

Leak Detection Systems

(An Local Distribution Company perspective)

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AGL Resources At-a-Glance

(Seven Natural Gas Companies +)



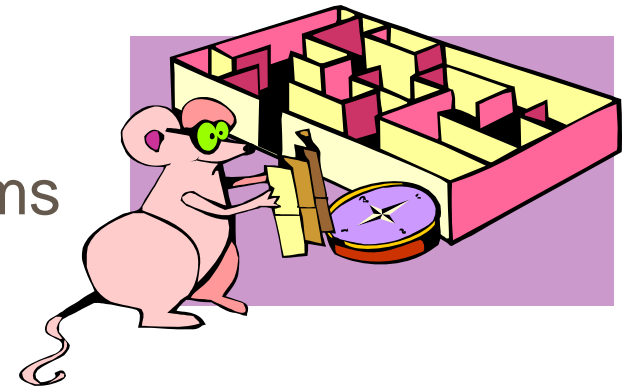
- 4.5 million customers in Seven states

- Atlanta Gas Light (1.6 million)
- Chattanooga Gas (65,000)
- Elizabethtown Gas (275,000)
- Elkton Gas (6,000)
- Florida City Gas (105,000)
- Virginia Natural Gas (275,000)

*** Nicor Gas (2.2 million)

Leak Detection Complexity for LDCs

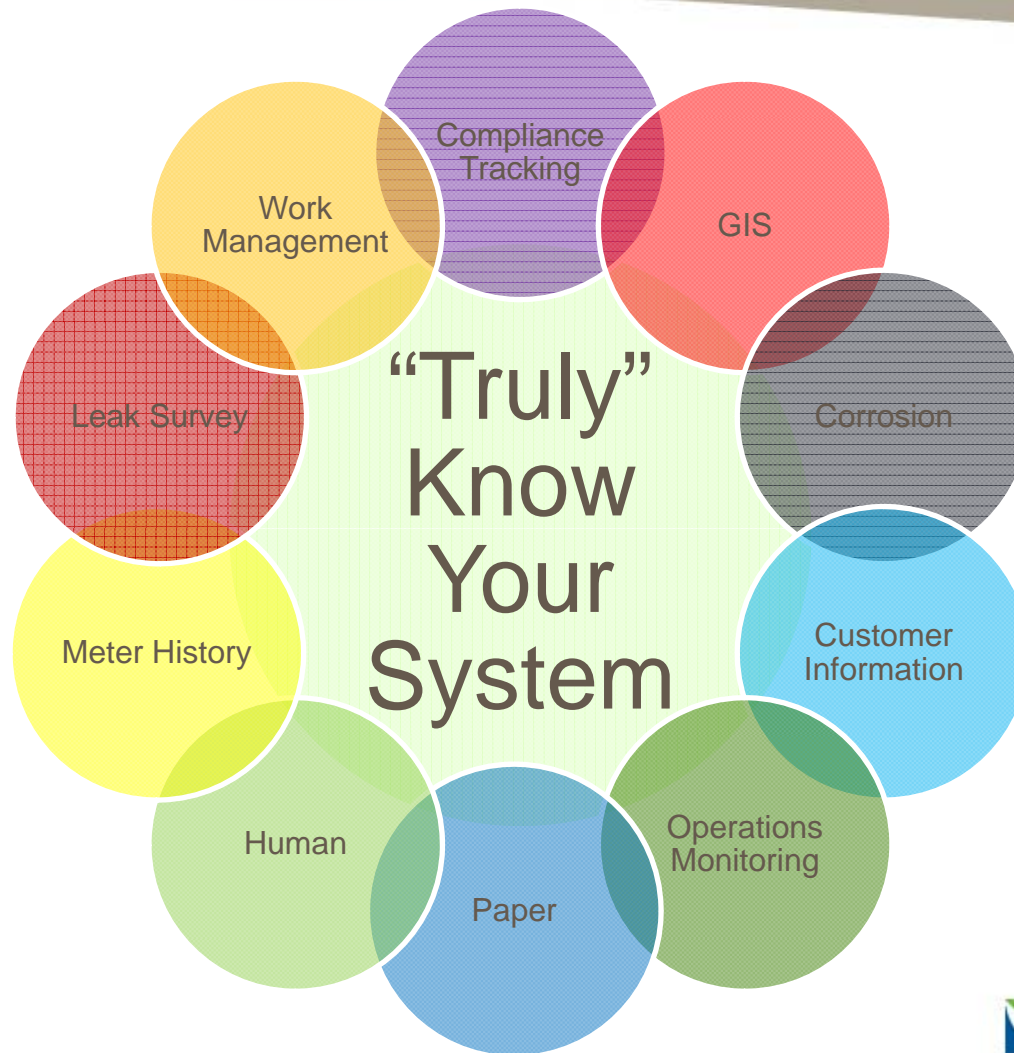
- Extremely complex piping systems
- Extremely congested areas
- Wide Variety of:
 - Pipe sizes Joining mechanisms
 - Materials System pressures
 - Gas loads
- Leaks on your systems
- Leaks on other operators' systems
- Leaks on end use Customer's Systems



An LDC's World (Did I Say it was Complex?)

- Proactive identification of leaks (Your System & Customer's)
 - Initial pressure testing/Up-rating Procedures
 - Ongoing periodic leak surveys
 - Customer turn-on procedures
- Knowing & Maintaining your systems (Normal & Accel Actions)
 - Leak Repair
 - System Replacement
- Odorization & Emergency Response - The Last Line of Defense

How can Distribution Operators Improve their LDS Strategy?



Successful Automation is the Key!



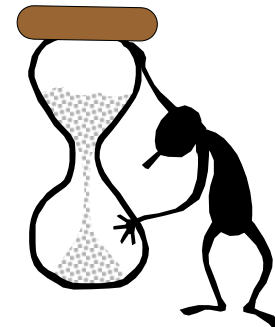
- **Electronic Mapping/GIS – (1991/2002)**
- **Automated Dispatch (Service)– (2000/2006)**
- **Work Management Systems (2005/2007)**
- **Compliance Tracking System – (2001)**
- **Leak Survey – (2002/2007)**



Success Through Automation

Automation Concerns

- Increased Data Capture in the Field
- More Chances to 'miss' or Incorrectly Fill Out Data
- Increased Office Review required



Addressing Concerns

- Improving Data Capture Processes
- Better System Training for Field
- Consistent Responses Through Dropdowns



The Better the Data, the Better the Analysis!

The Better the Analysis, the Better the Approach!

Improving Data Capture Process Through Standardization

AGL Resources
Distribution Work Order

LDC:

Date Reported:	<input type="text"/>	Report Type:	<input type="text"/>	Location Code / Service Center:	<input type="text" value="4970"/>
Work Order Type:	<input type="text"/>	Leak Field Case #:	<input type="text"/>	One Call Ticket #:	<input type="text" value="1750"/>
WR #:	<input type="text"/>	Initial WR #:	<input type="text"/>	AD #:	<input type="text" value="1770"/>
Street Address:	<input type="text"/>	Cross Street:	<input type="text"/>	Building Type:	<input type="text" value="1780"/>
County:	<input type="text" value="Chatham"/>	Boroughs/City/Town:	<input type="text" value="Savannah"/>	Township:	<input type="text" value="1800"/>
Time Report:	<input type="text"/>	Time Dispatched:	<input type="text"/>	Time of Arrival:	<input type="text" value="1920"/>
Indicator #:	<input type="text" value="Tattnall-Savannah"/>	Leak Detected By:	<input type="text"/>	Estimated Leak Location:	<input type="text" value="1930"/>
Gas Detected In:	<input type="text"/>	Plate #:	<input type="text"/>	Leak Classification:	<input type="text" value="2450"/>
Gas Level Reading:	<input type="text"/>	GLR Unit:	<input type="text"/>	Leak Reported By:	<input type="text" value="2510"/>
Odorant:	<input type="text" value="Select..."/>				<input type="text" value="2530"/>

Leak Detection

County: Chatham
Bryan
Chatham
Effingham
Liberty-Savannah
Tattnall-Savannah

Boroughs/City/Town: Savannah
Bloomingdale
Garden City
Pooler
Port Wentworth
Savannah
Thunderbolt
Tybee Island
Vernonburg

Location Code / Service Center: 4970
1750
1770
1780
1800
1920
1930
2450
2510
2530
3300
3320
3330
3380
3740
3840
3870
4910
4930
4940
4950
4970
5340
5360

Leak Codes to better Identify Leak Locations (Proactively and Reactively)

**AGL Resources
Distribution Work Order**

LDC

Service Leak Code:

Service Line Leak

Service Line Leak Color Codes

- 100 series: Within 10 ft. of Structure
- 200 series: >10 ft from main tap
- 300 series: Within 10 ft of main

Meter / Customer Fuel Line Leak Codes

Meter Headers: 407
Fuel Line Shut Off: 408
Customer Buried Pipe: 409

Main Leak Near Premise

Main Intersection Leak
to address of structure near

Main Roadside Leak
to address of structure near

Main Right-of-Way Leak
to address of structure near

215
216
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
400
401
402
403
404
404a
404b
405
406

Pop-up Definitions and Choices Helping the Folks in the Field

Microsoft Office InfoPath



Material and Welds Leaks - is a leak resulting from faulty wrinkle bends, faulty field welds, and damage sustained in transportation to the construction or fabrication site. Includes leaks after a dent, gouge, excessive stress, etc., occurs on originally sound material. Also includes leaks resulting from a defect in pipe material, component, or the longitudinal weld or seam due to faulty manufacturing procedures. Report leaks from material deterioration, other than corrosion, after exceeding the reasonable service life, under "Other Leaks".

OK

Select...

- Select...
- Corrosion
- Natural Forces
- Excavation
- Other Outside Force Damage
- Material & Welds**
- Equipment
- Operations
- Other



- Brittle like cracking**
- Dent
- Gouge
- Factory Defect
- Wrinkle Bend
- Weld (Steel)
- Fusion (Plastic)
- Cracked Cap (Plastic)

Excavation

Select...

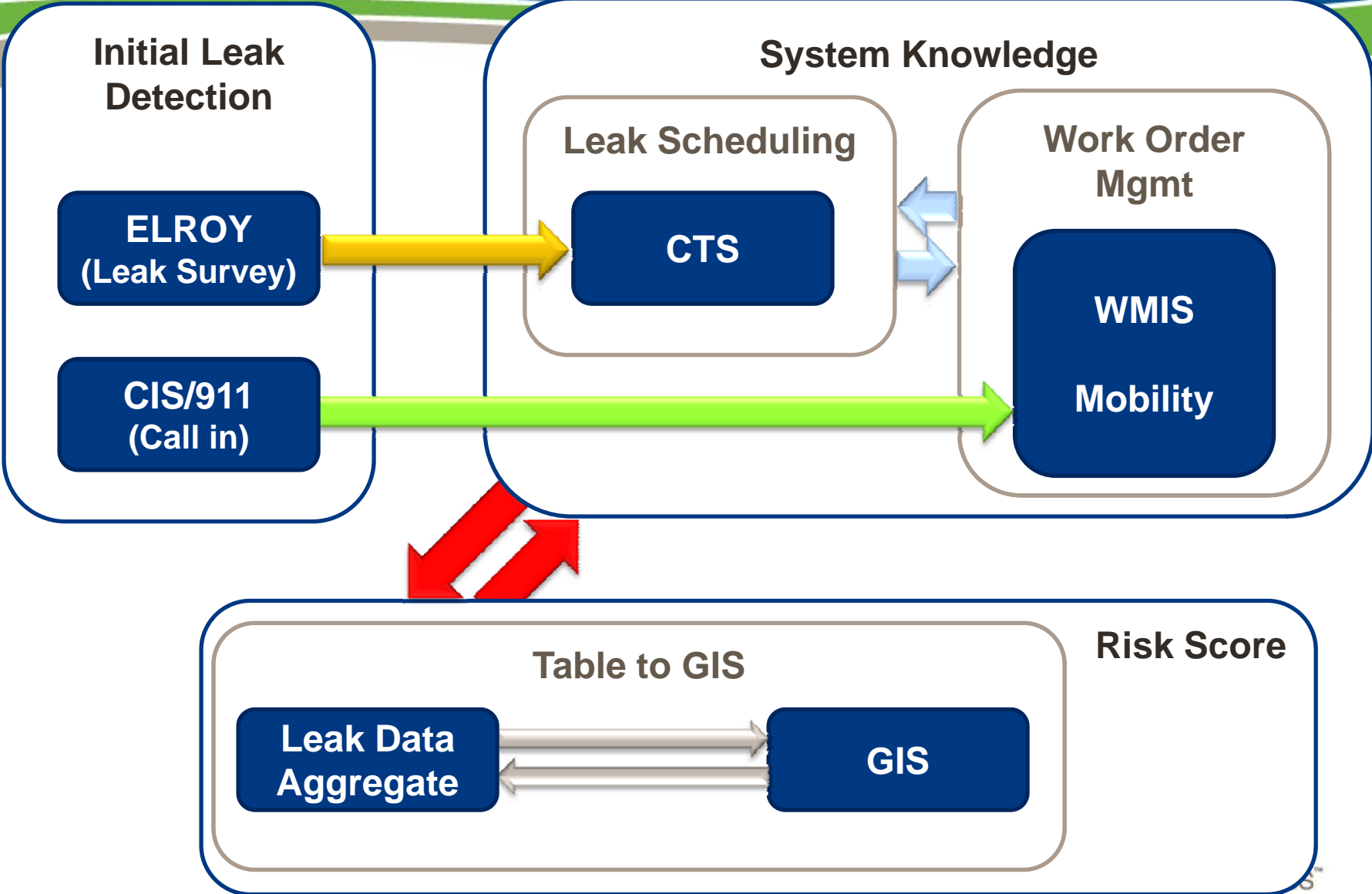
- Corrosion
- Natural Forces
- Excavation**
- Other Outside Force Damage
- Material & Welds
- Equipment
- Operations
- Other



3rd Party - Valid Ticket

- Company Employee**
- 3rd Party - No Ticket**
- 3rd Party - Invalid Ticket
- 3rd Party - Valid Ticket
- 3rd Party - Ticket Out Dated
- 3rd Party - Hand Tool
- Contractor Working for Company
- Mislocate by Company Locator
- Mislocate by Contract Locator
- Failure to Respond to Locate by Company
- Failure to Respond to Locate by Contractor

Leak System Integration

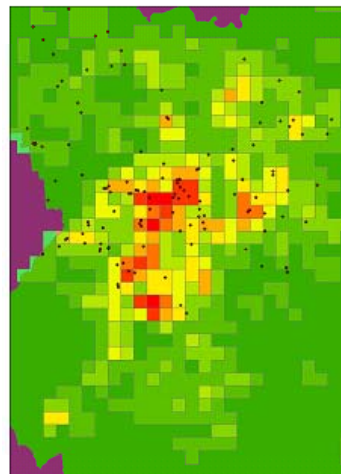


Threat Prioritization and Risk Factors

Risk of Failure (Likelihood & Consequence)

- Excavation Damage
- Corrosion
- Equipment
- Other Outside Force
- Material
- Weld /Joint
- Incorrect Operations
- Natural Forces
- Other

		ROF		29.36375	
LOF	1	36.14	COF	1	81.25
EXC	0.42	42	POP	0.4	100
EQP	0.35	42	P	0.25	25
COR	0.07	20	CRT	0.35	100
MAT	0.04	20		1	
WLD	0.04	20			
IO	0.02	10			
NF	0.02	10			
OOF	0.02	10			
O	0.02	10			



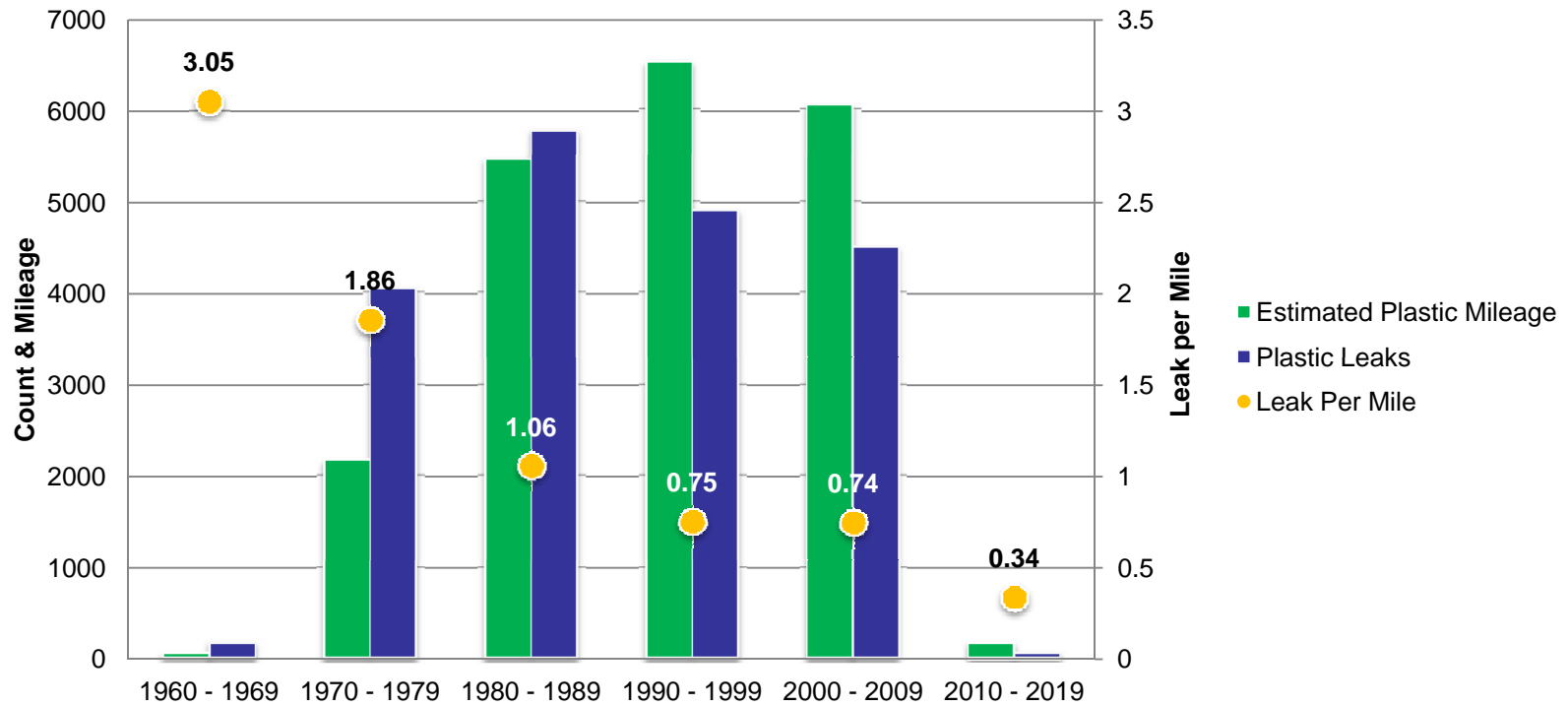
Leak Corrosion Density



Consequence Area including Block Groups, Landmarks, Business District, and Line Size.

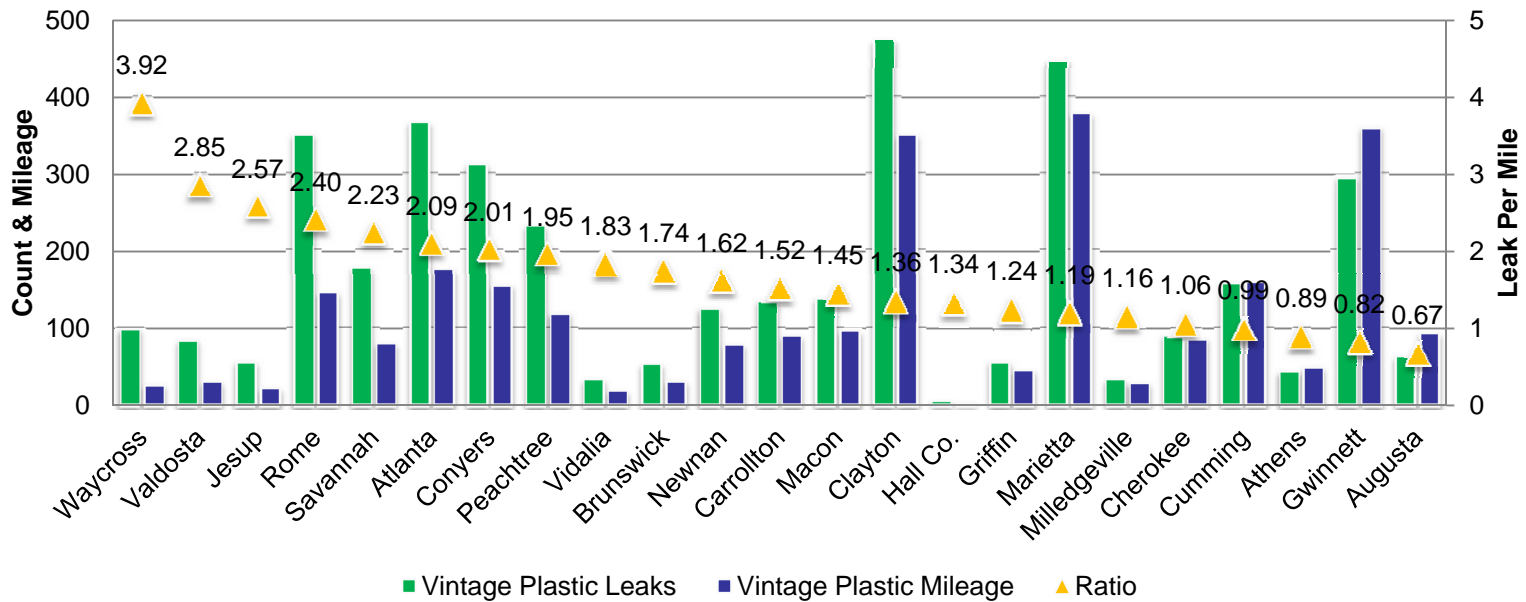
Knowing and Maintaining Your System

Plastic Leak Metric by Decade Installed



Knowing and Maintaining Your System

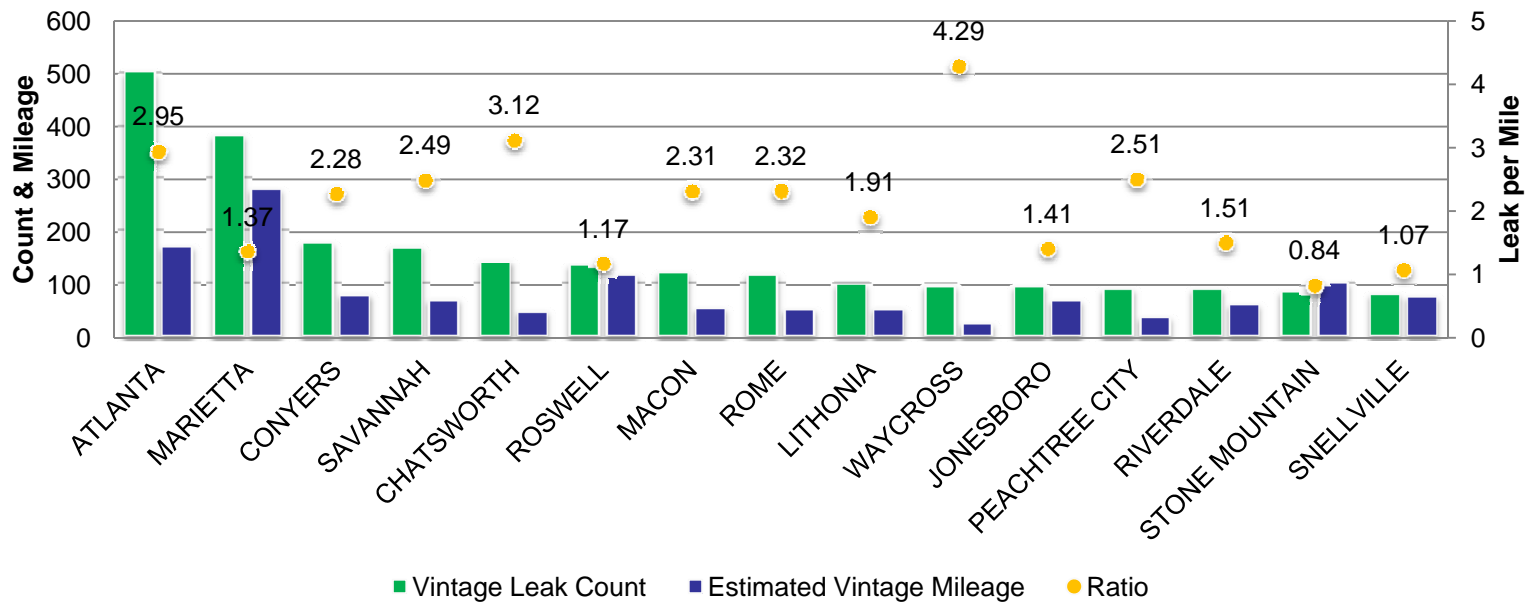
Vintage (Pre-1981) Plastic Leak Metric by Service Center



Knowing and Maintaining Your System

Vintage (Pre-1981) Plastic Leak Metric by City

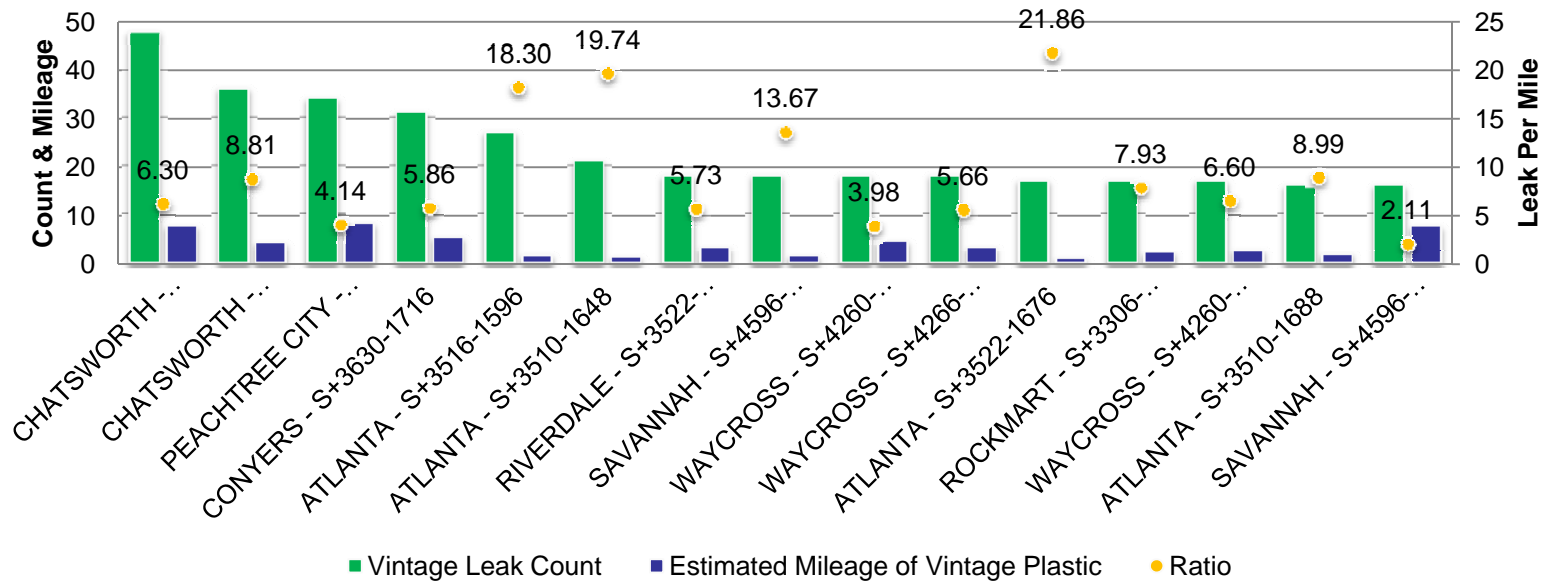
(Top 15 Leak Counts)



Knowing and Maintaining Your System

Vintage (Pre-1981) Plastic Leak Metric by Leak Survey Grid

(Top 15 Leak Counts)



Take the Data and Run! (Your System)

- Educate your Customers
- Emergency Response
- Scheduled Leak Repairs
- Accelerated Actions
- Focused Infrastructure Replacement
- Blanket Infrastructure Replacement

