



# Memo

To: Planning and Zoning Commission

From: Planning Department

Date: June 10, 2015

Re: Oil and Gas Pipelines Workshop

## **Executive Summary:**

The United States is heavily dependent on transmission pipelines to distribute energy because they are the safest mode available for transportation of energy fuels. Energy demand has increased by about 35 percent in the last decade, and is estimated to increase by another 36 percent. According to the Railroad Commission of Texas, U.S. petroleum demand is expected to increase 1.63 percent from 2014 to 2015 to 19.43 million barrels per day and increase 0.36 percent from 2015 to 2016 to 19.41 million barrels per day. U.S. natural gas demands is expected to increase 3.08 percent from 2014 to 2015 to 27.65 trillion cubic feet, and is expected to increase by 0.62 percent from 2015 to 2016 to 27.82 trillion cubic feet.

The nation's projected demand for energy especially in new and fast-growing metropolitan may require cities to reevaluate how we plan near pipelines. Increasing urbanization is resulting in more people living and working closer to pipelines. As a result, new development near pipelines is occurring in formerly rural and unincorporated areas. Transmission pipelines carry over 35 hazardous products such as refined and unrefined petroleum products and natural gas. Transmission pipelines ruptures can have a major impact on humans, the environment, and local and regional economies.

Because of increasing urbanization in the areas surrounding existing pipeline easements, zoning regulations involve a balancing of the financial interests of property owners in proximity to the pipelines and the safety of the increased numbers of people who would be placed within the zone of risk if more intensive development is permitted. Zoning regulations would be less controversial if existing and future natural gas transmission pipelines could be routed through farmland or other undeveloped lands. When originally constructed, many of the older, major natural gas transmission pipelines were sited in that way. But population growth and development patterns have brought increased population densities to the areas surrounding many of these transmission pipelines, and difficult decisions must now be made. A tragic accident in Bellingham, Washington in 1999 which caused three deaths, eight injuries and over 45 million dollars in property damage was the wake-up call in enacting new pipeline safety laws.

Texas has the largest pipelines infrastructure in the nation, with more than 425,939 miles of pipelines representing about 1/6 of the total pipeline mileage of the entire United States. According to the Texas Railroad Commission, Texas' pipelines are divided into the

categories of natural gas and LP-gas distribution lines (more than 146,966), hazardous liquid and natural gas transmission lines (more than 69,169), intrastate production and gathering lines leaving a lease lines (more than 163,543 miles), and interstate lines (46,097 miles).

In December 2014, Texas natural gas production was 706.82 billion cubic feet up from 682.44 billion cubic feet produced during the same month in 2013. In December, 2014, Texas crude oil production averaged 2.701 million barrels per day, up from 2.284 million barrels per day report the same month in 2013.

There are no generally accepted zoning standards for land uses in close proximity to natural gas transmission pipelines. The Texas Railroad Commission has authority over intrastate pipelines (those that originate and end within the State of Texas) for pipeline safety and pipeline rate regulations. The Railroad Commission is limited in its authority and has no authority over the routing or siting of intrastate or interstate pipelines with the exception of pipelines that contains hydrogen sulfide because of the potential toxicity at certain levels.

There is no standard width for a pipeline easement but the widths are usually specified in the contracts. Generally pipelines must be buried a minimum of 36 inches (three feet) however, pipeline operators are not required to maintain this depth if erosion occurs after installation. For gas pipelines, there is no minimum setback requirement. Hazardous liquids pipelines that are within 50 feet of a structure must be buried to a depth of 48 inches (four feet), which is 12 inches more than the standard 36 inches (three feet).

The primary reason for establishing setbacks from transmission pipelines is to avoid encroachment on the pipeline right-of-way, thereby reducing the likelihood of third party damage to the pipeline. Typically such damage in urban settings is caused by construction activity or underground utility work. Third party damage can certainly be lessened by consistent use of one-call utility locator systems, but experience shows that keeping construction or utility work away from pipeline easements or corridors is preferable. An adequate setback for avoiding third party damage can be far less than the setback distance needed to protect individuals from the energy of a catastrophic rupture.

Pipeline companies are very quiet on the issue of setbacks, probably because of the financial implications. Setbacks lessen the likelihood of third party damage from encroachment activity and lessen the possibility of personal injuries if there is a release from a transmission pipeline. Though pipeline operators might prefer that structures not be built close to their pipelines, publicly they will not say that setbacks are necessary or recommended. The pipeline industry instead puts out a consistent public message that their pipelines are "safe". How "safe" is a matter of opinion, and varies depending upon the pipeline operator. Historically, pipeline operators purchased easements that were adequate for installation and maintenance of their pipelines, with probably little awareness

that there would be significant pressure for development around their pipelines decades later. Setbacks can impose a financial burden on landowners whose property adjoins or is near the pipeline easement because they generally are not compensated for reduced development potential.

Management of development near transmission pipelines has the potential to address inappropriate development, yet federal or state regulations do not control land uses within close proximity of transmission pipelines. The authority for managing pipelines hazards rests largely with local governments who manage land uses surrounding transmission pipelines. Growth management and control techniques implemented by local governments provide one of the most important areas where changes could prevent harm to humans and the environment from transmission pipeline ruptures.

In the absence of accepted standards, a priority of local governments should be the protection of the lives and property of those living, working or recreating in the vicinity of natural gas transmission pipelines. A jurisdiction could choose to permit single family residences, but not multi-family housing, within a specified distance from the pipeline easement. A jurisdiction could choose to prohibit facilities such as nursing homes or hospitals within a certain distance from the pipeline easement. Zoning regulations can encourage mini-storage structures or similar uses near pipelines. The goal should be to zone in a way that minimizes the likelihood of large numbers of casualties in the event of a catastrophic rupture.

A city or county, as part of the normal planning process, need to establish setbacks and zoning regulations for the natural gas transmission pipelines that are within its jurisdiction. Those regulations are a quantification of the risk that the local government decides is acceptable. The unfortunate reality is that in our increasingly dense cities development will generally occur to the extent allowed by current land development regulations, and people will buy homes adjoining pipeline easements, assuming that construction permits would not have been issued by the city if the development was not safe. Residents rely upon cities and counties to provide safe environments to live and work, and establishing prudent setbacks is part of that difficult task.

## **Recommended Actions:**

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Pipeline incidents, population growth, urbanization and increasing energy demands are leading to a greater focus and attention on the need for increased land use controls in the vicinity of pipelines. For the most part, local governments have not systematically considered risks to the public from transmission pipelines incidents in regulating land use. Encroachment and inappropriate human activity can affect pipeline safety. Good land use decisions can reduce risks associated with transmission pipelines by reducing probabilities and the consequences of incidents.

Growth management tools can be used to address long-range community goals and changes and reduce inappropriate development in hazardous areas. Growth management programs generally consist of a mix of regulatory, incentive, and informational strategies. Under a regulatory approach, local governments use tools such as zoning, special ordinances, or building setback requirements to control growth near pipelines transmission. The Pipeline and Hazardous Materials Safety Administration has developed some best practices for planning near planning near pipelines which are outline below.

Regulatory tools used in planning near pipelines include:

- Low-density zoning surrounding policies
- Transmission pipeline zoning overlay district
- Special transmission pipeline hazard ordinance
- Fire resistance requirements in the building code
- Minimum building setback requirement for building adjacent to transmission pipelines
- Restriction on the location of critical facilities near transmission pipelines (such as fire, police stations, and public schools)
- Deed restrictions for property with pipeline easements
- Watershed protection ordinance with provisions for transmission pipelines
- Berms and/or containment ponds adjacent to hazardous liquid pipelines
- Mandatory open space dedication.

Additional recommended practices developed by the Pipeline and Hazardous Materials Safety Administration for cities include:

- Obtaining Transmission Pipeline Mapping Data
- Adopting Transmission Pipeline Consultation Zone Ordinance
- Defining Transmission Pipeline Consultation Zone
- Require Consideration of Transmission Pipeline Facilities in Land Development Design
- Collaborate on Alternate Use and Development of Transmission Pipeline Right-of-Way
- Provide Flexibility for Developing Open Space along Transmission Pipeline Right-of-Way

- Record Transmission Pipeline on Easements on Development Plats and Final Plats
- Reduce Transmission Pipelines Risk through Design and Location of New Parking Lots and Parking Lots Parking Structures
- Reduce Transmission Pipeline Risk through Design and Location of New Roads and New Utilities and Infrastructure.
- Plan and Locate Vegetation to Prevent Interference with Transmission Pipeline Activities
- Locate and Design Water Supply and Sanitary Systems to prevent Contamination and Excavation Damage.
- Reduce Transmission Pipeline Risk in New Development for Residential, Mixed-Use, and Commercial Land Use.
- Use, Document, Record and Retain Encroachment Agreements or Permits and Letters and No Objections and Conditional Approvals.

**Local Survey of Surrounding Communities:**

The City of Pearland conducted interviews with local planners in surrounding communities to determine their practices regarding transmission pipelines. Most of the cities had adopted a pipeline ordinance (similar to the City of Pearland) that primary dealt with oil and gas drilling and wells. The following cities were survey to determine their current zoning and planning practices regarding pipelines and setback requirements.

- City of Sugarland
- League City,
- City of Pasadena
- City of Baytown,
- Texas City
- Missouri City
- League City

Of the cities surveyed, most had a pipeline ordinance but none of the ordinances specified any setback requirements for transmission pipelines. However, some cities were requiring setbacks during the platting process.

<b>Name of City</b>	<b>Pipeline Ordinance</b>	<b>Setback Requirement</b>
<b>City of Pearland</b>	<b>YES</b>	<b>No</b>
<b>City of Sugar Land</b>	<b>YES</b>	<b>NO - Require separate reserve during plating process</b>
<b>City of Pasadena</b>	<b>YES</b>	<b>NO</b>
<b>City of Baytown</b>	<b>YES</b>	<b>NO – has 5 Pipeline Corridors</b>

<b>Texas City</b>	<b>YES</b>	<b>NO</b>
<b>Missouri City</b>	<b>YES</b>	<b>YES - 13 feet from easement or 30 feet from pipeline.</b>
<b>League City</b>	<b>YES</b>	<b>NO</b>

**Recommendations:**

The American Petroleum Institute recommends setbacks of 50 feet from petroleum and hazardous liquids for new homes, business, and place of public assembly. Setbacks of 25 feet are recommended for garden sheds, septic tanks, and water wells. A report by the Transportation Research Board indicates that the most common practice of local governments is a required setback of 25 feet from the center of the pipeline. There is not a universal standard recommendation for an appropriate setback from a pipeline due to the vary sizes and pressures and the varying type of adjacent land uses. However, as a result of the tragic accident in Washington State, the State did develop a model ordinance for local governments of a minimum of 50 feet (see attachment).

It is recommended that the City of Pearland adopt the model ordinance for local government along with the recommended practices established by the Pipeline and Hazardous Materials Safety Administration.

## **Attachments**

- Draft Ordinance Establishing Setback Requirements
- Top Ten Root Causes of Pipeline Damage
- Top Ten Damages to Pipeline by Type of Work Performed
- Incidents of Pipeline Damages in Texas per Year
- Incidents of Pipeline Damages in Texas per Month
- Map of Transmission Lines in Pearland

**Model Setback Ordinance  
For Transmission Pipelines  
(For Discussion Only)**

ORDINANCE NO. \_\_\_\_\_

**AN ORDINANCE ESTABLISHING SETBACK REQUIREMENTS FOR NEW  
HAZARDOUS LIQUID AND GAS TRANSMISSION PIPELINES WITHIN AND  
THROUGH THE CITY OF PEARLAND.**

**NOW, THEREFORE, THE CITY OF PEARLAND DOES ORDAIN:**

**Section 1. Definition.**

Pipeline Corridor shall mean the pipeline pathway through the jurisdiction of the City Pearland in which the pipelines and facilities of a pipeline operator are located, including public rights-of-way and easements over and through public or private property.

**Section 2. Setback Requirement for Gas Pipelines.**

Setback requirements from gas transmission pipelines for general residential, commercial, and industrial buildings shall be a minimum of 50 feet. The setback distance shall be measured from the nearest edge of the pipeline corridor.

**Section 3. Setback Requirement for Hazardous Liquid Pipelines.**

The setback requirement from a hazardous liquid pipeline corridor for all general residential, commercial, and industrial buildings shall be a minimum of 50 feet. The setback distance shall be measured from the nearest edge of the pipeline corridor.

**Section 5. Effective Date.**

PASSED/ADOPTED this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

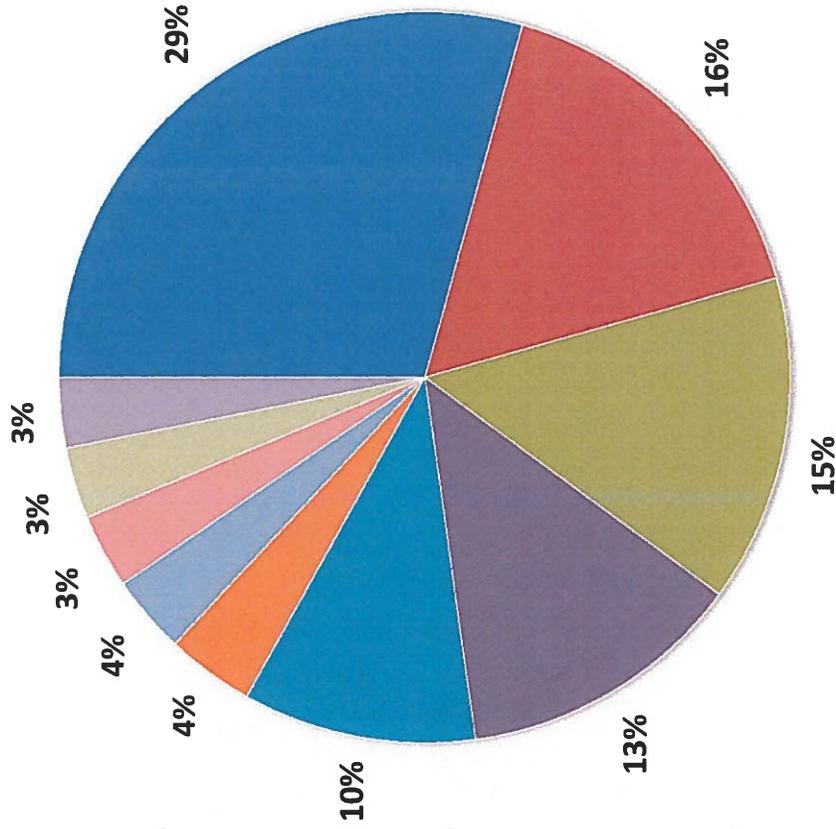
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APPROVED AS TO FORM:

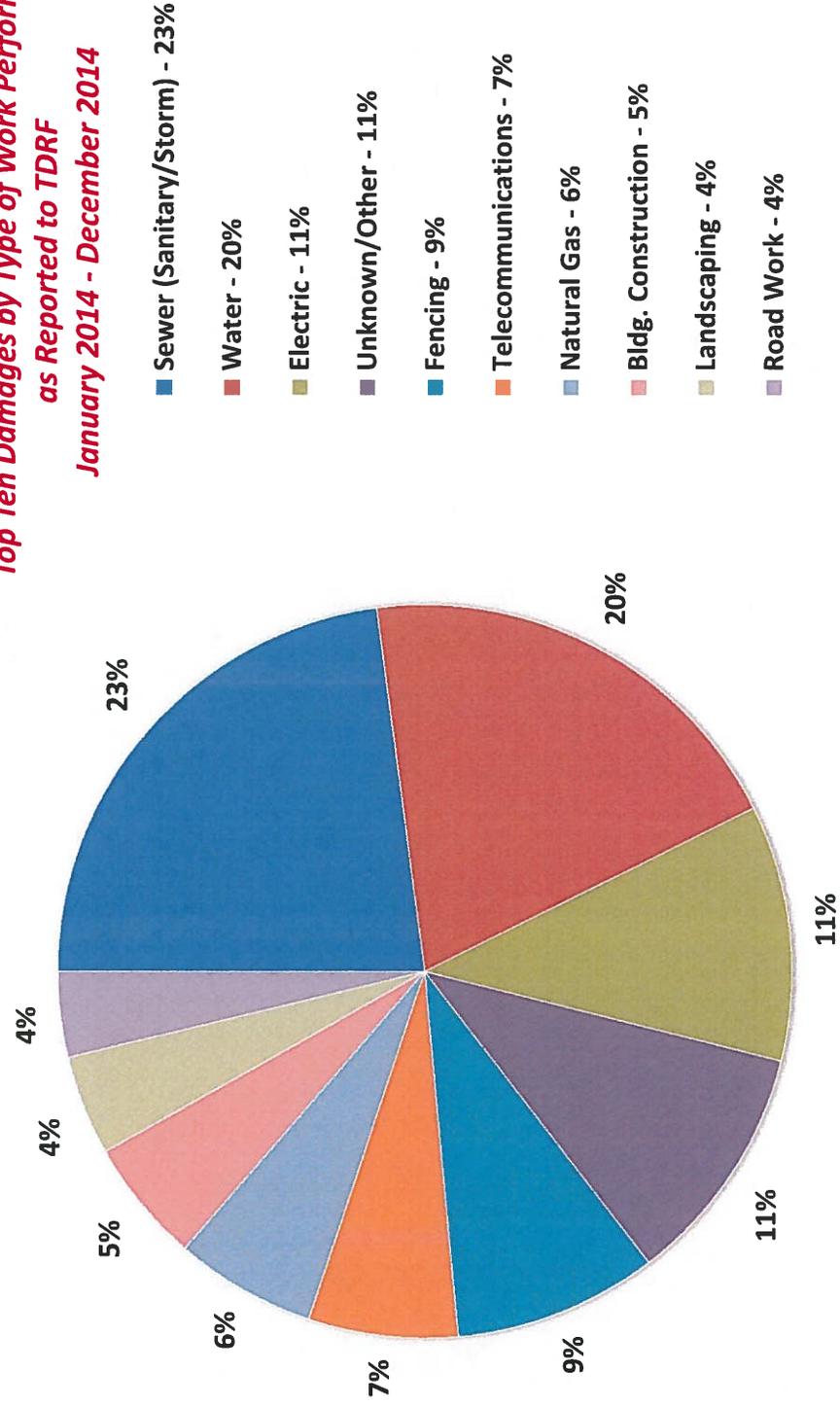
PUBLISHED:

**Top Ten Root Causes  
as Reported to TDRF  
January 2014 - December 2014**

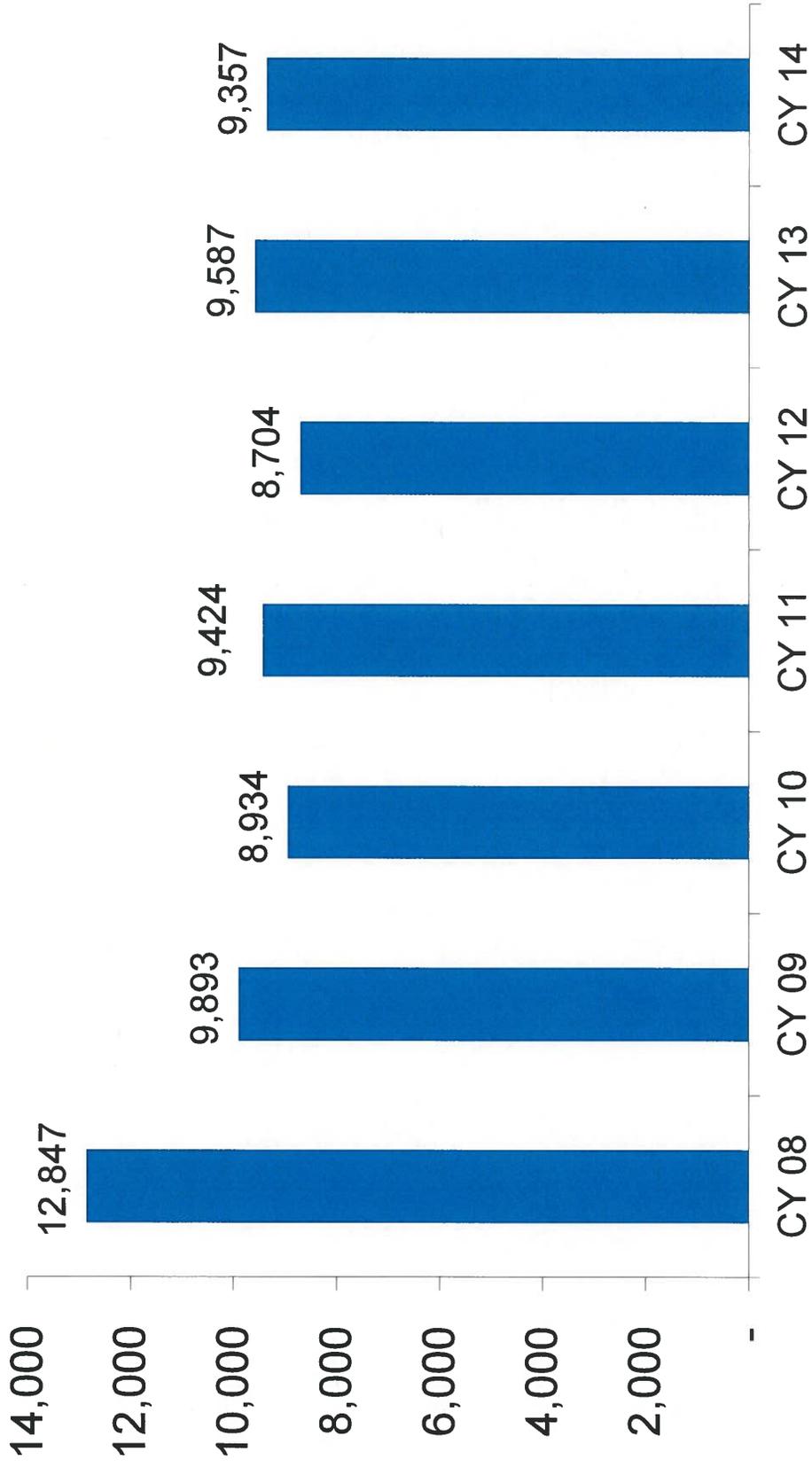


- No notification made to the One-Call center - 29%
- Facility was not located or marked - 16%
- Facility marking or location not sufficient - 15%
- Other - 13%
- Failure to maintain clearance - 10%
- Failure to use hand tools where required - 4%
- Facility could not be found or located - 4%
- Failure to maintain marks - 3%
- Data Not Collected - 3%
- Other insufficient excavation practices - 3%

**Top Ten Damages by Type of Work Performed  
as Reported to TDRF  
January 2014 - December 2014**

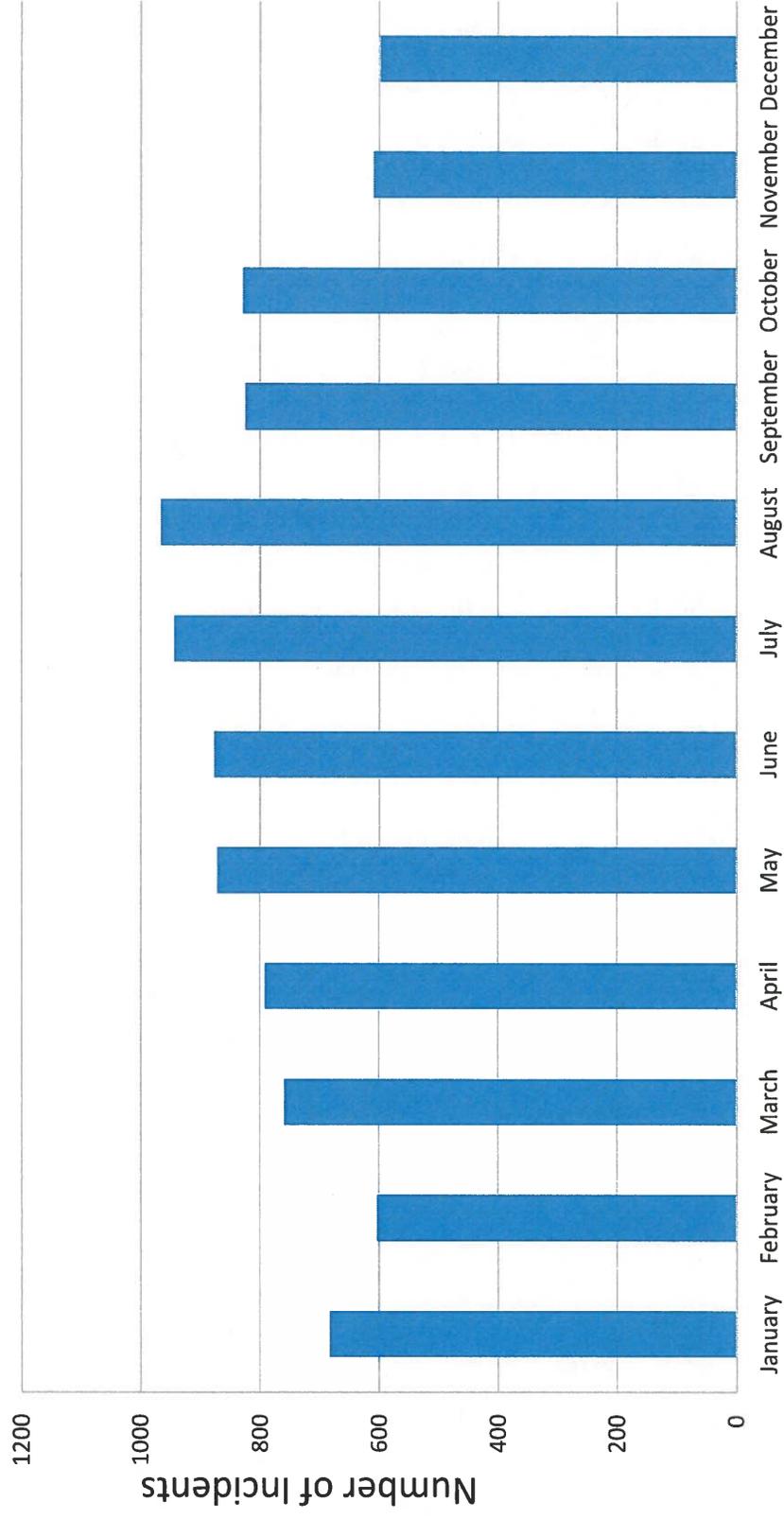


## Incidents Per Year



Source: RRC Pipeline Safety Damage Prevention

## Incidents Per Month 2014



Source: RRC Damage Prevention

