



# ARIZONA CORPORATION COMMISSION

Office of Pipeline Safety (AZOPS)

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## **2023 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) with a total combined pipeline length of 44,556 miles and 1,435,866 services.

A total of 760 pipeline hits/damages is the accumulative pipeline damages reported by operators during year 2023, after completing the analysis “3<sup>rd</sup> Party Excavator Error” is the leading cause of pipeline damage for year 2023, the second cause is “No AZ811 Tickets” followed by “Error by LDCs Personnel” and “Incorrect Marking” being the last cause.

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

Since 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 2023 Damage Prevention Performance Report an analysis of the information data was performed; the data analyzed corresponds to (19) operators as shown in the following list:

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

Table 1

The 19 operators listed above have a total combined pipeline length of 44,556 miles and 1,435,866 services. It is important to note that this information data is derived from 2023 annual reports.

In addition, for transparency purposes one operator did not provide its damage prevention quarterly reports during 2023. However, the pipeline damage numbers for this operator included in this analysis were obtained from the 2023 annual report. 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 2023 and analyzed the data received by operators. Table 2 below shows a summary report for 2023.

2023 SUMMARY REPORT						
Miles of Pipelines	44,556					
No. of Services	1,435,866					
		1st Q	2nd Q	3rd Q	4th Q	<b>Totals</b>
AZ811 Tickets Received	207,041	206,891	202,599	199,536		<b>816,068</b>
Pipeline Damages	154	200	268	138		<b>760</b>
No AZ811 Ticket	46	66	92	55		<b>259</b>
Incorrect Marking	30	22	27	11		<b>90</b>
3rd Party Excavator Error	65	90	111	58		<b>324</b>
Error by LDCs Personnel	13	22	38	14		<b>87</b>
Average Number of Pipeline Damaged Per 1000 Ticket Request	0.74	0.97	1.32	0.69		<b>0.93</b>

Table 2

Figure 1 below shows pipeline damage versus AZ811 tickets received during each quarter in 2023.

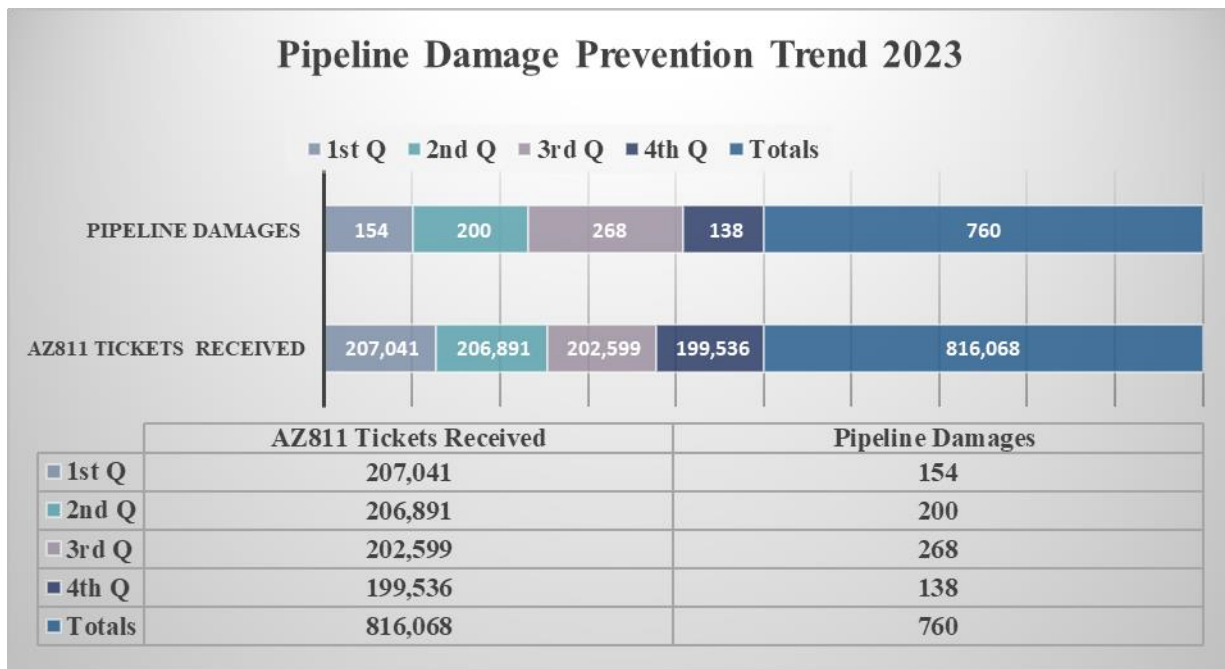
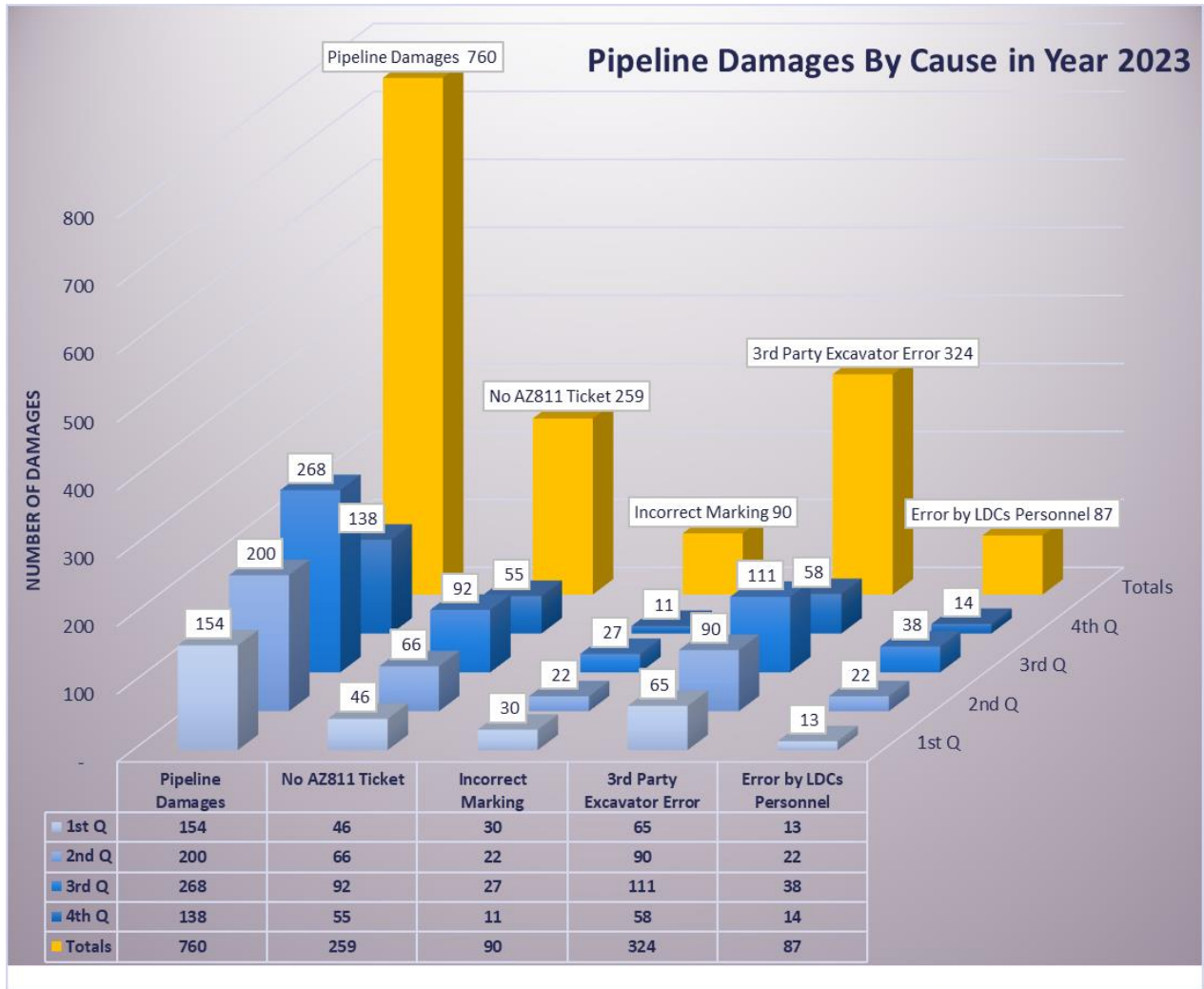


Figure 1. Damage Prevention Trend 2023

Figure 2 below shows 760 pipeline hits/damages as the accumulative pipeline damage reported by operators during year 2023, “3<sup>rd</sup> Party Excavator Error” is the leading cause of pipeline damage for year 2023, the second cause is “No AZ811 Tickets” followed by “Incorrect Marking” and “Error by LDCs Personnel” being the last cause.

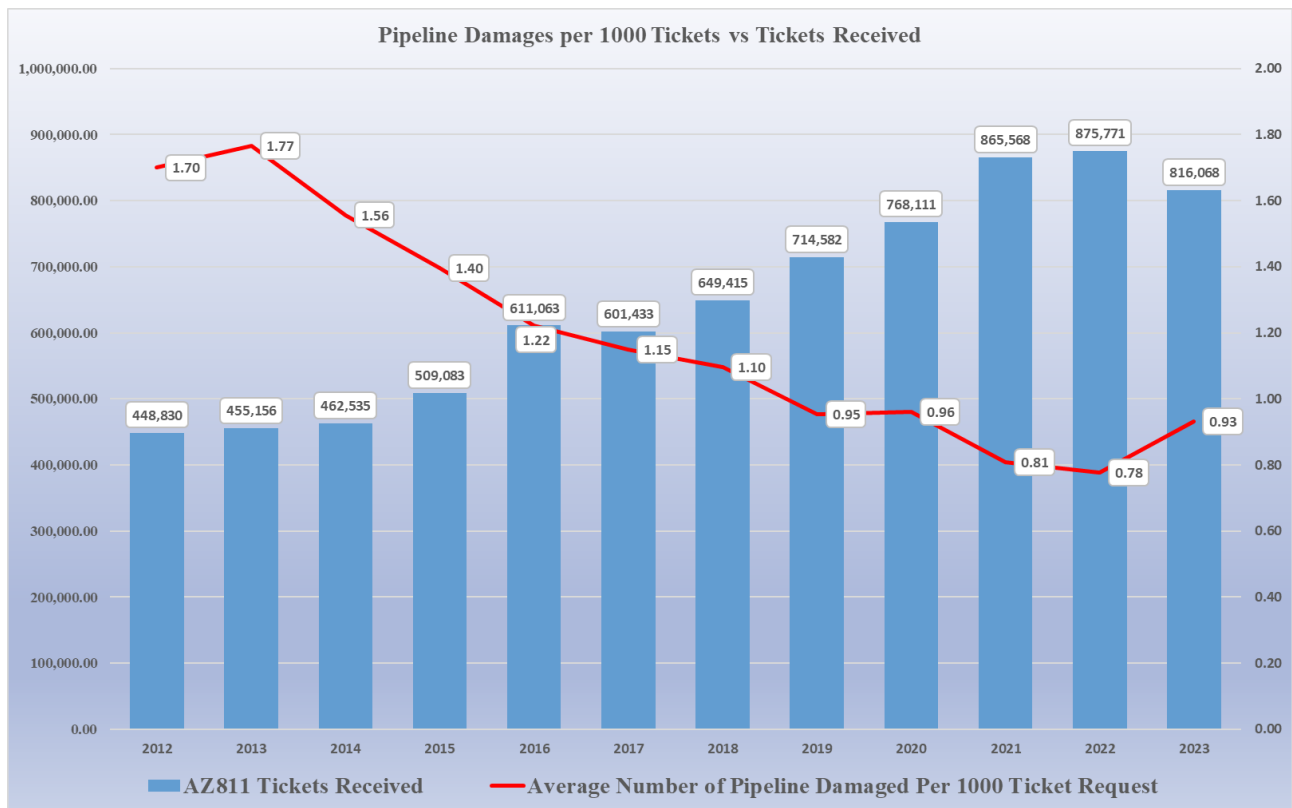


**Figure 2. Pipeline Damages by Cause 2023**

## HISTORICAL DATA

The next chart (Figure 3) 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 increased 0.15 in 2023 with respect to year 2022. 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 2023.



**Figure 3. Average number of damaged pipelines per 1,000 tickets vs tickets received.**

## DATA SUMMARY

The information data was analyzed, and a comparison established between years 2022 and 2023.

The data analysis assessment shows that there was a 6.8% decrease in AZ811 tickets generated for year 2023 versus year 2022. There were 875,771 AZ811 tickets received in year 2022 and within 2023 there were 816,068 AZ811 tickets received.

The number of pipeline damages reported increased in year 2023 by 12.48% in comparison to pipeline damages reported in 2022, from 681 reported in 2022 to 760 reported in 2023.

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

- Pipeline damages by excavation due to “Third Party Excavator Error” was the number one leading cause in 2023. There were 51 more cases reported in 2023 than 2022, being 273 instances reported in 2022 and 324 instances reported in 2023, which represents 43% of the overall reported cases in 2023.
- Pipeline damages caused by “No AZ811 ticket” decreased 6.8%. There were 19 cases less in 2023 than 2022. There were 278 cases reported in 2022 and 259 cases reported in 2023. Although the number of pipeline damages in this rubric decreased in 2023; it was the second leading cause of pipeline damages in 2023 due to the total pipeline damages representing 34%.
- Pipeline damages by excavation due to “incorrect marking” increased in year 2023. There were 60 cases reported in year 2022 and 90 cases reported in year 2023, which represents an increment of pipeline damages related to this root cause of 50%. This rubric was the third leading cause of pipeline damages being 12% of the total pipeline damages in 2023.
- Pipeline damages by excavation due to “operator or operator’s contractor error” increased 24.3% from 2022 to 2023. There were 70 cases reported in 2022 and an increment to 87 cases in 2023, which represents only 11% of the overall reported cases in 2023.



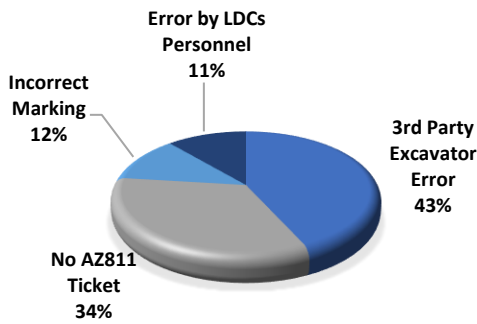
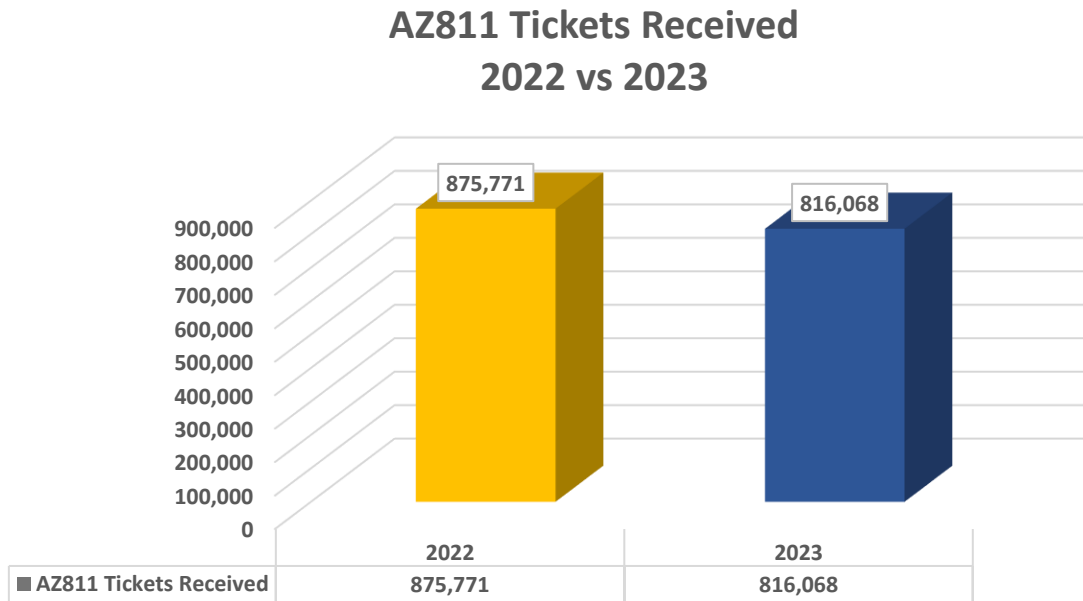


Figure 4 shows the pipeline damages by cause by percentage in 2023. “3<sup>rd</sup> Party Excavator Error” being the leading cause of excavation damages in 2023, “No AZ811 tickets” the second leading cause followed by “Incorrect Marking” and “Error by LDC’s Personnel”.

**Figure 4. Pipeline damages by percentage in 2023.**

Based on the data analyzed, the average number of pipeline damages due to excavation per 1,000 locate tickets increased from 0.78 in 2022 to 0.93 in 2023, data collection has revealed that this factor has continued a positive trend since year 2019, which has been below 1.

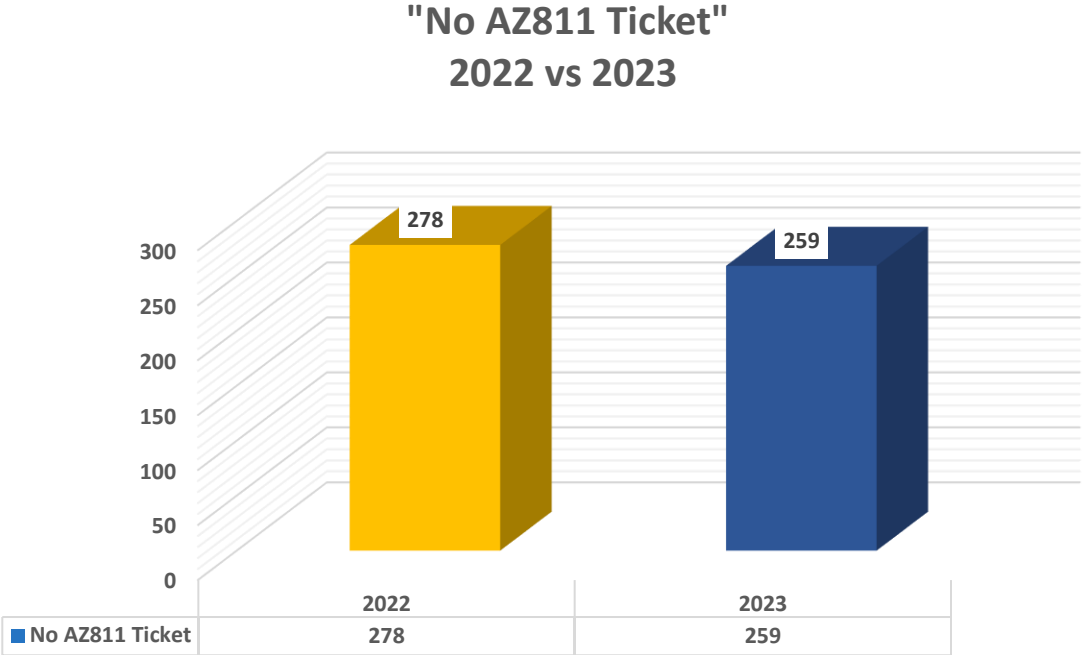
The chart below (Figure 5) shows how the number of AZ811 tickets generated in 2023 decreased by 59,703 representing 6.8% less than year 2022. Since year 2021, there has been more than 800,000 AZ811 tickets reported annually up to date.



**Figure 5. AZ811 tickets received 2022 vs 2023.**

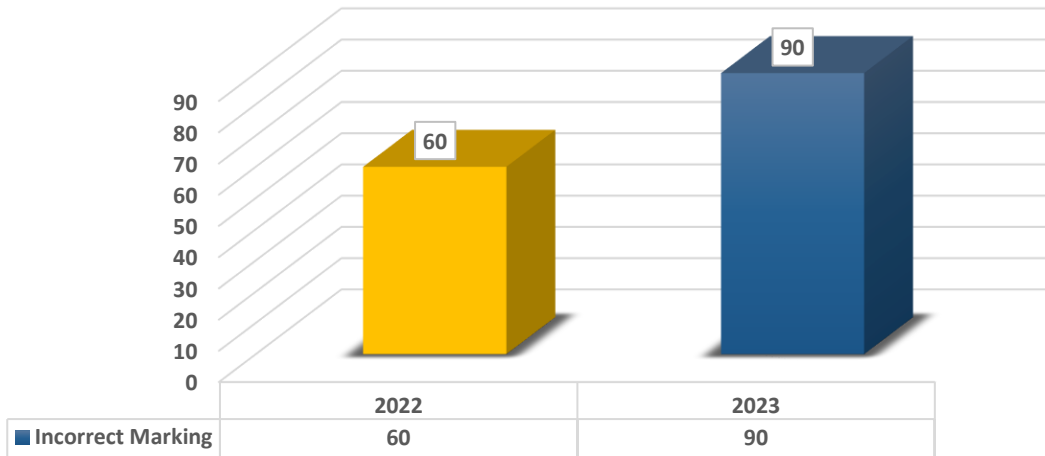
The following next 4 charts show a comparison on the cause of pipeline damage classified into four root causes between the years 2022 and year 2023. These categories are:

- 1. No AZ811 ticket requested by excavator (See Figure 6)
- 2. Incorrect marking of pipeline facilities (See Figure 7)
- 3. Third party excavator error (See Figure 8)
- 4. Error by operator or operator contractor (See Figure 9)



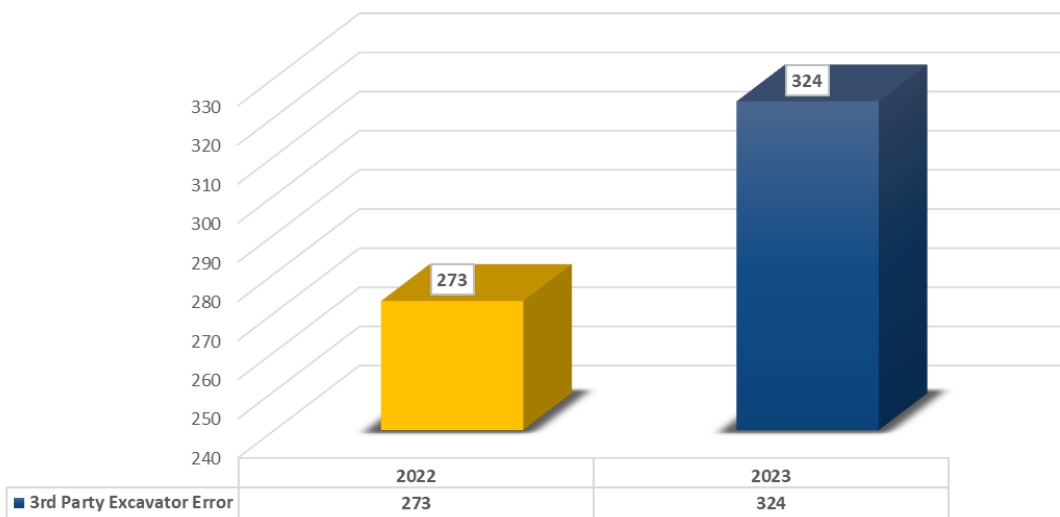
**Figure 6. Pipeline Damage "No AZ811 Ticket"**

### "Incorrect Marking" 2022 vs 2023



**Figure 7. Pipeline Damage " Incorrect Marking"**

### "Third Party Excavator Error" 2022 vs 2023



**Figure 8. Pipeline Damage "Third Party Excavator Error"**

### "Error by LDCs Personnel" 2022 vs 2023

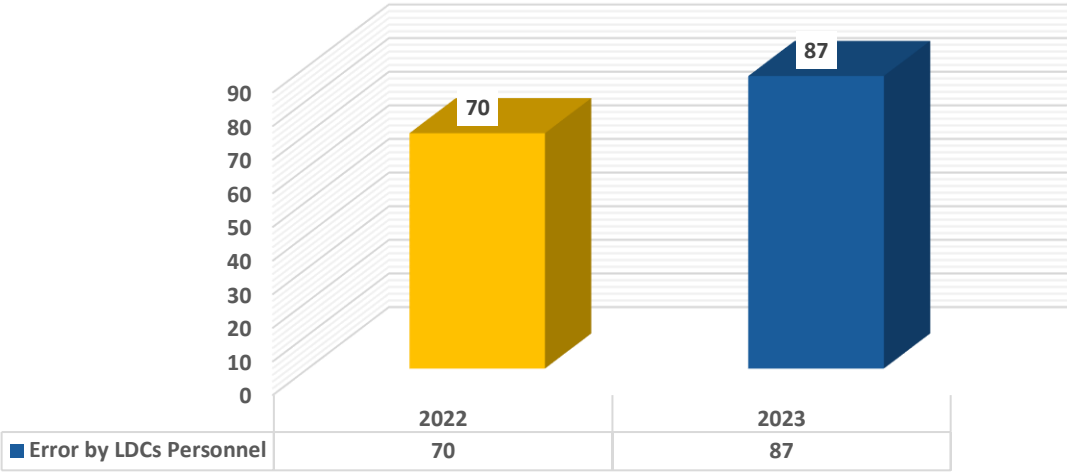


Figure 9. Pipeline Damage "Error by LDCs Personnel"

## 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. Participation by operators, excavators, and other stakeholders in the development and implementation of methods for establishing and maintaining effective communications between stakeholders from receipt of an excavation notification until successful completion of the excavation, as appropriate.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. Adopt new technologies to reduce damages by improving communications with the Arizona 811 Center to improve processes, locating, and excavating practices.

Continue...

## RECOMMENDATIONS TO IMPROVE PIPELINE DAMAGE PROGRAMS

9. Underground facilities owners/operators shall locate and track their abandoned underground facilities.
10. Operators shall continue to increase public awareness campaigns that can effectively reach multiple audiences with the AZ811 information.
11. Public outreach through mass media shall continue over the years to come to reach all audiences at the same time, making campaigns more efficient.
12. 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.
13. 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.
14. Operators must have a goal to create a program that offers clear expectations to industry and protects the integrity of underground infrastructure and the safety of people and property.
15. The AZOPS and the Arizona 811 Center joined efforts will continue to offer gas pipeline operators and contractors/excavators the required training of the Underground Facilities Law to reduce the number of pipeline damages.

## CONCLUSION

For calendar year 2023, the number one root cause of pipeline damages was “3<sup>rd</sup> Party Excavator Error” in the State of Arizona with 324-line hits and the second root cause was “No AZ811 ticket” with 259-line hits, followed by “Incorrect marking” with 90-line hits and finally “LDC personnel’s error” of facilities with 87-line hits.

“3<sup>rd</sup> Party Excavator Error” was the main cause of pipeline damage by excavation in 2023. According to the analysis the number reported of pipeline damages increased by 20.88% (51 cases more) in 2023. There were 273 cases reported in 2022 and 324 cases reported in 2023.

The number one cause of pipeline damages that increased the most percentage wise in 2023 was due to “incorrect marking” while performing excavation activities; this root cause increased 50% from 2022 to 2023. There were 60 cases reported in 2022 and an increment to 90 cases in 2023. Nonetheless, looking at the damage prevention program as its entirety, these pipeline damages represent only 12% of the overall pipeline damages (760 total) throughout the year. The benefit acquired through this analysis provides a better understanding of the state program identifying the areas for improvement.

Data shows a reduction of 59,703 AZ811 tickets generated in the state of Arizona in 2023, which represents a 6.8% decrease from year 2022. There were 875,771 AZ811 tickets received in 2022 and 816,068 tickets received in 2023.

Although, there was a small increment of pipeline damages in 2023 in comparison to year 2022 leading to an average number of pipeline damages per 1,000 ticket requests of 0.93 in 2023, representing a slight increment in this factor of 0.15, which indicates that the trend in damage prevention continues to be below 1. This indicator 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.