

FLORIDA  
PUBLIC SERVICE COMMISSION

NATURAL GAS PIPELINE

ANNUAL  
SAFETY REPORT

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*Division of Safety, Reliability, and Consumer Assistance  
September 2 0 1 1*

## **ABBREVIATIONS**

CFR	U.S. Code of Federal Regulations
DIMP	Distribution Integrity Management Program
EFV	Excess Flow Valve
FPSC	Florida Public Service Commission
HCA	High Consequence Area
IMP	Integrity Management Program
OPS	Office of Pipeline Safety
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIG	Pipeline Inspection Gauge
SSOCOF	Sunshine State One Call of Florida
UFDPSA	Underground Facility Damage Prevention and Safety Act

## **NATURAL GAS PIPELINE SAFETY**

At the March 5, 1984 Internal Affairs meeting, the Florida Public Service Commission (FPSC) voted to require staff to prepare an annual summary report of the previous year's natural gas pipeline safety activities. This report reflects calendar year 2010.

### **Gas Safety Background**

The federal government establishes minimum pipeline safety standards under the U.S. Code of Federal Regulations (CFR), Title 49 "Transportation," Parts 190 - 199. The Office of Pipeline Safety (OPS), within the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), has overall regulatory responsibility for hazardous liquid and gas pipelines in the United States. OPS partners with the FPSC, through state certification, to have state pipeline evaluators inspect and enforce the pipeline standards. Florida is certified through PHMSA to inspect intrastate transmission and distribution pipelines and has adopted the federal standards in the Florida Administrative Code. Chapter 368, Florida Statutes, also authorizes the Commission to inspect pipelines and to adopt rules for governing pipeline safety.

### **Gas Safety 2010 Overview**

Safety, reliability, and service monitoring promotes an uninterrupted supply of natural gas service to the public and confirms that such services are provided in a reasonable and timely manner with minimal risks. All natural gas systems are evaluated annually for safety compliance in areas of corrosion control, leak surveys, leak repairs, emergency response, drug testing, employee training and qualification, damage prevention, public awareness, maintenance and operations, and new construction. (See [NaturalGas.org](http://NaturalGas.org)) Standard inspections examine an operator's records and equipment to ensure the operator is complying with applicable regulations. Gas pipeline safety regulations include requirements for operators to periodically perform certain actions, and maintain accurate and thorough records of those actions.<sup>1</sup>

The FPSC's consumer brochure provides information about Natural Gas. The FPSC has jurisdiction over all aspects of the operation of investor-owned local natural gas distribution companies and [Chapter 368](#), Florida Statutes, provides the authority for the FPSC to inspect pipelines for safety issues. Through its Bureau of Safety, the FPSC evaluates gas system engineering and operations to ensure that construction, repairs, and maintenance are performed in accordance with specified tested procedures using proper materials.

### **Gas Safety Inspector Duties**

The FPSC safety staff has six (6) inspectors who conduct on-going inspections and review the safety operations of Florida's 94 natural gas systems. The inspectors check a number of both current and historical operating records and parameters as well, including whether the pipeline's maximum pressure is within safe limits. They examine emergency procedures to determine if operators are prepared to respond promptly and effectively if an

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<sup>1</sup> [F.A.C. 25-12.005](#) Codes and Standards Adopted.

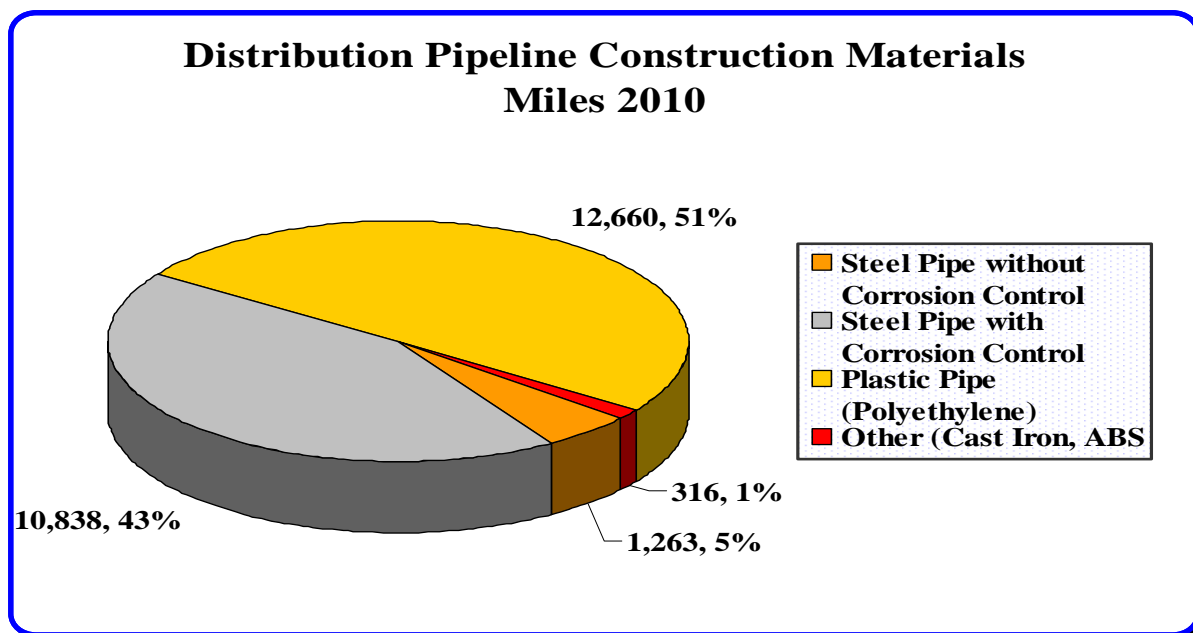
abnormal condition or pipeline failure occurs. In addition to inspecting operator records, procedures and data, inspectors make field visits to physically examine critical pipeline equipment and observe operator personnel implementing required procedures and tests. For example, on standard inspections, inspectors typically observe operator personnel:

- Taking measurements to assure corrosion control equipment is performing effectively;
- Testing pipeline valves to ensure they will operate in the event of an emergency; and
- Checking the settings on instruments and equipment designed to protect against events that could overpressure the pipeline.

The gas pipeline safety section also supports and assists the state’s Emergency Operations Center in all energy related issues, such as energy security, natural gas explosions, and natural disasters or when any utility related threat is detected that threatens life and property. This assistance requires regular involvement with supplying expert advice during the emergency and coordinating activities of the gas and electric utilities, along with government, fire, police, and other public and private agencies.

**2010 Significant Safety Activities**

During 2010, the Commission’s gas pipeline safety staff evaluated 94 natural gas systems, covering approximately 44,817 miles of pipeline<sup>2</sup>, and 817,421 customer service lines.<sup>3</sup> The chart below represents the percentage of distribution pipeline materials (excluding the mileage for service lines from the main to the meter) in use in Florida as of the end of 2010.



These evaluations resulted in the issuance of written notifications to utilities of gas pipeline safety violations. The notifications cited 79 rule violations<sup>4</sup>, ranging from failure to repair gas leaks, failure to odorize natural gas, and failure to use qualified welding personnel. All violations have




<sup>2</sup> This includes 19,352 miles for service lines from the main to the meter

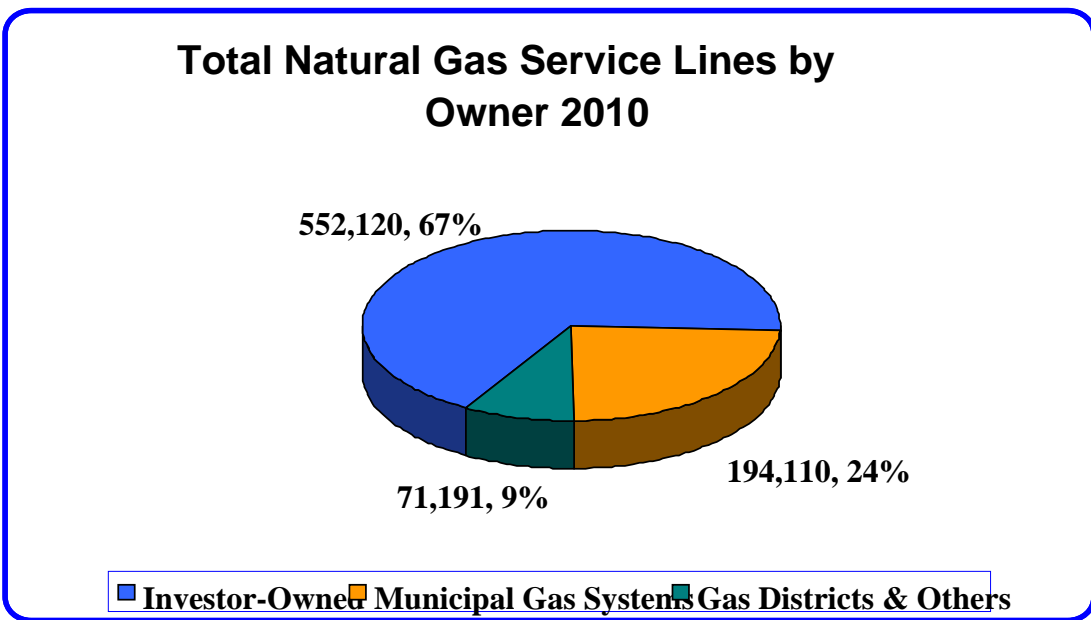
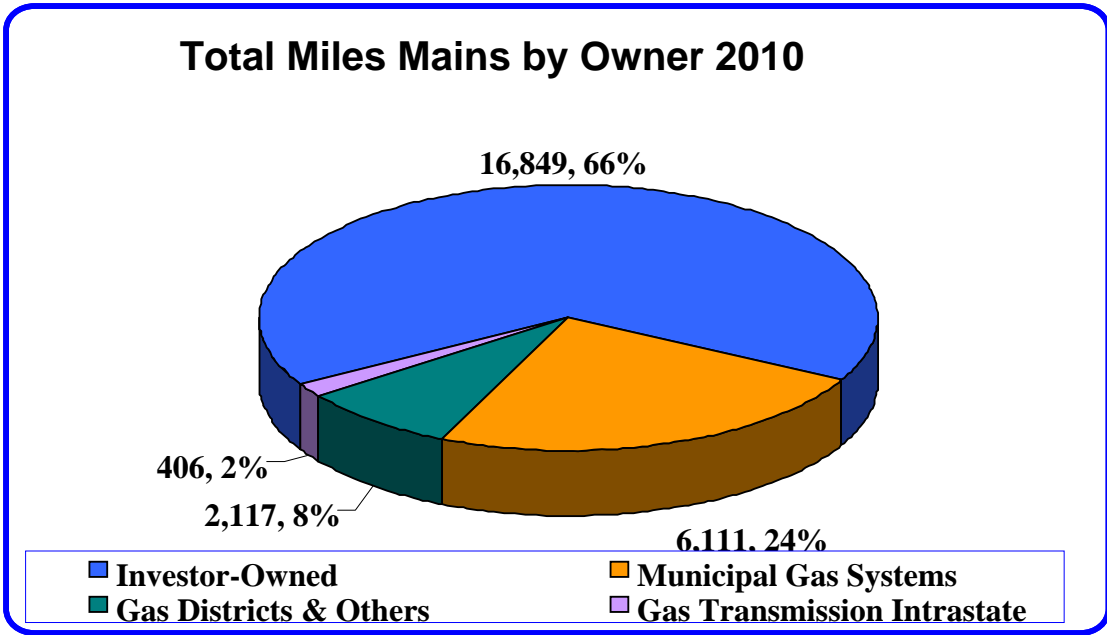
<sup>3</sup> Source: FORM PHMSA F 7100.1-1 (Rev. 01/11), as provided annually, by each operating company in Florida

<sup>4</sup> Source: FORM PHMSA F 7100.1-1 (Rev. 01/11), as provided annually, by each operating company in Florida

been corrected or scheduled for corrective action pursuant to the Commission's enforcement procedures.

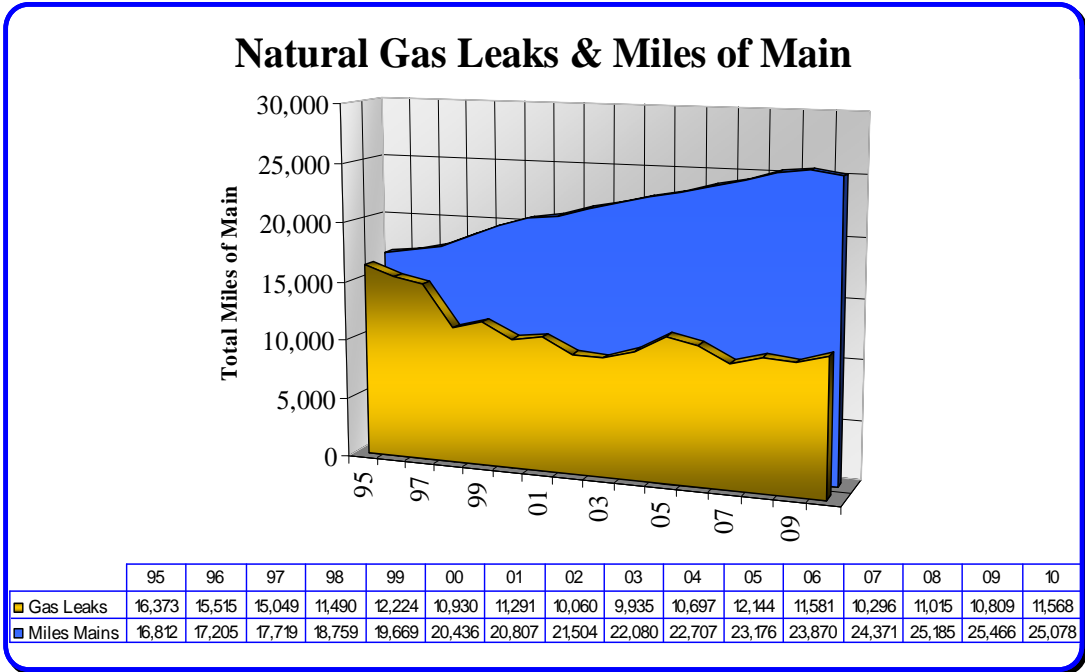
The following charts provide a breakdown of:<sup>5</sup>

-  The total miles of main by utility type owner for 2010
-  The total number of gas service lines by utility type owner for 2010
-  The number of natural gas leaks and miles of main for 1995 thru 2010

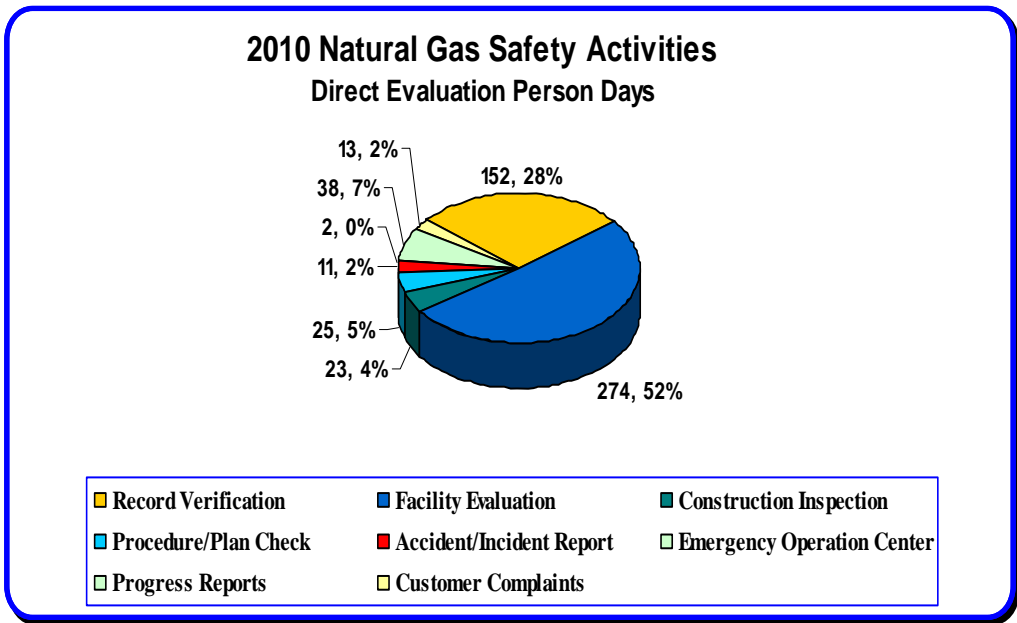


<sup>5</sup> Source: FORM PHMSA F 7100.1-1 (Rev. 01/11), as provided annually, by each operating company in Florida

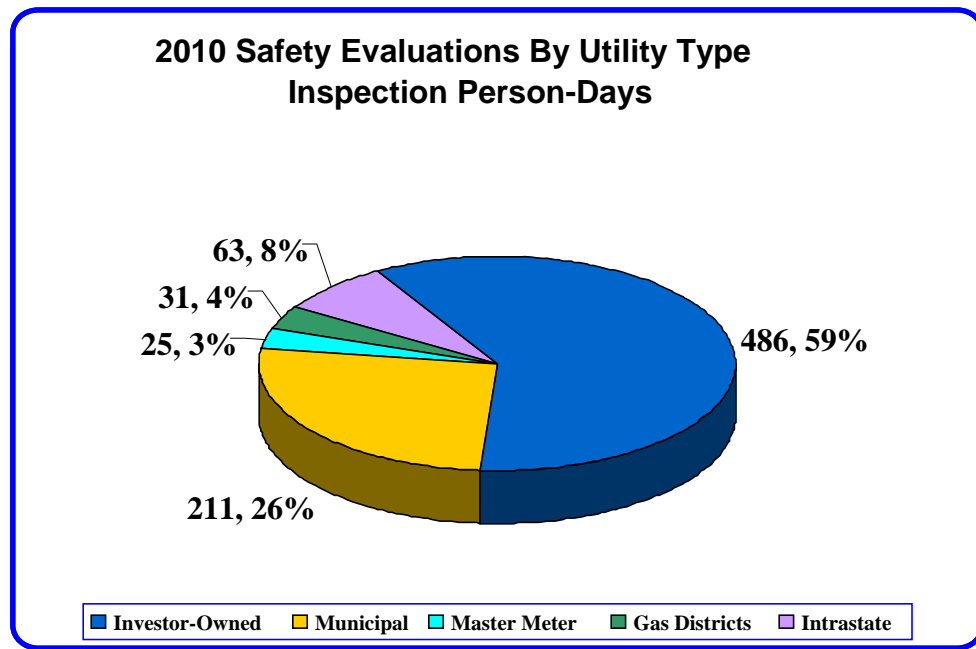
**CALENDAR YEARS 1995 thru 2010**



Commission inspectors used 526 direct evaluation person days for 2010. The direct evaluation person-day is an eight hour calculated day, in the field, checking safety compliance only (does not include hours spent for travel time, report writing, interviews, and administrative time). As shown in the chart below, during 2010, facility evaluations and record verifications required 80% of inspector time to be spent conducting a gas safety evaluation. The other 15% of inspector time was spent completing procedure checks, construction inspections, customer complaints, and progress reports on violations.



The chart below provides a breakdown of the percent of time spent per direct evaluation person-day by utility type.



### **Gas Operator Qualification Requirement**

Congress directed the Pipeline and Hazardous Materials Safety Administration (PHMSA) to require that “all individuals responsible for the operation and maintenance of natural gas pipeline be tested for qualifications and certified to operate and maintain gas facilities.” Rules and [qualification of pipeline personnel](#) can be found in Title 49, Part 192 of the electronic Code of Federal Regulations (e-CFR). The rule is a non-prescriptive, performance-based regulation requiring natural gas system operators to develop a written program for the qualification of personnel. This would allow each program to be customized to the unique operations and practices of each operator. This requirement covers all operation and maintenance employees of natural gas systems and contractors, subcontractors or any other entities performing covered tasks for the system operator. Commission staff has reviewed all plans. The evaluations are now focused on field evaluations of utility qualified personnel, direct line field supervision required by rule, and employee’s job knowledge and capabilities.

### **Transmission Pipeline Integrity Management**

The Department of Transportation's Integrity Management Regulation became law when Congress passed the Pipeline Safety Improvement Act (2002.) This regulation requires a pipeline operator to develop an Integrity Management Program (IMP)<sup>6</sup> for gas transmission pipelines located in areas where a leak or rupture could cause the most harm, i.e., “[high consequence areas](#).” An operator of a gas transmission pipeline is required to perform ongoing assessment of the pipeline's integrity by performing a risk analysis to identify and mathematically rank all threats that could be detrimental to the integrity of the pipeline. These threats may include excavation damage, internal and external corrosion, soil movement, inferior pipe materials and coatings, poor construction practices, stress corrosion cracking, and numerous other environmental or man-made factors that can detrimentally affect the pipeline’s integrity. Once identified, each threat must be mitigated to

<sup>6</sup> <http://law.justia.com/cfr/title49/49-3.1.1.1.3.15.html>

improve public safety and protect the environment. To maximize the improved safety, the transmission operator must evaluate its pipeline right-of-way to identify high consequence areas where an increased number of individuals either live or congregate, or where environmentally sensitive areas exist. Pipelines in these areas are to be evaluated first and a continuing program established to determine the effectiveness of the threat mitigation process. Below are images of pipelines in Florida.



*IMP rules can be found at <http://primis.phmsa.dot.gov/gasimp/>*

In addition to threat reduction, the operator is also required to establish the baseline condition of the existing pipeline in each of the identified high consequence areas. This baseline condition is to be compared to future integrity data to determine if the pipeline has deteriorated and is more susceptible to failure. This baseline analysis can be achieved using one of three methods:

- [In-line inspection](#)
- [Hydrostatic testing](#)
- [Direct assessment](#)

In-line inspection consists of the insertion of an electronic tool called a [Pipeline Inspection Gauge](#) (PIG<sup>7</sup>), into the pipeline to measure the existing wall thickness and the pipe's uniform diameter as it is moved along the pipeline. Hydrostatic testing involves removing the pipeline from service to perform a pressure test to 100 percent of the pipe's specified minimum yield strength. If the pipeline holds this test pressure without rupture, its integrity is to be considered adequate. The third method of establishing the baseline condition of a pipeline is direct assessment which involves a multi-method analysis of the corrosive environment near the pipeline. Data collected in this analysis is to be compared to known characteristics of the pipeline to identify internal and external corrosion problems affecting the integrity of the pipe. Any deficiencies detected by any one of these three methods, which may result in near term failure of the pipeline, must be promptly repaired in accordance with time limits established by the regulation.

Following a joint effort involving the Pipeline and Hazardous Materials Safety Administration (PHMSA), the gas distribution industry, representatives of the public, and the National Association of Pipeline Safety Representatives to explore potential approaches, PHMSA has proposed a slightly different approach for distribution integrity management. The final rule establishing integrity management requirements for gas distribution pipeline systems was issued on December 4, 2009. The effective date of the rule was February 12, 2010. Operators have until August 2, 2011 to write and implement their program. Staff is monitoring the PHMSA guidance for implementation, and assuring that operators are aware of the regulation

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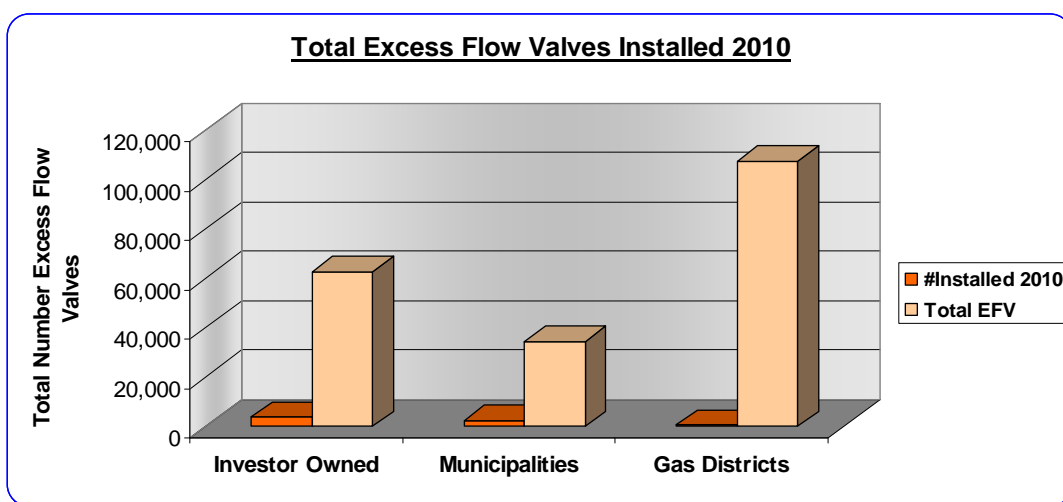
<sup>7</sup> A [pipeline inspection gauge](#) or "PIG" in the [pipeline](#) industry is a tool that is sent down a pipeline and propelled by the [pressure](#) of the product in the pipeline itself.



and the future requirement for their operations, as well as providing guidance on implementation.<sup>8</sup>

In addition to the IMP for transmission pipelines, distribution integrity management programs ([DIMP](#))<sup>9</sup> must be in place by August 2, 2011. The rule mandates the installation of excess flow valves (EFV), on single-family residences, where feasible. Excess flow valves are valves designed to stop the flow of gas when flow exceeds a preset quantity, such as would occur if the service was ruptured, however, an EFV cannot tell if the flow is due to a rupture or just high demand from the customer's appliances. EFV selection is therefore very important to avoid closure under normal flow conditions. EFVs are currently required to be installed on new and replaced services to single residences unless low pressure contaminants in the gas or other factors prevent EFV use. The National Transportation Safety board (NTSB) had recommended that PHMSA require EFVs on any new or replaced service where an EFV was available for that size and pressure.

The chart below represents the number of reported EFVs which have been installed as of December 31, 2010.



In summary, this regulation requires Florida's gas transmission pipeline operators to perform ongoing assessment of pipeline integrity, to improve data collection, integration, and analysis, to repair and remediate the pipeline as necessary, and to implement preventive and mitigative actions to improve public safety and protect the environment.

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<sup>8</sup> PHMSA during April 2011, launched a new Pipeline Safety Awareness website that will provide the public, community planners and developers, an accessible place for information and guidance on locating area pipelines. The web address is <http://opsweb.phmsa.dot.gov/pipelineforum/>

<sup>9</sup> Source: <http://www.aga.org/SiteCollectionDocuments/KnowledgeCenter/OpsEng/PipelineSafetyNews/2010/0410PHMSADIMP0310.PDF>

**Public Awareness**

When Congress enacted the Pipeline Safety Improvement Act, it added additional requirements mandating that operators of natural gas distribution and transmission pipelines establish and carry out a continuing public education program. This program was added in April 2000 to assure the operator's participation in a one-call notification system prior to excavation and other damage prevention activities. The purpose of these educational activities is to communicate to consumers possible hazards associated with unintended releases of gas from the pipeline facility including the physical indications of a gas release, steps that should be taken in the event of a release, and how an individual can report a natural gas-related incident.

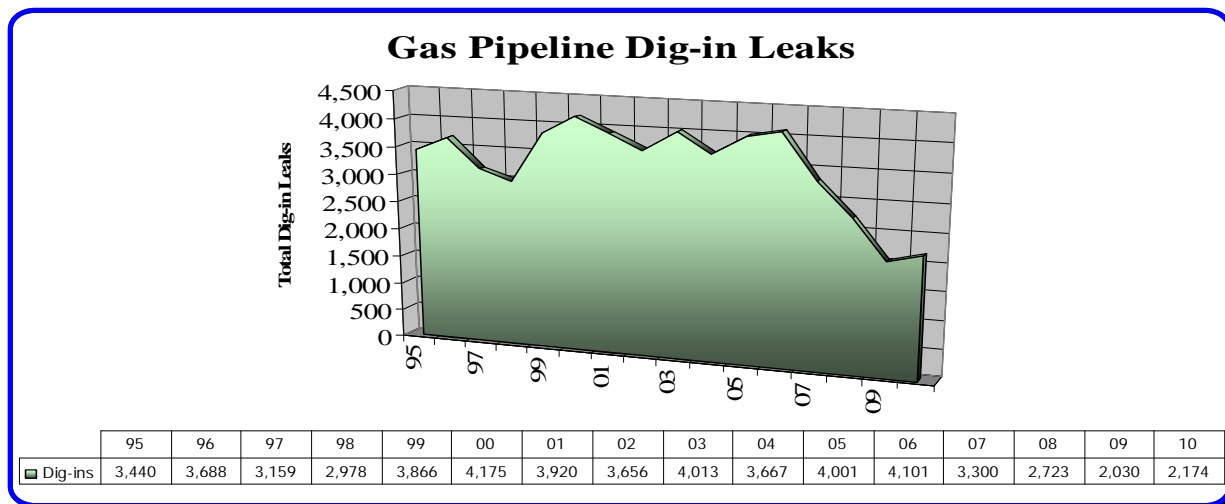
The link below offers a 30 second video depicting *why* you call before you dig in Florida.

<http://www.youtube.com/watch?v=3N-fmB6WsIs>

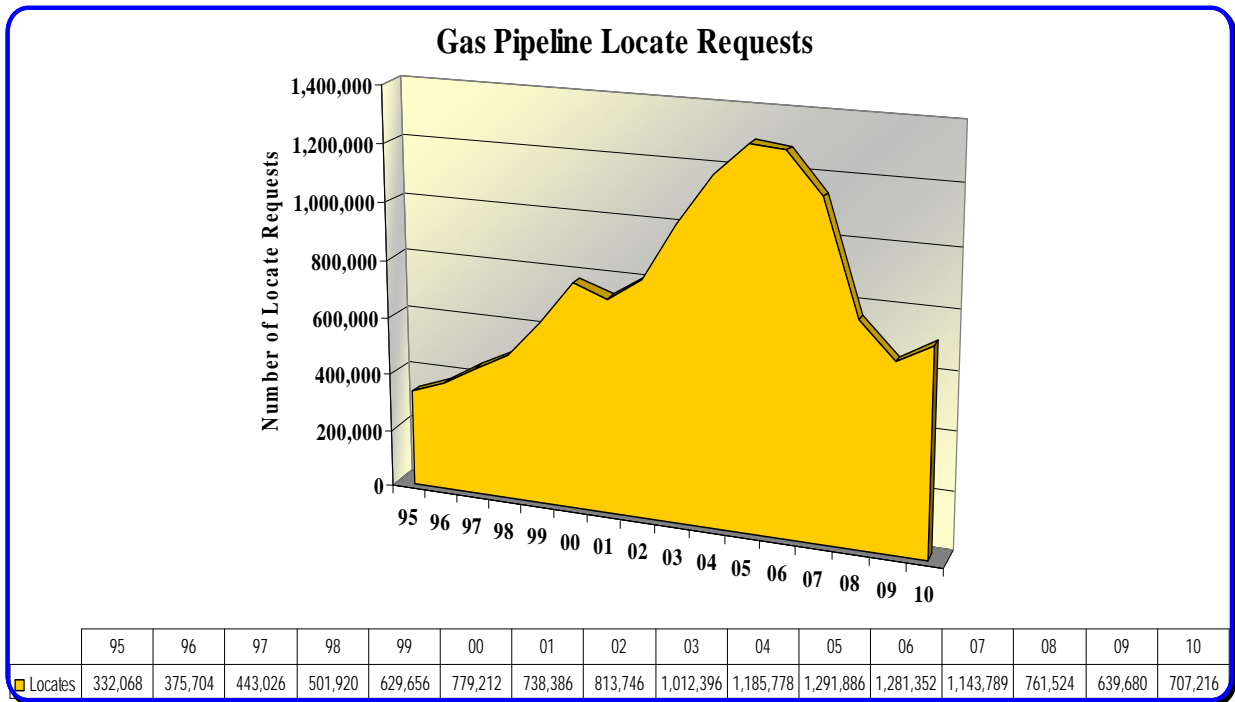


**Prevention of Damage to Gas Pipelines by Excavators**

The Florida Legislature enacted Chapter 556, entitled Underground Facility Damage Prevention and Safety Act (UFDPSA) in 1993. Prior to UFDPSA there was a private cooperative “one-call before you dig” system operated by the major utilities. The purpose of the law was to aid the public by preventing injury to persons or property and the interruption of services resulting from damage to an underground facility caused by excavation or demolition operations. The Act created a not-for-profit corporation (Sunshine State One-Call of Florida) consisting of operators of underground facilities in Florida to administer the provisions of the Act. The Act required the corporation to establish a one-call toll-free telephone notification system (Dial 811.) The purpose of the telephone system is to receive notification of planned excavation or demolition activities and to notify member operations of such planned excavation or demolitions.



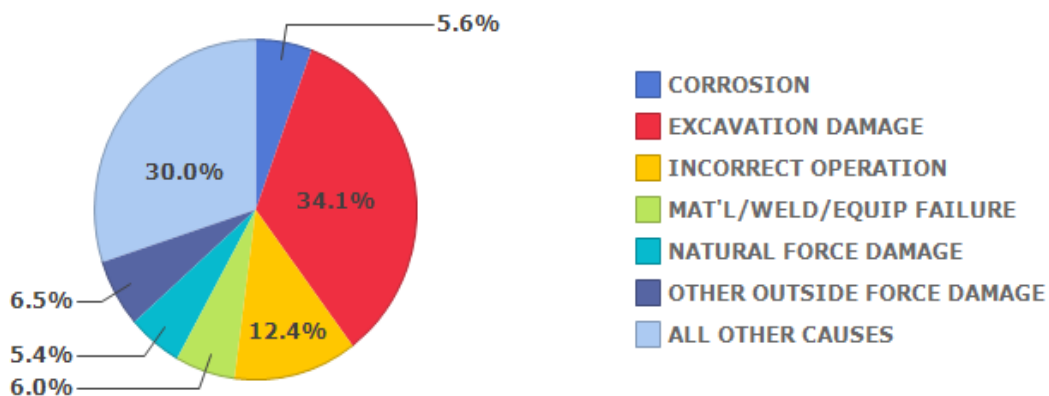
The number one cause of damage to natural gas pipelines in Florida, as well as the entire United States, is dig-ins (pipelines cut or damaged by others engaged in excavation activities or directional drilling).



### **History of Reportable Natural Gas Injuries and Fatalities**

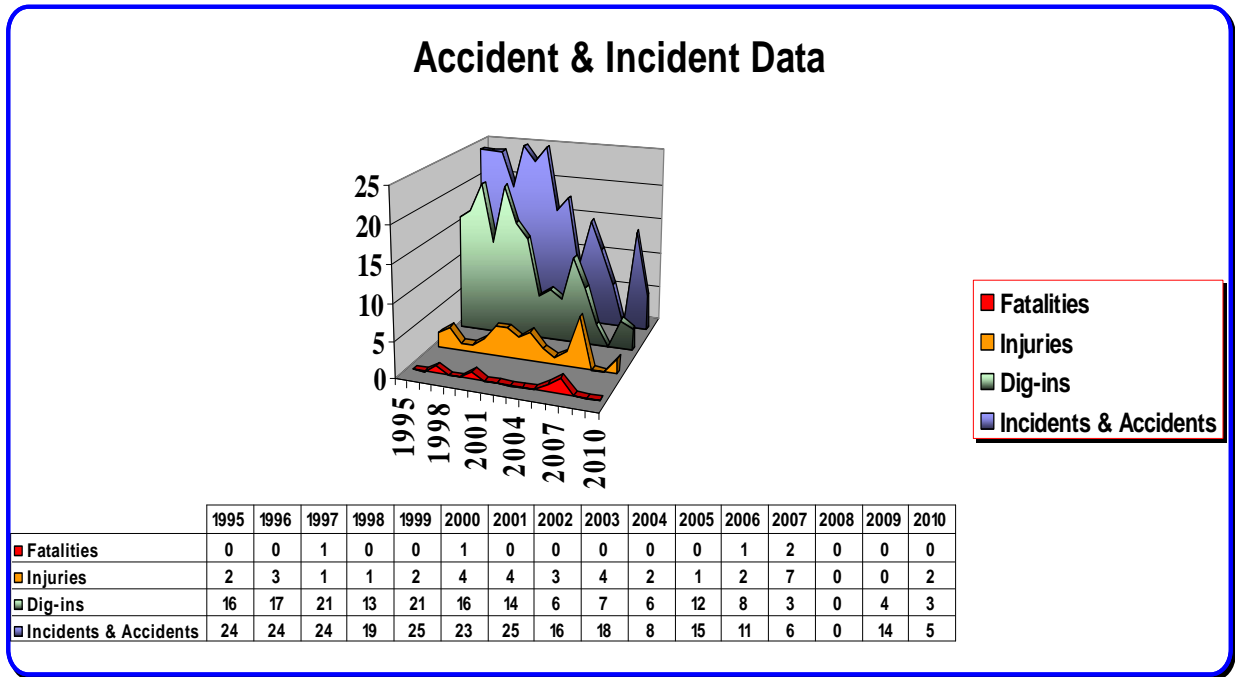
The Commission’s natural gas pipeline safety program has injury and fatality data back to the beginning of the program in 1972. The peak year for fatalities was 1980 when six people were killed by natural gas pipeline related incidents. The following year in 1981 was the record year for injuries with thirty-six. Most of the fatalities and injuries are related to excavation damages by construction activities or the public. Below is a ***national*** chart depicting the serious incidents, broken down by cause for the twenty-year period of 1991 thru 2010 for the United States.

**Serious Incident Cause Breakdown**  
National, All Pipeline Systems, 1991-2010

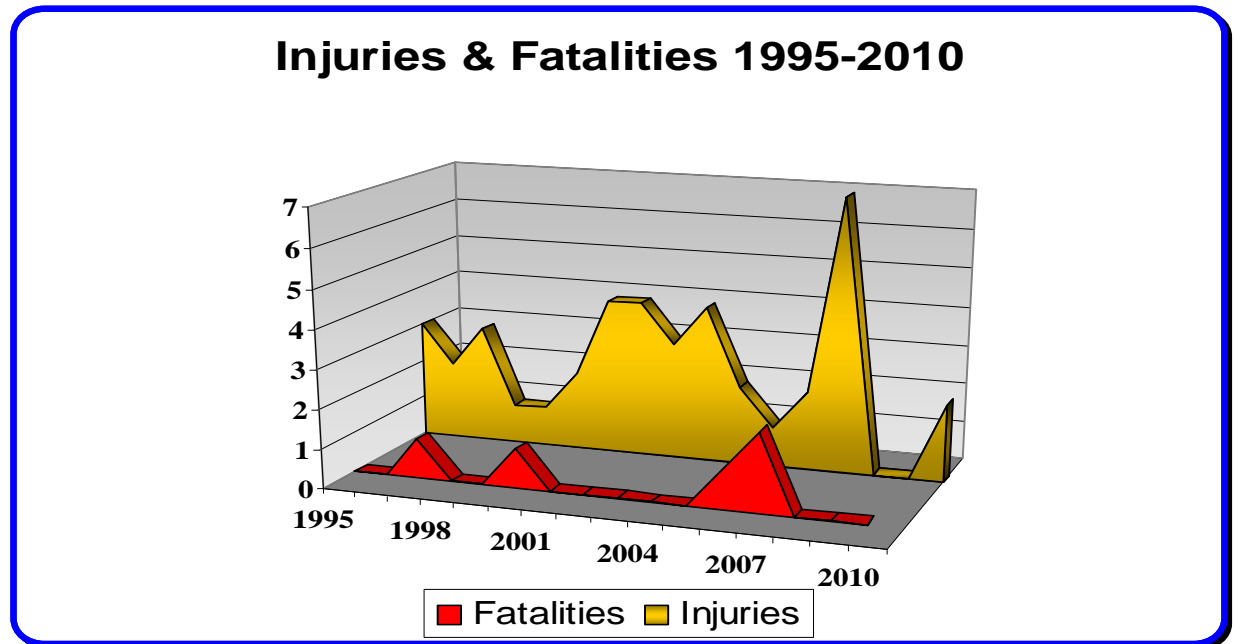


Source: PHMSA Significant Incidents Files May 31, 2011

The graphs below represent the number of incidents and accidents, injuries, and fatalities from 1995 thru 2010, and the number of dig-ins related to these accidents.



Below is a graph of natural gas injuries and fatalities reported to the FPSC from 1995 through 2010.



This chart represents the FPSC natural gas accident and incident results from 1972-2010:

Natural Gas Accidents and Incidents Reportable to the Commission					
Year	Number Gas Systems Having Incidents	Number of Incidents	Number of Injuries	Number of Fatalities	Number of Dig-ins
1972	1	4	0	0	3
1973	7	12	4	0	11
1974	5	10	7	0	10
1975	2	3	0	0	3
1976	4	5	2	2	4
1977	3	9	0	0	4
1978	3	4	1	0	3
1979	7	14	5	1	7
1980	12	17	6	6	13
1981	13	29	36	1	14
1982	12	29	12	2	11
1983	5	20	8	0	14
1984	8	18	1	0	14
1985	12	25	3	2	17
1986	7	16	2	0	14
1987	8	16	5	2	13
1988	8	19	1	0	18
1989	10	28	3	0	26
1990	8	35	0	0	33
1991	5	23	0	0	21
1992	8	42	3	0	39
1993	7	31	3	0	18
1994	13	20	3	0	15
1995	10	24	2	0	16
1996	12	24	3	0	17
1997	12	24	1	1	21
1998	11	19	1	0	13
1999	8	25	2	0	21
2000	9	23	4	1	16
2001	8	25	4	0	14
2002	4	16	3	0	6
2003	7	18	4	0	7
2004	4	8	2	0	6
2005	12	15	1	0	12
2006	5	11	2	1	8
2007	3	6	7	2	3
2008	3	18	1	0	11
2009	6	14	1	0	4
2010	2	5	2	0	3

Note: Natural gas accidents and incidents are reported to the Commission in accordance with Commission Rule 25-12.084 F.A.C

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