FLORIDA
PUBLIC SERVICE COMMISSION

NATURAL GAS PIPELINE

ANNUAL
SAFETY REPORT

2011

DIVISION OF ENGINEERING

TABLE OF CONTENTS

ABBREVIATIONS

DIMP	Distribution Integrity Management Plan
e-CFR	Electronic Code of Federal Regulations
EFV	Excess Flow Valve
EOC	Emergency Operations Center
F.A.C.	Florida Administrative Code
FDOT	Florida Department of Transportation
FPSC	Florida Public Service Commission
HCA	High Consequence Area
IMP	Integrity Management Plan
NTSB	National Transportation Safety Board
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

Gas Safety Background

The federal government establishes minimum pipeline safety performance standards under the U.S. Code of Federal Regulations (CFR), Title 49 "Transportation," Parts 190, 191, 192, and 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. PHMSA's goal is to improve industry performance and communications to prevent hazardous material transportation incidents, accidents, injuries, and fatalities. PHMSA tracks data on the frequency of failures, incidents and accidents. PHMSA also analyzes the causes and the resulting consequences and reports this data in various categories such as year, state, type, cause, and result.

The Federal pipeline safety regulations;

- assure safety in design, construction, inspection, testing, operation, and maintenance of pipeline facilities and in the siting, construction, operation, and maintenance of facilities
- sets out parameters for administering the pipeline safety program

The Florida Public Service Commission (FPSC) is certified through PHMSA to inspect intrastate transmission and distribution pipelines, and has adopted the federal standards as well as more stringent regulations found in Section 25-12, Florida Administrative Code (F.A.C.) and Chapter 368 Florida Statutes, which authorize the Commission to inspect pipelines and adopt rules for governing pipeline safety. PHMSA authorizes state agencies such as the FPSC to conduct oversight and enforcement of pipeline operators through PHMSA's State Pipeline Safety Program.[1]

Gas Safety 2011 Overview

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. A major aspect of compliance involves regular inspections of pipeline facilities. 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.

[1] Federal statutes provide for State assumption of all or part of the intrastate regulatory and enforcement responsibility of utility companies through annual certifications and agreements issued under this program.

All natural gas systems are evaluated annually for safety compliance in areas of corrosion control, leak surveys, leak repairs, emergency response, drug and alcohol testing, employee training and qualification, damage prevention, public awareness, maintenance and operations, and new construction. Standard inspections examine an operator's records and equipment to ensure the operator is complying with applicable regulations, and that there is a monitoring plan.

Gas Safety Inspector Duties and Training Requirements

The FPSC safety staff has six inspectors who conduct on-going inspections and review the safety operations of Florida's 94 natural gas systems. All FPSC inspectors must complete extensive training through PHMSA. Initially, there are eight mandatory courses which must be completed within three years from completion date of the first course, to be fully qualified to perform safety inspections. The following are the core courses:

1) Safety Evaluation of Gas Pipeline and Systems Course
2) Plastic and Composite Materials
3) Welding and Welding Inspection of Pipeline Materials
4) Gas Pressure Regulation and Overpressure Protection
5) Pipeline Failure Investigation
6) Pipeline Safety Regulation Application and Compliance Procedures
7) Corrosion Control of Pipeline Systems
8) HAZWOPER (The Hazardous Waste Operations and Emergency Response Standard) refresher for Pipeline Safety Representatives

In addition to the initial training, there are courses which are mandatory if the incumbent performs inspections related to course content, such as:

1) Distribution Integrity Management Plan (DIMP)
2) Fundamentals of SCADA System Technology and Operation
3) Safety Evaluation of Inline Inspection
4) Safety Evaluation of Control Room Management
5) Investigating and Managing Internal Corrosion of Pipelines
6) Operator Qualification

Overall, there are 21 courses available to FPSC inspectors to efficiently perform natural gas safety inspections.

The FPSC inspectors conduct annual evaluations of each of the companies' systems which include:

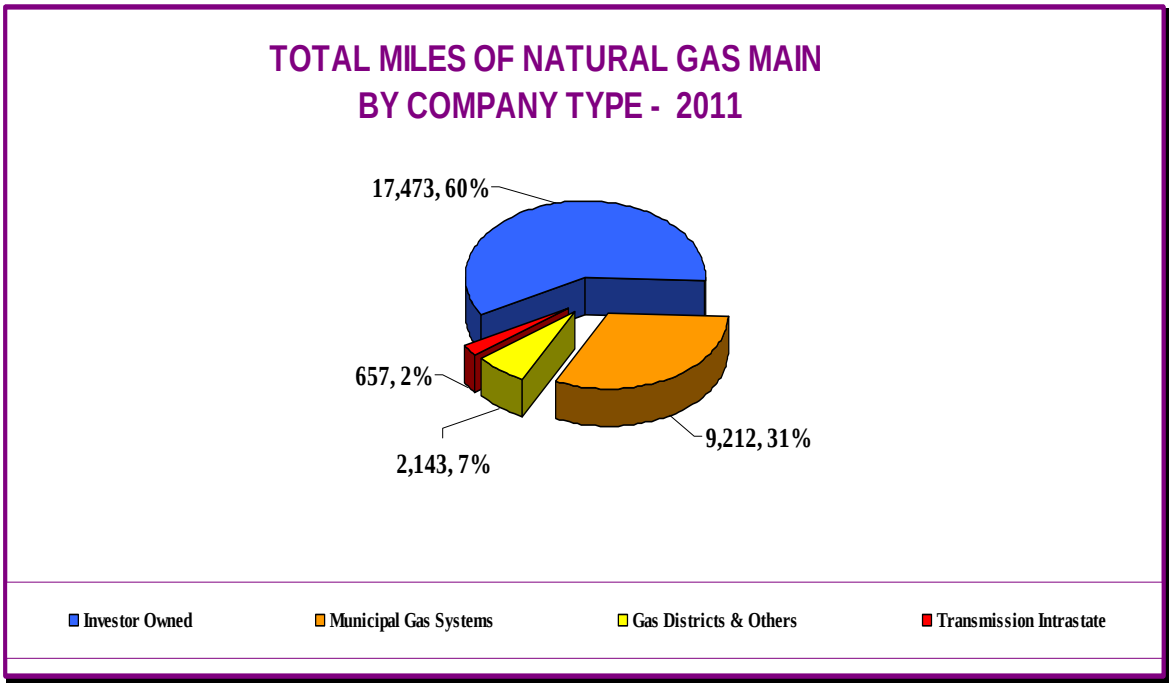
- Conduct annual field inspections of natural gas pipeline systems operations and facilities in order to determine conformance to state and federal regulations.
- Investigate and review related operator's records for compliance with Federal Pipeline Safety Standards (i.e., 49 Code of Federal Regulations Parts 191, 192, 199), state gas pipeline safety rules (i.e., as defined per Section 25-12, F.A.C.), and Chapter 368 Florida Statutes.
- Take measurements to assure corrosion control equipment is performing effectively.
- Test pipeline valves to ensure they will operate in the event of an emergency.
- Check settings on instruments and equipment designed to protect against events that could overpressure the pipeline.
- Check customer meter readings for accuracy, in response to requests from customers.

Scope of Gas Service In Florida

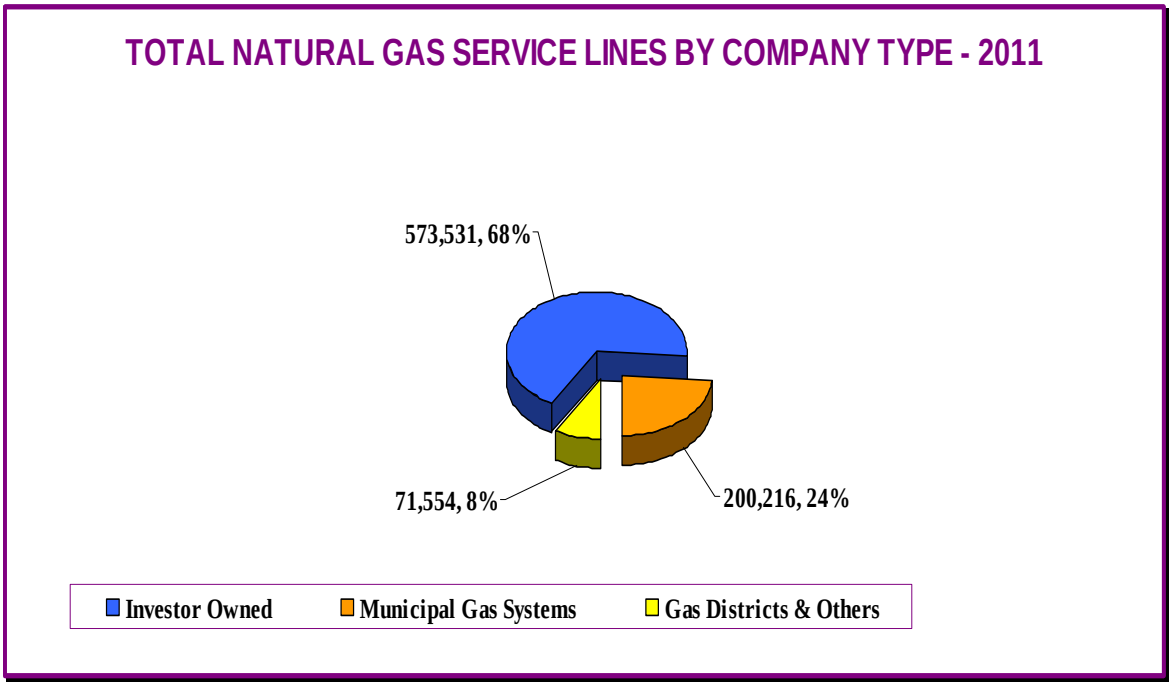
There were 65 gas companies, comprised of 94 systems operating in Florida as of December 31, 2011.

- 4 Gas Districts
- 6 Investor Owned Companies with 31 gas systems
- 10 Master Meters
- 17 Intrastate Pipelines with 20 gas systems
- 28 Municipalities with 29 gas systems

Florida's gas systems (some companies have several systems) are comprised of approximately 46,462 total miles of pipeline,[2] and 845,301 customer service lines.[3] Investor owned utilities account for 67 percent of the total miles of natural gas mains in Florida, while the remaining 33 percent is comprised of municipalities, gas districts, housing authorities, and intrastate pipelines. The charts below show the total miles of main (does not include miles of service lines) by company type, and the total number of services by company type providing service.



[2] This includes 19,334 miles for service lines from the main to the meter.
[3] Source: FORM PHMSA F 7100.1-1 (Rev. 01/11), as provided annually, by each operating company in Florida.

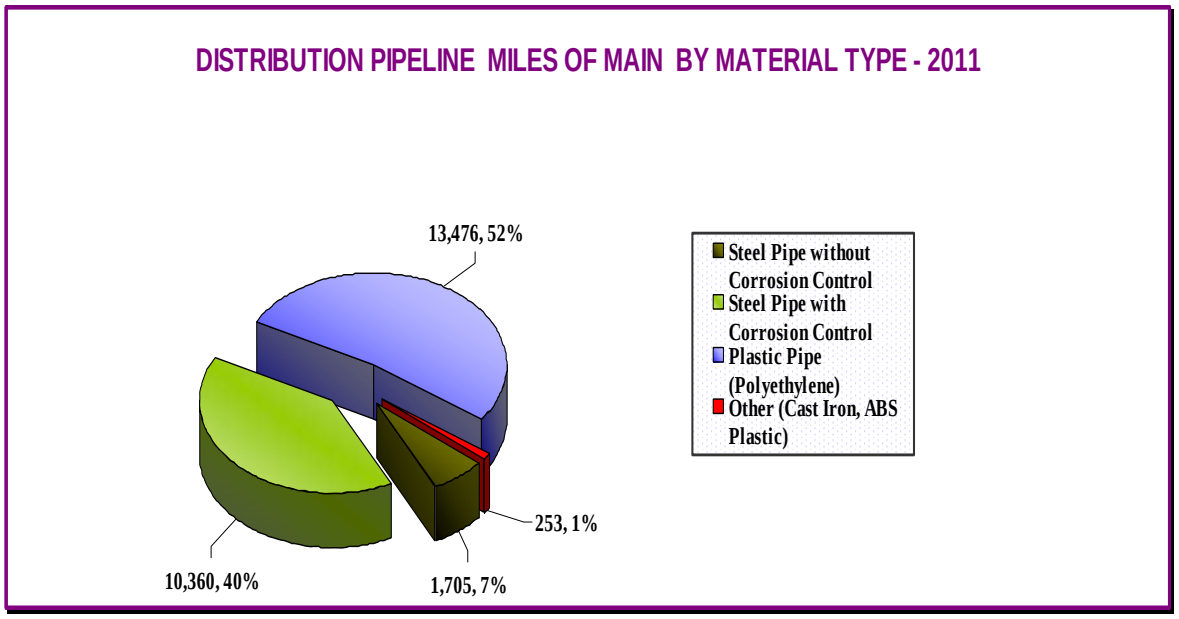


Safety Improvement Actions

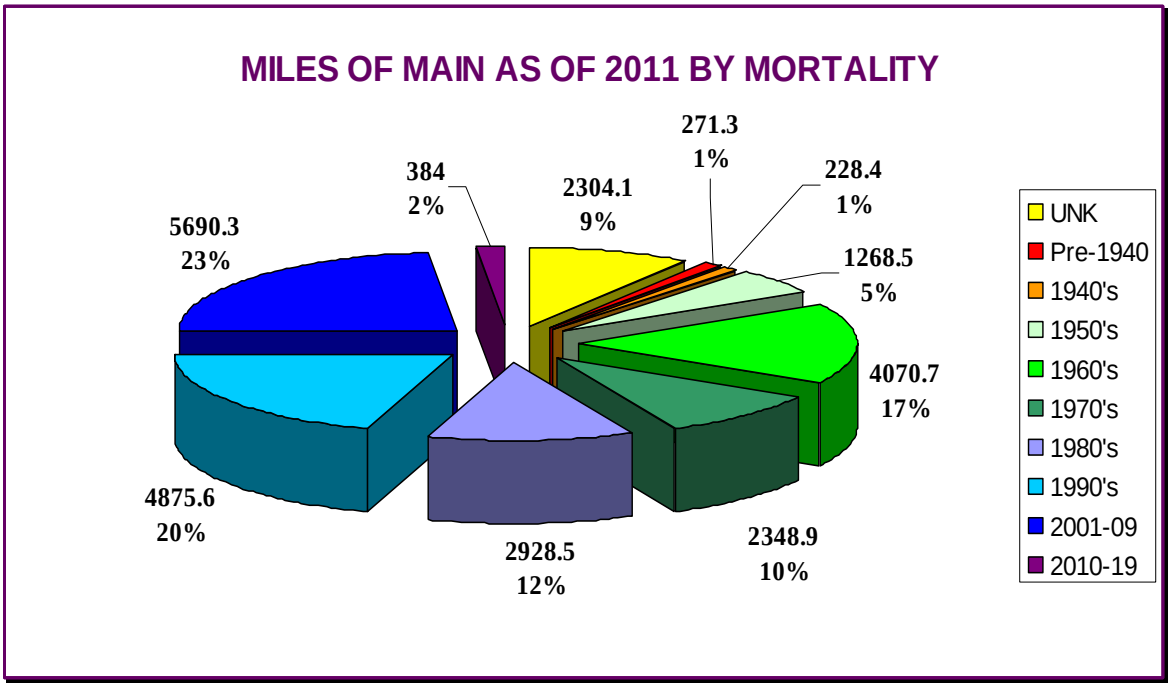
Ninety-two percent (92%) of the total miles of gas pipeline in Florida are comprised of either polyethylene (plastic) pipe or covered steel pipe, and the other eight percent (8%) is comprised of bare steel pipe (no corrosion control) and cast iron pipe. Due to accidents and incidents involving gas pipelines in recent years, in other states, there are growing concerns by PHMSA regarding the use of cast iron and unprotected bare steel, as expressed in PHMSA Secretary Ray LaHood's letter to each state governor dated March 28, 2011.

Secretary LaHood appeared at the National Association of Regulatory Utility Commissioners in 2011 expressing concerns about the needs to replace or repair the aged infrastructure.

In September 2011, the FPSC Bureau of Safety, requested all gas operators in the state of Florida who have bare steel and/or cast iron pipes in service to submit a pipeline replacement program. The request asked that each company provide in writing, outlining plans of replacing all cast iron pipe, and either protecting the existing bare steel or replacing with coated protected steel or approved materials. Florida has ten companies needing pipe replacement programs. Five companies responded with committed replacement plans, three have submitted plans which require docket approval, one has a pending completion date, and one has not yet filed a plan with the Commission.

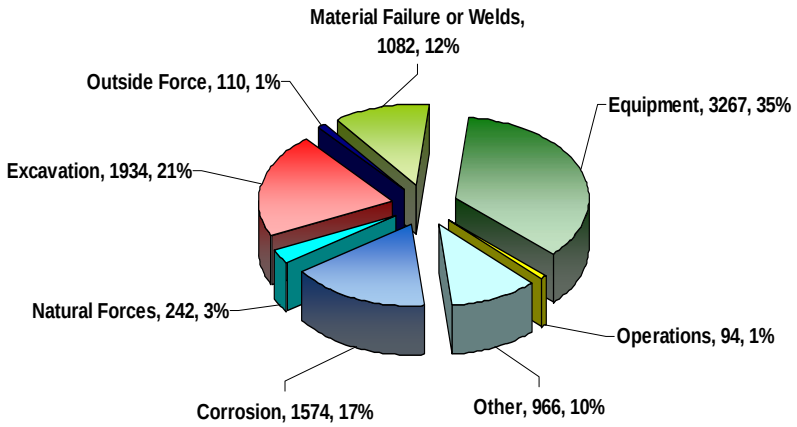


The age of cast iron pipes and steel pipe without corrosion control range from 50 to 70+ years; have a higher leakage rate than that of the newer plastic pipe that was placed after 1971, and account for 14 percent of the total steel pipe in Florida.

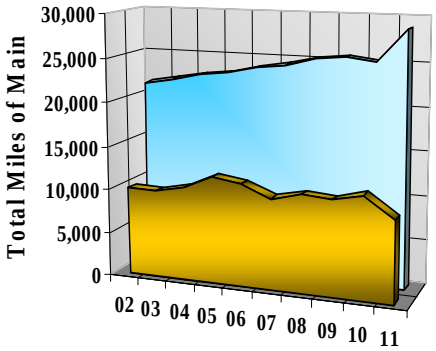


Historically, equipment failure and excavation are the two highest causes of natural gas leaks, which accounted for 56 percent of the gas leaks during 2011. While there was a 3 percent increase in total miles of main in 2011, the number of gas leaks decreased by 20 percent. This reduction in leaks can be attributed to replacement of older and corroded pipes, emphasis on advance notification before digging, and increased safety oversight of gas operators in the state of Florida.

NATURAL GAS LEAKS BY CAUSE - 2011



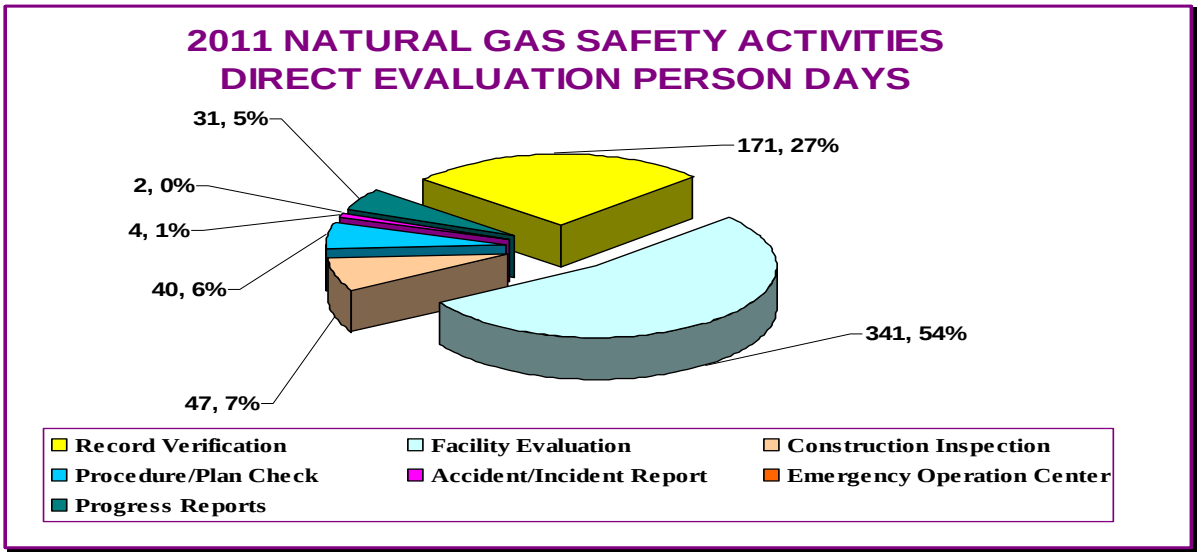
NATURAL GAS LEAKS AND MILES OF MAIN - 2011



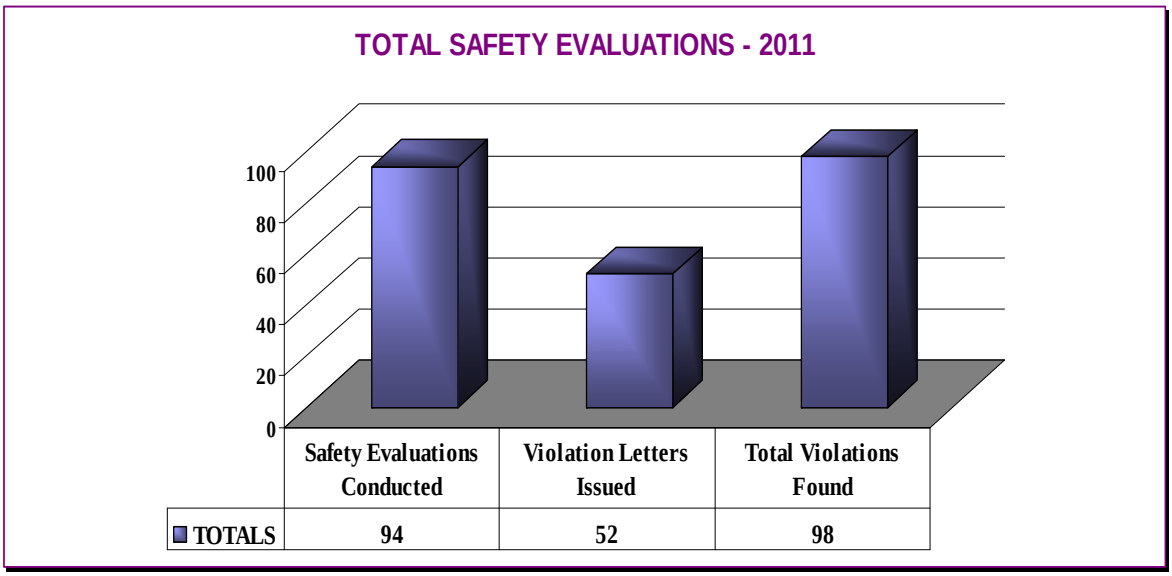
	02	03	04	05	06	07	08	09	10	11
Gas Leaks	10,060	9,935	10,697	12,144	11,581	10,296	11,015	10,809	11,568	9,269
Miles Mains	21,504	22,080	22,707	23,176	23,870	24,371	25,185	25,466	25,098	28,829

Inspection Results

Commission inspectors used 636 direct evaluation person days for 2011. 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, training, and administrative time). As shown in the chart below, facility evaluations and record verifications required 81 percent of inspector time to be spent conducting a gas safety evaluation during 2011. The other 19 percent of inspector direct evaluation time was spent completing construction inspections, procedure plan checks, progress reports, and accident/incident reporting.



Staff inspected 94 gas systems, and the installation of 697 miles of new pipeline. The inspections resulted in the issuance of 98 violations.



The notifications cited 98 rule violations, ranging from failure to repair gas leaks, failure to odorize natural gas, failure to properly identify service line valves, failure to follow criteria for cathodic protection, failure to use qualified welding personnel, and failure to maintain leak reports. All violations have been corrected or scheduled for corrective action pursuant to the Commission's enforcement procedures.

PROBABLE RULE VIOLATIONS 2001-2011		
Year	Number Found During Year	Number Corrected During Year
2001	*22*	*18*
2002	*22*	*27*
2003	*32*	*8*
2004	*31*	*41*
2005	*39*	*33*
2006	*34*	*27*
2007	*38*	*38*
2008	*136*	*57*
2009	*125*	*155*
2010	*83*	*97*
2011	*98*	*67*

Gas Operator Qualification Requirement

Congress directed 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.[4]" Rules pertaining to qualification of pipeline personnel can be found in Title 49, Part 192[5] of the Code of Federal Regulations (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. 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

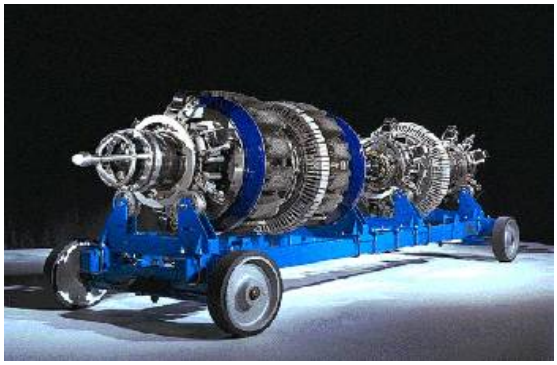
The Department of Transportation's Integrity Management Regulation became law when Congress passed the Pipeline Safety Improvement Act (2002.) This regulation requires a pipeline operator to develop an Integrity Management Program (IMP) for gas transmission pipelines located in areas where a leak or rupture could cause the most harm such as high consequence areas (HCA). 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 improve public safety and protect the environment. To maximize the improved safety, the transmission operator must evaluate its pipeline right-of-way to identify HCA's 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.

In addition to threat reduction, the operator is also required to establish the baseline condition of the existing pipeline in each of the identified HCA's. 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:

[4] Source: U.S. Code - Title 49 Chapter (§60101 - §60137).
[5] Rules and qualification of pipeline personnel, see Subtitle B--Other Regulations Relating to Transportation at e-CFR website.

- *In-line inspection*
- *Hydrostatic testing*
- *Direct assessment*

In-line inspection consists of the insertion of an electronic tool called a Pipeline Inspection Gauge (PIG), into the pipeline to measure the existing wall thickness and the pipe's uniform diameter as it is moved along the pipeline.



Pipeline Inspection Gauge

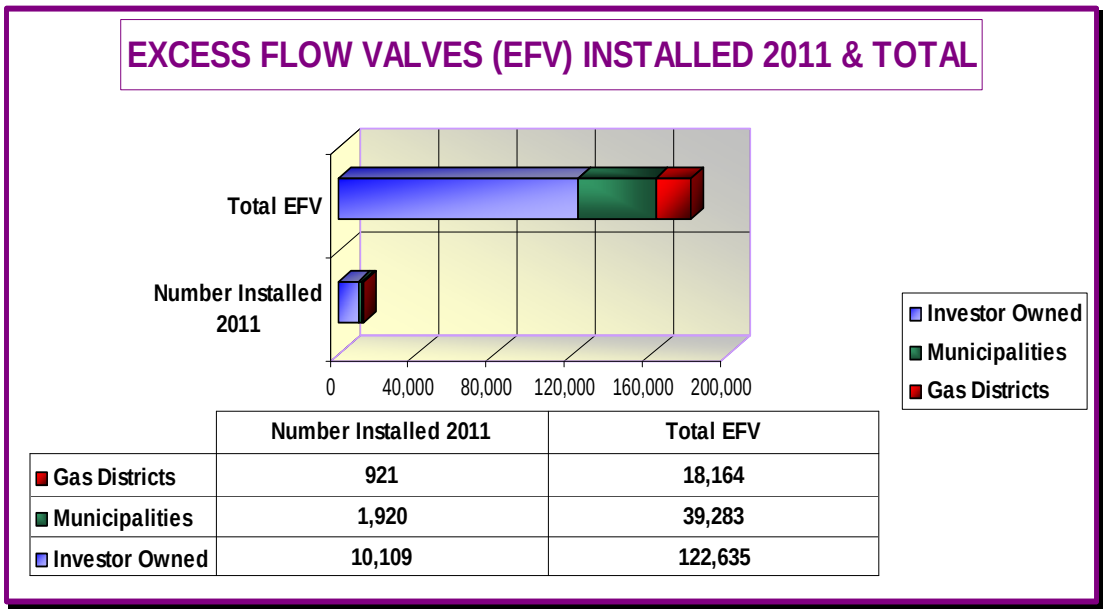
Hydrostatic testing involves removing the pipeline from service to perform a pressure test to 100 percent of the pipe's specified minimum yield strength. If the pipeline holds this test pressure without rupture, its integrity is to be considered adequate.

Direct assessment 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.

An operator must conduct a periodic evaluation as frequently as needed to assure pipeline integrity and must establish intervals not to exceed five (5) years for continually assessing the line pipe's integrity. Operators were required to have a Distribution Integrity Management Plan (DIMP) written and implemented by August 2, 2011. FPSC staff is trained and prepared to complete DIMP inspections in January 2012.

The rule also 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 is ruptured.



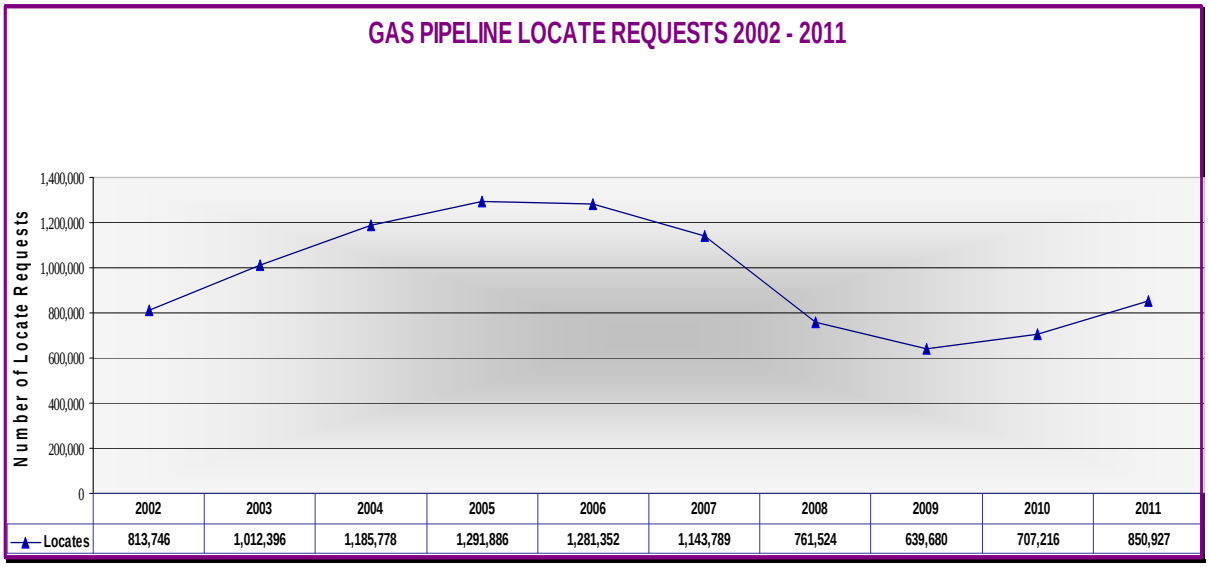
	Number Installed 2011	Total EFV
Gas Districts	921	18,164
Municipalities	1,920	39,283
Investor Owned	10,109	122,635

Public Awareness

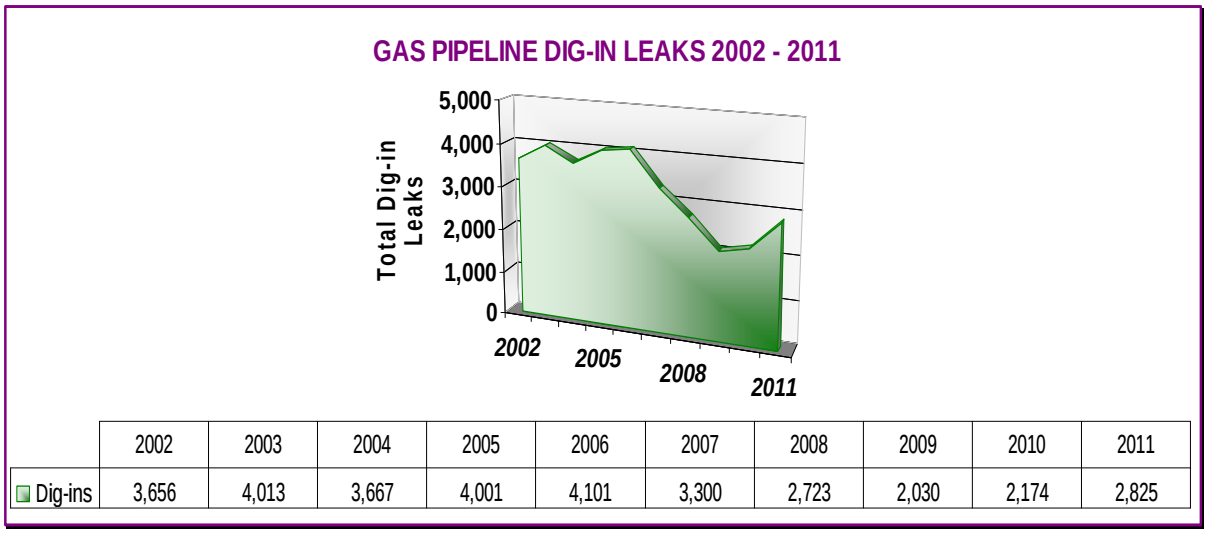
In addition to each company conducting Public Awareness activities, Public awareness and education is further enhanced via the FPSC website which contains publications that provide consumer information on Bill of Rights for Electric and Gas Service, and publications of the Natural Gas Pipeline Safety Annual Report.

Prevention of Damage to Gas Pipelines by Excavators

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. Chapter 556 Florida Statutes is the Underground Facility Damage Prevention and Safety Act which requires anyone that will be digging to call 811 first, so underground utility lines can be located and marked. Sunshine State One Call of Florida (SSOCOF) is Florida's one-call center whose responsibility is to help prevent damages to underground utilities. For the excavator, calling 811 helps prevent hefty fines and repair costs due to utility service outages, injuries, environmental contamination and property damage.



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). Underground utilities can sustain damages from just a small nick of the outer lining of the buried facilities, causing leaks, water intrusion, or corrosion.



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Dig-ins	3,656	4,013	3,667	4,001	4,101	3,300	2,723	2,030	2,174	2,825

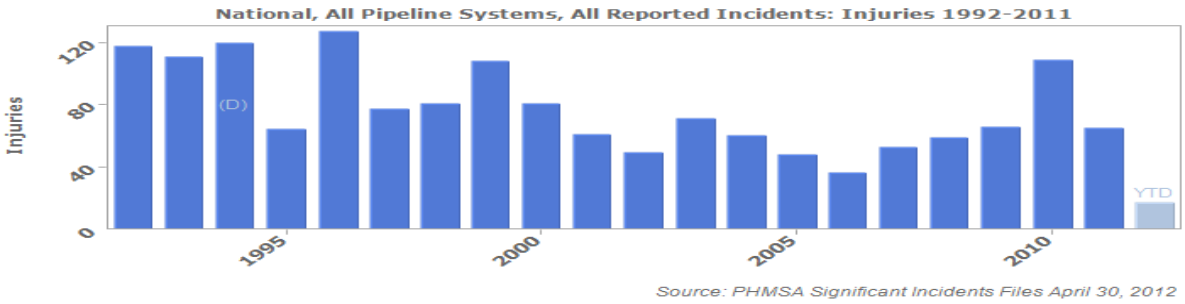
The law requires excavators to call 811 before they dig. The law can be enforced by any local or state law enforcement officer, government code inspector, or code enforcement officer in Florida.

The penalties can range from $500 to $5,000 if a violation is issued, in addition to repair costs.

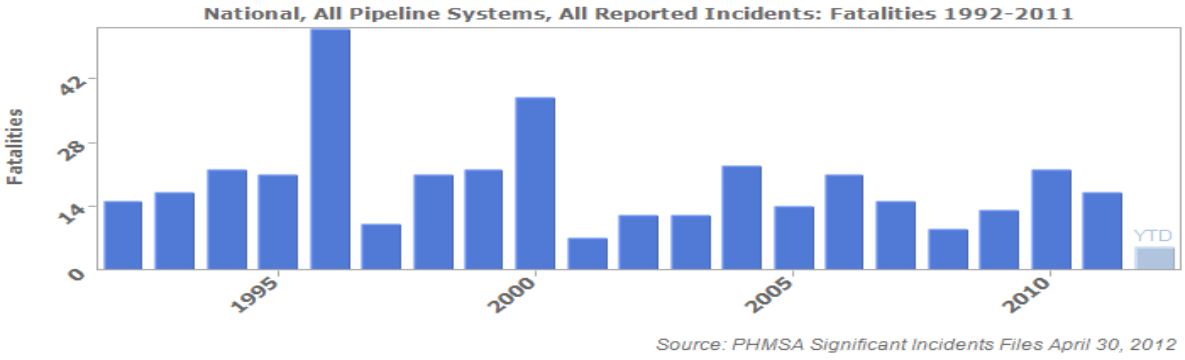
History of Reportable Natural Gas Injuries and Fatalities

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. The following is a ***national*** chart depicting the serious incidents, broken down between Injuries and Fatalities for the twenty-year period of 1992 thru 2011.

INJURIES – NATION WIDE

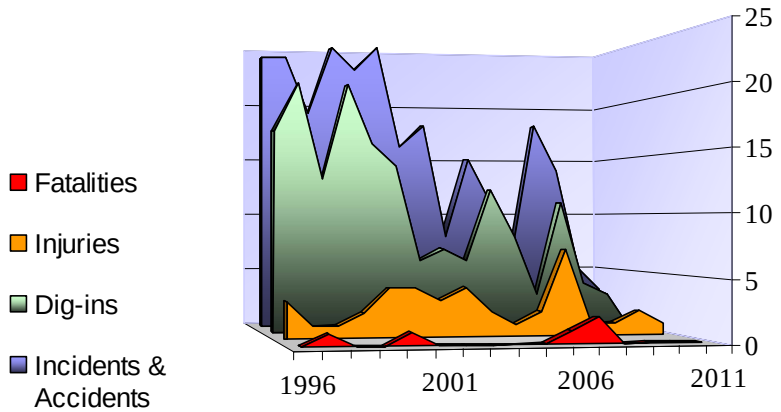


FATALITIES – NATION WIDE



The graph represents the number of all incidents and accidents related to dig-ins, injuries, and fatalities for the state of Florida, from 1996 through 2011.

NATURAL GAS RELATED ACCIDENTS AND INCIDENTS



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatalities	0	1	0	0	1	0	0	0	0	0	1	2	0	0	0	0
Injuries	3	1	1	2	4	4	3	4	2	1	2	7	1	1	2	1
Dig-ins	17	21	13	21	16	14	6	7	6	12	8	3	11	4	3	0
Incidents & Accidents	24	24	19	25	23	25	16	18	8	15	11	6	18	14	5	3

During 2011 there were no fatalities, one injury, and three reportable incidents which were due to a lightning strike, a vehicular collision, and a fire caused by an un-extinguished cigarette.

This chart represents the FPSC natural gas accident and incident results from 1972-2011

NATURAL GAS ACCIDENTS AND INCIDENTS REPORTABLE TO THE COMMISSION					
Year	Number of Systems with 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
2011	3	3	1	0	0

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

Other Responsibilities

The gas pipeline safety section also supports and assists the state's Emergency Operations Center (EOC) 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/or property. Several staff employees of the Bureau of Safety are also members of the State Emergency Response Team[6] (SERT). Their 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. Training exercises and safety drills are held throughout the year to keep members current on existing and upcoming procedures relating to the operations of the EOC, as well as to be prepared should an emergency arise.

The following is contact information pertaining to pipelines in Florida:

Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850
Bureau Chief Safety: Rick Moses
Office: 850-413-6582; Blackberry: 850-567-3786
E-mail: rmoses@psc.state.fl.us

Office of Pipeline Safety - Southern Region Office
233 Peachtree Street, N.E., Suite 600
Atlanta, Georgia 30303
Telephone: 404-832-1140
Director: Wayne Lemoi
CATS Managers: Joseph Mataich / Arthur Buff
Direct: 404-832-1159 / 404-832-1155
E-mail: joseph.mataich@dot.gov / arthur.buff@dot.gov

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration
East Building, 2nd Floor
Mail Stop: E24-455
1200 New Jersey Ave., SE
Washington, DC 20590

Email: phmsa.pipelinesafety@dot.gov

[6] State Emergency Response Team (SERT) which provides updated information to other agencies and the public, during any emergency condition involving electric or natural gas threats.