



ARIZONA CORPORATION COMMISSION

Office of Pipeline Safety (AZOPS)



2022 DAMAGE PREVENTION PERFORMANCE REPORT

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EXECUTIVE SUMMARY

This report examines and measures the trend of pipeline damages caused by excavation activities of all Intrastate Gas and Hazardous Liquid pipeline systems in the State of Arizona owned and operated by transmission and/or local distribution companies (LDC).

The definition of “Operator” and “Pipeline System” under R14-5-201 of the Arizona Administrative Code, Title 14, Chapter 5 are as follows:

“Operator” means a person that owns or operates a pipeline system or master meter system.

“Pipeline System” means all parts of the physical facilities of a public service corporation or provider through which gas, LPG, LNG, or a hazardous liquid moves in transportation, including but not limited to pipes, compressor units, metering stations, regulator stations, delivery stations, holders, fabricated assemblies, and other equipment, buildings, and property so used.

INTRODUCTION

In 2012, the Arizona Corporation Commission’s Office of Pipeline Safety (“AZOPS”) directed Intrastate Operators to submit quarterly reports of pipeline damages (data) caused by excavation according to the following information:

1. The total number of locate requests received by the Operators.
2. The total number of excavation damages.
3. The date, location, and name of the company or person responsible for the damage.
4. The cause of each damage classified into four root causes.
 - No AZ811 ticket requested by excavator.
 - Incorrect marking of pipeline facilities.
 - Error by excavator.
 - Error by operator or operator contractor.

The objective of gathering these reports is to identify the leading cause of “pipeline hits” and to suggest improvement in the areas that have more “pipeline damages” by a process of identification and tracking to reduce the number of pipeline damages within the State of Arizona.

For the development of the 2022 Damage Prevention Performance Report an analysis of the information data was performed; the data analyzed corresponds to (19) operators as shown in Table 1 below:

	Operator
1	Abbott Nutrition Supply Chain
2	Alliant Gas
3	Ameresco Ninety First Avenue Renewable Biogas
4	West Phoenix Power Plant
5	CPN Pipeline Company
6	City of Benson*
7	City of Mesa Municipal System
8	City of Safford Utilities Division
9	City of Willcox Municipal System
10	Colorado City Gas Department
11	Copper Market Incorporated
12	Duncan Rural Service Corp.
13	Tucson Electric Power Company
14	NUCOR Steel Kingman, LLC
15	Pimalco Gas
16	Plains Marketing, L.P.
17	Southwest Gas Corporation
18	Swissport Fueling Incorporated
19	UniSource Energy Services

Table 1

*Data used for the analysis obtained from 2022 annual reports.

The 19 operators listed above have a total combined pipeline length of 43,913 miles and 1,411,336 services. It is important to note that this information data is derived from 2022 annual reports.

In addition, for transparency purposes one operator did not provide its damage prevention quarterly reports during 2022. However, the pipeline damage numbers for this operator included in this analysis were obtained from the 2022 annual reports. Information contained within this report may be available upon a data request.

METHODOLOGY

The AZOPS gathered all reports corresponding to Q1, Q2, Q3 and Q4 for year 2022 and analyzed the data received by operators. Table 2 below shows a summary report for 2022.

2022 SUMMARY REPORT					
Miles of Pipelines	43,913				
No. of Services	1,411,336				
	1st Q	2nd Q	3rd Q	4th Q	Totals
AZ811 Tickets Received	226,747	229,782	221,595	197,646	875,771
Pipeline Damage	158	170	191	162	681
Cause of Damage					
No AZ811 Ticket	68	71	80	59	278
Incorrect Marking	10	18	20	12	60
3rd Party Excavator Error	59	71	63	80	273
Error by LDCs Personnel	21	10	28	11	70
Average Number of Pipeline Damaged Per 1000 Ticket Request	0.70	0.74	0.86	0.82	0.78

Table 2

Figure 1 below shows pipeline damage versus AZ811 tickets received during each quarter during 2022.

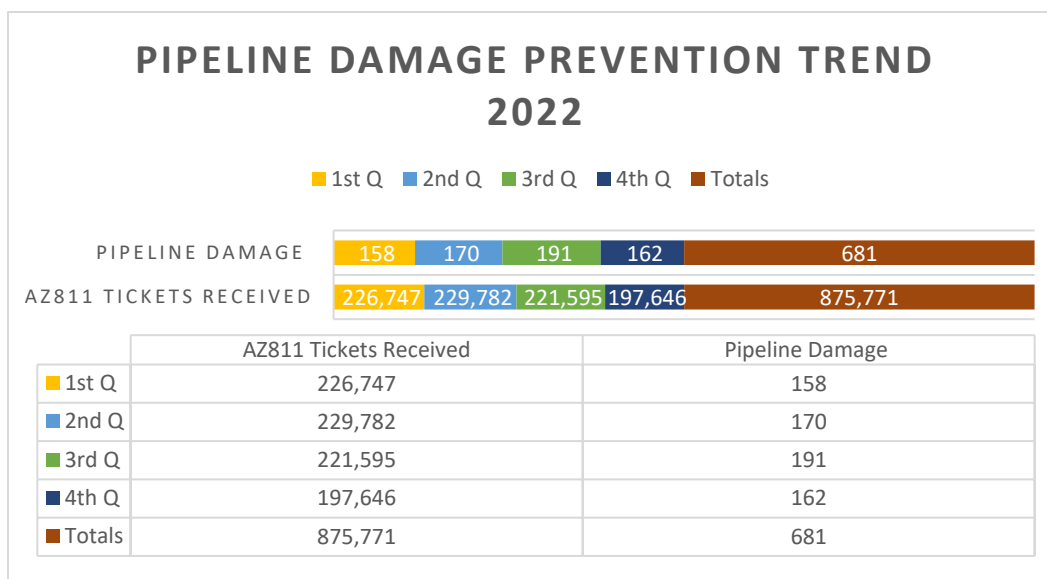


FIGURE 1. DAMAGE PREVENTION TREND 2022

Figure 2 below shows 681 pipeline hits/damages as the accumulative pipeline damage reported by operators during year 2022, “No AZ811 ticket” is the leading cause of pipeline damage for year 2022, the second cause is “3rd Party Excavator Error” followed by “Error by LDCs Personnel” and “Incorrect Marking” being the last cause.

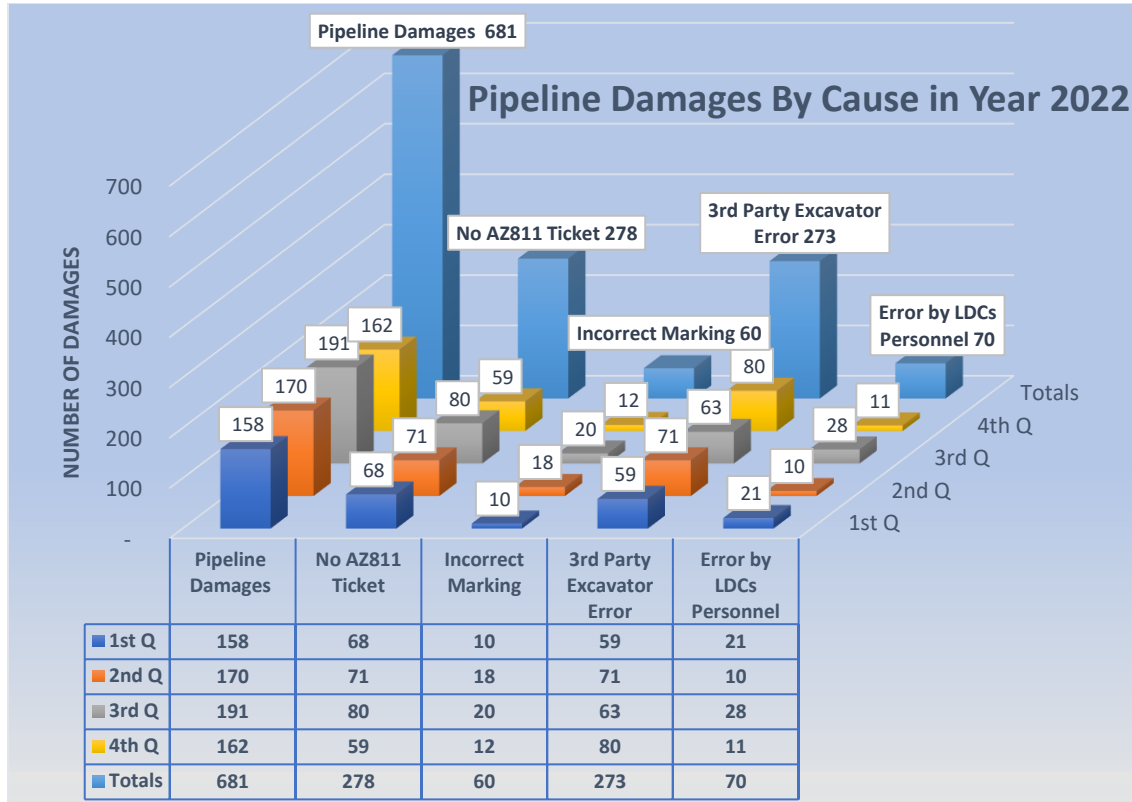


FIGURE 2. PIPELINE DAMAGES BY CAUSE 2022

DATA SUMMARY

The information data was analyzed, and a comparison established between years 2021 and 2022.

The data analysis assessment shows that there was a 1% increase in AZ811 tickets generated for year 2022 versus year 2021. There were 865,568 AZ811 tickets received in year 2021 and within 2022 there were 875,771 AZ811 tickets received.

The number of pipeline damages reported decreased in year 2022 by 3% in comparison to pipeline damages reported in 2021.

From the analysis, it is acceptable to ascertain the following description of pipeline damages by excavation and by category:

Pipeline damages caused by “No AZ811 ticket” increased 10%. There were 25 more pipeline damages reported in year 2022 than in year 2021 with a total of 278 cases reported during 2022. This category is the leading cause of pipeline damages in 2022.

Pipeline damages by excavation due to “incorrect marking” decreased in year 2022. There were 92 cases reported in year 2021 and 60 cases reported in year 2022, which represents a decrement of pipeline damages related to this root cause of 35%.

Pipeline damages by excavation due to “Third Party Excavator Error” decreased by 13%. There were 315 cases in 2021 and 273 cases reported in 2022. Although, there were less pipeline damages in 2022 related to Third Party Excavator Error for the first time in the last 10 years; this root cause is the second leading cause of pipeline damages in Arizona.

Pipeline damages by excavation due to “operator or operator’s contractor error” increased 75% from 2021 to 2022. There were 40 cases reported in 2021 and an increment to 70 cases in 2022. This is root cause increased the most percentage wise, nonetheless looking at the damage prevention program as its entirety, these pipeline damages represent only 10% of the overall pipeline damages throughout the year.

Based on the data analyzed, the average number of pipeline damages due to excavation per 1,000 locate tickets decreased from 0.81 in 2021 to 0.78 in 2022, this factor has had a positive trend since data has been collected over the last 10 years.

The chart below (Figure 3) shows how the number of AZ811 tickets generated in 2022 increased by 10,202 representing 1.2% more than year 2021. Since year 2012, there has been a continuous increase in the number of AZ811 tickets reported up to date.



FIGURE 3. AZ811 TICKETS RECEIVED PER YEAR

The following next 4 charts show a comparison on the cause of pipeline damage classified into four root causes between the years 2021 and year 2022. These categories are:

1. No AZ811 ticket requested by excavator (See Figure 4)
2. Incorrect marking of pipeline facilities (See Figure 5)
3. Error by excavator (See Figure 6)
4. Error by operator or operator contractor (See Figure 7)

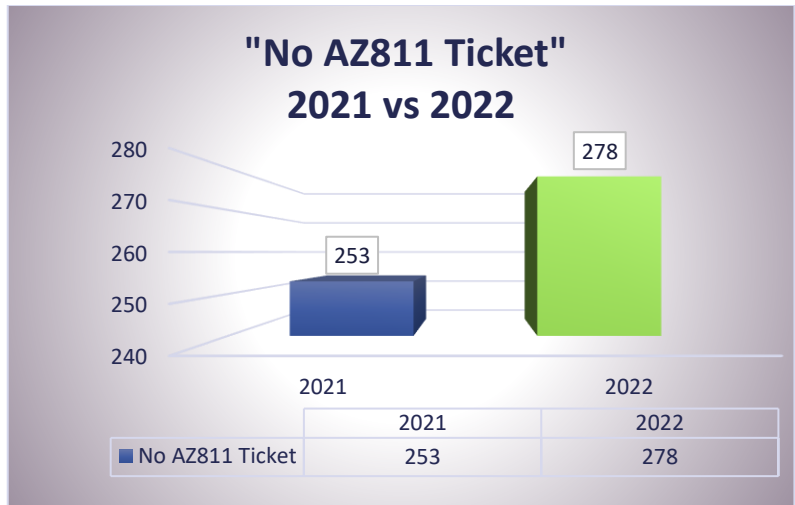


FIGURE 4. PIPELINE DAMAGE "NO AZ811 TICKET"



FIGURE 5. PIPELINE DAMAGE " INCORRECT MARKING"

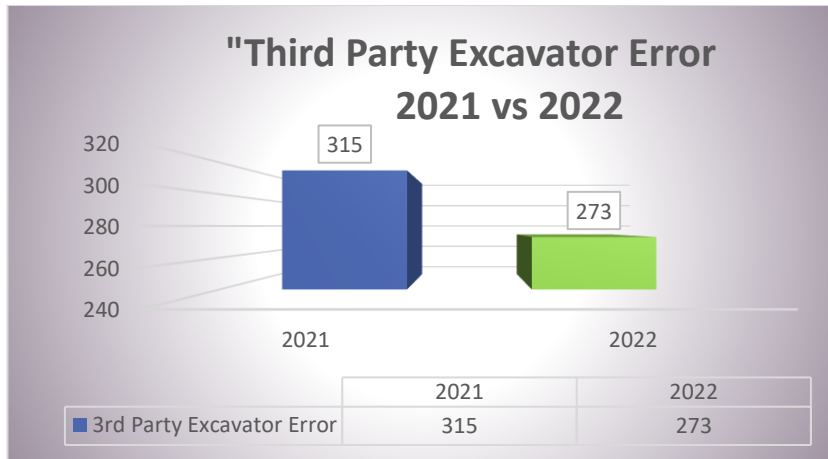


FIGURE 6. PIPELINE DAMAGE "THIRD PARTY EXCAVATOR ERROR"

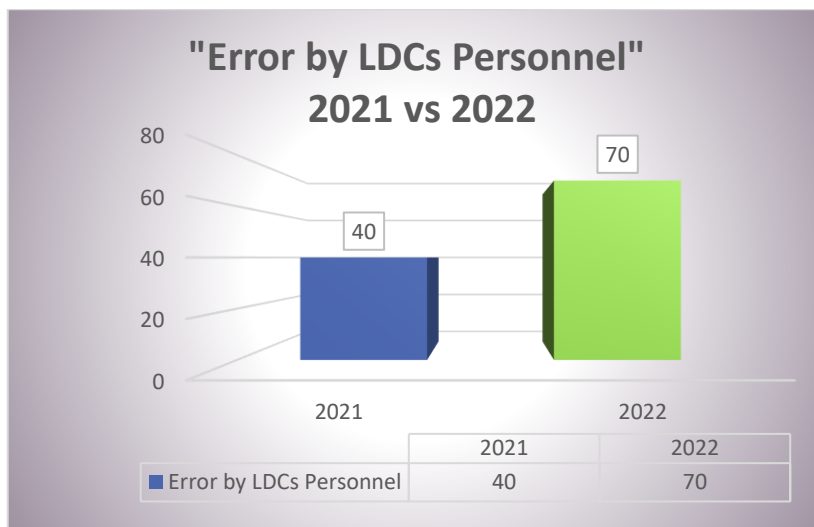


FIGURE 7. PIPELINE DAMAGE "ERROR BY LDCs PERSONNEL"

HISTORICAL DATA

The next chart (Figure 8) shows the average number of pipelines damaged per 1,000 ticket requests and the number of AZ811 tickets received per year since 2012. The graphic shows that the average of pipeline damaged per 1,000 tickets decreased 0.03 in 2022 with respect to year 2021. However, this factor has fluctuated over the years with an overall downward trend since the reporting started back in year 2012.

The number of excavation damage occurrences per 1,000 locate tickets is an established benchmark within the damage prevention industry and it is an important indicator of damage prevention program performance. This factor continues to be below 1 (one) in the State of Arizona in year 2022.

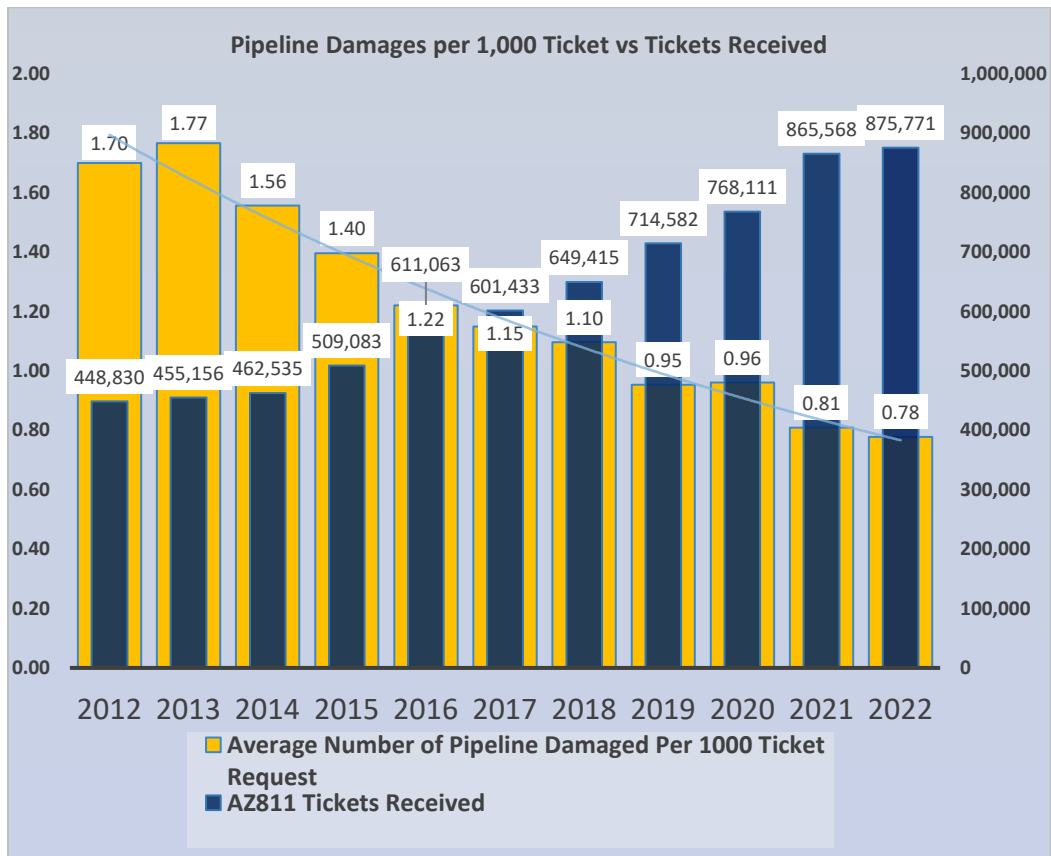


FIGURE 8. HISTORICAL DATA-AVERAGE NUMBER OF DAMAGED PIPELINES PER 1,000 TICKETS VS TICKETS RECEIVED

RECOMMENDATIONS TO IMPROVE PIPELINE DAMAGE PROGRAMS

1. Efforts should include encouraging pipeline operators/excavators to wait for markings to be completed, to stay within the stated work area or to make a new notice if the original work area is extended and renew notices if marks deteriorate or if work will continue beyond one call ticket expiration.
2. Improve on-time locate metrics. When mark-outs are late, contractors incur delays (downtime) and potentially added costs for demobilization, change in plans, etc. When these instances occur contractors must improve communication and inform AZOPS as soon as possible of these delays to prevent these situations.
3. Improve on-time locate metrics. All utility operators shall have enough qualified personnel to fulfill the AZ811 tickets requested to complete the markings in a timely manner per established requirements in the Underground Facilities Law.
4. Improve/Reduce damages due to No AZ811 notification by operators/excavators. Failure to provide notice of intent to excavate (No AZ811 ticket notification) is the second specific root cause of pipeline damages in Arizona.
5. As a best practice promote pot-holing and vacuum excavation within the pipeline industry. The excavation damages of natural gas pipeline include failure to pothole, maintain clearance, maintain marks and protect/support facilities, improper backfilling, and improper excavation practices.
6. Educate operators/excavators to reduce over-notifications to the Arizona 811 Center. Abuses of the one call system exacerbate issues with late locating and/or no response to one call tickets i.e., excavators repeatedly update locate tickets for which some or all the work has already been completed, marking of work areas larger than required.
7. Adopt new technologies to reduce damages by improving communications with the Arizona 811 Center to improve processes, locating, and excavating practices.
8. Underground facilities owners/operators shall locate and track their abandoned underground facilities.
9. Operators shall continue to increase public awareness campaigns that can effectively reach multiple audiences with the AZ811 information.
10. Public outreach through mass media shall continue over the years to come to reach all audiences at the same time, making campaigns more efficient.

11. Operators shall make damage prevention training more easily accessible, relevant, and actionable. All utility owners including natural gas operators/excavators have limited knowledge about the Arizona Underground Facilities Law beyond the need to notify before beginning work.
12. Operators shall contact the AZOPS as soon as practicable when excavators are performing activities in violation of the Underground Facilities Law to respond in a timely manner, this will provide the AZOPS a better opportunity to educate these excavators.

CONCLUSION

For calendar year 2022, the number one root cause of pipeline damages was “No AZ811 ticket” in the State of Arizona with 278-line hits and the second root cause was “3rd Party Excavator Error” with 273-line hits, followed by the “LDC personnel’s error” with 70-line hits and finally “Incorrect marking” of facilities with 60-line hits.

“No AZ811 ticket” was the main cause of pipeline damage by excavation in 2022, which means contractors did not have an existing 811 ticket issued and marked facilities prior to excavation activities. According to the analysis the number reported of pipeline damages increased by 10% (25 cases more) in 2022. There were 253 cases reported in 2021 and 278 cases reported in 2022.

The number one cause of pipeline damages that increased the most percentage wise in 2022 was due to “operator or operator’s contractor error” while performing excavation activities; this root cause increased 75% from 2021 to 2022. There were 40 cases reported in 2021 and an increment to 70 cases in 2022. Nonetheless, looking at the damage prevention program as its entirety, these pipeline damages represent only 10% of the overall pipeline damages (681 total) throughout the year. The benefit acquired through this analysis provides a better understanding of the state program identifying the areas improvement.

Despite the underground facilities law enforcement and monies collected in 2022, AZOPS has the responsibility to improve this program in a continuous effort to strongly encourage gas operators and underground facility owners to inform AZOPS of underground facility damage in a timely manner.

Data shows that 10,202 more AZ811 tickets were generated in the state of Arizona in 2022, which represents a 1.2% increase from year 2021. There were 865,568 AZ811 tickets received in 2021 and 875,771 tickets received in 2022.

The increase of AZ811 tickets called into the Arizona 811 Center is a good indicator that the public in general and operators within the State of Arizona are receiving the message to call 811 “before you dig”.

The AZOPS in conjunction with the Arizona 811 Center provides to gas pipeline operators and contractors/excavators the required training of the Underground Facilities Law to educate them to reduce the number of pipeline damages.

In addition, there was a small reduction of pipeline damages in 2022 in comparison to year 2021 leading to an average number of pipeline damages per 1,000 ticket requests of 0.78 in 2022, representing a factor reduction of 0.03; indicating a positive trend in damage prevention, and this may be attributed to the AZOPS proactive approach to enforcing Operator Qualification requirements and the Underground Facilities Law and to the operators engaging and implementing their damage prevention and public awareness programs.