal predecessor, Clark Oil and Refining Corp., released gasoline from leaking pipelines and other spills, that commingled with other responsible parties' releases and resulted in the large plume of refined petroleum substances beneath Hartford, Illinois. Vapors from the underground plume of millions of gallons of leaked and spilled petroleum products have migrated into houses in the village, causing years of fires, explosions, and evacuations.<sup>[192]</sup>



- On August 10, a 20-inch crude oil pipeline ruptured near Golden Gate, Illinois. About 243,000 gallons of crude were spilled, with about 33,000 gallons being lost. The cause was listed as a pipe seam failure.<sup>[193][194][195]</sup>
- On August 25, a 24-inch gas transmission pipeline failed in a rural area west of Pilot Grove, Missouri. The longitudinal rupture in the pipe body created a 50 foot by 33-foot by 7-foot deep crater in the ground. The cause of the rupture was external corrosion.<sup>[170]</sup>
- On August 28, a 36-inch gas pipeline failed near Stairtown, Texas, causing a fire with flames 400 feet (120 m) tall. The failure was caused by external corrosion.<sup>[196][197]</sup>
- On August 29, a 24-inch gas transmission pipeline ruptured in Cooper County, Missouri. Corrosion had caused the pipeline to lose 75% of its wall thickness in the failure area.<sup>[198]</sup>
- On September 9, workers constructing a new pipeline hit an existing natural gas pipeline in Wheeler County, Texas. Two workers were burned by this accident.<sup>[199]</sup>
- On September 14, a 30-inch Williams Companies gas pipeline ruptured and gas ignited near Appomattox, Virginia. Two houses were destroyed by the fire. External corrosion was the cause of the failure.<sup>[200][201]</sup>
- On September 23, a ruptured pipeline causes a fire at a Pipeline Terminal in Pasadena, Texas. One worker was killed, and another injured, with about 190,000 US gallons (720,000 L) of product being lost. The failure was caused by internal corrosion.<sup>[202][203]</sup>
- On October 3, a crew working on a Turnpike expansion drill into a Colonial Pipeline petroleum products pipeline, in Hamilton, New Jersey. About 35,000 gallons of Diesel fuel were spilled, with 100 gallons not recovered.<sup>[204][205]</sup>
- On October 3, construction equipment hit a Mid Valley Pipeline Company pipeline in Florence, Kentucky, spilling 3,650 barrels of crude oil.<sup>[206]</sup>
- On the night of November 15, a gas compressor for a pipeline at an entry exploded and burned near Godley, Texas. The fire spread to another company's gas compressor station next to it. A 24-inch gas pipeline had to be shut down to stop the fire. There were no injuries, and damages were estimated at \$2 million.<sup>[207]</sup>
- On November 25, a gasoline release from a Sunoco petroleum pipeline occurred, near a retail mall in Murrysville, Pennsylvania. Officials said the release occurred from the 6-inch line at about 9:30 a.m. while a Sunoco Logistics crew was working on a ball valve. It was suspected the ball valve was improperly installed. The failure resulted in the evacuation of numerous stores, restaurants and roads in the immediate vicinity due to the dousing of gasoline and subsequent vapors emitting from the 11,760 US gallons (44,500 L) of spilled product.<sup>[208]</sup>
- On December 5, a driver of a vehicle went off of a road, and struck a valve on an AMOCO gasoline pipeline in Colon, Michigan. The driver was killed, and, the fire burned for several days. About 14,000 gallons of gasoline were burned, or lost.<sup>[209][210]</sup>

## 2009   [ edit ]

- On January 4, 2009, a 6.625-inch storage well line operated by Columbia Gas Transmission Company in Elk View (near Charleston), Kanawha County, West Virginia, ruptured due to internal corrosion pitting complicated by low impact toughness of the pipe material, causing \$29,011 in damage.<sup>[211]</sup>
- On January 15, an accidental massive gas release at Pump Station 1 of the trans-Alaskan pipeline by Alyeska Pipeline Service Company threatened the site at the time. The company that runs the pipeline acknowledges a fire or explosion, had the gas ignited, could have imperiled the station's 60-plus workers and caused "an extended shutdown" of oil fields. There was no ignition or explosion. The incident occurred as BP workers used a cleaning device called a pig to swab oil out of an old pipeline the company was preparing to decommission. The 34-inch pipe was among major Prudhoe trunk lines found in 2006 to be ravaged with corrosion, due to BP's admitted lack of proper maintenance. A large volume of gas then bypassed the pig somehow, and rushed to Pump Station 1, a key asset through which every drop of oil coming off the North Slope must pass.<sup>[212]</sup>
- On February 1, a gas pipeline explosion rocked the area 2 miles (3.2 km) east of Carthage, Texas.<sup>[213]</sup>
- On February 11, a pipeline exploded and ignited near a natural gas treatment plant, near Carthage, Texas. There were no injuries.<sup>[214]</sup>
- At approximately 5 p.m. on February 18, a rupture of pipeline near the pump station and terminal located in Cygnet, Ohio, owned by Philadelphia-based Sunoco, resulted in one of the largest oil spills in Wood County history.<sup>[215]</sup> Upon learning of the release, the company immediately shut down the pipeline, stopped operations at the pump station and terminal, notified the appropriate authorities, and began an emergency response. As of 11:05 a.m. ET on February 19, the release had been stopped from the pipe. The damaged pipeline, which was operating at the time, released 1,250 barrels (199 m<sup>3</sup>) of crude oil into a farm field. Eventually, 782 of the

- 1,250 barrels (199 m<sup>3</sup>) released were recovered. Some of the crude oil, approximately 200 barrels (32 m<sup>3</sup>), did contaminate a local creek. There were no fatalities, or injuries.<sup>[216][217]</sup>
- On May 4, Kinder Morgan's Florida Gas Transmission pipeline burst near Palm City and Hobe City (near Port Salerno, Florida). The explosion ejected 106 feet of buried pipe weighing about 5,000 pounds out of the ground and onto the right-of-way between Interstate 95 and the Florida Turnpike (SR-91). The rupture was near a high school that was within the 366-foot potential impact radius. Two people were injured when their car ran off the road, and a Sheriff's deputy walked through a dense cloud and inhaled natural gas. The escaping gas did not ignite. The leak caused \$596,218 in property damage. FGT was cited for safety violations: failing to identify a high-consequence area, failing to test operators for alcohol and drugs, and failing to have prompt emergency response; PHMSA assessed a \$95,000 fine.<sup>[218]</sup>
  - On May 5, a natural gas pipeline exploded and caught on fire, near Rockville, Indiana in Parke County, about 24 miles (39 km) north of Terre Haute, Indiana. The cause of this failure was determined to be external corrosion. Additional work performed as a result of this order provided significant indications of external corrosion in various sections of this line. Pictures have been released around the area showing the damage caused. 52 people were evacuated in a one-mile (1.6 km) area of the explosion. No injuries reported.<sup>[170][219]</sup>
  - On May 21, an Enbridge pipeline pig sending trap in Superior, Wisconsin leaked from operator error, spilling about 6500 gallons of crude oil. 700 cubic yards of contaminated soil had to be removed.<sup>[220][221]</sup>
  - On July 15, an explosion occurred at Kinder Morgan's Midcontinent Express pipeline natural gas metering station that was under construction, while it was being pressure tested with nitrogen, in Smith County, Mississippi. One worker was killed, and two others injured. There was no fire.<sup>[222]</sup> The workers were "literally right on top" of the explosion; their injuries were caused by pressure, not heat. One worker was injured when part of the pipe fell on him. The explosion snapped and bent a pipeline connected to a massive separator unit which was slung several yards.<sup>[223]</sup>
  - On August 10, operators of a Belle Fourche pipeline incorrectly operated the line, causing it to fail, near Edgerton, Wyoming. About 30,000 gallons of crude oil were spill, with about 1,200 gallons being lost.<sup>[135]</sup>
  - On August 17, a pipeline was found leaking by an aerial patrol in Atoka County, Oklahoma. 50 barrels (7.9 m<sup>3</sup>) of diesel fuel were estimated to have been released as a result of this accident, and none of it was recovered.<sup>[224]</sup>
  - On October 7, a leaking pipeline carrying jet fuel was accidentally ignited by a pipeline repair crew in Upton County, Texas.<sup>[225]</sup>
  - On October 28, Kinder Morgan's Natural Gas Pipeline Company of America above-ground storage tank north of St. Elmo, Illinois caught fire, injuring two workers. Welding caused the tank to ignite resulting in several explosions. Two workers were taken to the hospital.<sup>[226]</sup>
  - On November 5, two people were hurt when an El Paso Natural Gas pipeline exploded in the Texas Panhandle near Bushland, Texas. The explosion left a hole about 30 yards by 20 yards and close to 15 feet (4.6 m) deep. The orange inferno rose about 700 feet in the air; the blast incinerated the home of the Jose Torres family, injuring his wife Agnieszka and daughter Franczeska. About 200 residents in the area were evacuated. Bushland is in Potter County, about 15 miles (24 km) west of Amarillo. The failure was in an abandoned tap, but the exact failure reason remains unknown. The explosion cause \$436,136 in property damage.<sup>[227][228][229][230]</sup>
  - On November 14, a fire at a gas compressor station near Cameron, West Virginia slightly burned one employee, and causes \$5.6 million of damage to the facility.<sup>[231]</sup>
  - Also on November 14, 2009, a newly built 42-inch gas transmission pipeline near Philo, Ohio failed on the second day of operation. There was no fire, but evacuations resulted. Several indications of pipe deformation were found.<sup>[232][233]</sup>
  - From December 3 to 4, a Minnesota Pipeline carrying crude oil leaked in Todd County, Minnesota, spilling about 5,000 barrels of crude. Pipeline workers on December 3 had been repairing sections of the 16-inch pipe in a rural area, left on the afternoon of December 3, and the spill occurred during the evening hours of December 3–4.<sup>[234][235][236]</sup>
  - On December 23, a crude oil pipeline started leaking in Galveston, Texas. There was no fire or explosion as a result of the accident, and an estimated 120 barrels (19 m<sup>3</sup>) of crude oil were released to the environment.<sup>[237]</sup>

**2010s** [ edit ]

**2010** [ edit ]

- On January 2, Enbridge's Line 2 ruptured near Neche, North Dakota, releasing about 3,784 barrels of crude oil, of which 2,237 barrels of were recovered. The cause was a material defect.<sup>[238][239]</sup>
- On January 7, a gas pipeline exploded near Barksdale Air Force Base, Louisiana, in January, killing a pipeline employee.<sup>[240]</sup>
- On February 1, a plumber trying to unclog a sewer line in St. Paul, Minnesota ruptured a gas service line that has been "cross bored" through the house's sewer line. The plumber and resident escape the house moments before as an explosion and following fire destroyed the house. The Minnesota Office of Pipeline Safety ordered that gas utility, Xcel, to check for more cross bored gas lines. In the following year, 25,000 sewer lines inspected showed 57 other cross bored gas lines. In Louisville, Kentucky, 430 gas line cross bores were found in 200 miles (320 km) of a sewer project, including some near schools and a hospital. The NTSB had cited such cross bore incidents as a known hazard since 1976.<sup>[241][242]</sup>
- On February 7, a power plant explosion occurred at the Kleen Energy Systems, killing 5 and injuring a dozen. 2010 Connecticut power plant explosion
- On February 25, a natural gas liquids (NGL) pipeline ruptured near Pond Creek, Oklahoma, releasing over 575,000 US gallons (2,180,000 L) of NGL's, and forcing road closures. There was no fire.<sup>[243][244]</sup>
- On March 1, at about 8:10 am, Mid-Valley Pipeline identified a release of crude oil in the manifold area of the Mid-Valley tank farm in Longview, Texas. Crude oil was observed "gushing" from the soil in the manifold area. About 198 barrels of crude oil were estimated to have been released and 196 barrels were recovered from the secondary containment area within Mid-Valley's site.<sup>[245]</sup>
- On March 15, a 24-inch gas pipeline burst, but did not ignite near Pampa, Texas.<sup>[246]</sup>
- On March 25, there was a release of 1700 barrels of Vacuum gas oil (VGO) from the FM-1 pipeline into an open in-ground valve pit and the surrounding area in the West Yard of the Sunoco, R&M Philadelphia refinery in Philadelphia, Pennsylvania. The area was under the control of the Operator in a fenced off area that is off-limits to the public.<sup>[247]</sup>
- On April 5, a crude oil pipeline ruptured near Green River, Wyoming. At least 84,000 US gallons (320,000 L) of crude were spilled. Corrosion in the pipeline was the cause.<sup>[29]</sup>
- On April 13, a flash fire occurred as a result of incorrect operations while operator and contract employees were conducting planned maintenance at the Seymour Terminal of the Enterprise Products Operating Company, LLC(EPCO) located in Jackson County, Indiana. Two EPCO employees and two contract employees were injured.<sup>[248]</sup>
- On April 23, a pipeline ruptured near Niles, Kansas, due to previous excavation damage. About 1,659 barrels of natural gasoline were lost.<sup>[189]</sup>
- On May 29, an Amoco pipeline leaked nearly 89,000 gallons of gasoline into a farm field along Quarterline Road. The leak occurred in Constantine Township, St. Joseph County, Michigan. The cause was from a manufacturing defect in the pipe.<sup>[210]</sup>
- On June 7, a 36-inch gas pipeline explosion and fire in Johnson County, Texas, was caused by workers installing poles for electrical lines. One worker killed, and six were injured. Confusion over the location and status of the construction work lead to the pipeline not being marked beforehand.<sup>[249][250]</sup>
- On June 8, construction workers hit an unmarked 14-inch gas gathering pipeline near Darrouzett, Texas. Two workers were killed.<sup>[249][251]</sup>
- The Red Butte Creek oil spill. On June 12, a Chevron crude oil pipeline, damage by lightning, ruptured, causing 800 barrels (130 m<sup>3</sup>) of crude to spill into Red Butte Creek in Salt Lake City, Utah. Crude then flowed into a pond in Liberty Park.<sup>[252]</sup>
- On July 5, a landowner operating a bulldozer hit an 8-inch LPG/propane pipeline near Thomson, Georgia. Later, the propane fumes ignited, killing the adult son of the landowner, and igniting fires that destroyed a trailer house and woodlands.<sup>[253]</sup>
- On July 26, the Kalamazoo River oil spill: Enbridge Energy Partners LLP (Enbridge), reported that a 30-inch (760 mm) pipeline belonging to Enbridge burst in Marshall, Michigan. Enbridge had numerous alarms from the affected Line 6B, but controllers thought the alarms were from phase separation, and the leak was not reported to Enbridge for 17 hours. Enbridge estimates over 800,000 US gallons (3,000,000 L) of crude oil leaked into Talmadge Creek, a waterway that feeds the Kalamazoo River,<sup>[254][255]</sup> whereas EPA reports over 1,139,569 gallons of oil have been recovered as of November 2011.<sup>[256]</sup> On July 27, 2010, an Administrative Order was issued by U.S. EPA requiring the performance of removal actions in connection with the facility. The Order requires Enbridge to immediately conduct removal of a discharge or to mitigate or prevent a substantial threat of a discharge of oil and to submit a Work Plan for the cleanup activities that was to include a Health and Safety Plan,<sup>[257]</sup> as required by 29 CFR 1910.120 (HAZWOPER). In 2012, the NTSB later cited known but unrepaired cracks and external corrosion as the cause.<sup>[258]</sup>

- On August 10, the U.S. Environmental Protection Agency (EPA) and the Justice Department announced that Plains All American Pipeline and several of its operating subsidiaries have agreed to spend approximately \$41 million to upgrade 10,420 miles (16,770 km) of crude oil pipeline operated in the United States. The settlement resolves Plains' Clean Water Act violations for ten crude oil spills in Texas, Louisiana, Oklahoma, and Kansas, and requires the company to pay a \$3.25 million civil penalty.<sup>[259]</sup>
- On August 17, smell from a mixture of gasoline and diesel fuel were detected in Hammond, Indiana. The source was from a leaking Amoco/BP pipeline in the area, and, about 38,000 gallons of the mixture was released. about 5,000 gallons of the spillage was not recovered. The cause was from external corrosion to the pipeline.<sup>[210][260]</sup>
- On August 25, a construction crew installing a gas pipeline in Roberts County, Texas hit an unmarked pipeline, seriously burning one man.<sup>[261]</sup>
- On August 24, a gas compressor station in Shongaloo, Louisiana injured one worker.<sup>[262]</sup>
- On August 27, a LPG pipeline sprang a leak in Gilboa, New York, forcing the evacuation of 23 people. The cause was stress corrosion cracking. There were no injuries or ignition.<sup>[263][264][265]</sup>
- 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. Ten acres of brush also burned. Later, PG&E was unable to supply the California Public Utilities Commission with documents on how PG&E established pressure limits on some of its gas transmission pipelines. It was also revealed that this pipeline had 26 leaks between Milpitas and San Francisco during the time of 1951 to 2009, with some of the leak causes listed in records as "unknown". Later hydrostatic testing of the same pipeline that failed found a pinhole leak, and a previously damaged section blew out.<sup>[266][267][268][269][270]</sup>
- On September 9, a 20-inch diameter Columbia Gas Transmission Company pipeline failed in Lawrence County, Kentucky. While there was no fire or evacuations, the condition of this uncoated, non-cathodic protected, unknown grade pipeline caused PHMSA to enter into a Consent Order to eventually replace this pipeline.<sup>[271]</sup>
- On September 28, a repair crew was working on a corroded gas pipe in Cairo, Georgia, when the line exploded. One crew member was killed, and three others burned.<sup>[272]</sup>
- On October 15, a gas pipeline under construction in Grand Prairie, Texas was running a cleaning pig without a pig "trap" at the end of the pipe. The 150 pound pig was expelled from the pipeline with enough force to fly 500 feet (150 m), and crash through the side of a house. No one was injured.<sup>[273]</sup>
- On November 12, three men working on natural gas lines were injured when a pipeline ruptured in Monroe, Louisiana.<sup>[274]</sup>
- On November 30, a Tennessee Gas Pipeline 30-inch gas pipeline failed at Natchitoches, Louisiana. There was no fire, but the pipeline had a Magnetic Flux smart pig test earlier in the year that indicated no flaws in the pipeline. The failure was at a crack in a wrinkle bend. The deadly 1965 gas pipeline accident had occurred on a different pipeline owned by the same company nearby.<sup>[275]</sup>
- On December 1, a valve on a crude oil pipeline leaked about 500 barrels (79 m<sup>3</sup>) of crude in Salt Lake City, Utah. This failure was only 100 yards from a June 2010 failure on the same pipeline.<sup>[276]</sup>
- On December 2, a pipeline was discovered leaking gasoline near Livingston, Illinois.<sup>[277]</sup>
- On December 8, at East Bernard, Texas, a 24" diameter Tennessee Gas Pipeline exploded, blasting a 12-foot section of ruptured pipe 295 feet and caused \$715,000 in property damage. It took 6 hours for the pipe system to blow down. The cause of the leak was a full guillotine failure of the pipe caused by internal corrosion micro-biologically induced due to moisture in the pipe.<sup>[278]</sup>
- On December 17, a gas line fire and explosion just outside Corpus Christi, Texas city limits leaves one person critically injured. A man was working on removing an abandoned pipeline when it exploded, and the man's face was severely burned.<sup>[279]</sup>
- On December 21, a crude oil pipeline was discovered leaking into the Dominguez Channel in the Port of Los Angeles. Over 1,000 gallons of crude oil was recovered, but the pipeline company was alleged to have failed to report the spill to State or Federal pipeline authorities. A 61 count criminal complaint was later filed in this accident.<sup>[280]</sup>
- On December 28, a pipeline at an underground gas storage facility in Covington County, Mississippi, forcing the evacuation of about two-dozen families for over a week.<sup>[281]</sup>

## 2011   [ edit ]

- On January 11, personnel from Millennium Pipeline noticed that a gas transmission pipeline was leaking in Tioga County, New York. This 30-inch diameter pipeline was built in 2008. A pinhole in a rejected girth weld

- was found to be the cause of the failure. It appears that during the course of the construction project for the line, the subject pipe section was inadvertently picked up and subsequently installed in the pipeline. PHMSA ordered testing of this pipeline for similar flaws.<sup>[282][283]</sup>
- A 12-inch cast iron gas main leaking in Philadelphia explodes, killing a repair crew member and injuring six others on January 18.<sup>[284][285]</sup>
  - Multiple gas pressure regulators failed, and caused a gas pressure surge in Fairport Harbor, Ohio, on January 24, causing gas fires in 11 houses, and one apartment. 150 gas appliances were damaged or destroyed, but there were no injuries. Gas company Dominion East Ohio says it found fluids and debris in a failed regulator. A year after the explosion, the Public Utilities Commission of Ohio recommended a \$500,000 fine for Dominion.<sup>[286][287][288][289]</sup>
  - Five people were killed, and eight houses were destroyed, in a gas explosion and fire in Allentown, Pennsylvania on February 9. The NTSB had warned UGI about cast iron gas mains needing replacement after the 1990 gas explosion in that city. Between 1976 and the date of the letter, July 10, 1992, two more gas explosions occurred. Three people were killed, 23 injured and 11 houses were destroyed or damaged in those explosions. UGI was cited in 2012 for several safety violations, including a lack of valves on their gas system.<sup>[290][291][292][293]</sup>
  - Late on February 10, a Tennessee Gas Pipeline 36-inch gas transmission pipeline exploded and burned near Lisbon, Ohio. No injuries resulted. The cause was from stress on a girth weld on the pipeline. A failure on another girth weld on the pipeline system led to a PHMSA Consent Agreement.<sup>[294][295][296]</sup>
  - Early on February 24, a pipeline near Texas City, Texas ruptured, sending up to 5,000 US gallons (19,000 L) of gasoline into Bayou Pierre.<sup>[297][298]</sup>
  - On March 1, a Tennessee Gas Pipeline gas transmission pipeline failed near Cumberland, Ohio. A material or weld defect was the cause.<sup>[299][300]</sup>
  - Early on March 17, a 20-inch steel CenterPoint Energy natural gas line running through a Minneapolis, Minnesota neighborhood ruptured, and gas from it ignited, caused evacuations to buildings nearby, and Interstate 35W was closed from downtown Minneapolis to Highway 62. There were no injuries. The Minnesota Office of Pipeline Safety later found the pipe there was not designed to handle the load of soil and passing cars, and efforts to shore up the pipeline were incorrectly carried out.<sup>[301][302][303]</sup>
  - A farmer and rancher near White Oak Township, Michigan smelled gasoline on April 13, and discovered gasoline from a products pipeline leaking into a drainage ditch. As of late September, an estimated 460,000 gallons of gasoline had been released, with about 111,000 gallons of it recovered.<sup>[304]</sup>
  - On May 7, a threaded connection failed on a Keystone Pipeline pump at a station in Sargent County, North Dakota, spilling about 400 barrels of crude oil. Due to a number of other leaks on this pipeline system, Keystone's owner, TransCanada Corporation, was given a Corrective Action Order by PHMSA.<sup>[305]</sup>
  - An 8-inch NGL pipeline failed in Romeoville, Illinois on May 14, leaking about 4200 gallons of butane. Corrosion inside a casing under a road was the cause of the failure. Corrosion only 2.5 feet from the failure had been seen by a smart pig run in 2007, but was not within action limits at the time.<sup>[306]</sup>
  - On May 19, a 10-inch crude oil pipeline ruptured near Maysville, Oklahoma. Over 42,000 US gallons (160,000 L) of crude were lost. There was no fire. Internal pipeline corrosion was the cause.<sup>[307][308]</sup>
  - A 2-inch lateral on a crude oil pipeline rupture in Huntington Beach, California on July 1. A major road, Goldenwest Street, had to be closed for cleaning and pipeline repairs.<sup>[309]</sup>
  - Late on July 1, a 12-inch Exxon Mobil crude oil pipeline, also known as the Silvertip Pipeline, ruptured, and spilled about 63,000 gallons of oil into the Yellowstone River in south-central Montana. There was confusion in the pipeline control room, causing a delayed pipeline shutdown. Some residents of Laurel, Montana had to be evacuated.<sup>[310][311]</sup> The break near Billings fouled the riverbank and forced municipalities and irrigation districts to close intakes.<sup>[312][313]</sup> Exxon later increased the spill size estimate to 1500 barrels in January 2012 after seeing the damage to the pipeline.<sup>[314]</sup> About 140 people were evacuated starting about 12:15 a.m. Saturday due to concerns about possible explosions and the overpowering fumes. All were allowed to return after instruments showed petroleum odors had decreased,<sup>[315]</sup> although no information was available regarding the concentrations of benzene in air. Speculation involves high water flow in the Yellowstone River may have scoured the river bed and exposed the pipe. Consequently, with three oil refineries are located in the Billings area, the fire chief for the city of Laurel said he asked all three to turn off the flow of oil in their pipelines under the river after the leak was reported. Exxon Mobil and Cenex Harvest Refinery did so, and that Conoco Phillips said its pipe was already shutdown.<sup>[315]</sup> Cenex had a release into the Yellowstone River in September 2002. Exxon Mobil later announced the cleanup would cost \$135 million. In 2015, Exxon Mobil was fined \$1 million by PHMSA for this incident.<sup>[316][317][318][319]</sup>
  - On July 20, a six-month-old, 30-inch natural gas pipeline exploded near Gillette, Wyoming, creating a 60-foot (18 m) crater. There was no fire, nor any injuries. Construction or installation issues caused the failure.<sup>[320][321]</sup>

- A pipeline carrying jet fuel ruptured in Mango, Florida on July 22. About 31,500 US gallons (119,000 L) of fuel spilled. There was no fire or injuries.<sup>[322]</sup>
- On August 13, an 8-inch NGL pipeline ruptured near Onawa, Iowa at a Missouri River crossing, during flooding conditions. About 818 barrels of Natural Gasoline was lost. There were no evacuations or injuries, but two other pipelines in the same right of way were forced to shut down.<sup>[323][324][325][326]</sup>
- On August 17, Kinder Morgan's Natural Gas Pipeline Company of America had a flash fire and explosion at a plant south of Herscher, Illinois. Five employees went to the hospital. Kinder Morgan was later cited for pipeline and workplace safety violations.<sup>[327][328]</sup>
- A pipeline carrying heating oil was hit by construction workers in East Providence, Rhode Island on August 31, spraying oil on roofs, trees, and pavement, and flowed into storm drains. At least 56,000 US gallons (210,000 L) of oil were spilled.<sup>[329]</sup>
- A Cupertino, California condominium was gutted August 31, after a plastic pipeline fitting cracked, filling the garage with natural gas that exploded just minutes after the owner left for lunch. PG&E later found six other plastic pipe failures near the blast site. The line was an especially problematic type of pipe manufactured by DuPont called Aldyl-A. PG&E has 1,231 miles (1,981 km) of the early-1970s-vintage pipe in its system. Federal regulators singled out pre-1973 Aldyl-A starting in 2002 as being at risk of failing because of premature cracking. Explosions caused by failed Aldyl-A and other types of plastic pipe have killed more than 50 people in the United States since 1971, the federal government says.<sup>[330]</sup>
- A 10-inch LPG pipeline failed on September 8 in Mitchell County, Texas. The escaping gas ignited, starting a small brush fire. The cause of the failure was a crack in the weld of a repair sleeve from bending and heat hardening. There were no injuries.<sup>[331]</sup>
- On September 20, a farmer digging to lay drainage tile hit a 10-inch gasoline pipeline near Aurelius, New York, spilling about 3,300 US gallons (12 m<sup>3</sup>) of gasoline. There was no fire or injuries.<sup>[332]</sup>
- A 2-inch crude oil gathering pipeline failed in Oklahoma on October 12, spilling about 120 barrels of oil. There were no injuries or fire from the failure.<sup>[333]</sup>
- Early on November 3, an explosion and fire hit a gas Columbia Gas Transmission pipeline compressor station at Artemas in Mann Township, Bedford County, Pennsylvania. There were no injuries. The cause was internal corrosion.<sup>[334][335]</sup>
- On November 8, a contractor for Vectren Corp. working on a bare gas main replacement project broke a "short stub" on the main, then failed to notify New Albany, Indiana authorities about the leak. Gas migrated through the soil, and built up in a nearby house, then exploded. Five people had to be hospitalized.<sup>[336]</sup>
- A crew working on a waterline hit a gas distribution pipeline in Fairborn, Ohio on November 12, leading to a gas explosion that killed one man, and injured five others, including children.<sup>[337]</sup>
- On the evening of November 13, 2011, a release of nearly 1798,000 gallons of diesel fuel occurred at the Belle Fourche Pipeline Company's Davis Station in a remote area of Wyoming. The cause was from pumping against a closed valve on the pipeline.<sup>[338]</sup>
- On November 16, a Tennessee Gas Pipeline 36-inch gas transmission pipeline exploded and burned near Glouster, Ohio. Two people were injured, with three houses and a barn destroyed, and a barn damaged. The pipeline failed at a girth weld, with landsliding causing more stress on the weld.<sup>[339][340]</sup>
- Late on November 21, a Tennessee Gas Pipeline 24-inch gas transmission pipeline exploded and burned near Batesville, Mississippi. Twenty houses were evacuated for a time, but there were no injuries or major property damage. The pipeline failed at a sleeve over a wrinkle bend installed in 1946.<sup>[341]</sup>
- On December 3, a Williams Companies gas transmission pipeline exploded and burned in Marengo County, Alabama. A 47-foot section of the pipe was hurled more than 200 feet from the failure area. The gas burned for several hours, and a nearby pipeline was damaged. There were no injuries, or serious property damage. External corrosion was the cause of the failure, due to issues with the pipeline coating, the cathodic protection level, and the local soil corrosiveness.<sup>[342][343][344]</sup>
- On December 6, explosions and fire erupted at a natural gas pipeline compressor station in Sublette County, Wyoming. Two workers were injured.<sup>[345]</sup>
- On December 10, a landowner using a bulldozer hit an 8-inch and a 12-inch petroleum pipelines near Nemaha, Nebraska, rupturing both lines. The spill size was estimated to be 119,000 gallons of gasoline, jet fuel, and Diesel fuel. Some of the fuels flowed into a creek leading into Jasper Creek. There were questions about the depth of soil coverage for this pipeline.<sup>[346][347][348]</sup>
- A 42-inch natural gas transmission pipeline failed and ignited at a valve on December 10 in Cache County, Utah.<sup>[349][350]</sup>
- On December 27, controllers for Enterprise Pipeline received an alarm, for a leak on an LPG pipeline. The leak location was found in Loving County, Texas. Repair crew excavated the area, and found a full girth weld failure. During the pipeline repair, a flash fire involving residual pipeline product in the soil occurred, injuring 3

employees, one of whom required in-patient hospitalization. The rupture was attributed to the complete circumferential separation of an acetylene girth weld dating to 1928, and the flash fire was attributed to operator error.<sup>[351]</sup>

## 2012 [ edit ]

- A 30-inch gas pipeline exploded and burned, in Estill County, Kentucky, on the evening of January 2. The rupture created a crater approximately 86 feet long by 22 feet wide, and expelled a number of pieces of pipe as far as 800 feet from the rupture center. Flames were reported reaching over 1,000 feet high. Residents up to a mile away from the failure were evacuated. There were no injuries. The cause was overstress from land movement.<sup>[352][353]</sup>
- A forest fire caused a gas pipeline to explode and burn in Floyd County, Kentucky on January 7. There were no injuries from this incident.<sup>[354]</sup>
- On January 9, a man was killed, and another person injured, in a fiery house explosion from a leaking 4-inch cast iron gas main installed in 1950 in Austin, Texas. Gas had been smelled in the area for several weeks prior to this. Gas company crews had looked along the affected property for a leak, but were unable to find it.<sup>[285][355]</sup>
- A Sunoco pipeline ruptured and spilled about 117,000 gallons of gasoline, in Wellington, Ohio, late on January 12. Some residents were evacuated for a week.<sup>[356][357]</sup>
- On January 13, an 8-inch gas pipeline exploded and burned, in a vacant agricultural field, in Rio Vista, California. There were no injuries or evacuations.<sup>[358]</sup>
- A Tennessee Gas Pipeline gas compressor had a major leak "that sounded like a rocket" in Powell County, Kentucky, forcing evacuations of nearby residents on January 14. There was no fire or injuries reported.<sup>[359]</sup>
- A contractor excavating for a communications company caused a massive gas explosion and fire at a condominium complex on January 16 in West Haverstraw, New York, injuring two firefighters and two utility workers. Afterwards, it was found that the excavator's insurance will be insufficient to cover all of the property damage of the incident.<sup>[360]</sup>
- On January 18, the original Colonial Pipeline mainline failed in Belton, South Carolina, spilling about 13,500 gallons of petroleum product. The failure was caused by internal corrosion.<sup>[361]</sup>
- Workers in Topeka, Kansas were installing a yard sprinkler system on January 30, hit a gas line. Gas from the leak later on exploded in a nearby house, burning a 73-year-old woman, who died several weeks later.<sup>[362][363]</sup>
- On January 31, a Shell Oil Company fuel pipeline to the Milwaukee, Wisconsin Mitchell International Airport was found to be leaking. Jet fuel had been smelled for about two weeks in the area, and was found in runoff water in the area. The cause was from external corrosion. About 9,000 gallons of fuel were spilled. In 2014, a Shell employee was scheduled to plead guilty to charges of falsifying records of the pipeline.<sup>[364][365]</sup>
- A Florida Gas Transmission Company 30-inch gas transmission pipeline burst near Baton Rouge, Louisiana on February 13. Residents in the area were evacuated for a time, but there was no fire.<sup>[366][367]</sup>
- On February 15, 2012, in Arenac County, Michigan, oil was discovered in the soil around a 30-inch Enbridge crude oil pipeline. About 800 gallons of crude oil was spilled.<sup>[368]</sup>
- Two cars that were drag racing went off the road they were on, and crash through a fence and into a crude oil pipeline in New Lenox, Illinois on March 3. The pipeline was ruptured, and the crude oil ignited. Two men from the vehicles were killed, and three others seriously burned.<sup>[369][370]</sup>
- On March 5, a leak at an Enid, Oklahoma pipeline storage facility spread propane fumes in the area, forcing evacuations. There was no fire or explosion.<sup>[371]</sup>
- A crude oil pipeline leaked near Grand Isle, Louisiana on March 17, spilling as much as 8,400 gallons of crude oil. There were no injuries reported.<sup>[372]</sup>
- On March 29, an employee accidentally left a valve open during maintenance work on a Williams Companies gas compressor station near Springville Township, Pennsylvania. Later, gas leaked through the valve, causing alarms to evacuate workers in the compressor building. Later, the gas exploded and burned. There were no injuries. It was also found there are no agencies enforcing rules on rural gas facilities in that state.<sup>[373][374]</sup>
- On April 2, Transcontinental Gas Pipeline Company, reported a leak on their 72nd Street Interstate Transmission Lateral located in North Bergen, New Jersey. Workers discovered a rock in contact with the bottom of the pipe. Upon removing the rock, the pipeline began to leak. There was no fire or injuries reported as a result of this incident.<sup>[375]</sup>
- A 12-inch gas pipeline exploded and burned for five hours near Gary, Texas on April 4. There were no injuries, but the rupture site was only 200 feet from that pipeline's compressor station.<sup>[376]</sup>



- On April 6, two gas company workers were mildly burned when attempting to fix a leak on a 4-inch gas pipeline in DeSoto County, Mississippi. The pipeline exploded and burned during the repairs.<sup>[377]</sup>
- A gas pipeline exploded and burned in Terrebonne Parish, Louisiana, on April 9. The accident was reported first by a satellite monitoring the area to the NRC. There were no injuries.<sup>[378]</sup>
- Two men escaped with only minor burns after a bulldozer they were using hit a 24-inch gas pipeline near Hinton, Iowa on April 25. Authorities later announced the men did not call 811 for an underground utility locate.<sup>[379]</sup>
- On April 28, an ExxonMobil 20/22-inch-diameter pipeline ruptured near Torbert in Pointe Coupee Parish, Louisiana, about 20 miles west of Baton Rouge, and crude oil spilled into the surrounding area, and flowed into an unnamed tributary connected to Bayou Choipe. About 117,000 gallons of crude were spilled, with about 37,000 gallons being lost. The pipeline failed due to a manufacturing defect.<sup>[380][381][382]</sup>
- A 26-inch gas transmission pipeline ruptured on June 6 in a compressor station near Laketon in northeastern Gray County, Texas. Gas escaped from the 50-foot-long rupture, igniting, leaving a crater 30 feet in diameter, burning two acres of agricultural area and telephone poles. There were no injuries.<sup>[383]</sup>
- On June 8, near Canadian, Texas, a trackhoe operator suffered burns, after a fire from leaking 4-inch gas-gathering pipeline that was undergoing maintenance. Fumes entered the engine of the trackhoe and ignited.<sup>[384]</sup>
- A contractor was killed and two others injured after an explosion at a BP gas compressor station in Durango, Colorado on June 25. BP, Halliburton, and the other contractors were fined \$7,000 each for safety violations in that work.<sup>[385][386]</sup>
- A West Shore Pipe Line petroleum products pipeline burst near Jackson, Wisconsin on July 17, releasing about 54,000 gallons of gasoline. At least one family self evacuated due to the leak. At least 44 water wells nearby were contaminated from benzene in the gasoline, including a municipal well. A LF-ERW seam failure was suspected as the cause. Further testing revealed that at least 26 other areas on this pipeline needed repairs, with 22 within the Jackson Marsh Wildlife Area.<sup>[387][388][389][390]</sup>
- A 14-inch gas gathering pipeline exploded and burned on July 18 near Intracoastal City, Louisiana. There were no injuries or major property damage reported.<sup>[391]</sup>
- On July 23, a compressor station operated by Williams Companies in Windsor, New York was venting gas in a "routine procedure" — during a lightning storm — when the vent was ignited by lightning, causing a fireball "hundreds of feet into the air"<sup>[392][393]</sup>
- An Enbridge crude oil pipeline ruptured in Grand Marsh, Wisconsin, releasing an estimated 1,200 barrels of crude oil. The pipeline had been installed in 1998. Flaws in the longitudinal welds had been seen during X-ray checks of girth welds.<sup>[162][394]</sup>
- Four contract workers were injured during a flash fire at a Wyoming gas processing plant on August 22.<sup>[395]</sup>
- A jet fuel pipeline near Chicago began leaking on August 27. The burst pipeline spilled an estimated 42,000 gallons of jet fuel into a ditch that empties into the Calumet Sag Channel in Palos Heights, Illinois. External corrosion was the cause of the pipeline failure.<sup>[396][397][398]</sup>
- On August 28, a Atmos Energy repair crew struck an 8-inch gas main in McKinney, Texas, causing a fire. Four Atmos workers were treated for injuries. 1,000 Atmos gas customers lost gas service for a time.<sup>[399][400]</sup>
- On September 6, a 10-inch gas gathering pipeline exploded and burned near Alice, Texas. Flames reached 100 feet high, and caused a 10-acre brush fire. There were no injuries.<sup>[401]</sup>
- An explosion and fire hit a Crestwood Midstream Partners gas compressor station in Hood County, Texas on September 6. Heavy damage to a sheet metal building resulted, but, there were no injuries reported to crew there.<sup>[402]</sup>
- A Colorado Interstate Gas gas compressor in Rio Blanco County, Colorado caught fire on September 11. There were no reported injuries.<sup>[403][404]</sup>
- On September 24, an excavator struck a 4-inch natural gas line on Route 416 in Montgomery, New York. Escaping gas ignited, and it took 90 minutes before the gas was shut off. There were no injuries.<sup>[405]</sup>
- On October 3, a Colonial Pipeline stubline leaked gasoline into in a marshy area of Moccasin Bend, about 1,000 feet from the Tennessee River, near Chattanooga, Tennessee. About 3,600 gallons of gasoline were spilled, with about 1000 gallons being lost. The cause was from previous excavation damage.<sup>[406][407]</sup>
- The operator of an excavator machine narrowly escaped serious injury in Lewiston, Idaho on November 19, when his machine hit a gas pipeline during road work. The resulting fire destroyed a railroad signal, along with several telephone poles, and road construction equipment. The depth of the pipeline has been misjudged at that location.<sup>[408][409]</sup>
- On November 20, about 38,000 gallons of crude oil spilled from an Enbridge pipeline at a tank farm in Mokena, Illinois.<sup>[410]</sup>

- Two men were injured in an explosion and fire at a natural gas production facility east of Price, Utah on November 20.<sup>[411]</sup>
- On November 23, a gas company worker looking for the source of a reported gas leak in a Springfield, Massachusetts strip club pierce a gas line. The gas later exploded, injuring 21, devastating the strip club, and damaging numerous nearby buildings.<sup>[412]</sup>
- On November 30, a heavy equipment operator punctured a 12-inch gas transmission pipeline, near the city of Madera, California. The adjacent highway, along with several rural roads, was shut down for hours, while houses and businesses in the area were evacuated.<sup>[413]</sup>
- A malfunction in a gas compressor caused a fire on December 4, north of Fort Worth, Texas. There were no injuries.<sup>[414]</sup>
- On December 5, a 16-inch gas pipeline at 500 psi of pressure exploded and burned near a natural gas plant in Goldsmith, Texas. A fireball 250 feet high was created after the explosion, destroying 12 to 15 utility poles, and caliche and rocks the size of bowling balls damaged a road. There were no injuries reported.<sup>[415]</sup>
- On December 11, at approximately 12:40pm, a 20-inch gas pipeline owned by NiSource Inc., parent of Columbia Gas, exploded along I-77 between Sissonville and Pocatalico, West Virginia. Several people suffered minor injuries, four houses were destroyed, and other buildings were damaged. Early reports announced the NTSB was investigating as to why alarms in the control room for this pipeline did not sound for this failure.<sup>[416][417][418][419]</sup>
- On December 26, a 20-inch Florida Gas Transmission Company pipeline ruptured near Melbourne, Florida, ejecting a 20-foot section of the pipeline. There was no fire or injuries.<sup>[420]</sup>

## 2013 [ edit ]

- On January 1, a Colonial Pipeline line was overpressured by improper operation, causing a spill of about 5,500 gallons of petroleum product in Greensboro, North Carolina. About 1,000 gallons of product was not recovered.<sup>[205]</sup>
- On January 15, a utility crew struck and ruptured a 4-inch gas pipeline in Lewisville, Texas, causing a nearby house to explode later on. The explosion killed a man.<sup>[421]</sup>
- An independent contractor installing fiber-optic cable for a cable company in Kansas City, Missouri inadvertently struck an underground gas line on February 19. Gas later caught fire, and created an explosion that destroyed a popular local restaurant, killing one of the workers there, and injuring about 15 others near the scene.<sup>[422][423]</sup>
- A tug towing a barge struck and ruptured a Chevron LPG pipeline at Bayou Perot, a marshy area on the borders of Jefferson Parish and Lafourche Parish, Louisiana on March 12. The tug Captain was severely burned when the escaping gas ignited, and died several weeks later from those injuries.<sup>[424][425]</sup>
- On March 8, pipeline equipment failure resulted in a spill of 6,000 barrels of crude oil, in eastern Columbia County, Arkansas.<sup>[426]</sup>
- On March 18, a Chevron 8-inch petroleum products pipeline ruptured along a seam, spilling Diesel fuel into Willard Bay State Park near Ogden, Utah. Wildlife was coated with Diesel, but, the fuel was prevented from entering into water supply intakes. About 25,000 gallons of Diesel were spilled.<sup>[427][428]</sup>
- A Williams Companies 24-inch gas gathering pipeline failed in Marshall County, West Virginia on March 22. There were no injuries.<sup>[429]</sup>
- The 2013 Mayflower oil spill occurred when ExxonMobil's 20-inch Pegasus crude oil pipeline spilled near Mayflower, Arkansas on March 29, causing crude to flow through yards and gutters, and towards Lake Conway. Wildlife was coated in some places. Twenty-two houses were evacuated, due to the fumes and fire hazard. Some estimates say the total amount spilled could reach upwards of 300,000 gallons of diluted bitumen were spilled. Hook cracks and extremely low impact toughness in the LF-ERW seam of the pipe were identified as causes of the failure.<sup>[430][431][432][433]</sup>
- On April 4, an explosion and fire occurred at a gas compressor station near Guthrie, Oklahoma. Nearby houses were evacuated. There were no injuries reported.<sup>[434]</sup>
- A flash fire at a pipeline gas compressor station broke out when natural gas liquids ignited in Tyler County, West Virginia on April 11, seriously burning three workers, two of whom later died. The workers were performing pipeline pigging operations.<sup>[435][436]</sup>
- On April 30, the Pegasus oil pipeline spilled a small amount of crude into a residential yard in Ripley County, Missouri, a month after the same pipe spewed thousands of barrels of crude in Arkansas. The Pegasus pipeline was out of service from the Mayflower, Arkansas spill, accounting for the minimal amount of oil spilled in Missouri.<sup>[437]</sup>

- On May 9, Diesel fuel was detected to be leaking from a Marathon pipeline in Indianapolis, Indiana. Over 20,000 gallons of Diesel leaked, at a slow rate that was not detected by SCADA systems. Cleanup cause a nearby major road to be shut down for five days. There were no injuries reported.<sup>[438]</sup>
- Late night on May 14, an explosion and fire hit a Williams Companies gas compressor station near Brooklyn Township, Pennsylvania. There were no reported injuries.<sup>[439]</sup>
- On May 8, the Kinder Morgan Tejas pipeline compressor station near Crockett, Texas, required an emergency shutdown and subsequently had a fire that caused \$7,502,188 in property damage.<sup>[440][441]</sup>
- On May 30, two construction workers were injured, when a fire erupted during welding at a Williams Companies natural gas facility in Hunterdon County, New Jersey.<sup>[442]</sup>
- A 12-inch gas transmission pipeline failed near Torrington, Wyoming on June 13. LF-ERW seam failure was suspected as cause. There was no fire or injuries.<sup>[443]</sup>
- On June 18, in Washington Parish, Louisiana, a Kinder Morgan Florida Gas Transmission Company 30" diameter pipeline ruptured and exploded before dawn, jolting residents out of their beds. No one was seriously hurt but 55 homes were evacuated. The blast knocked down trees in an area about 200 yards across and the fire burned those within another 300 yards. "The ground around the crater is completely bare. The dirt around it is just like it had been cooked in a kiln," and an 80-foot section of pipe was destroyed.<sup>[444]</sup>
- On July 4, a fire involved a gas compressor and a nearby ruptured 2-inch gas pipeline in Gilmore Township, Pennsylvania. There were no injuries.<sup>[445]</sup>
- An 8-inch natural gas pipeline released gas from a rupture at 1,400 psi, for 90 minutes in New Franklin, Ohio on July 22, forcing 75 people to evacuate the area. Afterward, the local Fire Chief said that pipeline owners refused to give information to first responders in previous requests.<sup>[446]</sup>
- Early on July 23, a downed 13,000 volt power line sparked a massive gas fire in Mamaroneck, New York when a gas main was damaged by the electricity. Three automobiles were destroyed, and houses were threatened for a time.<sup>[447]</sup>
- On July 26, a leaking BP 20-inch crude oil pipeline spilled 50 to 100 barrels of crude oil in Washington County, Oklahoma. Some of the crude spilled into a drainage ditch leading to a water reservoir.<sup>[448]</sup>
- On the evening of August 12, a 10-inch NGL pipeline exploded and caused a massive propane-ethane mix fire in Erie, Illinois. A number of nearby residents were evacuated for a while, but, there were no injuries. About 772,000 gallons of mix were burned or lost. The cause was from a manufacturing defect.<sup>[449][450]</sup>
- A leak developed on a valve on Longhorn Pipeline in Austin, Texas during maintenance on August 14, spilling about 300 gallons of crude oil. There were no evacuations.<sup>[451]</sup>
- Atmos Energy crews dug into a 4-inch gas pipeline in Overland Park, Kansas on September 2, causing an explosion and fire. There was no major damage or injuries.<sup>[452]</sup>
- A 10-inch gas gathering pipeline ruptured and burned in Newton County, Texas on September 21. About a dozen people from nearby houses were evacuated for a time. There were no injuries.<sup>[453]</sup>
- On September 24, a Denton TX city water utility worker ruptured a 1/2-inch gas pipeline in Denton, Texas, which immediately caused a fire that gave the worker minor burns. There was no other significant damage.<sup>[454]</sup>
- A farmer near Tioga, North Dakota smelled oil for several days, before discovering a leaking 6-inch 20-year-old Tesoro pipeline under his wheat field, on September 29. Crews tried to burn off the oil at first. The spill size was estimated at 865,000 gallons, and covered over seven acres. There were no injuries. Corrosion was suspected as being the cause. Governor Jack Dalrymple said he wasn't told of the spill until October 9. In May 2014, it was announced that it would 2 1/2 more years before the spilled crude would be cleaned up.<sup>[455][456]</sup>
- On October 7, a gas pipeline burst in Howard County, Texas. There was no fire, but, dangerous hydrogen sulfide in the gas forced evacuations of nearby residents. There were no injuries.<sup>[457]</sup>
- On October 7, authorities were notified of a Lion Oil Trading and Transportation crude oil pipeline leak in Columbia County, Arkansas. It was estimated that the leak started on September 21. Oil spread into a Horsehead Creek tributary.<sup>[458]</sup>
- A 30-inch Northern Natural Gas pipeline exploded and burned in Harper County, Oklahoma on October 8. 220 feet of the pipe was ejected from the ground. Flames were seen for a number of miles, and four houses nearby were evacuated. Oklahoma Highway 283 was closed for several hours until the fire was determined to be under control and safe. There were no injuries.<sup>[459][460][461]</sup>
- On October 29, a Koch Industries 8-inch pipeline spill about 400 barrels of crude oil near Smithville, Texas. The oil polluted a private stock pond and two overflow reservoirs.<sup>[462]</sup>
- A Chevron operated 10-inch LPG pipeline was ruptured by contractors for the company installing a Cathodic protection system, near Milford, Texas, on November 14, causing a large fire, and forcing the evacuation of Milford and 200 students of a nearby school. A nearby 14-inch pipeline was threatened by the failure, but did not fail. There were no injuries reported. About 183,000 gallons of propane burned.<sup>[463][464][465][466]</sup>

- An ExxonMobil gas plant exploded and burned on November 17, near Kingsville, Texas. The plant burned for over a day, but there were no reported injuries.<sup>[467]</sup>
- On November 18, a gas pipeline burst near Ranger, Texas, causing a fire in a field, with flames reaching 100 feet high. Some houses nearby were evacuated for a time. The owner of the pipeline, Hanlon Gas, had been installing a new compressor station, and they believe a malfunction led to the rupture and fire. There were no injuries reported.<sup>[468]</sup>
- On November 28 a 30-inch Panhandle Eastern natural gas pipeline exploded in Hughesville, Missouri causing several nearby buildings to catch fire. There was a local evacuation but no injuries. Metallurgical examination determined the root cause of the failure to be corrosion.<sup>[170][469]</sup>
- On December 9, a 2-inch pipe on a propane dehydrator failed at the Dixie Pipeline Terminal in Apex, North Carolina, forcing evacuations and sheltering in place at nearby businesses. There was no fire or explosion.<sup>[470]</sup>
- A Sunoco pipeline was found leaking gasoline on December 20, near Coal Township, Pennsylvania, from external corrosion. The initial spill size was reported as two gallons, but, later on, 480 tons of soil were removed as part of the remediation of that leak.<sup>[471][472][473]</sup>
- On December 27, two natural gas company workers had minor burns when the pipeline they were working leaked, and the escaping gas exploded and ignited in Shrewsbury, Massachusetts. Flames 30 feet high knocked out phone service in the area.<sup>[474]</sup>

## 2014  [edit]

- On January 7, a Colonial Pipeline line leak from equipment failure in Fountain Inn, South Carolina, spilling about 52,000 gallons of petroleum product, of which around 8,000 gallons was not recovered.<sup>[205]</sup>
- On January 10, a 12-inch PSNC gas transmission pipeline exploded and burned in Asheville, North Carolina. The cause was damage to the pipeline during installation in 2003. There were no injuries, but the costs of property damage was around \$825,000.<sup>[475]</sup>
- On February 10, a gas pipeline exploded and burned near Tioga, North Dakota. There were no injuries.<sup>[476]</sup>
- On February 13, a 30-inch diameter Columbia Gulf Transmission gas pipeline carrying natural gas exploded near Knifley, Kentucky, sending two people to the hospital with injuries, destroying two houses, and alarming residents, who saw flames from miles away. Later, it was determined that Hydrogen embrittlement had caused the pipe failure from when the pipeline was installed in 1965.<sup>[477][478]</sup>
- On February 19, a leaking gas main caused a gas build up in a nearby rowhouse, that exploded in [Baltimore, Maryland], killing one youth, and seriously injuring another walking by the area. 3 other people had minor injuries. The area on the gas main near the leak had been patch twice in previous months.<sup>[479][480]</sup>
- On March 6, contractors working for Shell Oil Company hit Shell's Houston-to-Houma (Ho-Ho) crude oil pipeline near Port Neches, Texas, spilling 364 barrels of crude oil.<sup>[481]</sup>
- 2014 East Harlem gas explosion: On March 12, there was a gas explosion in New York City, New York. NTSB investigators found natural gas in the soil nearby, indicating that the gas leak had existed for a while before the explosion.<sup>[482]</sup>
- On March 18, a 20-inch Mid-Valley Pipeline Company pipeline failed in Hamilton County, Ohio, spilling at least 364 barrels of crude oil into the adjacent Oak Glen Nature Preserve. Animals in the area were affected.<sup>[483][484]</sup>
- On March 18, a 3-inch, half-mile flare waste gas pipeline in a neighborhood in Arvin, California, was discovered leaking, a few blocks from Arvin High School, in a residential area. It had been leaking for as long as two years.<sup>[485]</sup>
- On March 31, a pipeline running to a Williams Companies LNG storage facility in Plymouth, Washington exploded and sent shrapnel flying that ruptured an LNG storage tank. Nearly 1,000 residents were evacuated and at least five employees at the facility were injured.<sup>[486][487]</sup>
- A 12-inch Williams Companies gas pipeline failed at a weld in Moundsville, West Virginia. The following explosion and fire explosion scorched trees over a 2-acre area near Moundsville. Several houses were evacuated as a precaution. There were no injuries reported.<sup>[488]</sup>
- On April 17, a private excavator accidentally cut a gas line while doing some work in Union Township, Licking County, Ohio on April 17. The man suffered second degree burns to the upper portion of his body. There was no damage to any buildings.<sup>[489]</sup>
- On April 23, an explosion and fire hit a Williams Companies gas processing plant in Opal, Wyoming. All 95 residents of the town were evacuated, and part of US Highway 30 was closed for a time.<sup>[490][491]</sup>
- On May 6, Sinclair Oil Corporation pipeline operators detected a pressure drop on a pipeline, with the problem being traced two days later to a leak in Knox County, Missouri. A mixture of gasoline and Diesel fuel contaminated soil on a farm.<sup>[492]</sup>

- On May 12, three workers from Plantation Pipeline inadvertently ruptured their pipeline at a pump station in Anderson County, South Carolina, causing a geyser of gasoline, and spraying the workers with it. There was no fire, but the workers had to be decontaminated at a hospital.<sup>[493]</sup>
- On May 17, at Port St. John, Florida, Kinder Morgan's 36" Florida Gas Transmission pipeline ruptured, forcing evacuation of 7 homes and halting train traffic through Brevard Co. for 3 hours near the Florida Power & Light plant. Florida Gas Transmission workers searched for a leak when pressure dropped in the line. Homes, vehicle & train traffic were reopened after the remaining gas escaped from the pipe.<sup>[494]</sup> This pipeline failure caused \$177,321 in property damage.<sup>[495]</sup>
- On June 26, near East Bernard, Texas, a gas pipeline adjacent to a Kinder Morgan gas compressor plant blew out, destroying the roadway and setting a nearby truck on fire just south of Highway 59. Flames as high as 150 feet were shooting out of the pipeline. The focus was on a 27-inch pipeline that sends gasoline to different tank farms along the line.<sup>[496]</sup>
- On July 10, a vent stack at a Williams Field Services gas pipeline compressor station in Susquehanna County, Pennsylvania caught fire. Only minor damage was reported at other parts of the station.<sup>[497]</sup>
- On July 23, at Milledgeville, Georgia, Midway Elementary School faculty and staff were evacuated due to a fire caused by a gas leak at nearby Southern Natural Gas Co. tap station. Fire rescue personnel closed down Highway 441 South for an hour. Due to the amount of pressure, precautionary measures were taken so pipe wouldn't rupture under the road while Southern Natural Gas tried to determine the cause of the leak. "It could be some type of failure in a valve or regulator. Right now we don't know but Southern Natural Gas is looking into it." No injuries were reported.<sup>[498]</sup>
- On August 4, a Greka 6 inch pipeline spilled over 1,200 gallons of crude oil at the Zick Compressor Station by Williams Field Services in Hop Bottom near Santa Barbara County, California. The oil spread out over less than a mile from the leak and did not enter a river. The station can process 455 million cubic feet of natural gas per day.<sup>[499]</sup>
- On August 12, a mulching machine hit a 12-inch natural gas pipeline in Rusk County, Texas. The operator of the machine was killed in the following explosion.<sup>[500]</sup>
- On August 21, four workers were injured in a fire while a crew was performing maintenance on a natural gas pipeline in Garvin County, Oklahoma. The injured workers were treated and released from a hospital, and there was no explosion.<sup>[501]</sup>
- On September 14, a contract worker performing routine maintenance on a Chevron offshore gas pipeline was killed, and two other workers were injured. The accident occurred 6 miles south of Timbalier Bay off the southeast coast of Louisiana.<sup>[502]</sup>
- On September 16, more than 500 residents of Benton Township, Michigan, were forced to leave their houses for 10 to 12 hours, after authorities discovered a leak on TransCanada Corporation's 22-inch ANR gas transmission pipeline.<sup>[503][504]</sup>
- On October 13, a gas transmission pipeline failed near Centerview, Missouri, causing an explosion and massive fire for several hours. There were no injuries.<sup>[170][505]</sup>
- On October 13, a Sunoco/Mid-Valley crude oil pipeline ruptured, and spilled about 168,000 gallons of crude oil in Caddo Parish, Louisiana. Wildlife was killed.<sup>[506]</sup>
- A 24-inch gas transmission pipeline was hit by excavators on October 23, near Newport, Arkansas. Five nearby houses were evacuated, and two highways and a railroad were closed for a time. There was no fire or injuries.<sup>[507]</sup>
- On October 28, an 8-inch natural gas condensate pipeline exploded in Monroe County, Ohio. A large fire followed. There were no injuries.<sup>[508]</sup>
- On December 8, gasoline was discovered leaking from Kinder Morgan Plantation Pipeline in Belton, South Carolina. It was found that the 26-inch pipeline had leaked into a nearby creek. The cause was a failure at a sleeve that was part of an earlier repair.<sup>[509]</sup> As of April 2015, it was estimated that 8,000 barrels (42 gallons per barrel) or more than 300,000 gallons of gasoline had leaked. After four months of cleanup, only 176,901 gallons of product had been recovered and removed.<sup>[510]</sup>

## 2015 [ edit ]

- On January 14, during work to free a trapped inline inspection unit, a leak was discovered on the Evangeline Pipeline, near Cameron Parish, Louisiana. This pipeline had been given a Corrective Action Order in October 2014, due to a number of leaks.<sup>[511][512][513]</sup>
- Also on January 14, a gas pipeline exploded near the Ross Barnett Reservoir in Brandon, Mississippi, creating a sizable crater in the ground and burning 6 acres of vegetation before the fire was extinguished. No injuries were reported. The failure was due to a "hard spot" from manufacturing, that already had a repair sleeve on it.

There are 788 sleeves on the Index 129 pipeline from Edna, Texas, to Sterlington, Louisiana; and, 726 sleeves on the Index 130 pipeline from Marchand Junction, Louisiana to Kosciusko, Mississippi. Both were built from pipe made in 1952.<sup>[514][515][516]</sup>

- On January 16, a transmission pipeline operated by Kinder Morgan subsidiary Southern Natural Gas had an equipment malfunction in Walthall County, Mississippi.<sup>[517]</sup>
- On January 17, oil from a broken pipeline seeped into the Yellowstone River, and contaminated the water supply 10 miles south of Glendive, Montana. The release was from Bridger Pipeline LLC's 12-inch Poplar line, which can carry 42,000 barrels a day of crude from the Bakken Formation and runs from Canada south to Baker, Montana. Bridger Pipeline is a subsidiary of True Cos., a privately held Wyoming-based company. The company said in a statement that the pipeline was shut down within an hour of the leak. About 30,000 gallons of crude was spilled, with about 28,000 gallons of crude being lost.<sup>[518][519][520]</sup>
- On January 21, a petroleum products pipeline in Honolulu, Hawaii ruptured, due to external corrosion, spilling about 42,000 gallons of petroleum product, of which about 22,000 gallons was lost.<sup>[521]</sup>
- On January 21, a crude oil pipeline pump station caught fire northwest of Texas City, Texas. Texas City fire officials said that company officials reported that there had been issues with the pump station over the weekend.<sup>[522]</sup>
- On January 26, a 20-inch Enterprise Products ATEX pipeline carrying ethane exploded and burned in Brooke County, West Virginia. Despite snow in the area, five acres of woodlands burned, and 1,283,000 gallons of ethane were consumed, or lost. The fireball melted siding on nearby homes and damaged power lines; it is believed that day's snowy weather lessened the damage. Reports suspect a girth weld failure from ductile tensile overload, with the pipeline being less than two years old. There were no injuries.<sup>[449][523][524][525]</sup>
- On January 29, near Bowling Green, Missouri, a rupture in a Rockies Express 42-inch natural gas pipeline blew a 20 by 20-foot crater and forced a six-hour evacuation of 50 families. The rupture occurred in a vacant field a few yards east of Pike County Road 43. Strong winds helped dissipate gas until a temporary cap was put in place.<sup>[526]</sup> This explosion caused \$2,672,345 in property damage and was due to a fault in the pipe's fabrication or construction.<sup>[527]</sup>
- On February 10 in Hopkinton, Massachusetts, the temperature caused "natural force damage" to a Kinder Morgan Tennessee Gas Pipeline, causing \$55,150 worth of property damage.<sup>[517]</sup>
- On February 17, a suspected electrical arc made a hole in a Marathon Petroleum pipeline in Shively, Kentucky, spill about 6,700 gallons of jet fuel. More than 2,500 tons of soil were removed to clean up the area.<sup>[528][529]</sup>
- On February 25, a 26-inch crude oil pipeline in Navarro County near the Town of Dawson, Texas, failed, spill about 50 barrels of crude oil. Near the failure, investigation showed that the pipe had lost about 80% of its thickness, due to external corrosion. This anomaly was not seen in a 2011 test of this pipeline.<sup>[530]</sup>
- On March 2, a Kinder Morgan Tennessee Gas Pipeline leaked due to equipment failure, causing \$281,890 of property damage in Marshall, Mississippi.<sup>[517]</sup>
- On March 13 a pipeline Patrol pilot identified an oil sheen on a pond near Tehuacana Creek, Texas which was then linked to a leaking 10 inch petroleum products pipeline. About 50 barrels of diesel fuel were spilled.<sup>[531]</sup>
- On March 20, a pipe owned by Kinder Morgan subsidiary Southern Natural Gas failed in Rolling Fork, Mississippi, and on March 23, another of that subsidiary's pipes failed due to equipment malfunction in Augusta, Georgia, causing \$311,785 in property damage.<sup>[517]</sup>
- On April 9, 2 Williams Companies pipelines broke within hours of each other in Marshall County, West Virginia. A 4-inch condensate pipeline broke at 8 pm local time, spilling about 132 barrels of condensate into a creek. Around 10:50 pm local time, a 12-inch gas pipeline ruptured. There was no fire or injuries. Heavy rains were said to be the cause of the failures.<sup>[532][533]</sup>
- On April 13, a Kinder Morgan / Natural Gas Pipeline Co. of America pipeline exploded and burned near Borger, Texas. One home was evacuated, but, there were no injuries. The explosion, caused by equipment failure due to environmental cracking, caused \$455,000 in property damage.<sup>[534]</sup>
- On April 17, a 12-inch natural gas pipeline near Fresno, California operated by Pacific Gas and Electric Corp was ruptured by a backhoe. The resulting explosion killed 1 person and injured 12 others.<sup>[535]</sup>
- On May 15, Kinder Morgan's Tennessee Gas Pipeline leaked in Powell County, Kentucky causing \$23,400 in property damage.<sup>[517]</sup>
- On May 19, a Plains All American Pipeline oil pipeline ruptured near Refugio State Beach, also near Goleta, California, spilling about 124,000 gallons of crude oil. It is referred to as the Refugio Oil Spill.<sup>[536][537]</sup>
- On May 31, a 24-inch natural gas back-up pipeline that runs under the Arkansas River in Little Rock, Arkansas ruptured releasing 3.9 million cubic feet of natural gas. The pipeline was not currently in use. No one was injured. A tugboat was damaged.<sup>[538][539]</sup>
- On June 9 in Moorehouse Parish, Louisiana, Kinder Morgan's Tennessee Gas Pipeline equipment failed, due to environmental cracking, and leaked, causing \$73,395 in property damage.<sup>[517]</sup>

- On June 9, a 24-inch natural gas pipeline ruptured in Lycoming County, Pennsylvania. About 130 individuals were evacuated from their homes. No injuries or damage reported. there was no fire The cause was Stress corrosion cracking.<sup>[540][541]</sup>
- On June 10, Kinder Morgan's El Paso Natural Gas control/relief equipment failed and leaked in Gray County, Texas.<sup>[517]</sup>
- On June 13, a 42-inch gas gathering pipeline exploded and burned near Cuero, Texas. 7 homes were evacuated for a time, but there were no injuries.<sup>[542]</sup>
- On June 15, Kinder Morgan's Natural Gas Pipeline Co. of America equipment failed for unknown causes, with \$260,555 of property damage in Marshall, Texas (that area's third documented Kinder Morgan leak).<sup>[517]</sup>
- On June 18, in Victoria Texas, Kinder Morgan's Tennessee Gas Pipeline pipe failed due to external corrosion and caused \$159,346 in property damage).<sup>[517]</sup>
- On June 22, a truck driver was killed when his rig veered off a highway and broke above ground facilities for a propylene pipeline in Houston, Texas. The highway was closed for several hours while the gas dissipated.<sup>[543]</sup>
- Four workers were hurt on June 25, when a 4-inch gas pipeline exploded at a gas pipeline facility, near White Deer, Texas. 2 of the workers were critically injured. The cause of the explosion was not immediately known.<sup>[544]</sup>
- On July 10, a fitting on a 20-inch Plains All American Pipeline crude oil pipeline broke, spilling 4200 gallons of crude oil near Grantfork, Illinois. Much of the crude reached a nearby creek. There were no injuries.<sup>[545]</sup>
- On July 15, two workers were hurt by an explosion, when a bulldozer hit a 4-inch gas pipeline, at an EQT gas compressor station in Worthington, Pennsylvania.<sup>[546]</sup>
- On August 3, a Tennessee Gas Pipeline natural gas pipeline operated by Kinder Morgan ruptured and exploded, with \$191,498 in property damage. Later investigation showed that the pipe split along an ERW seam, but, the failure was from stress corrosion cracking.<sup>[547][548][549]</sup>
- On August 7, a natural gas liquids pipeline in Weld County, Colorado burned, after being struck by a third party.<sup>[550]</sup>
- On August 13, crew working for Colonial Pipeline damaged one of Colonial's lines in Kannapolis, North Carolina, spilling about 6,000 gallons of petroleum product. About 1,000 gallons of product was lost.<sup>[205]</sup>
- On August 13, a natural gas pipeline in Cypress, Texas ruptured and leaked while a contract crew worked in the area. The pipeline was owned by GULFSOUTH Pipeline. There were no injuries or immediate damage; residents were evacuated.<sup>[551]</sup>
- On August 26, two maintenance divers were injured while working on a pipeline owned by Boardwalk/Gulf South Pipeline Co. 25 miles offshore of Louisiana when the pipeline ruptured, and the gas ignited.<sup>[552]</sup>
- On September 21, a Colonial Pipeline 32 inch main line was discovered to be leaking in Centreville, Virginia. At least 7,000 gallons of gasoline were spilled, forcing several nearby businesses to close.<sup>[553][554]</sup>
- On October 8, an explosion occurred at a Williams Companies pipeline facility in Gibson, Louisiana. 4 employees were killed, and, one other injured. The cause of the explosion was from procedure not being followed during welding work.<sup>[555][556][557]</sup>
- On November 15, work was being performed on a flow control valve, on a Sunoco 10 inch crude oil pipeline, in Wortham, Texas, when the valve failed, injuring 5 workers, and spilling some crude oil. It was later determined that the valve was under 400 psi of nitrogen pressure when it was being worked on.<sup>[558]</sup>
- On November 30, about 11,000 gallons of gasoline, butane and propane leaked from a pipeline, in eastern Summit County, Utah.<sup>[559]</sup>
- On December 1, personnel from Enterprise Crude Pipeline, LLC (Enterprise Products), discovered a spill at their West Cushing Tank Farm in Cushing, Oklahoma. Approximately 42,000 gallons of crude oil were released within the terminal. A tank line had failed from internal corrosion.<sup>[560]</sup>
- On December 8, a contractor drilled into an 8-inch buried oil line (200 mm), that transports oil from a holding station in Ventura, to a Wilmington refinery, near Long Beach, while setting new poles for Southern California Edison along State Route 118 near Somis that spilled about 7,980 U.S. gallons (190 barrels).<sup>[561]</sup>

## 2016   [ edit ]

- On January 2, 3 people were injured, one seriously, one home destroyed, and 50 homes were damaged in Oklahoma City, Oklahoma, when a leak gas from a gas main entered a home. Preliminary results indicate that a leak occurred at a weld seam on the gas main. Later, Oklahoma regulators filed a complaint over the failure with Oklahoma Natural Gas. The complaint alleged the utility failed to properly inspect its system following eight previous leak failures in the neighborhood going back to 1983.<sup>[562][563]</sup>



- On January 9, a 30-inch Atmos Energy gas transmission pipeline exploded and burned in Robertson County, Texas. 4 families nearby were evacuated.<sup>[564]</sup>
- On January 11, butane leaking from a pipeline storage facility, in Conway, Kansas, forced a closure of a nearby highway for a time.<sup>[565]</sup>
- On February 14, a 6-inch crude oil pipeline broke near Rozet, Wyoming, spilling about 1,500 gallons of crude oil into a creek bed.<sup>[566]</sup>
- On February 16, an explosion and fire occurred at a gas plant in Frio County, Texas. 2 employees at the plant were injured.<sup>[567]</sup>
- On February 24, a 10-inch propane pipeline exploded and burned, near Sulphur, Louisiana. There were no injuries. About 208,000 gallons of propane were burned. The cause was from manufacturing defects.<sup>[568][569]</sup>
- On March 11, about 30,000 gallons of gasoline spilled from a leaking plug on a pipeline, at a tank farm in Sioux City, Iowa.<sup>[570]</sup>
- On March 22, about 4,000 gallons of gasoline spilled from a 6-inch petroleum products pipeline in Harwood, North Dakota.<sup>[571]</sup>
- On April 2, the TransCanada Corporation Keystone Pipeline was observed by a local resident to be leaking, near Freeman, South Dakota. The cause was a crack in a girth weld, and amount of tar sands dilbit spill was about 16,800 gallons.<sup>[572][573]</sup>
- On April 12, a pipeline at a gas plant in Woodsboro, Texas exploded, killing 2 men, and injured another worker.<sup>[574]</sup>
- On April 17, a 10 petroleum products pipeline failed in Wabash County, Illinois, resulting in a sheen on the Wabash River. About 48,000 gallons of diesel fuel was spilled.<sup>[575]</sup>
- On April 29, a 30-inch Texas Eastern/Spectra Energy pipeline exploded, injuring one man, destroying his home and damaging several others. The incident was reported at 8:17 a.m., near the intersection of Routes 819 and 22 in Salem Township, Westmoreland County, Pennsylvania. Later, Spectra Energy Corp. announced plans to dig up and assess 263 miles of that pipeline, from Pennsylvania to New Jersey. Corrosion had been detected at the failed seam 4 years before the rupture.<sup>[576][577][578]</sup>
- On May 20, a Shell Oil Company pipeline leaked near Tracy, California, spilling about 21,000 gallons of crude oil.<sup>[579]</sup>
- On June 23, a Crimson Pipeline crude oil line leaked in Ventura County, California. Initial reports said the spill size was from 25,200 gallons to 29,000 gallons, but, later reports estimate 45,000 gallons of crude were spilled.<sup>[580][581]</sup>
- On July 6, a Plantation Pipeline line was noticed to be leaking in Goochland County, Virginia. The spill did not reach nearby waterways.<sup>[582]</sup>
- On August 12, contractors were working on one of the main lines in Sunoco Pipeline LP's Nederland, Texas terminal when crude oil burst through a plug that was supposed to hold the oil back in the pipeline and ignited. The contractors were knocked off the platform to the ground, suffering injuries from the fall and severe burns. 7 contractors were injured.<sup>[583]</sup>
- On September 5, a pipeline in Bay Long, Louisiana was hit by dredging operations, resulting in a spill of about 5,300 gallons of crude oil into the water.<sup>[584]</sup>
- On September 9, a Colonial Pipeline mainline leak was noticed by workers on another project, in Shelby County, Alabama. At least 252,000 gallons of gasoline leaked from line.<sup>[585][586]</sup>
- On September 10, a Sunoco pipeline ruptured near Sweetwater, Texas. About 33,000 gallons of crude oil were spilled. The pipeline was just over a year old.<sup>[587]</sup>
- On October 11, two Nicor Gas workers were injured, and two townhouse units destroyed in a massive fire and explosion, caused by a gas leak in Romeoville, Illinois.<sup>[588]</sup>
- On October 17, an 8-inch ammonia pipeline started leaking, near Tekamah, Nebraska. A farmer living nearby went to find the source of the ammonia, and was killed by entering the vapor cloud. About 50 people were evacuated from their homes.<sup>[589]</sup>
- On October 19, a contractor in Portland, Oregon hit a 1-inch gas pipeline during work. Within an hour, there were 2 explosions, injuring 8 people, destroying or damaging several buildings, and started a fire. Contractors claim a utility locate was done before work began.<sup>[590]</sup>
- On October 21, an 8-inch Sunoco pipeline ruptured in Lycoming County, Pennsylvania, spilling about 55,000 gallons of gasoline into the Susquehanna River. The river was running high at the time.<sup>[591]</sup>
- On October 23, a pipeline ruptured on the Seaway Pipeline, in Cushing, Oklahoma, spraying the area with crude oil. About 319,00 gallons of crude were spilled. The cause was from prior excavation damage.<sup>[592][593]</sup>
- On October 31, a Colonial Pipeline mainline exploded and burned in Shelby County, Alabama, after accidentally being hit by a track hoe. One worker died at the scene, and 5 others were hospitalized, with one of



those workers dying a month later. The explosion occurred approximately several miles from the 9 September 2016 breach.<sup>[594][595][596]</sup>

- On November 29, an Enterprise Products pipeline exploded in Platte County, Missouri, burning an ethane propane mixture. There were no evacuations or injuries.<sup>[597]</sup>
- On December 2, equipment failure in a Denbury Resources source water pipeline led to a leak of approximately 84,000 gallons of source water into Skull Creek, in Bowman County, North Dakota.<sup>[598]</sup>
- On December 5, a 6-inch Belle Fourche pipeline spilled 529,800 gallons of crude oil, into Ash Coulee Creek, in Billings County, North Dakota.<sup>[599][600]</sup>
- Sometime in December, a natural gas pipeline running beneath Turnagain Arm in Cook Inlet, near Nikiski, Alaska, southwest of Anchorage ruptured, leaking large quantities of natural gas into the water.<sup>[601]</sup>

## 2017 [ edit ]

- On January 7, a Colonial Pipeline stubline leaked gasoline into Shoal Creek, in Chattanooga, Tennessee.<sup>[602]</sup>
- On January 14, the Ozark Pipeline, an Enbridge, now Marathon, division, spilled about 18,900 gallons of light oil, at the Lawrence Pump Station, near Halltown, Missouri.<sup>[603]</sup>
- On January 16, a gas pipeline exploded and burned, near Spearman, Texas. There were no injuries.<sup>[604]</sup>
- On January 25, a Magellan pipeline leaked 46,830 gallons (1,115 barrels) of diesel fuel onto private agricultural land, in Worth County, Iowa, near Hanlontown.<sup>[605][606]</sup>
- On January 30, a Texas Department of Transportation crew dug into the 30 inch Seaway Pipeline, near Blue Ridge, Texas, spraying crude oil across road. About 210,000 gallons of crude were spilled. There were no injuries.<sup>[607][593]</sup>
- On January 31, a DCP pipeline exploded under a runway, at Panola County Airport-Sharpe Field in Texas. There were no injuries, but the airport will shut that runway down for an extended amount of time.<sup>[608]</sup>
- On February 10, a Phillips 66 natural gas liquids pipeline (TENDS pipeline Sorrento system)<sup>[609]</sup> near the Williams-Discovery natural gas plant on US Route 90 near Paradis, Louisiana exploded while being cleaned, killing one worker, and sending another worker to a burn unit. Traffic on US 90 and La 631 was shut down and residents in the area evacuated.<sup>[610][611]</sup>
- On February 15, a 36-inch Kinder Morgan gas pipeline exploded and burned in Refugio County, Texas. There were no injuries.<sup>[612]</sup>
- On February 27, a crude oil pipeline ruptured in Falls City, Texas. spilling about 42,630 gallons of crude oil. The cause was from internal corrosion.<sup>[593]</sup>
- On March 29, a natural-gas leak of a high-pressure pipeline, in Providence, Rhode Island, owned by Spectra Energy, released about 19 million cubic feet of natural gas, or enough natural gas to heat and keep the lights on for 190,000 homes for a single day. Approximately two gallons of polychlorinated biphenyls (PCBs) were also released, in the form of contaminated natural gas condensate.<sup>[613]</sup>
- On April 4, a pump on the Dakota Access Pipeline spilled about 84 gallons of oil, at a pump station in Tulra, South Dakota. The leak was not noticed until May 9.<sup>[614]</sup>
- On April 13 and 14, it was discovered that Energy Transfer Partners spilled drilling fluid into two separate wetlands in rural Ohio while constructing the Rover Pipeline. The spills occurred in wetlands near Richland County, Ohio. The spill on the 13th released 2 million gallons of drilling fluid and the spill on the 14th released approximately 50,000 gallons of drilling fluid.<sup>[615][616]</sup>
- On April 21, a Plains All American Pipeline, experienced a crude oil release on the Buffalo Pipeline, near Loyal, Oklahoma. About 19,000 gallons of crude oil was spilled.<sup>[617]</sup>
- On April 22, a 1,050-gallon oil pipeline spill near Bismarck, North Dakota polluted a tributary of the Little Missouri River, but was prevented from flowing into the larger waterway.<sup>[618]</sup>
- On May 8, a Wood River Pipelines (part of Koch Industries) line broke in Warrensburg, Illinois, spill 250 gallons of crude oil.<sup>[619]</sup>

## References [ edit ]

1. <sup>a</sup> <sup>b</sup> <sup>c</sup>

August 17, 2016 + June 15, 2017

Dear Mr. Asim Haque, *siting board representatives,*

I am writing you with great concern about a Duke Energy proposed high-pressure national gas pipeline through Blue Ash, my community for the last 48 years. Any one of the 3 routes will travel through highly populated neighborhoods, past schools, a hospital, shopping areas, day care centers, and houses of worship.

SAFETY is my main concern in your decision to amend the proposed routes of the Central Corridor Gas Pipeline Extension Project (Case ID 16-0253GA-BTX). I have heard Duke Energy people speak about safety but why do we in Blue Ash have to live in fear of future failures? Federal records have shown since 2010 there have been 35 explosions, 32 ignitions, with 17 people dead and 86 injured.

The OPSB must find and determine 8 criteria:

1. The need may be there but not in populated areas.
2. The impact on our property and natural environment is overwhelming.
3. Surely these routes do not represent the minimum adverse environmental impact.
4. How reliable is this proposal for the people not Duke?
5. What about our "standard of living" in Blue Ash?

6. How can ruining our yards, community areas, property value, or lives serve the public interest?
7. Our land is most important to us. Please don't turn it into a "no live" zone.
8. Please consider an alternate route that "conserves" our community and all that it has grown to be...BLUE ASH a great place to live, work, and play.

As the Chairman of the Public Utilities Commission, I ask that you reject the current proposal by Duke Energy and ask that the gas transmission lines stay clear of densely populated areas like Blue Ash. Residential population:12,000; daytime population: 40,000.

Thank you for your consideration of this matter.

Sincerely,

A handwritten signature in cursive script that reads "Joyce Seeger".

Joyce Seeger

8822 Brittany Drive

Blue Ash, Ohio 45242

Dear Sitting Board I live in Reading  
I'm very ~~involved~~ involved I swim at my  
pool I play Basket Ball I play Soft Ball,  
I go to the Public School. I live on  
the West-St. Please think of me before  
you decide what if if you lived in this  
community and what if you lived in  
this house with your child in this  
situation.

Hetic Sturgill  
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Exposition  
(10-10-11)

## Safety of the Proposed C314 Extension Pipeline based on Data from PHMSA Website

Ethan Boger, 26 May, 2017

### Purpose

The purpose of this study is to help evaluate the safety of Duke Energy Ohio's proposed 20-inch pipeline (aka the Central Corridor Gas Pipeline Extension Project), filed under PUCO Docket #16-0253-GA-BTX, based on historical incident data recorded on the PHMSA website, specifically data on transmission line incidents occurring between the years 2010-2016 (Reference 1). Safety is generally assessed based on the probability of failure and the consequence of failure. Together, they define the safety risk.

This study is needed in order to help assess the risk imposed by routing the proposed pipeline through a number of densely populated urban and suburban communities. Therefore, it focuses on incidents in Class 3 and Class 4 locations, i.e., those locations most likely to be highly populated. The reason for choosing to analyze the latest available data (data are available for earlier years as well) is because they reflect incidents that occurred primarily after the 2010 San Bruno disaster, after which the industry adopted more rigorous integrity management practices, similar to the practices that Duke would put into place to assure the safety of the proposed pipeline.

This study is not based on rigorous statistical analysis. However, the trends discovered, though based on a relatively sparse population of incidents, provide compelling though incomplete evidence that the integrity management practices touted by Duke and the industry are far from foolproof. In particular, the higher number of incidents per mile in Class 3 and Class 4 locations vs. all incidents, the large volume of gas released per incident and the significant property damage per incident are strong indicators that the industry has not found adequate solutions for the protection of pipelines or the protection of residents in densely populated areas.

In its 2015 safety study of gas pipelines in high consequence areas (HCA's) (Reference 3), the NTSB reached a similar conclusion. Quoting from the abstract: "This study found that while the PHMSA's gas integrity management requirements have kept the rate of corrosion failures and material failures of pipe or welds low, there is no evidence that the overall occurrence of gas transmission pipeline incidents in HCA pipelines has declined."

The term "incident" as defined in 49CFR191.3 (Reference 2) is "an event that involves release of gas from a pipeline ...and that results in one or more of the following consequences:

- (1) Death or personal injury necessitating in-patient hospitalization
- (2) Estimated property damage of \$50,000 or more
- (3) Unintentional gas loss of 3000 mcf or more..."

While Duke claims to the contrary, the proposed pipeline most definitely meets the definition of a transmission line, based on its size and MAOP (500 psi) and based on its purpose – to transmit gas from an existing transmission line by extension to a distribution hub without any planned branches in-between.

## Method

This study examines the data provided in the PHMSA database, in particular data on incidents occurring in Class 3 and Class 4 locations. The PHMSA database is huge and contains a wealth of information on each specific incident. This study focuses only on the number of incidents per year, the amount of gas released and the property damage incurred. The data were segregated by year and the results graphed and trend-lines drawn. These trend lines were compared to trend lines for overall incidents.

## Data Analysis – All Incidents

There are approximately 300,000 miles of natural gas transmission lines in the US. Approximately 20,000 miles (6.7%) are in Class 3 and Class 4 locations (Reference 3, Table 5), which are typical for the proposed pipeline. The database records 841 total “incidents” that occurred between 2010 and 2016 for all transmission lines, or, 4.0 E-4 incidents per mile per year. The number of incidents per year has trended flat at about 120 per year (Figure 1).

Overall, the 841 incidents resulted in 20 fatalities, 89 injuries, 8242 evacuees and \$973 million in property damage. Note: the property damage total includes \$558 million due to the San Bruno incident. Three other incidents resulted in property damage averaging \$26 million. Without these four, the property damage total was \$336 million, or \$402,000 per incident on average.

The total number of incidents per year over this time period, the amount of gas released and the value of property damage are shown in Figures 1, 2 and 3. Note: Figure 3 excludes property damage due to the San Bruno incident and three others as discussed above.

Figure 1. Transmission Line Incidents per Year, 2010 - 2016

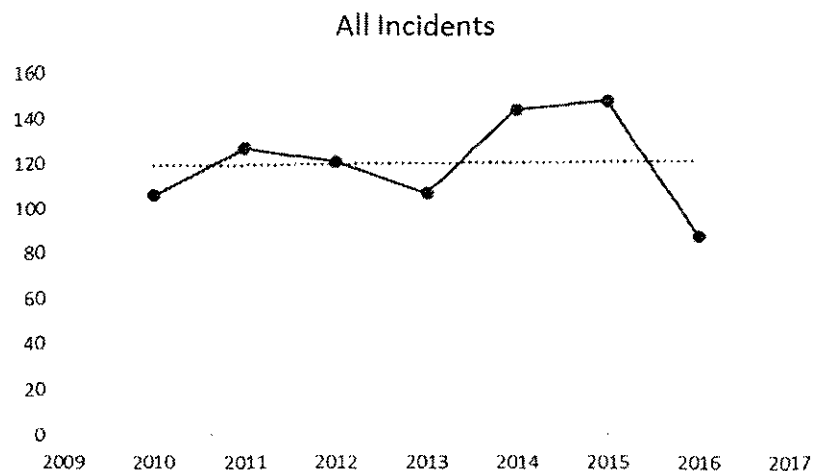


Figure 2. Average Gas Release per Incident (MCF), All Incidents, 2010-2016

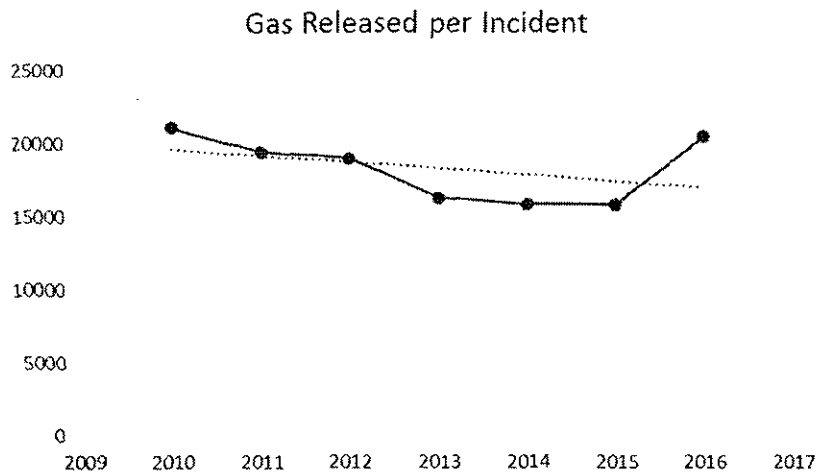
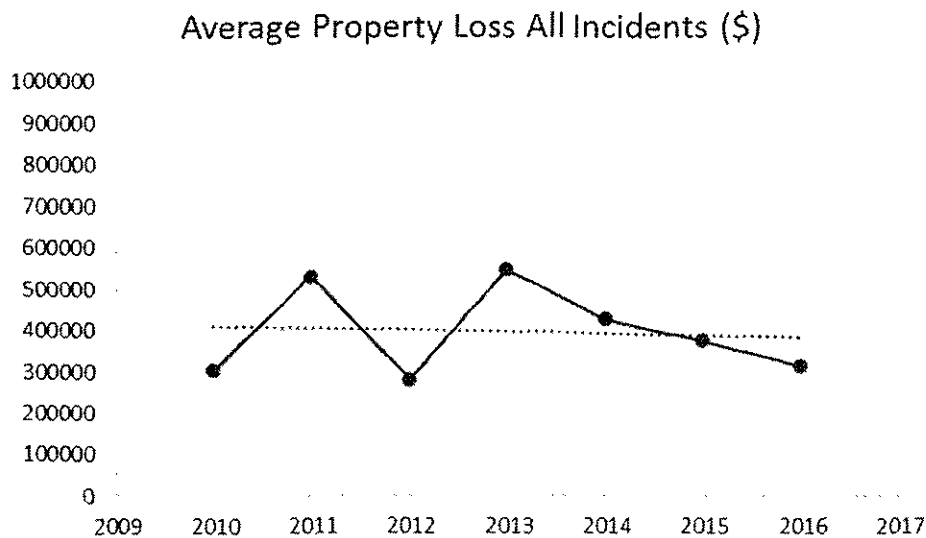


Figure 3. Average Property Damage (\$) per incident (less four outlier incidents)



#### Data Analysis – Incidents in Class 3 and Class 4 Locations

As mentioned above, 103 of 841 total incidents in the 2010-2016 timeframe occurred in Class 3 and Class 4 locations. Analysis of these incidents is particularly germane to this study, since Class 3 and Class 4 locations are populated areas similar to the routes proposed for the Duke pipeline.

The incident rate in Class 3/4 locations can be computed by dividing the total number (103) by seven (years) and by the total number of HCA miles (20,000) =  $7.5 \text{ E-}4$  incidents/mile/year. Thus, incidents in Class 3/4 locations occurred at about twice the average rate of all incidents ( $4.0\text{E-}4$ /mile/year). The total property loss for this subset of incidents over the seven year study period

was \$36.5 million, or approximately \$360,000 per incident on average. Also of interest is the average amount of gas released per incident, approximately 15,000 mcf, which is roughly the same for Class 3/4 incidents and for all incidents.

As a point of reference, 15,000 mcf is the average hourly rate of gas consumption for the entire Cincinnati metropolitan area served by Duke (approximately 500,000 customers) in the coldest month (January). The energy content of 15,000 mcf is approximately 15 billion BTU, equivalent to 3,750 tons of TNT, although, release of this energy in natural gas ignition is primarily by radiant heat rather than by blast.

The total number of Class 3 and Class 4 location incidents per year over this time period, the amount of gas released and the value of property damage are shown in Figures 4, 5 and 6.

Figure 4. Transmission Line Incidents in Class 3 and Class 4 Locations per Year, 2010 - 2016

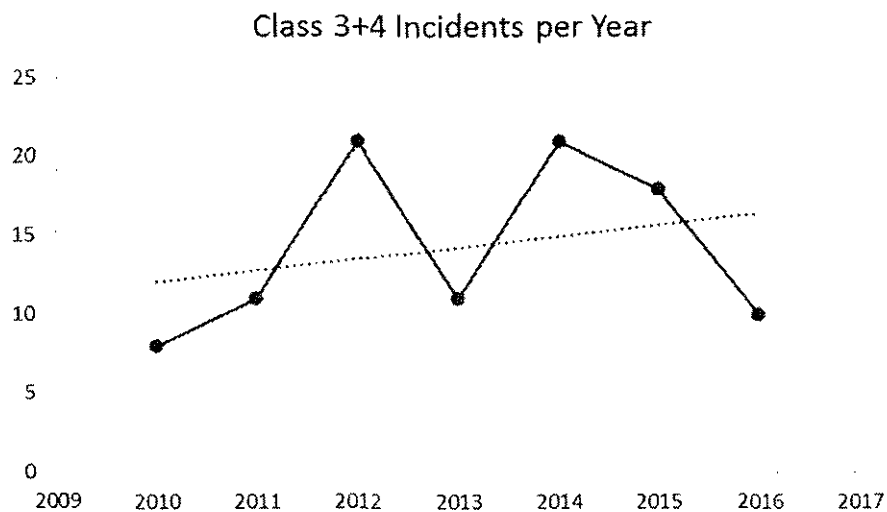


Figure 5. Average Gas Release per Incident (MCF), Class 3 and Class 4 Locations, 2010-2016

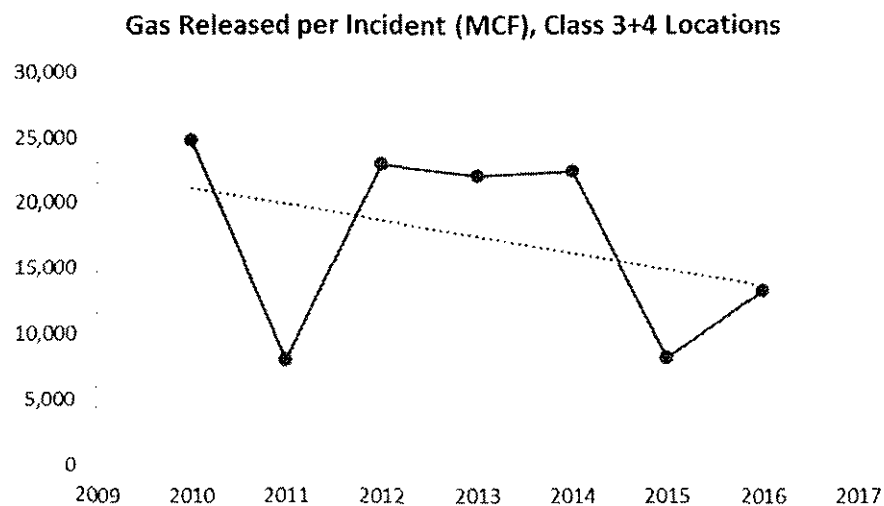
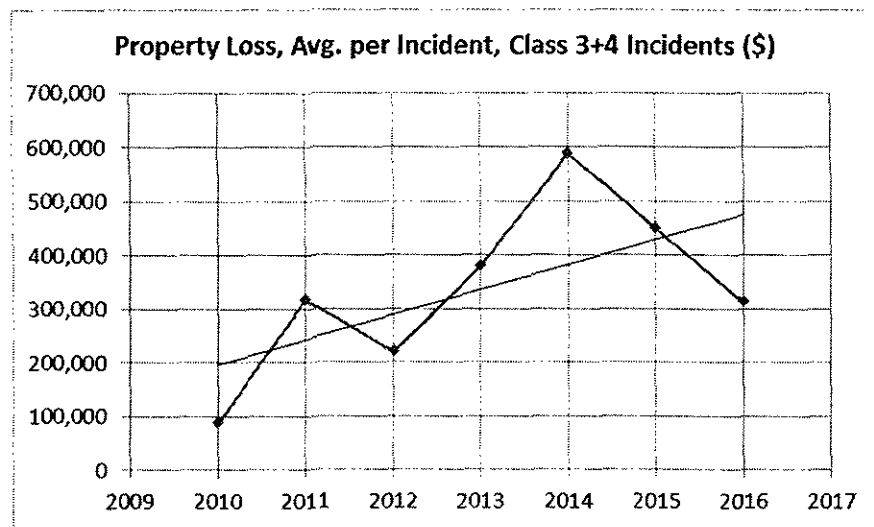




Figure 6. Average Property Damage (\$) per incident, Class 3 and Class 4 Locations, 2010-2016



### Discussion

In comparing the rate of incidents, the amount of gas released per incident and the property loss per incident, it is apparent that pipelines in Class 3 and Class 4 locations are significantly more vulnerable to failure resulting either in loss of life, injury or significant property loss. Of concern is the trend in number of incidents per year and property loss per incident, both rising in Class 3 and Class 4 location incidents over the seven year data period.

The reasons for the higher rate of incident in Class 3/4 locations have been discussed at length in the literature (References 3 – 8). It is primarily due to the higher rate of third party damage such as excavation. This is to be expected in densely populated areas where repairs to roads, sewers, new building construction, etc. increase the likelihood of excavation damage.

The incident rate in Class 3/4 locations during the past seven years has been  $7.5E-4$  incidents per mile per year. For the proposed pipeline, which is 14 miles long and has a 50-year life the expected incident rate is  $7.5E-4$  incidents per mile per year  $\times$  14 miles  $\times$  50 years = 0.53 incident per lifetime. I.e., there is a fair likelihood of one incident occurring during the lifetime of the pipe.

### Conclusion

The study evaluates the safety of the proposed Duke pipeline based on the historical rate of incidence, average release rate of gas and the average property loss per incident in similar Class 3 and Class 4 locations. Based on the historical data for similar pipelines, the probability of a significant incident occurring within its lifetime is unlikely, but the consequences of failure could be severe, based on the amount of gas released and property damage. Thus, it is concluded that the overall risk (probability of failure and consequence of failure) imposed on densely populated areas is high.

## References

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2. 49CFR191.3, Definitions
3. Integrity Management of Gas Transmission Pipelines in High Consequence Areas, NTSB/SS-15/01/PB2015-102735, January 2015
4. Risk and uncertainty analysis of gas pipeline failure and gas combustion consequence, Stoch Environ Res Risk Assess (2014), 28:1431–1446
5. Natural Gas Pipeline Safety and Reliability: An Assessment of Progress, Van Ness Feldman, LLP for the American gas Foundation (2015)
6. Statistical analyses of incidents on onshore gas transmission pipelines based on PHMSA database, International Journal of Pressure Vessels and Piping 145 (2016) 29e40
7. 7th Report of the European Gas Pipeline Incident Data Group (2008)
8. An Integrated Quantitative Risk Analysis Method for NG Pipeline Network. Journal of Loss Prevention in the Process Industries, 23, 428-436

June 11, 2017

Mary Gilbert  
107 West Pleasant Street  
Reading, OH 45215

To whom it may concern:

I am unable to attend the meeting due to being out of town, but wanted my voice heard as a concerned citizen about the proposed gas pipeline.

According to the map, my home is only 55 feet from of Duke Energy's proposed natural gas pipeline. This puts me squarely within the danger zone based on Duke's estimation of the impacted area should there be a pipeline explosion. We have a lot of children and grandchildren in this neighborhood. In addition, the stadium, fieldhouse and pool are also nearby. Many children are in this area on a daily basis. I feel this pipeline puts us all at unnecessary risk.

In addition to the risks should this pipeline be installed, building this pipeline is a major undertaking, requiring at least a 30-foot clearing on either side of the pipeline to bury it underground. Trees, natural habitats, roads and even people's property may be unnecessarily destroyed in order to lay this pipeline.

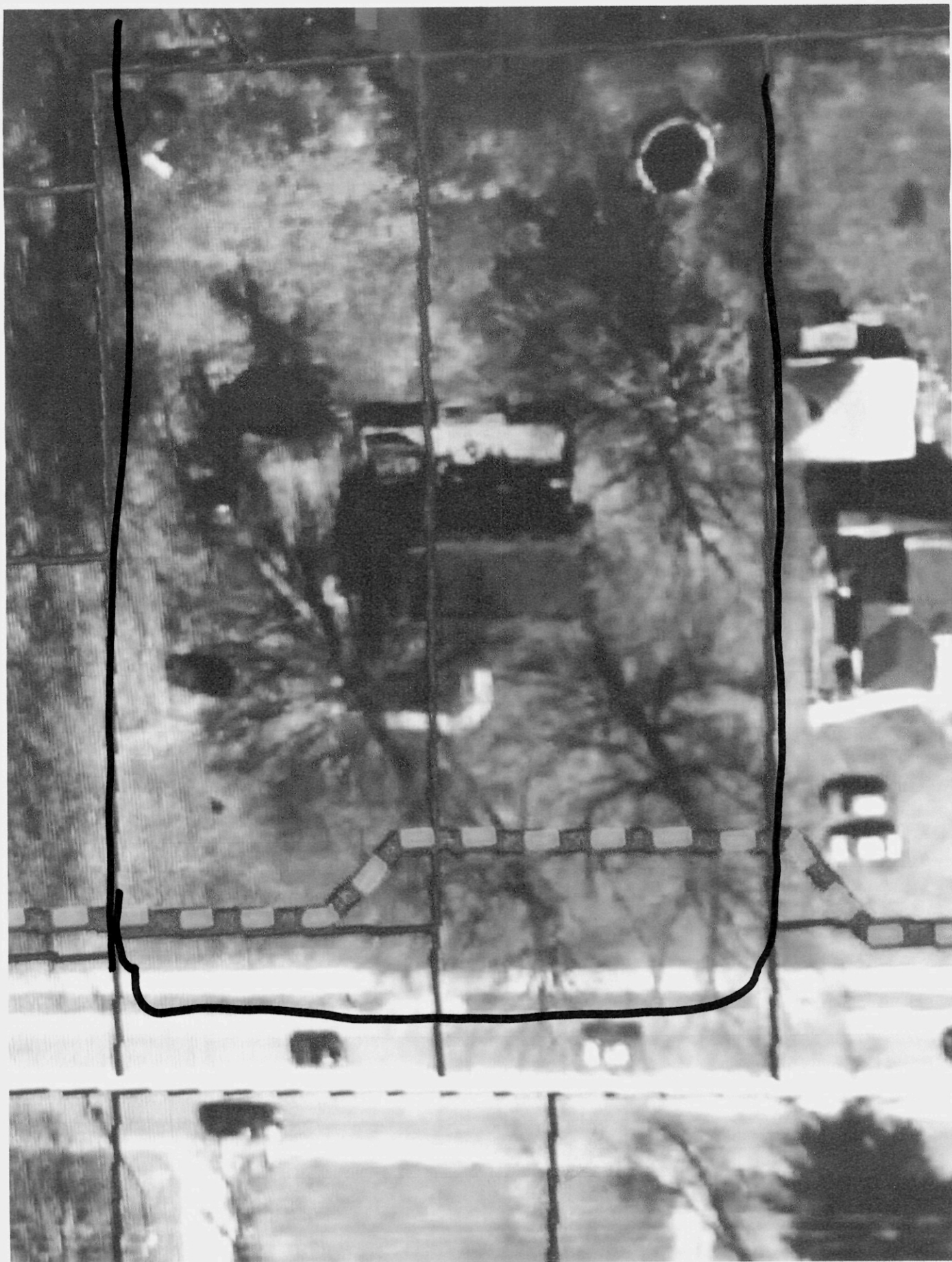
Duke claims that it is trying to serve the area, and that this project will allow the company to retire propane-powered "peak shaving" facilities that provide extra energy during peak demand. Based upon NOPE's analysis, the "peak shaving" facilities can be repaired or replaced for far less money than the cost of this \$100 million pipeline. Additionally, the proposed project would supply far more gas than is necessary to meet current and forecasted demand.

Therefore, this pipeline is unnecessary, irresponsible and not in the best interest of our communities.

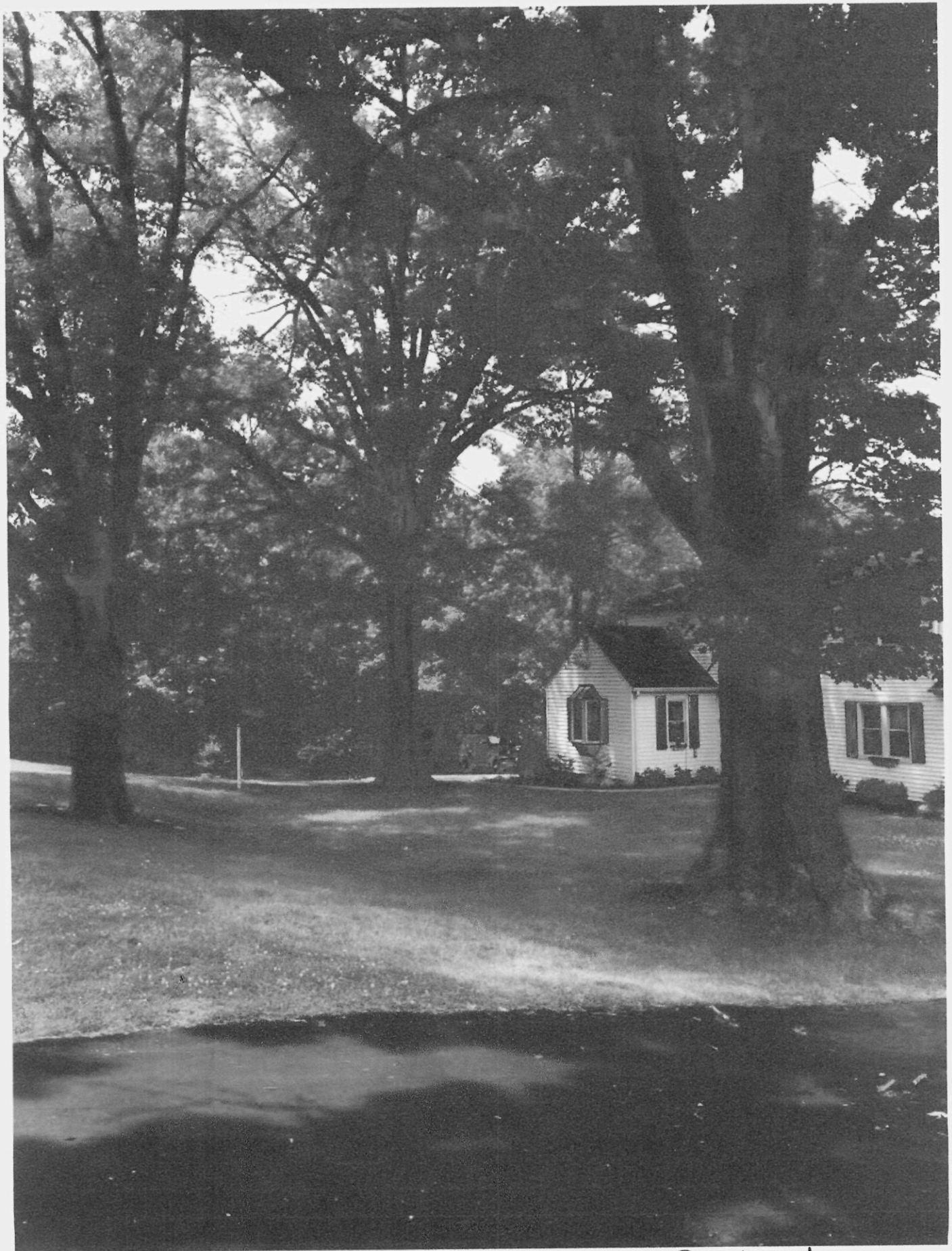
Please hear our concerns and, if new natural gas infrastructure is necessary in our area, that it be handled safely and responsibly.

Sincerely,

Mary Gilbert



Overly, 41026 Glendale Milford Rd.



Overly, 41026 Glendale Milford Rd.

JUNE 15, 2017

First of all, this is only about profiting more money and it is very apparent it has nothing to do with the needs and safety of the people in residential and commercial areas.

Second, Energy companies, including Duke, have already lobbied the government to pass environmental laws years ago, only because they would have to build their own roads to put this pipeline in. This costs more money. Energy companies have already lobbied Congress to pass laws and regulations to have the HVAC industry mandatorily increase the energy efficiency ratings of heating and cooling systems, lighting industries, etc., only to sell that saved energy to another customer without expanding their systems. Why else would they give you free energy efficient light bulbs? Nothing is free, the cost of doing business is at the ratepayers expense.

Third, Now Duke has reached that threshold and say they now have to expand their gas pipeline, not for the use of the communities they go through, but are able to sell to the public more cheaply and in less time, than dealing with the Federal Government. The only reason Duke Energy doesn't run their pipeline down the interstate system is due to the governments involved in the properties, know what the cost of easement rights are and the length of time to obtain them. So it's easier to approach what Duke says is necessary for them, in this way, only to do this project cheaper and defraud the public, residential neighborhoods, industries, schools, shopping centers, day care centers, churches, community recreation centers, public athletic fields and parks involved, knowing they will get a lower easement price from the unknowing public. Duke is not doing us a service, they are trying to paint that picture, bait and switch, but are doing a disservice for all the areas involved.

Siting Board "Look" at the impact it will have on the proposed lines, you walk them or fly over them, see and view what will be lost and not replaced. I'm sure there is a computer wiz or an app available for you to view in reality as before and after. The decision you make is based on what? That is why I'm here. Thank you for your time and listening, now do your own discovery.

Jeff Kemp of JC Kemp Company

10417 Sharondale Road, Cincinnati, The Village of Evendale, OH 45241

513-703-4897

Hello, I'm Patty Kreitinger. My property is 365 ft from the orange line. According to one published natural gas pipeline model, I have a 100% chance of death in 5 minutes & 52 seconds if an incident occurs.

Gas pipelines fail. It's not a matter of "if", it's a matter of "when". In Kenwood the orange route goes by nursing homes, 2 sides of Jewish Hospital, by churches and their schools, the Kenwood Towne Center shopping mall, gas stations, much less all the residences. I support natural gas, however the routing of a 20-inch diameter, 400 PSI transmission pipeline through such a densely populated area is a major safety concern.

The current measured sound level from I-71 in my yard is 56 dB (avg.). The proposed transmission line will remove hundreds of feet of trees, trees that act as a natural sound barrier. The pipeline will increase noise levels at my home, further disrupting sleep which has a known impact on health.

Duke states there is a need for this transmission line. They would like to balance the gas pressure coming from the south of Cincinnati to avoid brown outs. Duke must prove a "real" need for this transmission line in our community. The peaking plant industry is alive and well and a lot less expensive. This \$100 million-dollar proposed pipeline will increase rates for all residents of Hamilton county. It will deliver far more gas than current projected demands. Who is benefiting from this project?

There are other issues I would like to mention:

- Increased cost for homeowner's insurance for those on the line
- The need for first responder to create, practice, and implement emergency response plans in case of an explosion.
- Some neighborhoods have one way in and out. An explosion could trap the residence and/or prevent the first responder from getting in to help
- Lowering property values which in turn will lower the tax base

I didn't build our house near this transmission line, the transmission line is being built near my house.

I oppose the proposed natural gas transmission line.

Thank you,



Patty Kreitinger



6/15/17

My name is Mary Kate Cooper. I reside in the Park Hills neighborhood of Evendale with my husband, 4 year old daughter and 2 year old son.

Here are my children, Lydia and Sam.



I spend most of my days with my young children in and around Evendale. On any given day you can find us at the Rec center, the pool, the park, or soccer field. Our little village is an ideal spot for a magical childhood.



Here are my children with all of their friends at the Evendale recreation center.



All of these childhood spaces are directly in the blast zone of the proposed Duke Energy pipeline to be installed on the Glendale Milford route.

This pipeline puts our community at great risk. An explosion would kill our children at play and at school almost instantaneously. Do not place the lives of these children at risk for Duke Energy's reward.

I implore the board to fully investigate Duke Energy's claims on the supposed need for this risky pipeline. They have not proven the need for dangerous and costly infrastructure. I demand that Duke provide concrete evidence proving the need for this pipeline.

I demand a safe place to raise my children. This pipeline is an unacceptable risk and I am asking the board to deny approval for this dangerous, destructive, and unnecessary infrastructure.

Sincerely,

Mary Kate Cooper  
3776 Sherbrooke Dr  
Cincinnati, OH 45241

6/14/17

Statement to OPSB re Duke Energy Pipeline

Duke Energy is a huge for profit corporation that is seeking to take over the energy market 100%. It has a for profit agenda, not a for customer agenda. It wants to put in a very dangerous pipeline right through neighborhoods, churches, schools, hospitals, day cares and shopping areas. They report it is "needed". I did a little research, they are planning on having a huge gas pipeline and they are to be the owners. I read the information below in the Charlotte Observer, FEBRUARY 16, 2017

"Chairman and CEO Lynn Good, in a statement, called 2016 "a transformational year for Duke Energy as we acquired Piedmont Natural Gas (for over 4 billion dollars) and exited our international business, positioning the company for more consistent earnings and cash flow growth. We continue to advance our long-term growth strategy to modernize the energy grid, generate cleaner energy and expand natural gas infrastructure." Fracked gas is by no means clean energy. It is destroying water sources and is causing earthquakes. When I called Duke Energy to find out about the gas that would be transmitted and its source, the person said they did not know, they just buy gas and have no idea where it comes from. Lying to us is unacceptable. This is a multiple state transmission line of fracked gas.

Duke owns a 47 percent stake in a company that will build and own a natural gas pipeline from West Virginia to eastern North Carolina. Duke expects an environmental study of the Atlantic Coast Pipeline to be completed by late June, with federal approval 90 days later.

I believe the pipeline proposed is for a trans american movement of fracked gas, not for the care and development of the citizens of Cincinnati and Hamilton County. They already have part of it built in Kentucky, all ready for the interstate transmission. It is not for our needs, but for their corporate profits.

Duke Energy is a company that made over 2 billion in profits in 2016, and paid ZERO, NADA, NOTHING in Federal Taxes. The money they make does not go back into infrastructure, that is paid for by rate hikes and making customers pay for lines and other charges. The bill I receive is rats nest of charges. You can use no gas at all and still pay Duke Energy \$30 a month. Now that is a real RACKET. Energy conservation is the farthest thing from their corporate minds. By allowing this development, we are committing to dirty fuel for decades. I am paying for it, not Duke Energy. They sweep the profits off to the share holders.

Duke Energy cares nothing at all for people, children. They do not live in the blast zone. They are bringing a pipeline bomb. They report the property used will be returned to its previous state. That is impossible, as they will take out all trees, not replace them. The earth will be permanently unsafe and have only grass.

Give the common person back our right to safety. Curb Corporate Greed, which is what this pipeline is. The only obstacle to their greed is OPSB, we hope.

Thank you  
Kathy H. Kugler  
7106 Tenderfoot Lane (Blast Zone Resident)  
Cincinnati, OH



Gmail

More

10:06 AM

## Statement. Concerning pipeline

Inbox x

Inbox (1,853)

Starred

Important

Sent Mail

Drafts (63)

[Gmail]/Iavendakaren...

[imap]/Sent

" " " " " "



Karen



Ezra Lavenda

Invitation sent



Naphtali Lavenda

7:13 PM (12 hours ago)

**Regina Eisenberg**

There are a great number of Jewish activities located in the Golf Manor, Blue...

7:41 AM (14 minutes ago)

**Karen**

Sent from my iPhone > On Jun 14, 2017, at 7:13 PM, Regina Eisenberg <reginame...>

7:52 AM (3 minutes ago)

**Karen Lavenda** <karenlavenda@gmail.com>  
to Regina

There are a great number of Jewish activities located in the Golf Manor, Blue Ash, and Amberley Village area. Most of our synagogues and temples (6) , parochial Jewish schools (3) are in this area. The Jewish Community Center, is located along the pipeline, it has members from the the general area-both Jewish and non-Jewish who actively use the center's services. Were something to happen, a very great number of people of my Jewish faith would simply disappear. There must surely be a less populated route for the pipeline.

Regina Eisenberg  
2344 Vera Ave.  
Golf Manor, OH 45237

[Click here to Reply or Forward](#)

**From:** Marilyn Sholiton marilynsholiton7@gmail.com  
**Subject:** Pipeline  
**Date:** Today at 12:32 PM  
**To:** Marilyn Sholiton marilynsholiton7@gmail.com  
**Cc:** Marilyn Sholiton marilynsholiton7@gmail.com

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Sent from my iPad

Dear committee

I am proud to live in a free country where we can have such a forum

Where we freely speak.

But I fear the decision has already been made

This is only for our sakes and a way for us to let out our feelings but that the

Decision is a for gone done deal.

I feel that this is like Imminent Domain

That Duke can and will do what it wants.

From all I have read it appears we do not need this. And it is appalling that this projected pipeline will go through communities of homes,schools, and put at risk many people.

Because we all know accidents do happen

Look,at the accidents in our country and Japan re nuclear power plants

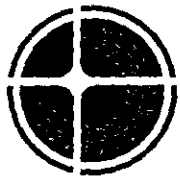
Why can we not develop clean energy like windmills which if something happens do not put large populations at risk?

I fear it is always the bottom line. That profit is more important than safety

I think this is like talking to the sky , that it will not sway the powers that be because it is already too far along and the community should have been asked before it ever got this far.

Thank you.

  
Dr Marilyn Sholiton



# URSULINE

Voice. Values. Vision.®

To: Members of the Ohio Power Siting Board

Re: OPSB case number 16-0253-GA-BTX

Date: June 15, 2017

I am writing to share my concerns regarding Duke Energy and the plan to build a 20-inch industrial size natural gas pipeline. Of the two possible routes that are being considered, The preferred route would be constructed in part on our property. As the President of Ursuline Academy, located in Blue Ash, my primary concern is the safety of our 665 students and the 93 individuals who are employed at Ursuline Academy. Our families entrust their daughters to our care, expecting Ursuline Academy to provide the highest quality education in a faith-based, value-centered and **safe** environment.

The proposed routes go through residential and highly populated areas that are next to homes, schools, churches, synagogues, daycare centers, businesses and a hospital. One would hope that those who are proposing the routes would take into consideration the density of the population and would avoid areas that contain schools, places of worship and a hospital. It is my belief that those elected to serve and protect the citizens of the communities involved will vehemently oppose this project.

I encourage you to consider the consequences of a high-pressure pipeline running directly through a neighborhood filled with people – babies, teenagers, young adults, adults and seniors. Perhaps the question that must be answered is - does the perceived need outweigh the potential risk of human lives? I doubt that any thinking person would say yes to that question. For our young women who come to Ursuline Academy every single day, prepared to do their best and trusting us to do our best to teach, nurture, empower and protect them, I urge you to stop this project.

Sincerely,

Sharon L. Redmond  
President









6-15-17

To Whom it Concerns,

I am writing to you to let you know I am a home owner in the city of Reading, Ohio. Where the Duke Gas Pipeline is wanting to put a route of the pipeline in our area.

First I want to let you know, I cannot believe nor do I understand where Duke can come into our city which is a very family community and dig out our property, that we have bought and pay taxes on. I was there when I bought my home at closing, paid the closing cost to purchase my home. Now Duke wants to come and take a part of this? My Husband passed in 1992 with cancer here in Reading and also born in Reading. We have lived in Reading for 35 years now, my Husband grew up here in Reading. I saved all my money to be able to purchase our home for my 3 sons and to give them a home in a city we love.

The inconvenience you are causing the people of Reading with the gas pipeline, taking a part of their

property up setting everyone's household, putting danger on us all, you are going to be working where people (not only from Reading, from neighboring areas also) come to everyday. Our children's football stadium, the community pool, not to mention other places are going to be in their everyday activity will be disrupted).

I need to tell how much this will inconvenience our household. I am a single parent of a multihandicapped 45 year old son. **W**e was told he would never see adulthood yet here he is. Know why? Because he is so full of love and happiness, enjoys everyone and everything he does. One of the things he loves to do is sit on our porch to watch people and the traffic going by especially the Emergency vehicles. This porch is in the line of your destruction which will take away one of his favorite things to do! With him in a wheelchair not being able to stand or walk he takes all the small things he gets to do to heart. He has a ramp

along the side yard up to the porch, off the driveway which will also be in the digging area, this is how he enters & exits his home everyday! Not being able to use his other doors because of the size of his wheelchair (emergency he could crawl out but, not for everyday) how will he be able to come and go? He goes to his workshop, he loves being with his peers which he needs to keep developing. He is picked up by a bus to get him that uses the same streets to get to our driveway to pick him up everyday not having any other way to get him. The bus is too large to come up the street to get him, if he can get out & go, it can't turn around, it takes the corner 4-way to turn to the drive and can't back down the whole street. What if he seizes or any other emergency happens to any of us, how will they get to us?

Even all our other neighbors too, I now use a walker to walk after hurting my back helping him so he too use the ramp to enter and exit the house. The neighborhood children also use this street to walk to school. My son cannot speak to let you know

How much you are leading to disrupt  
his life so that as his ~~son~~ mom will  
do it for him! He has fought all  
his life to keep going, please do not  
take his enjoyments and safety  
away!

Please reconsider your plans of  
the placement of the Duke Gas  
Pipeline, not for only my son ~~son~~  
myself, my family but for every-  
one that is going to be disrupted by  
the construction and the pipeline.  
Across the street from our home is  
a corner block of a large vacant  
lot. Did Duke even consider this  
area for the pipeline? Then the  
neighbors + myself would only worry  
about the dangerous gas and not you're  
taking a part of each of our property.

A Sincere Worried, Caring,  
mother, + Home Owner in  
The Wonderful City Of  
Reading, Ohio

Sherry Jegeder  
1330 Market Street  
Reading, Ohio 45215

Good afternoon. Thank you for letting me address the Siting Board.

My name is Leonid Turkevich. I reside in Evendale, about half a mile from Glendale-Milford Road, on the route of the proposed Green line for the Pipeline.

I was trained as a Physicist, and I work at NIOSH (The National Institute for Occupational Safety and Health), one of the centers of the CDC (The Centers for Disease Control and Prevention). However, my remarks are my personal opinions and do not reflect policy of either NIOSH or of the CDC. I have published articles in the peer-reviewed literature in the area of Dust Explosions.

I am primarily concerned with Safety. My neighbors can attest, more eloquently than I, to the personal dangers, and damage to their property, that the potential Pipeline routes bring. I want to focus on a Safety issue that has not received much attention.

The proposed pipeline routes all pass through densely populated residential and business areas. This inherently poses a safety risk in the event of a pipeline failure. I believe that the risk of failure is enhanced due to the proximity of the proposed routes to active railroad lines; all of the proposed pipeline routes parallel and cross several of these railroad lines.

My concern is with vibration-induced damage. I believe that there are, at least, two effects that excessive vibrations might cause:

- a) damage to the pipeline structure; and
- b) acceleration of metal fatigue to pipe components.

Bajcar et al. (2012) studied the impact of road traffic on a buried pipeline. A similar study is warranted to quantify the impact of the larger amplitude vibrations generated by rail traffic. There are some hints from modeling (Giner et al. 2016; Degrande et al. 2006; Chebli et al. 2008) as to how rail traffic might affect pipeline structure, but an experimental evaluation really needs to be conducted. The effect on metal fatigue is expected but similarly needs to be quantified.

Absent any understanding of the magnitude of potential damage to the pipeline by rail induced vibrations, siting the pipeline along the currently proposed routes is foolhardy.

I strongly urge you not to situate the proposed pipeline in our densely populated communities.

## References cited

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