

# ARIZONA CORPORATION COMMISSION

## Office of Pipeline Safety (AZOPS)

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## 2021 Damage Prevention Performance Report

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## EXECUTIVE SUMMARY

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This report examines and measures the trend on 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

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In 2012, the Arizona Corporation Commission’s Office of Pipeline Safety (“AZOPS”) directed the 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 goal of 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 creation of the 2021 Damage Prevention Performance Report an analysis of the information data was performed; the data analyzed corresponds to (21) operators as shown in Table 1 below:

	<b>Operator</b>
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
14	Graham County Utilities Incorporated
15	NUCOR Steel Kingman, LLC
16	Pimalco Gas
17	Plains Marketing, L.P.
18	Southwest Gas Corporation
19	Swissport Fueling Incorporated
20	UniSource Energy Services
21	United Dairymen of Arizona

Table 1

\*Data used for the analysis obtained from 2021 annual reports.

These 21 operators have a total combined pipeline length of 43,232 miles and 1,387,142 of gas services. It is important to note that this information data is derived from 2021 annual reports.

In addition, for transparency purposes two small operators did not provide their damage prevention quarterly reports during 2021. However, the pipeline damage numbers for these operators included in this analysis were obtained from the 2021 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 2021 and analyzed the data received by operators. Table 2 below shows a summary report for 2021.

2021 SUMMARY REPORT						
Miles of Pipelines	43,232					
No. of Services	1,387,142					
	1st Q	2nd Q	3rd Q	4th Q	Totals	
811 Tickets Received	208,608	219,613	225,169	212,178	<b>865,568</b>	
Pipeline Damage	174	170	174	182	<b>700</b>	
Cause of Damage	No 811 Ticket	54	57	61	81	<b>253</b>
	Incorrect Marking	21	23	33	15	<b>92</b>
	3rd Party Excavator Error	88	80	72	75	<b>315</b>
	Error by LDCs Personnel	11	10	8	11	<b>40</b>
Average Number of Pipeline Damaged Per 1000 Ticket Request	0.83	0.77	0.77	0.86	0.81	

Table 2

Figure 1 below shows pipeline damage versus AZ811 tickets received during each quarter during 2021.

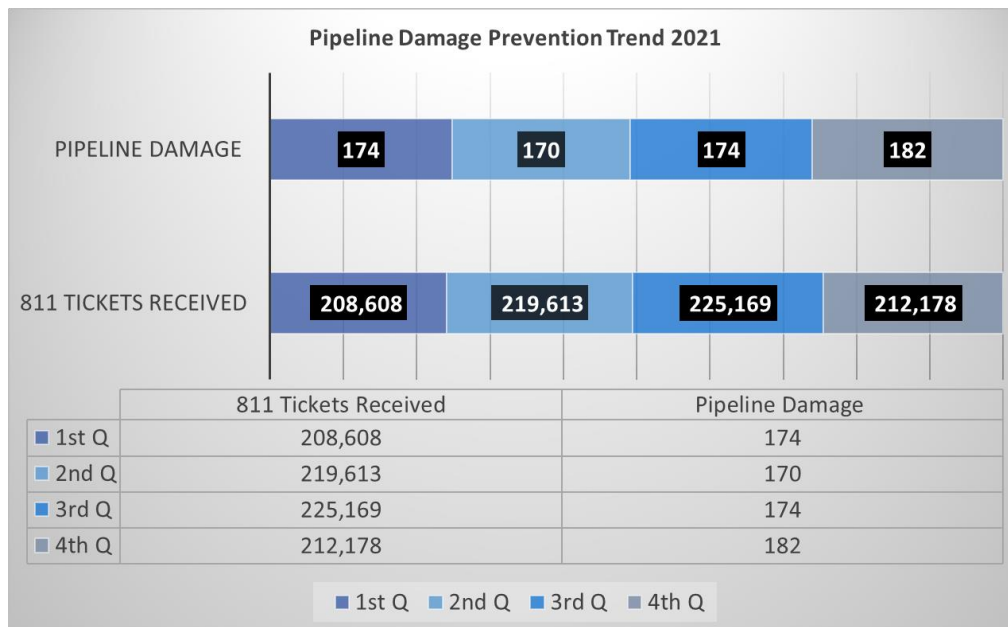
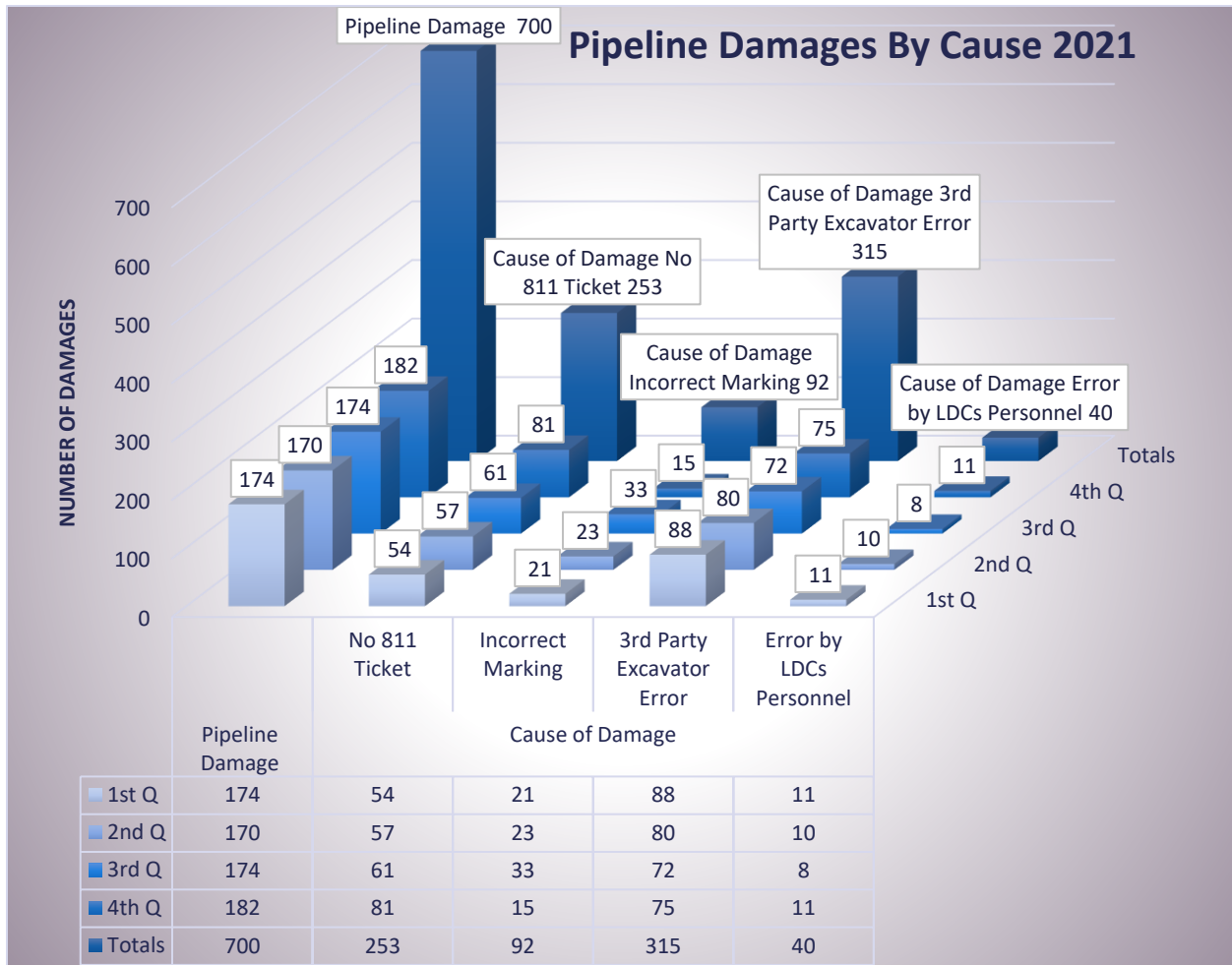


FIGURE 1. DAMAGE PREVENTION TREND 2021

Figure 2 below shows 700 pipeline hits/damages as the accumulative pipeline damage reported by operators during year 2021, the leading cause of pipeline damage during 2021 continues to be 3rd Party Excavator Error, the second cause is No AZ811 Tickets, followed by Error by LDCs Personnel and Incorrect Marking being the last cause.



**FIGURE 2. PIPELINE DAMAGES BY CAUSE 2021**

## DATA SUMMARY

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The information data in this analysis was gathered, analyzed, and compared between years 2020 and 2021.

The data analysis assessment shows that there was a 13% increase in AZ811 tickets generated for year 2021 versus year 2020. There were 768,111 AZ811 tickets received in year 2020 and within 2021 there were 865,568 AZ811 tickets received.

The number of pipeline damages reported decreased in year 2021 by 5% in comparison to pipeline damages reported in 2020.

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

No AZ811 ticket increased 2%. There were 6 more pipeline damages reported in year 2021 than in year 2020 with a total of 253 cases reported during 2021. This category continues to be the second leading cause of pipeline damages in 2021.

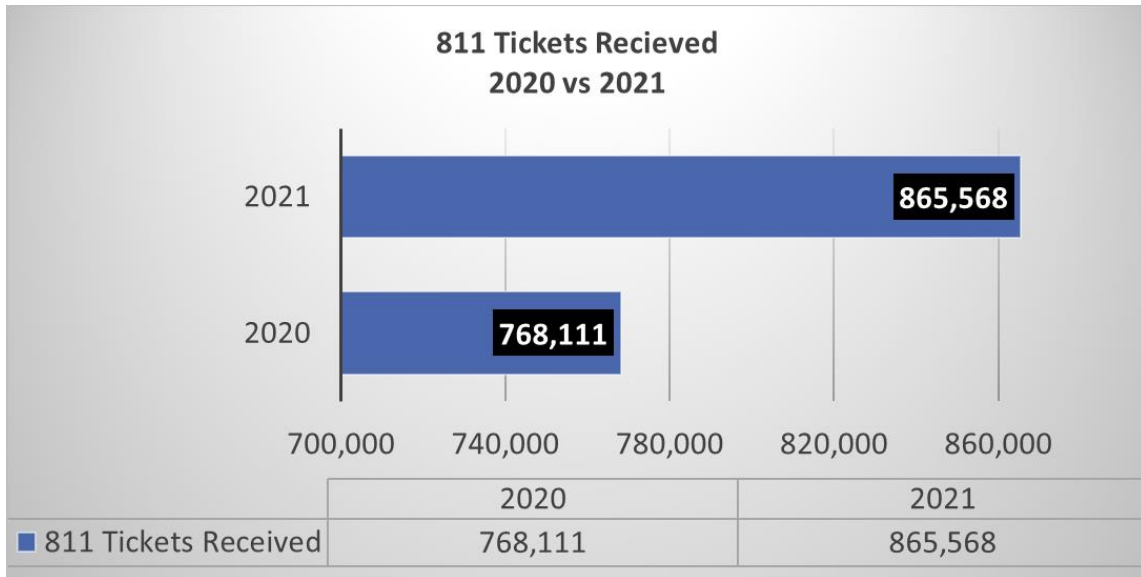
Pipeline damages by excavation due to incorrect marking increased in year 2021. There were 76 cases reported in year 2020 and 92 cases reported in year 2021, which represents an increment of pipeline damages related to this root cause of 21%.

Pipeline damages by excavation due to Third Party Excavator Error decreased by 4%. There were 329 cases in 2020 and 315 cases reported in 2021. Although, there were less pipeline damages in 2021 related to Third Party Excavator Error, this root cause continues to be the leading cause of pipeline damages in Arizona.

Pipeline damages by excavation due to operator or operator's contractor error decreased 53% from 2020 to 2021. There were 86 cases reported in 2020 and only 40 cases in 2021.

Based on the data analyzed, the average number of pipeline damages due to excavation per 1,000 locate tickets decreased from 0.96 in 2020 to 0.81 in 2021.

The chart below (Figure 3) shows how the number of 811 tickets generated in 2021 increased by 97,457 representing 13% more than year 2020. Since year 2012 there has been a continuous increase in the number of AZ811 tickets reported up to date.

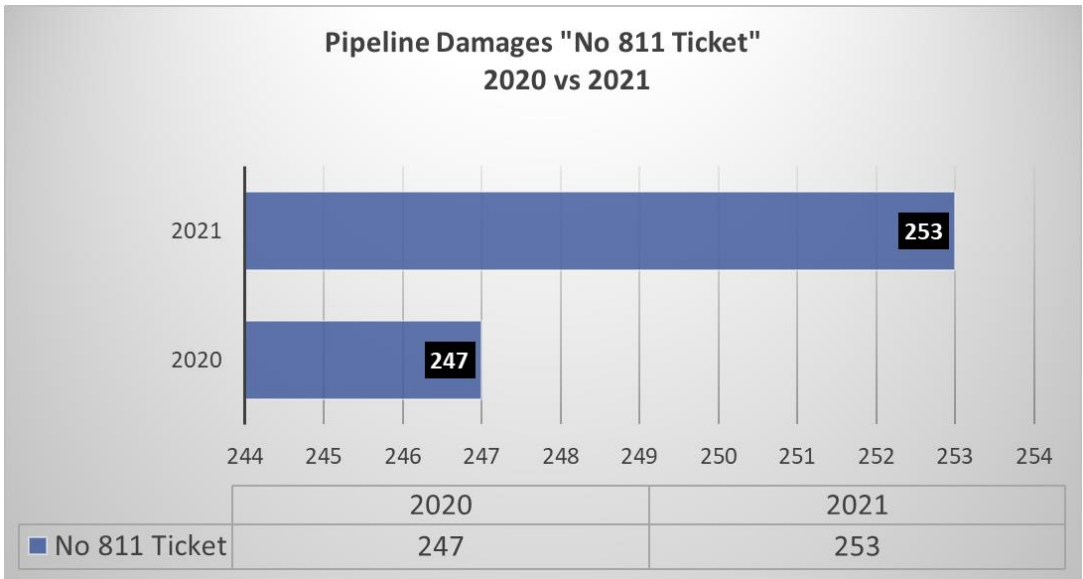


**FIGURE 3. 811 TICKETS RECEIVED PER YEAR**

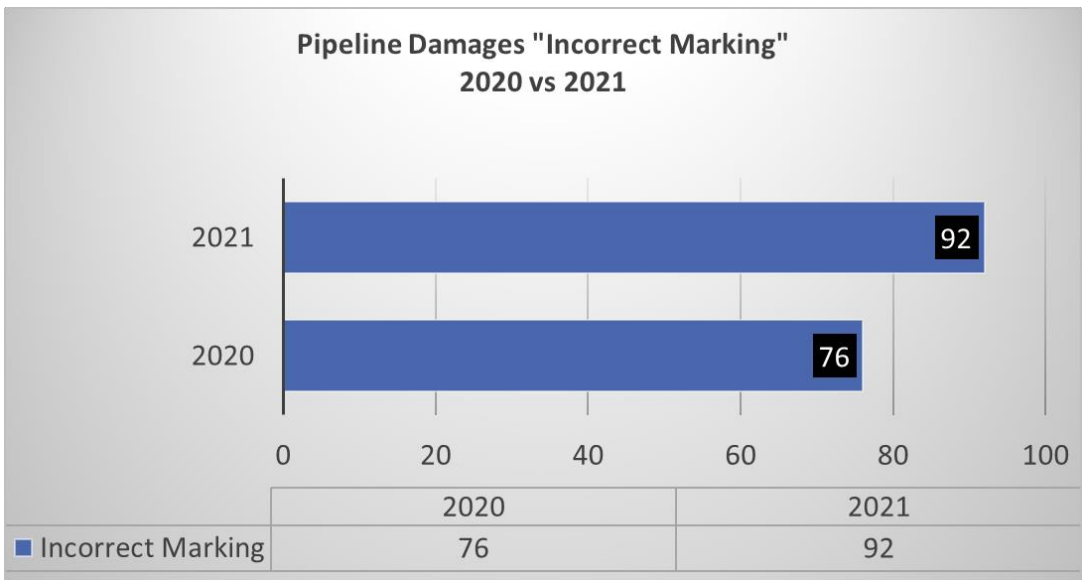
The next 4 charts show a comparison on the cause of pipeline damage classified into four root causes between the years 2020 and year 2021. These categories are:

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)

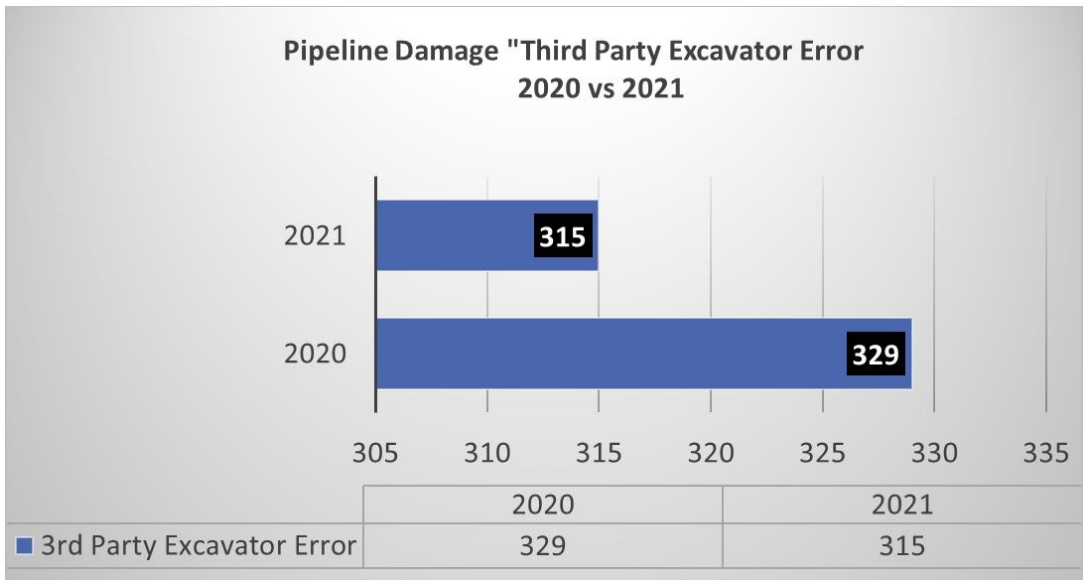




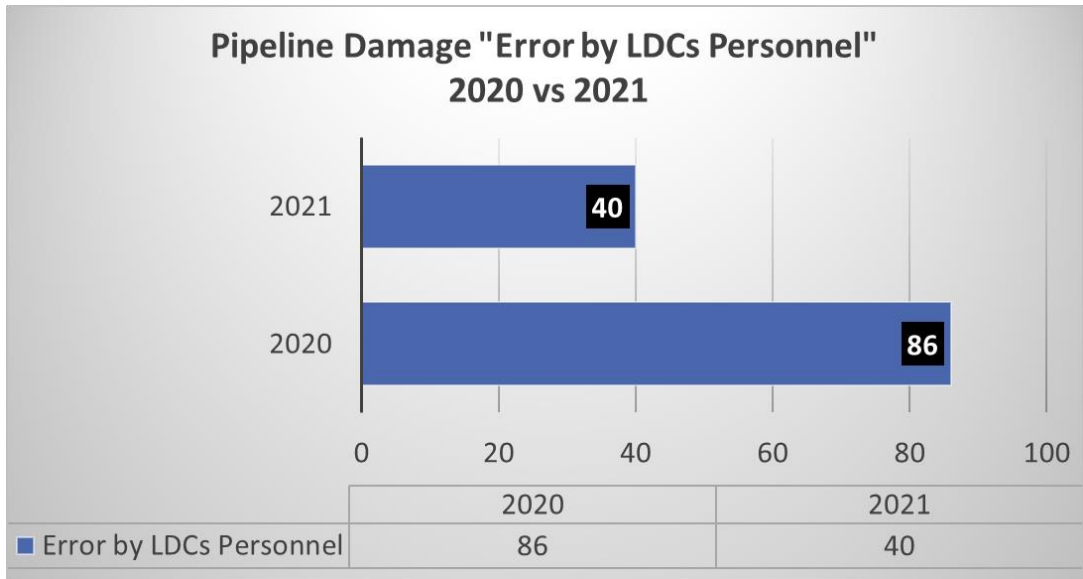
**FIGURE 4. PIPELINE DAMAGE "NO 811 TICKET"**



**FIGURE 5. PIPELINE DAMAGE " INCORRECT MARKING"**



**FIGURE 6. PIPELINE DAMAGE "THIRD PARTY EXCAVATOR ERROR"**



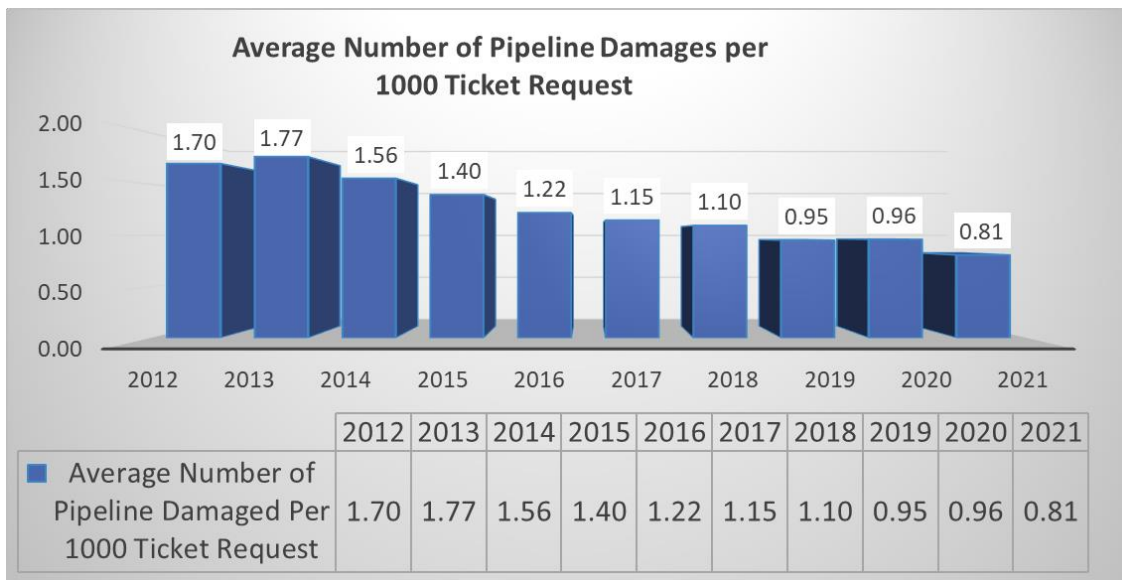
**FIGURE 7. PIPELINE DAMAGE "ERROR BY LDCs PERSONNEL"**

## HISTORICAL DATA

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The next chart (Figure 8) shows the average number of pipelines damaged per 1,000 ticket requests. The graphic shows that the average of pipeline damaged per 1,000 tickets decreased 0.15 in 2021 with respect to year 2020. However, this factor has decreased significantly over the years since the reporting started back in year 2012, showing a positive trend.

The number of excavation damage occurrences per 1,000 locate tickets is an established benchmark within the damage prevention industry and an important indicator of damage prevention program performance. This factor continues to be below 1 in year 2021.



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

## RECOMMENDATIONS TO IMPROVE PIPELINE DAMAGE PROGRAMS

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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 in 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

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For calendar year 2021, “3<sup>rd</sup> Party Excavator Error” continues to be the number one root cause of pipeline damages in the State of Arizona. The number two root cause was No AZ811 tickets, followed incorrect marking of facilities and finally LDC personnel’s error.

Although, “3<sup>rd</sup> Party Excavator Error” is the main cause of pipeline damage by excavation; according to this analysis the number reported of pipeline damages decreased by 4% in 2021. There were 329 cases reported in 2020 and 315 cases reported in 2021.

Data shows that 97,457 more AZ811 tickets were generated in the state of Arizona in 2021, which represents a 13% increase from year 2020. There were 865,568 AZ811 tickets received in 2021 and 768,111 tickets received in 2020.

Despite the underground facilities law enforcement and monies collected in 2021, 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.

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 provide 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 2021 in comparison to year 2020 leading to an average number of pipeline damages per 1,000 ticket requests of 0.81 in 2021 representing a factor reduction of 0.16; it is observed 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.