

ARIZONA CORPORATION COMMISSION  
PIPELINE SAFETY SECTION



2015

Trends on Pipeline Damages  
Caused by Excavation

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## EXECUTIVE SUMMARY

This report examines and measures the trend on pipeline damages caused by excavation activities of all local companies (LDC) that own and operate (Operator) a pipeline system in the State of Arizona.

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.

In the year 2012, the Arizona Corporation Commissions, Office of Pipeline Safety (ACC) instructed the Operators to submit a quarterly report of pipeline damages (data) caused by excavation with 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 811 ticket requested by excavator
  - Incorrect marking of pipeline facilities
  - Error by excavator
  - Error by operator or operator contractor.

The goal of this report is to identify the leading cause of “pipeline hits” and to suggest improvement of identification and tracking of areas that have more “pipeline hits” which will be critical to gas pipeline safety.

There are twenty two (22) operators included in this Damage Prevention Performance Report, they are the following:

◆ Abbott Laboratories	◆ Gila River Power LP
◆ Alliant Gas Arizona Propane LLC	◆ Graham County Utilities Incorporated
◆ APS Energy Services	◆ Havasu Spring Resorts.
◆ Calpine Energy Services LP	◆ NUCOR Steel
◆ City of Benson	◆ Pimalco Incorporated
◆ City of Mesa	◆ Plains LPG Services
◆ City of Safford	◆ Southwest Gas Corporation (SWG)
◆ City of Willcox	◆ Swissport Fueling Incorporated
◆ Colorado City	◆ Unisource Energy Services (Unisource)
◆ Copper Market Gas Incorporated	◆ Valley Airpark
◆ Duncan Valley Electric Cooperative	◆ Zapco Energy Tactics Corporation

These 22 Operators have a total combined pipeline length of 49,956 miles and 1,275,158 total number of gas services.

# DATA ANALYSIS

## DATA SUMMARY

Data shows that there is a 10% increase in 811 tickets generated for 2015. There were 462,535 - 811 tickets received in 2014 and 509,083 - 811 tickets received in 2015.

There was a 1% decrease of pipeline damages due to excavation from 720 pipeline damages in 2014 down to 711 pipeline damages in 2015.

Pipeline damages by excavation due to no 811 ticket increased 10%. There were 210 cases in 2014 and 230 cases in 2015.

Pipeline damages by excavation due to incorrect marking decreased 2%. There were 85 cases in 2014 and 83 cases in 2015.

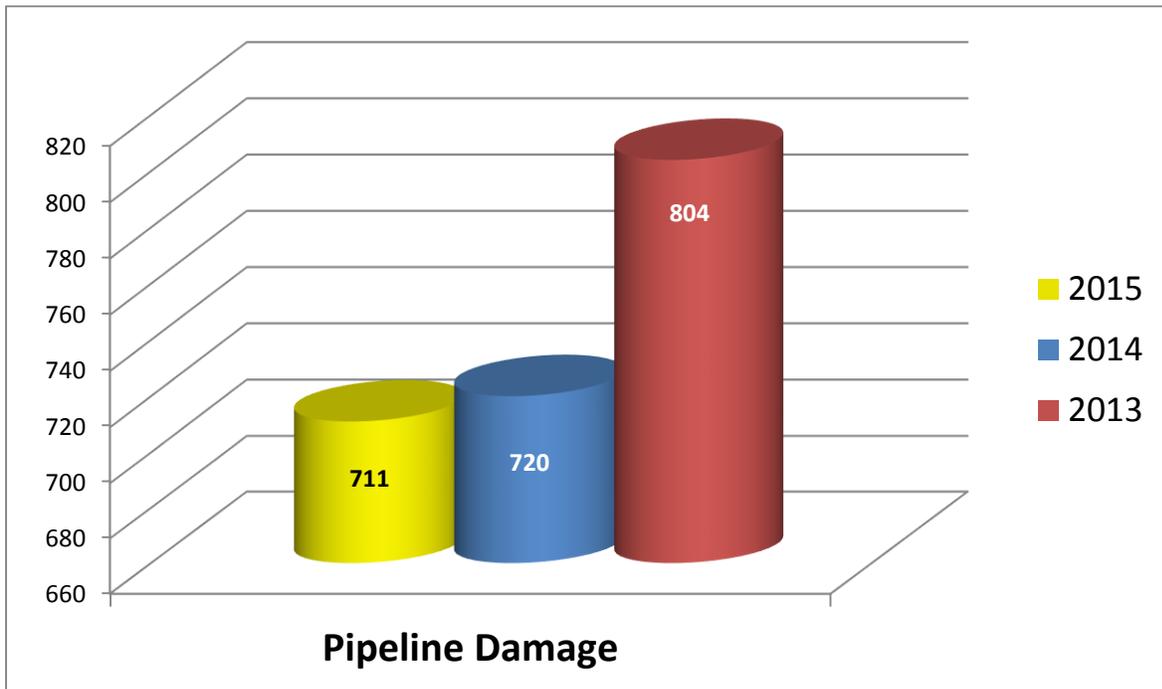
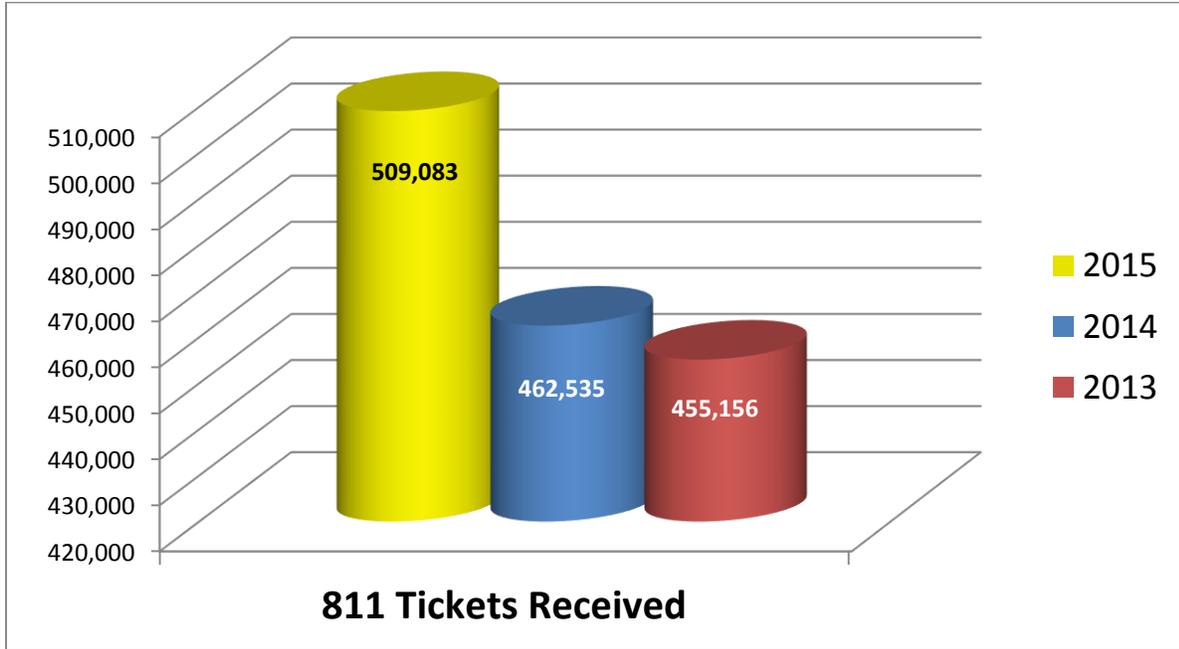
Pipeline damages by excavation due to 3<sup>rd</sup> party excavator error decreased 2%. There were 279 cases in 2014 and 273 cases in 2015.

Pipeline damages by excavation due to operator or operator's contractor error decreased 14%. There were 146 cases in 2014 and 125 cases in 2015.

Based on this data, the average number of pipeline damages due to excavation per 1000 locate tickets decreased from 1.56 in 2014 to 1.40 in 2015.

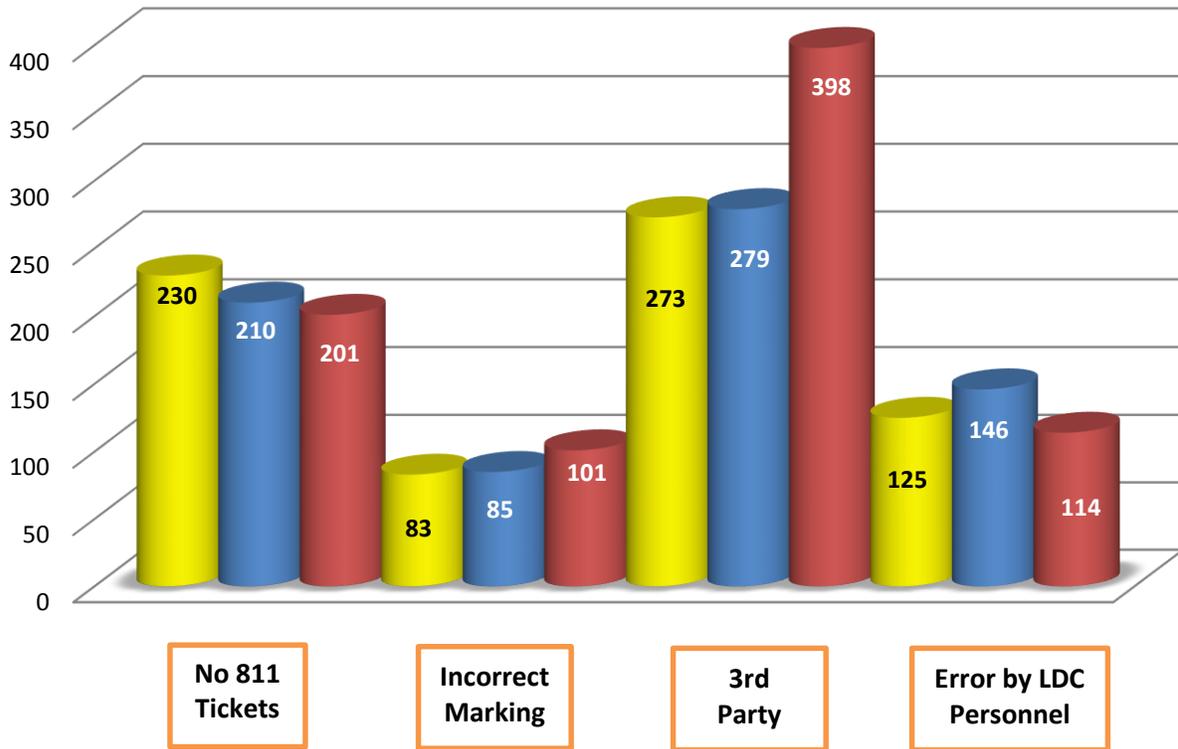
Based on the data that was gathered, the number one root cause of pipeline damages by excavation is due to 3<sup>rd</sup> party excavator error.

DATA SUMMARY FOR 22 OPERATORS

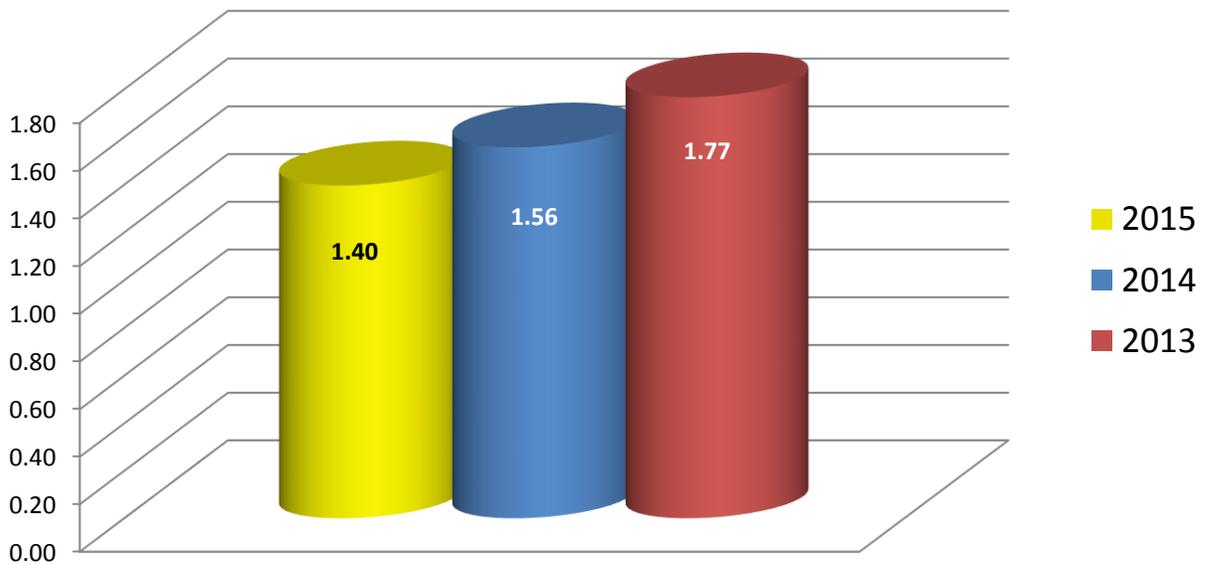


## Cause of Damages

2015 2014 2013

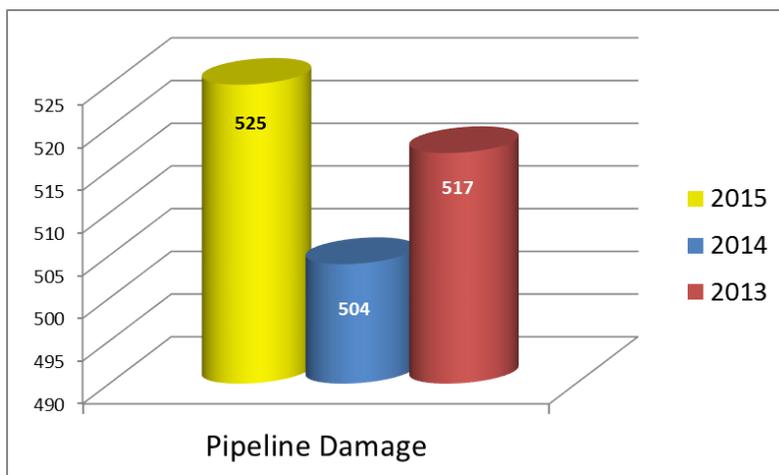
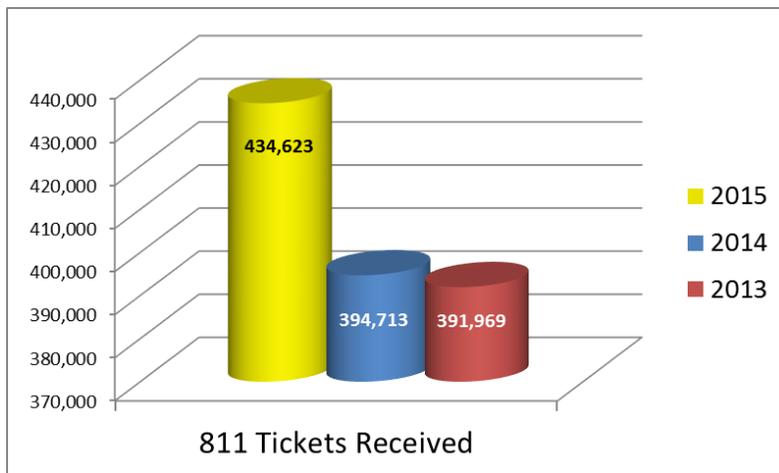


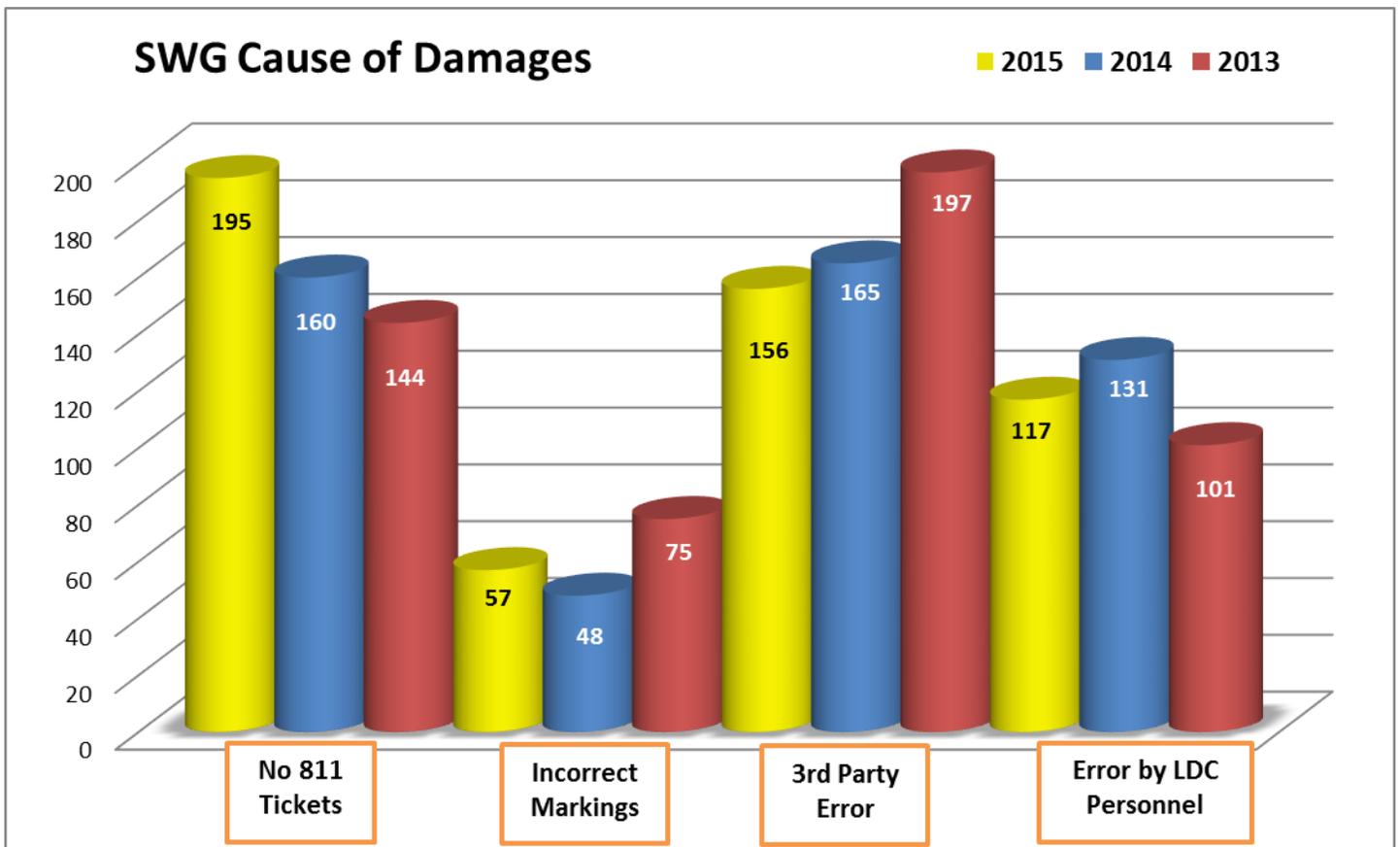
## Average damages per 1000 - 811 ticket request



## SOUTHWEST GAS

SOUTHWEST GAS CORPORATIONS - TOTAL							
Miles of Pipelines			32,865.32				
No. of Services			1,049,015				
			Year 2015				
			1st Q	2nd Q	3rd Q	4th Q	Total
811 Tickets Received			103,875	113,983	111,895	104,870	<b>434,623</b>
Pipeline Damage			122	140	131	132	<b>525</b>
Cause of Damage:							
	No 811 Ticket		47	47	41	60	<b>195</b>
	Incorrect Marking		10	19	19	9	<b>57</b>
	3rd Party Excavator Error		40	44	42	30	<b>156</b>
	Error by LDCs Personnel		25	30	29	33	<b>117</b>
Average Number of Pipeline Damaged							
Per 1000 Ticket Request			1.17	1.23	1.17	1.26	<b>1.21</b>



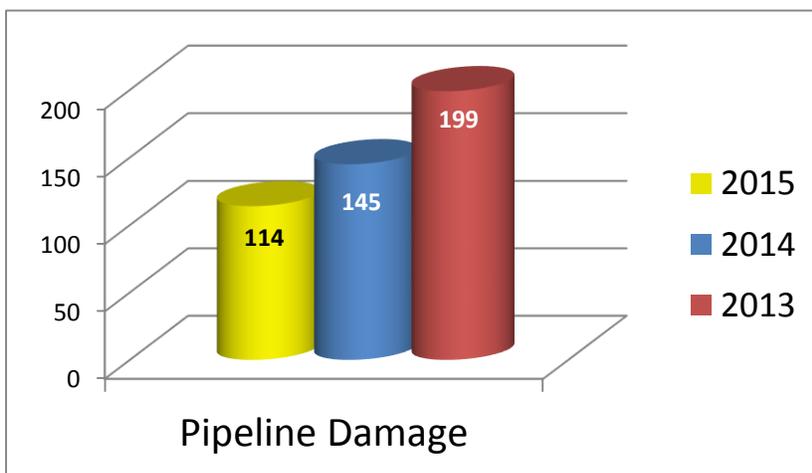
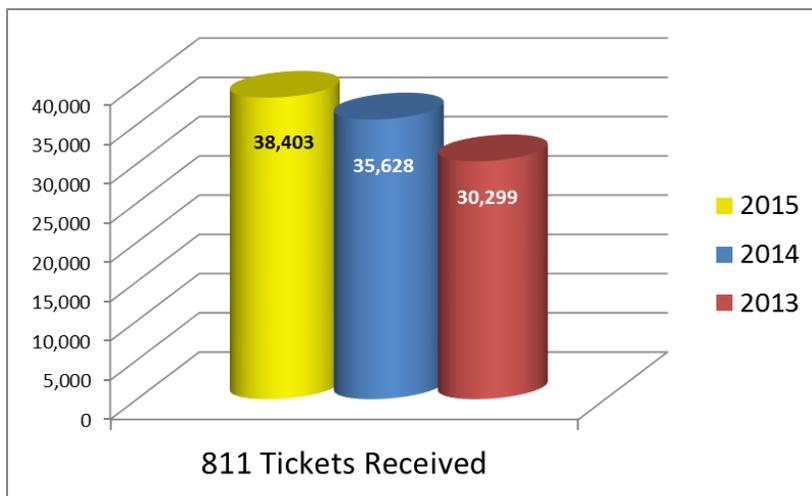


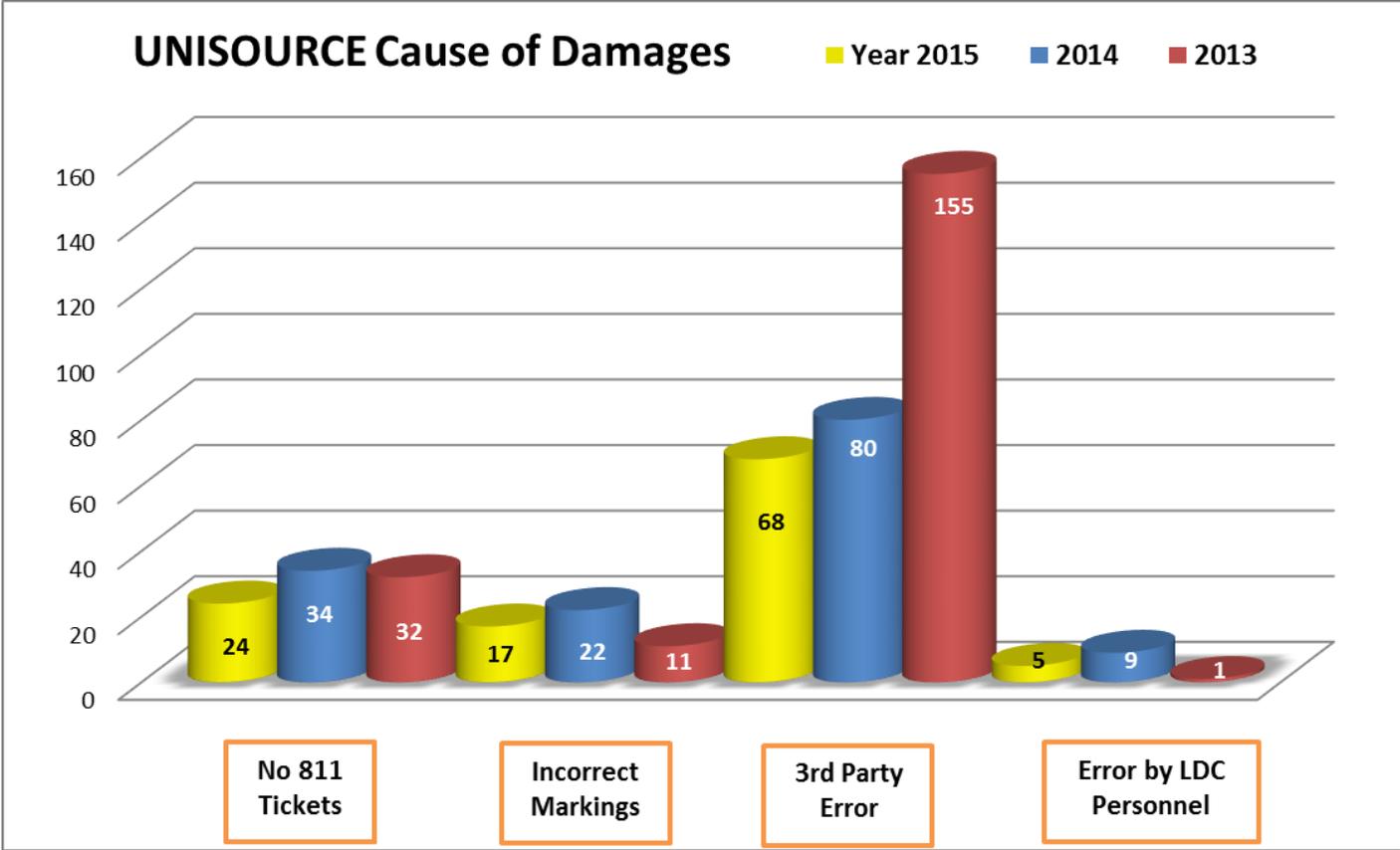
- There is a 10% increase in 811 tickets.
- There is a 4% increase in pipeline damage due to excavation.
- There is a 22% increase in pipeline damage caused by no tickets.
- There is a 19% increase in pipeline damage caused by incorrect markings.
- There is a 5% decrease in pipeline damage caused by 3rd party excavator.
- There is an 11% decrease in pipeline damage caused by LDC personnel's error.

**No 811 Ticket excavator damage was the major root cause of pipe damage due to excavation. Out of the 195 total damages due to No 811 Ticket, 77 (39%) were caused by the occupants or names of individuals excavating without an 811 Ticket.**

UNISOURCE ENERGY

UNISOURCE ENERGY SERVICES							
Miles of Pipelines			4,788.32				
No. of Services			140,295				
			<b>Year 2015</b>				
			1st Q	2nd Q	3rd Q	4th Q	<b>Total</b>
811 Tickets Received			8,052	10,358	11,285	8,708	<b>38,403</b>
Pipeline Damage			18	33	46	17	<b>114</b>
Cause of Damage:							
	No 811 Ticket		6	6	10	2	<b>24</b>
	Incorrect Marking		1	7	7	2	<b>17</b>
	3rd Party Excavator Error		10	18	27	13	<b>68</b>
	Error by LDCs Personnel		1	2	2	0	<b>5</b>
Average Number of Pipeline Damaged							
Per 1000 Ticket Request			2.24	3.19	4.08	1.95	<b>2.86</b>



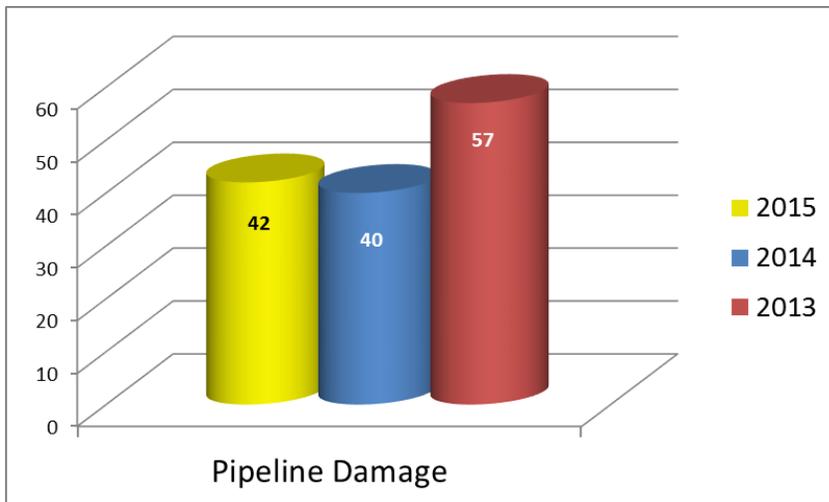
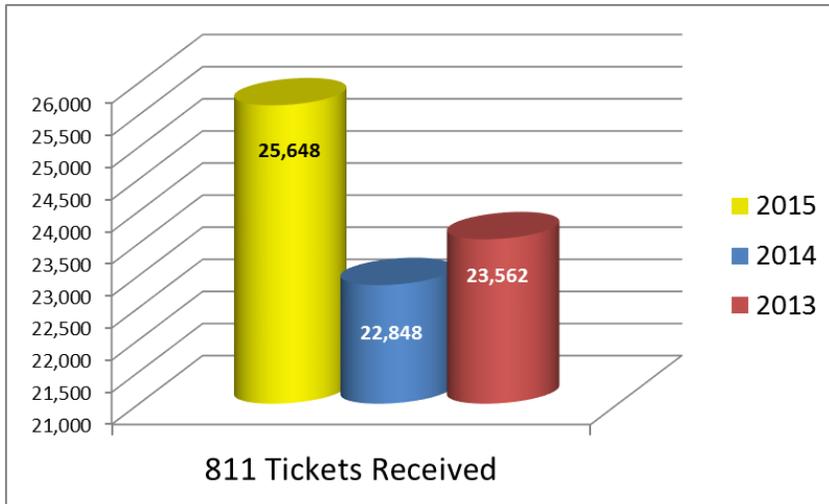


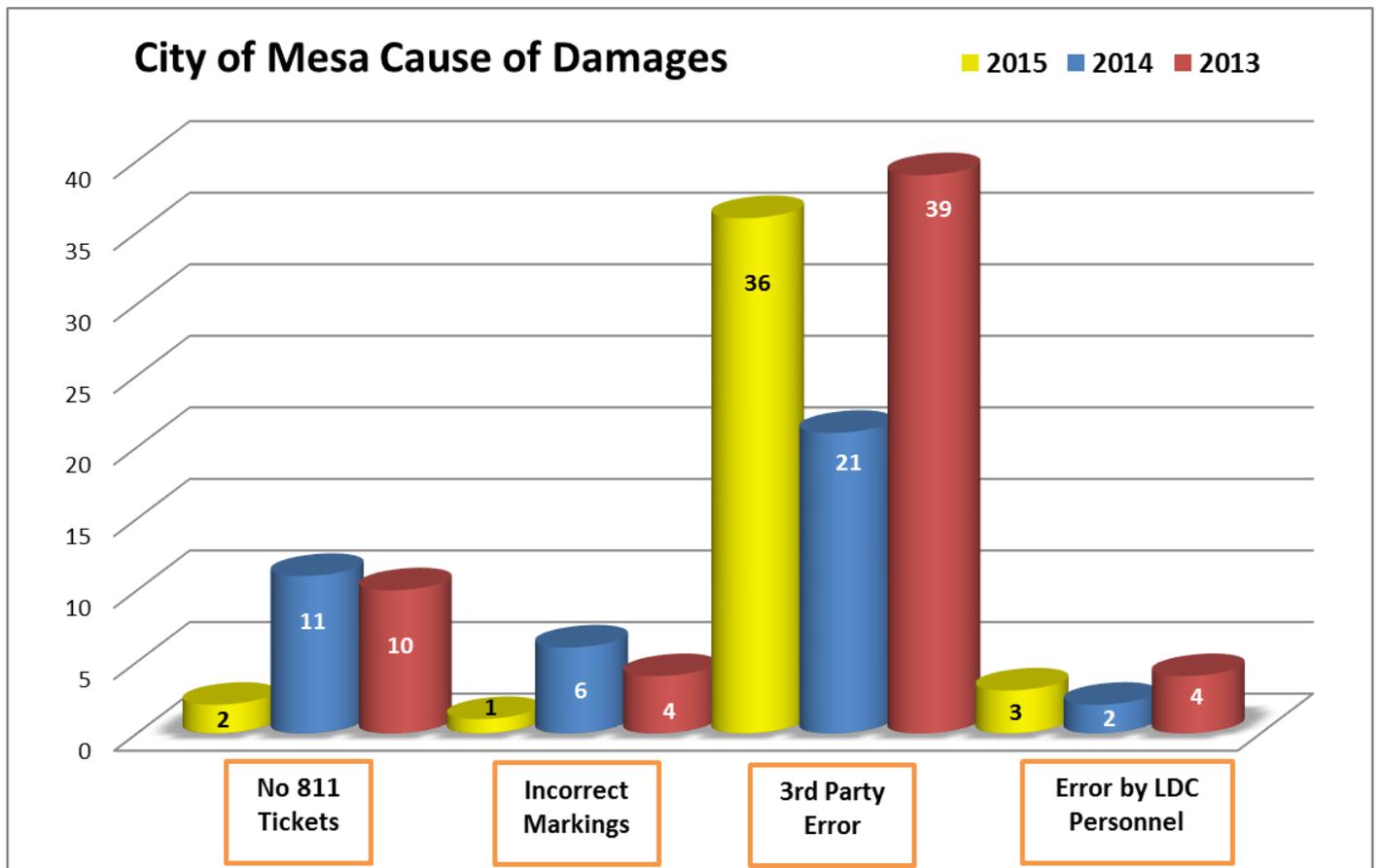
- There is an 8% increase in 811 tickets.
- There is a 21% decrease in pipeline damage due to excavation.
- There is a 29% decrease in pipeline damage caused by no tickets.
- There is a 23% decrease in pipeline damage caused by incorrect markings.
- There is a 15% decrease in pipeline damage caused by 3rd party excavator.
- There is a 44% decrease in pipeline damage caused by LDC personnel's error.

**3rd Party excavator damage was the major root cause of pipe damage due to excavation.**

CITY OF MESA

CITY OF MESA							
Miles of Pipelines			2,040.34				
No. of Services			61,222				
			Year 2015				
			1st Q	2nd Q	3rd Q	4th Q	<b>Total</b>
811 Tickets Received			6,240	6,226	6,704	6,478	<b>25,648</b>
Pipeline Damage			8	12	12	10	<b>42</b>
Cause of Damage:							
	No 811 Ticket		1	1	0	0	<b>2</b>
	Incorrect Marking		0	0	0	1	<b>1</b>
	3rd Party Excavator Error		5	11	11	9	<b>36</b>
	Error by LDCs Personnel		2	0	1	0	<b>3</b>
Average Number of Pipeline Damaged							
Per 1000 Ticket Request			1.28	1.93	1.79	1.54	<b>1.64</b>



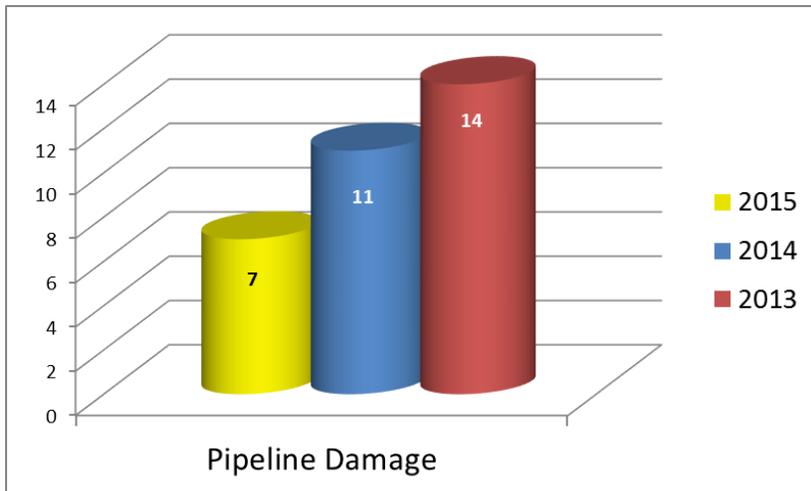
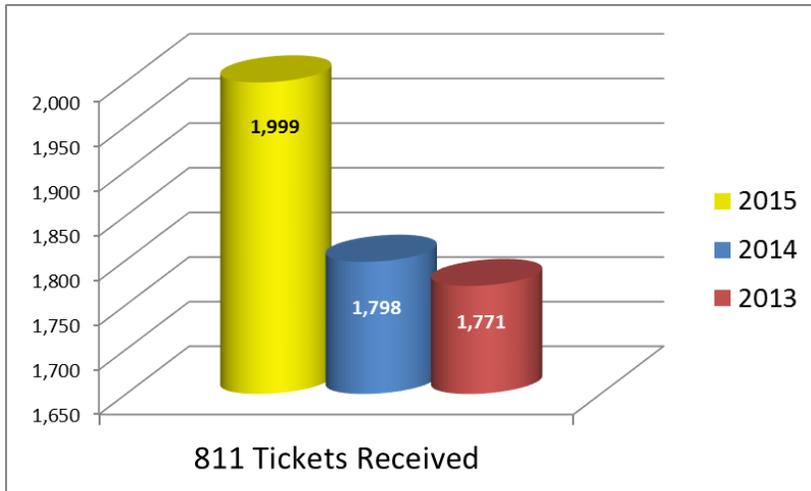


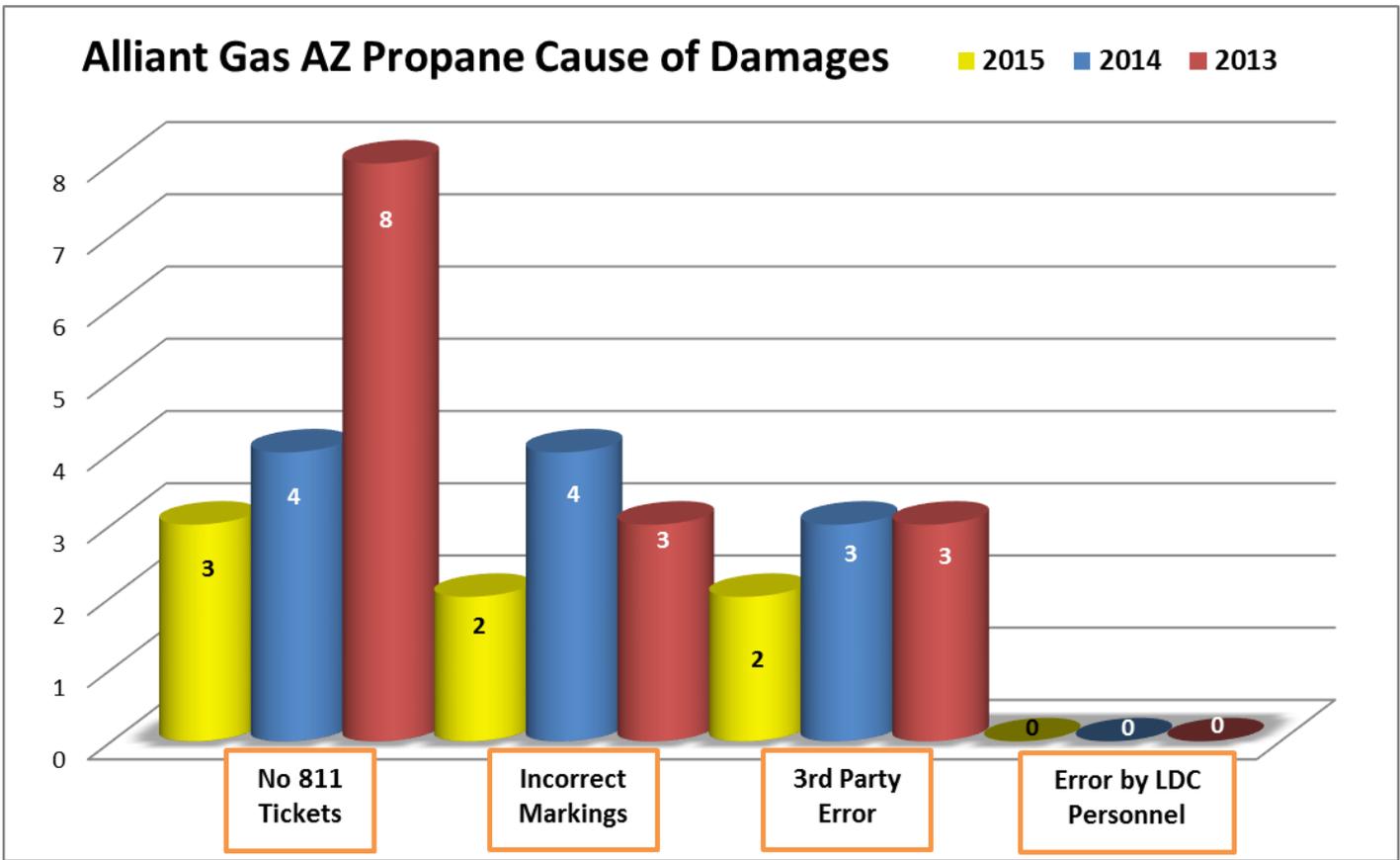
- There is a 12% increase in 811 tickets.
- There is a 5% increase in pipeline damage due to excavation.
- There is an 82% decrease in pipeline damage caused by no tickets.
- There is an 83% decrease in pipeline damage caused by incorrect markings.
- There is a 71% increase in pipeline damage caused by 3rd party excavator.
- There is a 50% increase in pipeline damage caused by LDC personnel's error.

**Error by 3rd party excavator was the major root cause of pipe damage due to excavation.**

ALLIANT GAS

ALLIANT GAS ARIZONA PROPANE LLC							
Miles of Pipelines			372.82				
No. of Services			9,550				
			Year 2015				
			1st Q	2nd Q	3rd Q	4th Q	Total
811 Tickets Received			442	530	660	367	<b>1,999</b>
Pipeline Damage			1	1	1	4	<b>7</b>
Cause of Damage:							
	No 811 Ticket		0	0	1	2	<b>3</b>
	Incorrect Marking		0	1	0	1	<b>2</b>
	3rd Party Excavator Error		1	0	0	1	<b>2</b>
	Error by LDCs Personnel		0	0	0	0	<b>0</b>
Average Number of Pipeline Damaged							
Per 1000 Ticket Request			2.26	1.89	1.52	10.90	<b>4.14</b>





- There is a 11% increase in 811 tickets.
- There is a 36% decrease in pipeline damage due to excavation.
- There is a 25% decrease in pipeline damage caused by no tickets.
- There is a 50% decrease in pipeline damage caused by incorrect markings.
- There is a 33% decrease in pipeline damage caused by 3rd party excavator.
- There is a 0% change in pipeline damage caused by LDC personnel's error.

**No 811 ticket was the major root cause of pipe damage due to excavation.**

OTHER OPERATORS

<b>Operator</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>No. of Pipeline Damages in 2015</b>
<b>Abbot</b>	<b>14</b>	<b>2</b>	<b>0</b>	<b>0</b>
<b>APS</b>	<b>4</b>	<b>14</b>	<b>9</b>	<b>0</b>
<b>Calpine</b>	<b>8</b>	<b>4</b>	<b>0</b>	<b>0</b>
<b>City of Benson</b>	<b>476</b>	<b>561</b>	<b>684</b>	<b>3</b>
<b>City of Safford</b>	<b>973</b>	<b>802</b>	<b>815</b>	<b>4</b>
<b>City of Willcox</b>	<b>422</b>	<b>389</b>	<b>397</b>	<b>0</b>
<b>Colorado City</b>	<b>0</b>	<b>0</b>	<b>157</b>	<b>0</b>
<b>Copper Market</b>	<b>1,306</b>	<b>835</b>	<b>1,020</b>	<b>0</b>
<b>Duncan Valley</b>	<b>495</b>	<b>436</b>	<b>433</b>	<b>0</b>
<b>Gila River</b>	<b>108</b>	<b>88</b>	<b>104</b>	<b>0</b>
<b>Graham County</b>	<b>2,928</b>	<b>2,418</b>	<b>2,360</b>	<b>16</b>
<b>Havasu Springs</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Nucor</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>
<b>Pimalco</b>	<b>73</b>	<b>71</b>	<b>59</b>	<b>0</b>
<b>Plains</b>	<b>81</b>	<b>146</b>	<b>180</b>	<b>0</b>
<b>Swissport</b>	<b>1,287</b>	<b>1,490</b>	<b>1,230</b>	<b>0</b>
<b>Valley Air Park</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Zapco</b>	<b>222</b>	<b>287</b>	<b>107</b>	<b>0</b>

## Conclusion:

For the year 2015, 3<sup>rd</sup> party excavator error was the number one root cause of pipeline damages. The number two root cause was no 811 tickets, followed by LDC personnel's error and incorrect marking of facilities.

Pipeline damage by excavation due to 3<sup>rd</sup> party excavator error continues to be the main cause even though there was a decrease of 2%. There were 279 cases in 2014 and 273 cases in 2015.

In 2015 the main decrease of 14% was in damages due to operator or operator's contractor error, there were 146 cases in 2014 and 125 cases in 2015.

There are many reasons for the 14% drop of excavation damages due to LDC personnel's error, this is the result of the LDC's involving the ACC when damages are caused by their own contractors. LDC personnel are involved in excavation operations on a daily basis, proper qualification and training on behalf of the LDC's on top of holding them accountable will help these numbers continue to trend downward.

Inclusive, the decrease in damages is a positive trend and may be attributed to the ACC's proactive approach to enforcing the Underground Facilities Law and to the operators engaging and implementing their damage prevention and public awareness programs.