



REVIEW OF
FLORIDA CITY GAS
METER SAMPLING AND
TESTING PROGRAMS

APRIL 2011

BY AUTHORITY OF
THE FLORIDA PUBLIC SERVICE COMMISSION
OFFICE OF AUDITING AND PERFORMANCE ANALYSIS

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METER SAMPLING
AND
TESTING PROGRAMS**

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1.0 EXECUTIVE SUMMARY

1.1 PURPOSE AND OBJECTIVES

At the request of the Florida Public Service Commission's (Commission or FPSC) Division of Service Safety and Consumer Assistance, the Office of Auditing and Performance Analysis reviewed the meter testing program in place at Florida City Gas (FCG or company). The review's primary objective was to assess the company's adherence to its Commission-approved Meter Testing Program along with the company's overall adherence to Commission rules for meter accuracy.

1.2 SCOPE

Audit staff evaluated the company's policies and procedures, managerial oversight, and the appropriateness of its operational practices for meter testing and recordkeeping. Specifically, the audit focused on compliance with the following sections of the Florida Administrative Code (F.A.C.):

- ◆ Records of Meters and Meter Tests
- ◆ Meter Testing Equipment
- ◆ Meter Test Records
- ◆ Meter Accuracy at Installation
- ◆ Periodic Meter Tests
- ◆ Meter Test By Request
- ◆ Meter Test-Referee
- ◆ Adjustment of Bills for Meter Error

1.3 METHODOLOGY

Planning, research, and initial data collection for this review were performed in December 2010. Additional data collection and analysis were conducted in January and February 2011. The information compiled in this report was gathered via company responses to staff document requests, an onsite visit to the company's Hialeah office, and interviews with key company management. Additionally, audit staff evaluated the company's historical responses to the *Report of Meters, Consumers, and Refunds* which is filed annually by February 10.

1.4 OBSERVATIONS

Through this review, audit staff assessed the effectiveness of the company's meter testing process. Audit staff presents the opinion and findings of Florida City Gas' meter testing program.

1.4.1 OVERALL OPINION

Florida City Gas has in place a testing program to assess the safety and accuracy of its meters. For the period of 2006 through 2009, audit staff determined that the company did not

maintain compliance with its testing process or with required state regulations. The company made efforts to improve its testing process in late 2009 and 2010; however, required monitoring will be necessary to ensure that this improvement continues over time.

Overall, audit staff has concerns with management's oversight and monitoring of the testing program. At times, company management did not appear to have a full grasp of the process and results of the testing program. In addition, inconsistencies were found in the company's responses to audit staff's data requests. These inconsistencies continued throughout the audit process and required audit staff to request updates and revisions to the company's responses. Much of the audit data conflicted with data in its annual filings with the Commission. Audit staff does not believe that management places sufficient emphasis on monitoring and analyzing the accuracy of its sample data to make sure that the information provided to the Commission is accurate and representative of its testing efforts for the period.

1.4.2 AUDIT FINDINGS

Audit staff identified the following findings regarding the company's meter testing program and related Commission requirements:

- 1. FCG did not perform the prescribed number of residential and commercial (up to 2500) meter tests during the review period of 2006 through 2009, as required in the company's Gas Meter Sampling Plan and Rule 25-7.064, F.A.C.**
- 2. FCG did not perform the prescribed number of industrial meter (greater than 2500 cfh) tests during the review period of 2006 through 2009, as required in the company's Gas Meter Sampling Plan and Rule 25-7.064(3) and (4), F.A.C.**
- 3. FCG could not provide staff industrial meter test data for 2006, indicating the company was not fully in compliance with Rule 25-7.021, F.A.C; which requires the company to maintain meter testing records on its standard forms for all active meters.**

After completion of the audit, the company notified audit staff that it was able to obtain these records from the archived database of the previous company. Staff verified that these testing records are now accessible, as required by Rule 25-7.021 F.A.C. As such, staff believes the company has now resolved this finding.

- 4. FCG did not timely replace its poor-performing meters in accordance with its Commission-approved Gas Meter Sampling Plan and Rule 25-7.064, F.A.C.**
- 5. Since 2006, FCG removed at least 1,400 poor performing meters for which test results were not recorded in the Meter History system, without which, the company was unable to issue any necessary credits to customers, as required by Rule 25-7.087, F.A.C.**
- 6. Staff determined, through a sample review of FCG's 2010 performance program, that approximately eight percent of meter test results were not entered into the meter records database.**
- 7. FCG's 2006 through 2009 Annual Report of Meters, Consumers, and Refunds contain incorrect and inconsistent information.**

- 8. FCG does not have a prescribed process for calibrating its field-testing meter equipment, as required by Rule 25-7.061, F.A.C.**

After the completion of the audit, the company implemented new procedures for ensuring the accuracy of its testing equipment. Staff verified these procedures and confirmed that FCG recently calibrated each device. As such, staff believes the company has now resolved this finding.

- 9. FCG's current process for documenting the manufacturer's testing date for new meters limits its ability to ensure calibration tests were performed within the prior 12 months, as required by Rule 25-7.063(3), F.A.C.**
- 10. FCG does not maintain the results for meter tests triggered by damaged shipping containers, as required by Rule 25-7.063(1), F.A.C.**

2.0 BACKGROUND AND PERSPECTIVE

2.1 COMPANY HISTORY

Florida City Gas (FCG) is an operating division of Pivotal Utility Holdings, Inc., a wholly-owned subsidiary of AGL Resources. FCG is headquartered in Hialeah, Florida, and serves approximately 102,000 residential and commercial customers in its Florida territories.

The company currently operates in Dade, Broward, Palm Beach, Indian River, St. Lucie, and Brevard Counties along the southeast Florida coast, and in Hendry, Lee, Glades, Charlotte, and Collier Counties along the southwest coast. Company gas services include sales of natural gas to residential and commercial customers within its territories, maintaining gas pipeline infrastructure, repair of gas leaks, providing customer service and billing assistance, and offering online customer information regarding natural gas service and gas-fueled products.

In 1946, City Gas began serving customers in its Miami Dade County service territory. Approximately 15 years later, as Florida's space program began development, the company expanded operations into Brevard County. In 1988, the company merged with New Jersey-based NUI Corporation and extended the Florida gas service operations into St. Lucie, Indian River, Martin, and Palm Beach Counties.

The company operated as City Gas until 2004, when it became a subsidiary of AGL Resources Inc. (AGL), an Atlanta, Georgia-based energy company. At that time, the company name was changed to Florida City Gas, and AGL Resources reorganized its six-state territory into two divisions. The Mid-Atlantic Operations consist of Maryland, New Jersey, and Virginia, and the Southern Operations consist of Florida, Georgia, and Tennessee. AGL Resources serves 2.3 million gas customers throughout the six-state territory, with more than half of those customers located in Georgia. In December 2010, AGL Resources initiated an acquisition of a large gas utility in Northern Illinois, increasing AGL's gas customer base by an additional two million customers.

Through the end of 2010, Florida City Gas was managed by an AGL Regional Manager based out of Savannah, Georgia. The Regional Manager's primary responsibility was for the South Georgia and Florida markets. An Operational Manager was also based out of Savannah, with South Georgia and Florida responsibilities. The Vice President/General Manager for Georgia and Florida was based out of the Florida City Gas Hialeah office.

In January 2011, the company made several other organizational changes to its management reporting structure. The company created a Regional Manager position for its Florida operations, reporting to the Vice President/General Manager, who oversees both South Georgia and Florida. Both positions are based in Hialeah.

The Florida division does not have an Operations Manager under the newly revised structure. However, the company employs two Operations Supervisors over its Miami and Brevard service centers. The Miami supervisor manages the field and technical staff for the Miami division, while the Brevard supervisor manages the support for the Brevard and Port St. Lucie districts. In addition, an AGL supervisor based in Atlanta, Georgia, manages and supports the staff responsible for industrial meters.

2.2 COMMISSION GAS METER RULES

The Florida Public Service Commission governs the performance testing, accuracy, and recordkeeping of meters in service for gas utilities in Florida under Chapter 25-7, (F.A.C.) Specifically, the sections that provide necessary guidelines and direction for gas utility meter testing include:

- ◆ 25-7.021, F.A.C.—Records of Meters and Meter Tests
- ◆ 25-7.049, F.A.C.—Testing Equipment
- ◆ 25-7.061, F.A.C.—Meter Testing Equipment
- ◆ 25-7.062, F.A.C.—Meter Test Records
- ◆ 25-7.063, F.A.C.—Meter Accuracy at Installation
- ◆ 25-7.064, F.A.C.—Periodic Meter Tests
- ◆ 25-7.065, F.A.C.—Meter Test by Request
- ◆ 25-7.066, F.A.C.—Meter Test Referee
- ◆ 25-7.087, F.A.C.—Adjustment of Bills for Meter Error

These and other Commission rules must be adhered to for compliance with Commission authority over gas meter performance testing, accuracy, and recordkeeping. Each rule referenced above and its application is discussed in the Chapter six.

2.3 HISTORY OF FCG'S METER SAMPLING PROGRAM

In November 1997, the company filed with the Commission its proposed Statistical Meter Sampling Plan for testing positive displacement meters with a rated capacity up to 250 cfh, pursuant to Rule 25-7.064(1), F.A.C. The sampling plan was reviewed by Commission staff, and minor changes were recommended to the plan. Commission staff believed the recommended changes would help the plan conform to American National Standards Institute guidelines for gas displacement meters.

In February 1998, a revised sampling plan was submitted by the company for Commission approval. In March, the revised Statistical Sampling Plan was approved by the Commission, and the company implemented its testing plan. Since the approval of FCG's sampling plan in 1998, the company has submitted its *Report of Meters, Consumers, and Refunds* to Commission staff annually, pursuant to Rule 25-7.021, F.A.C.

On February 10, 2010, Florida City Gas filed its 2009 *Report of Meters, Consumers, and Refunds*, along with meter test results data to document company compliance with the approved meter sampling plan. The Commission's Division of Service Safety and Consumer Assistance staff identified deficiencies within the meter test data reported by FCG. Staff determined that the data provided was insufficient to evaluate if the company was in compliance with its approved meter sampling plan and conducted on-site evaluations to further inspect meter test records and assess the company is compliance with its plan.

In April 2010, Division of Service, Safety and Consumer Assistance staff met with representatives at the company's Hialeah offices to review testing records. Specific records of meter group populations and failed meter removals, however were not readily available from data provided and the information maintained in the Hialeah offices. The company agreed to provide further supporting information from the AGL Atlanta offices.

On April 26, 2010, the Commission's Division of Service, Safety and Consumer Assistance staff issued a formal data request to FCG for the data necessary to evaluate the company's compliance with the meter sampling plan. The letter specified the following data:

- ◆ A summary of the number of meters in service for ten or more consecutive years, by year of installation, as of January 1, 2009.
- ◆ A detailed description of the process by which customer meters were selected for sample testing of each sample group and a list of meter numbers randomly selected for sample testing by year of installation for 2009.
- ◆ Documentation of additional analysis performed by the company on sample groups failing to meet prescribed accuracy limits, the associated sub-groups of meters, and the failed meter codes removed or scheduled to be removed from service within four years.
- ◆ An explanation of the increase in number of meter error refunds for calendar year 2009, in the *Report of Meters, Consumers, and Refunds* submitted on February 9, 2010.
- ◆ An explanation of why more meters were tested than reported for the meter sample group in ten of the twelve years reported, and whether the number of meters reported under "Number of Meters In Sample Group" represents the total number of meters in service by the year of installation for calendar year 2009.
- ◆ A description of any actions taken to investigate and improve meter accuracy for meters rated at a capacity greater than 250 cfh tested during 2009, since 53 percent of the large capacity meters tested in excess of two percent fast in 2009.

A second on-site meeting between Division of Service, Safety, and Consumer Assistance staff and company representatives was scheduled for July 2010; allowing the company additional time to respond with the requested data and provided staff time to review the responses before further discussions.

The Division of Service, Safety and Consumer Assistance staff determined that pertinent information necessary to evaluate compliance with the company's sampling program was not included in the annual test report submitted to the Commission. Commission staff continued to work with FCG to obtain the data necessary to evaluate the company's compliance with the meter sampling plan during 2010. The company also agreed to provide further supplemental data with future annual reports of *Meters, Consumers, and Refunds* to assist staff in determining compliance with the meter sampling plan.

However, continued staff concerns with the data led to a management audit of FCG's meter accuracy. In December 2010, the Division of Service, Safety and Consumer Assistance requested the Office of Auditing and Performance Analysis to perform a management audit of the company's meter testing program and its compliance with Commission rules.

3.0 METER TESTING PROGRAM

3.1 RESIDENTIAL METER TESTING PROGRAM (UP TO 250 GFH)

During the period 2006 through 2009, the company averaged approximately 103,000 residential meters in service. For these meters, the company has a random sample testing program in place to assess meter accuracy and performance. This plan allows the company to test a sampling from each meter group to monitor for accuracy and performance (the company groups its meters based on capacity, manufacture, and year of installation.) The plan states that the minimum sample size for each identified grouping shall be 10 percent of the total group, not to exceed 200 meters.

Each January, the company compiles a sample of meters in each identified group, based on the number of meters in service at the end of the previous calendar year. Prior to 2008, this process for selecting the sample pool was performed by the NUI corporate office in New Jersey and provided to the Florida office even though AGL Resources purchased the Florida operations in 2004. The company states that the lag in taking over the sample process was a result of delays in the system migration to the AGL platform.

In 2008, the AGL Resources technology group took over responsibility for selecting the sample group. The company states that it made some modifications to its meter grouping categories, but overall maintains the same sampling structure that was in place during the NUI period. Under the current AGL methodology, the company extracts a sample of residential meters from its Meter History system, the database that maintains all active meter records. Once a random sample of meters is identified, AGL provides the listing of residential meters to the Florida office for testing.

The Operations Supervisors, or their staff, will periodically manually input a batch of the meters to be sampled into the workload dispatch system.¹ Once entered, the system will automatically issue a work order for the meter to be pulled from the field and marked for testing. These work orders are then prioritized by the system based on daily workload and priority requests.

Every residential meter tested as part of the sample must be removed from service. The technician removes the identified meter and immediately installs a new meter at the location. This process is documented in the Customer Management Application system². The field representative returns the meter to the district warehouse for testing. A special tag is used to note that the meter was pulled as a part of the sample program. Once the meter is placed in the warehouse queue for testing, it becomes the responsibility of the warehouse personnel.

All residential meters are tested in-house at either the Miami or Brevard warehouse. The warehouse staff is responsible for completing the meter test and documenting the testing results. Once the meter tester pulls the meter from the testing queue and performs the pressure test, the tester manually documents the test results, test date, and meter number on the special meter tag. The testing equipment automatically stores the results on

¹ The company's current workload dispatch system does not interface with the Meter History system. Therefore, management must manually input the meters selected and all meter testing requests into the workload distribution system.

² The Customer Management Application is the database used to record all services and actions performed on a customer account.

a compact disk for backup documentation. Limitations with the current database system, however, prevent the company from uploading these results through an automated process.

After test results are documented on the meter tags, the tags are collected and provided to the support analyst to manually key the results into the Meter History system. This database contains all historical meter test records and results for the company. FCG management uses this system to query for fast meter refunds and the percentage of meters that fall outside the approved parameters established in the sample plan. A list of fast meters is provided to the billing group in Atlanta to calculate and issue customer billing adjustments. The Meter History system and the customer billing system are not interfaced, requiring manual processing.

Audit staff recognizes that the process for collecting, testing, and documenting residential meters is a resource intensive process that requires multiple steps to complete. The current process is hampered by interface limitations of the workload dispatch system, the Meter History system, and the customer billing system. This limitation requires the company to rely on manual documentation and input to the system. Audit staff notes that an increased risk for errors exists when a manual process is in place. Company management admits that it experienced problems with missing testing results, and audit staff believes that this problem may be attributed, in part, to this manual process. Poor performing meters are discussed in greater detail in section 3.5.

Finally, audit staff notes that a significant component of the current process is the reliance on FGC management to manually dispatch meters for testing to the field staff. Audit staff believes that the backlogs that have occurred during this review period can, in part, be attributed to a lag in this process. To prevent further backlogs, senior management must specifically monitor this portion of the process to ensure that the sampling plan operates as intended.

3.2 COMMERCIAL METER TESTING PROGRAM (250 TO 2500 CFH)

3.2.1 COMMERCIAL METERS 250 TO 1000 CFH

FCG management states that the company attempts to make certain all commercial meters are field tested or shop tested at least once every ten years pursuant to Rule 25-7.064(2), F.A.C. For commercial meters 250 to 1000 cfh, the AGL Information Technology Group provides FCG, each January, a listing of commercial meters identified for testing in that year. The selected commercial meters are then combined with the listing of residential meters. Meters from this combined list are periodically manually entered into the workload dispatch system for prioritization. Similarly to the residential meter process, technicians will collect the commercial meters for sampling; warehouse employees test the meters, and the staff analyst manually enters the results into the Meter History system. Any customer credits are processed through the company's billing system.

3.2.2 COMMERCIAL METERS 1000 TO 2500 CFH

The company categorizes meters between 1000 cfh and 2500 cfh as large commercial meters and processes these meters similarly to its industrial meters (greater than 2500 cfh). These meters are tested on a five-year cycle based on the original installation date. Meters of this rating are tested in the field by specially trained technicians, and the meter records are maintained in AGL's DataStream 7i system (D7i), the work order database that maintains large

commercial and industrial meter records. The process for testing industrial meters is described in greater detail in the next section.

3.3 INDUSTRIAL METER TESTING PROGRAM (GREATER THAN 2500 CFH)

FCG stated that meters with a capacity rating above 2500 cfh are scheduled for routine maintenance every three years and are field tested for calibration accuracy at least once every five years pursuant to Rule 25-7.064(3), F.A.C. During maintenance the meters are checked for rust, defects, and any corrective maintenance necessary. If there is less than a 12-month period between maintenance and scheduled testing, both activities will be completed together. Each year, in early January, the AGL management provides FCG a list of large commercial and industrial meters and controls to be maintained and tested during the year.

Since May 2008, FCG has housed its large commercial and industrial meter data in the D7i work order system. The D7i system stores meter information, such as previous inspections and scheduled future meter installations. Field technicians complete scheduled maintenance and testing and enter results through their laptops to the D7i system. Once the completed work order information is input by field technicians, the D7i system updates the managers at AGL and FCG with real time information. To ensure annual meter maintenance and sampling is completed, the D7i system provides report data that assists AGL and FCG managers in monitoring large commercial and industrial inspection results.

3.4 COMPANY TESTING RESULTS AND COMMISSION COMPLIANCE

3.4.1 RESIDENTIAL AND COMMERCIAL TESTING RESULTS FOR 2006 THROUGH 2010

Audit staff obtained the test results for each meter tested during 2006 through 2010 to assess the sampling program and verify company compliance with sampling requirements. While the company's process for collecting and testing its residential and commercial meters are the same, the testing cycle is different per Rule 25-7.064 (1) and (2), F.A.C.

Exhibit 1 details the number of residential and commercial meters reported by the company in its annual filing with the Commission during the period 2006 through 2009. This report provides the number of meters tested (per the sample) and the number of meters that tested outside the required calibration requirements. Audit staff notes that there appear to be errors in the widely varying numbers reported by the company.

**NUMBER OF RESIDENTIAL AND COMMERCIAL METERS TESTED
AS REPORTED IN THE FCG ANNUAL FILINGS TO THE COMMISSION
2006-2009**

Meter Type	2006	2007	2008	2009	Total
Residential (250 cfh <)	5,033 (432*)	388	480	2,760	8,661 (4,060)
Commercial (250-2500 cfh)	586	323	21	933	1,863
Total Residential and Commercial Meters Tested	5,619 (1,018*)	711	501	3,693	10,524 (5,923*)

*There are inconsistencies with the residential totals provided in the company's 2006 *Report of Meters, Consumers, and Refunds* filing. The "testing this period" totals and the itemized total number of meters tested do not agree; the itemized totals are provided in parentheses.

EXHIBIT 1

Source: Report of Meters, Consumers, and Refunds 2006-2009

For the same period, audit staff requested a detailed listing of each residential and commercial meter tested under the company's plan, by both the original sample year and actual test year. **Exhibit 2** shows the annual sample testing results for the commercial and residential meters and the total number of meters tested under the program. Comparing Exhibits 1 and 2 reveals inconsistencies in the number of meters reported by the company when it filed its annual reports and its totals presented during this audit. Audit staff believes this discrepancy reflects problems with management's monitoring and tracking of the company's overall testing results.

**RESIDENTIAL AND COMMERCIAL METERS TESTED
AS PROVIDED TO AUDIT STAFF
2006-2010**

Residential Testing Sample						
Original Sample Year	Number of Meters in Sample	Actual Year Test Conducted				
		2006	2007	2008	2009	2010
2006	432	429	0	1	1	1
2007	890		368	235	121	166
2008	1,657			586	590	481
2009	3,565				2,403	1,162
2010	1,490					1,490
Total	8,034	429	368	822	3,115	3,300
Commercial Testing Cycle						
Original Sample Year	Number of Meters in Test Cycle ³	Actual Year Test Conducted				
		2006	2007	2008	2009	2010
2006	348	344	0	1	2	1
2007	1,684		286	273	320	805
2008	164			54	66	44
2009	1,401				509	892
2010	360					360
Total	3,957	344	286	328	897	2,102
Total Residential and Commercial Meters Tested		773	654	1,150	4,012	5,402

EXHIBIT 2

Source: Document Request DR-3.8, Attachment 8,-Revised

³ The number of meters within the commercial testing pool can vary each year. The cycle is based on the number of meters installed within a given year.

Exhibit 2 also shows the number of residential and commercial meters tested after the year the sample was selected for the period 2006 through 2009. As the chart details, in 2007 through 2009, the company tested a significant number of meters from the sample after the year the meter was scheduled for testing. For residential meters, the company only tested 41 percent of the meters scheduled in 2007; in 2008, only 35 percent were tested in the scheduled year; and in 2009, 67 percent were tested in the original sample test year. For commercial meters, in 2007 the company only completed 24 percent of the meters scheduled for that year; in 2008, only 33 percent were tested timely; and in 2009, 36 percent were tested in the year the sample was selected.

Finding 1: FCG did not perform the prescribed number of residential and commercial (up to 2500 cfh) meter tests during the review period of 2006 through 2009, as required in the company’s Gas Meter Sampling Plan and Rule 25-7.064, F.A.C.

Audit staff believes these results indicate that the company did not maintain compliance with its Sample Testing Program or Rule 25-7.064 (1) and (2), F.A.C. For both residential and commercial meters, the company did not maintain its testing schedule through the review period. The company attributes the delays in timely completion of its sampling cycle to several factors. Management states that during the transition between the NUI and AGL, the company only imported the prior two years of data into the new tracking system. Additionally, the company states that it was not able to hire outside contractors to assist with this work because of collective bargaining restrictions in the union contract. Management notes that in 2008, the union was decertified, which now allows the company to hire outside contractors, as the company did in 2009 and 2010 to reduce the backlog.

3.4.2 INDUSTRIAL METER TESTING RESULTS FOR 2006 THROUGH 2010

FCG management states it has recently increased efforts to remain current with its industrial meter inspection cycle. The company admits that system integration challenges and labor constraints prevented the completion of annual industrial meter sampling during 2006 through 2008.

Exhibit 3 details the number of industrial meters reported in the company’s annual filing with the Commission for 2006 through 2009. These results appear questionable due to widely varying data results. These figures also differ from the numbers provided in the company’s responses to staff data requests.

NUMBER OF INDUSTRIAL METER TESTS AS REPORTED IN FCG’S ANNUAL FILINGS TO THE COMMISSION 2006-2009				
Meter Type	2006	2007	2008	2009
> 2500 cfh	17	162	81	337*

EXHIBIT 3

Source: Report of Meters, Consumers, and Refunds 2006-2009

Exhibit 4 shows the FCG scheduled, completed, and backlogged industrial meter tests for the Miami and Brevard divisions during 2006-2010, as provided to staff during this audit.

FCG scheduled 261 industrial meters to be tested in 2007 and completed 100. This does not match the 162 reported in the annual *Report of Meters, Consumers, and Refunds* for 2007.

INDUSTRIAL METER TESTED AS PROVIDED TO AUDIT STAFF 2006-2010					
	2006	2007	2008	2009	2010
Meter Testing Scheduled	*	261	237	166	98
Meter Testing Completed	*	100	164	330	204
Testing Cycle Backlog					
Testing Not Completed in Current Year	*	161	73	0	0
Backlog From Prior Years	*	35	196	269	105
Total Testing Backlog	*	196	269	105	+1

* Company could not provide to audit staff during review process.

EXHIBIT 4

Source: Document Request DR-1.12

Similar inaccuracies were reported by the company for 2008 and 2009. In 2008, the company provided in the annual *Report of Meters, Consumers, and Refunds* that 81 industrial meters were tested, but informed audit staff that 237 meters were selected, and only 164 tests were completed. In 2009, the company filed in the *Report of Meters, Consumers, and Refunds* that 337 industrial meters were tested by the company. However, the company responded to audit staff that 166 meters were scheduled for testing, and the company completed 330 meter tests (a combination of current and backlog meters). These examples show that the numbers provided in the *Report of Meters, Consumers, and Refunds* were not dependable in prior years.

The company carried a backlog of selected meters to be tested in 2006 through 2009.⁴ In 2007, FCG scheduled 261 industrial meters for testing. Of these, the company completed 100 tests and delayed the remaining 161 meter tests. With 35 meters backlogged from prior years, the total testing backlog in 2007 was 196 industrial meters. In 2009 and 2010, FCG placed increased efforts on reducing its industrial meter testing backlog. As of the end of 2010, the company reported that it had completed all backlog testing and was currently on schedule.

While FCG appears to have improved its oversight and scheduling of industrial meter testing since 2009, evidence shows that historically the company did not timely complete field or shop tests of industrial meters above 2500 cfh pursuant to Rule 25-7.064(3), F.A.C. Company testing reports for industrial meters show that the company has not met the same interval test requirements for all instruments and auxiliary devices for industrial meters, pursuant to Commission Rule 25-7.064(4) at least during the period 2006-2009.

Finding 2: FCG did not perform the prescribed number of industrial meter (greater than 2500 cfh) tests during the review period of 2006 through 2009, as required in the company's Gas Meter Sampling Plan and Rule 25-7.064(3) and (4), F.A.C.

Audit staff examined FCG data for large commercial and industrial meters and found that the company had not updated all meter installation and inspection data from the NUI data conversion period. While discussing this process with FCG management, audit staff learned

⁴ The company was unable to provide specific data for its 2006 testing cycle, although management reports a backlog of 35 meters carried over in 2007.

that FCG is currently working with AGL on updating the installation and intermediate inspection data for all industrial meters to the D7i system. FCG management confirmed that it is committed to completing this work as quickly as possible.

Rule 25-7.021(2), F.A.C. requires the company to maintain and preserve, on its *standard forms*, all meter testing records for its in-service meters. The company could not provide requested data for the 2006 industrial meter test results. Management stated that the company did not import these records into the current D7i database post-merger. The company's inability to provide the historical meter testing data for 2006 indicates to audit staff that the company does not have complete or reliable data for that year and potentially earlier years.

Finding 3: FCG could not provide staff industrial meter test data for 2006, indicating the company was not fully in compliance with Rule 25-7.021, F.A.C; which requires the company to maintain meter testing records on its standard forms for all active meters.

Staff Confirmation:

After completion of the audit, the company notified audit staff that it was able to obtain these records from the archived database of the previous company. Staff verified that these testing records are now accessible, as required by Rule 25-7.021 F.A.C. As such, staff believes the company has now resolved this finding.

3.5 POOR PERFORMING METERS

For a group of residential meters to remain in service, at least 80 percent of the tested meters must meet the accuracy limits established in Rule 25-7.062, F.A.C. When an identified group does not meet the requirements of this rule, the company must take corrective actions to bring the group into compliance. These identified meter groups are typically referred to as poor performing meters.

3.5.1 REMOVAL OF POOR PERFORMING METERS

The company's plan states that the corrective action may "consist either of a selective meter removal program to improve the accuracy of the group to be within acceptable limits or the removal of the entire group from service." The company must complete its corrective action within four years from the date the meters were reported as below standard. During the review period of 2006 through 2010, the company's approach was to remove all poor performing meter groups from service.

Audit staff reviewed the poor-performing meter removal rate and determined that the company did not meet the standard during the period of 2006 through 2010. Staff determined that the company was still removing poor-performing meters from service in 2009 that had been identified for removal in 1999. Audit staff reviewed the testing dates and removal dates for the poor performing meters removed during 2006 through 2010. Of these meters, staff determined that between 22,000 and 25,000 poor-performing meters remained in service past the four-year replacement requirement. After reviewing the meter replacements by district, staff believes the issue was a problem company-wide.

The company states that several factors contributed to the delays in removing these meters. The reasons include the company's inability to hire outside labor due to a former union contract, lack of integration of the legacy systems, and the inability to access meter premises.

During 2009 and 2010, the company made significant strides to reduce the backlog with the use of contractors. As of January 2011, the company stated that less than 900 poor-performing meters fall outside the four-year window. Management noted that while it is working to replace these meters, in many cases the property owner has not allowed the company access to the meters.

Although efforts were made to improve the process, the management requires continued focus to ensure that meter removal backlogs do not reoccur. Audit staff recommends that the Commission monitor the results of these poor-performing meter replacements to verify the company timely completes this task.

Finding 4: FCG did not timely replace its poor-performing meters in accordance with its Commission-approved Gas Meter Sampling Plan and Rule 25-7.064, F.A.C.

3.5.2 DOCUMENTATION OF POOR PERFORMING TESTING RESULTS

As with all meters removed from service, the company must test the accuracy of all its poor performing meters to determine if a credit is due to the customer. Based on the records provided to audit staff for the period 2000 through 2010, the company states that it removed approximately 1,400 poor-performing meters from service without documenting the test results in its Meter History system.⁵ Audit staff notes that without these test results in the Meter History system, the company could not issue any necessary credits to the customer, as required by Rule 25-7.087, F.A.C.

Audit staff believes that a significant challenge in monitoring the process is the company reliance on several systems that do not interface or share information. The manual aspects to the current process and the lack of interface between the company databases create multiple opportunities for errors in the meter testing and documentation process. The company recognized during this audit that testing results were missing or omitted from meters removed from service. Audit staff believes that a process should be developed to make sure that all meter testing results are documented in the Meter History system.

Finding 5: Since 2006, FCG removed at least 1,400 poor performing meters for which test results were not recorded in the Meter History system, without which, the company was unable to issue any necessary credits to customers, as required by Rule 25-7.087, F.A.C.

3.6 STAFF ANALYSIS OF COMPANY TESTING RESULTS

In addition to the information provided by the company, audit staff reviewed a sample of the meter testing results for the year 2010. The sample's purpose was to verify that all relevant documentation was in place for the meters' removals and testing results as prescribed by the testing program. In each case, staff verified that the meter was collected, tested, and the results documented in the appropriate database.

⁵ The company provided conflicting information in its responses to DR1.12 (amended in the February 25, 2011, response) and the response to DR 3. 4, attachment 4, (revised as to the total number of missing test results.)

3.6.1 RESIDENTIAL AND COMMERCIAL SAMPLE AUDIT TESTING RESULTS

Audit staff completed two samples of the company's residential and commercial testing results for the year 2010. The original sample was selected during staff's on-site visit; however, after the sample was drawn, the company modified the data in its system to change the sample results. This action compromised the original results, requiring staff to perform an additional random sample.

Audit staff reviewed the sample results to verify that the company performed the meter testing and documented the results in the appropriate systems. Audit staff determined that approximately eight percent of the test results were not recorded in the Meter History system. Without proper documentation in the Meter History system, the company can not determine and process any fast meter credits that may be due to the customer in accordance with Rule 25-7.087, F.A.C. As mentioned in prior sections, the company's manual process for collecting and documenting meter testing results may be a reason for these omissions.

Finding 6: Staff determined, through a sample review of FCG's 2010 performance program, that approximately eight percent of meter test results were not entered into the meter records database.

In addition to meter documentation, audit staff reviewed the timeliness of the meter testing process. Staff evaluated the time differential between the date a meter was removed from service and the test date. While the company tests the majority of its meters within a few days to weeks after removal, audit staff determined that approximately ten percent were not tested for two to five months after the removal date. While there is not a formal requirement for the timeliness of testing a meter, the company should have in place a process for testing meters in a timely and orderly manner. A specific process will increase the likelihood that credits owed are processed within a reasonable period of time.

3.6.2 INDUSTRIAL METER TEST RESULTS ANALYSIS

Audit staff examined a limited number of 2010 industrial meter test results to identify if differential pressure results were documented in both the summary document and the work order source documents. Each of the sampled meters were traced back through the source work order documents issued to record the work completed and the results of testing. Each work order showed the same test results reported on the 2010 sampling plan summary report, thus confirming the transfer of sample test results from the source documents to the summary report document.

3.7 FAST METER REFUNDS

The testing process can identify meters that exceed the two percent fast testing parameters. The company tracks the testing results for meters up to 1000 cfh in the Meter History system. AGL customer service receives a report of the tested meters, with three months of fast meter results. Fast meters reported as part of the sampling program are first checked in the Customer Information System (CIS) to determine if any prior adjustment has been made for each meter. If no adjustment has been made for the reported meter, a template for calculating the adjustment for residential or commercial meters is completed to calculate the proper adjustment. The results are input manually to the CIS for customer billing. The template is a

spreadsheet with information regarding the meter reading date, meter results, gross tax, franchise tax, utility taxes, and more for Florida.

A monthly spreadsheet of fast meter adjustments is sent from AGL Customer Service to AGL and FCG management for review, along with a year-end summary report of annual meter adjustments. FCG management reviews current monthly billing credits and adjustments through the monthly financial report. AGL customer service and CIS can supply individual customer adjustment reports to FCG management. FCG incorporates the annual customer billing adjustment report data as part of the *Report of Meters, Consumers, and Refunds* filing with the Commission.

Audit staff performed a sample review of the customer meter credits applied during 2010 to ensure meter credits were applied to customer accounts. Staff evaluated the 2010 report compiled from the AGL Meter History system, identifying all meters requiring a fast meter adjustment. Audit staff compared customer billing adjustments with the fast meter accounts identified and determined that all listed customers properly received a billing credit adjustment.

3.8 ERRORS IN THE REPORT OF METERS, CONSUMERS, AND REFUNDS FILINGS WITH THE COMMISSION

In 1998, the Commission approved the Florida City Gas statistical meter testing program. This plan was developed and managed by the parent company NUI Corporation. According to FCG management, NUI did not modify the plan during its ownership. When AGL Resources purchased FCG in 2004, NUI continued to manage and maintain the meter records within its legacy Meter Management System through 2007. With this arrangement, NUI continued its oversight of the meter testing sample.

In 2007, AGL integrated NUI's legacy system into its Meter History system. Starting with the 2008 testing sample, the AGL Resources Information Technology group oversaw the sample testing meter selection. The conversion of the meter information onto a new platform required AGL to develop a new system program.

FCG confirmed that when it developed the criteria for evaluating its meter sample pool, its technical team did not exclude meter groupings that were previously identified as poor-performing meters and scheduled for removal. Additionally, the company stated that it developed a different "grouping" categorization in its sample methodology than the one used by NUI.

During the 2009 meter testing period, the company identified errors in its sample selection process. Management determined that this error impacted the 2008 and 2009 sample pool. The company stated it resolved these issues in mid-2009 and ran an additional sample for that year. However, instead of voiding the original 2009 run, the company *combined* the two samples for its annual inspection, invalidating the accuracy of its results. The company states it corrected this issue for its 2010 sample.

In addition to the meter sample pool, the company has been inconsistent in how it reports the results in its annual *Report of Meters, Consumers and Refunds* filing. This report contains specific details on the number of residential, commercial, and industrial meters tested in a given year. Additionally, the company is required to report the number and total of

customer refunds for the period. Audit staff determined that inconsistencies appeared in how the company stated information within the following areas of the report:

- ◆ Testing Next Period
- ◆ Testing This Period
- ◆ Number of Meters in Sample Group

Specifically, the company did not calculate these fields consistently during the review period. In one year, the company calculated the "Testing Next Period" using all remaining meters in the sample universe that would require testing, while in the next filing, only including the meters selected for that calendar year. Also, in certain years the itemized listing of meters tested did not agree with the "Testing This Period" totals. Overall, audit staff believes that the errors and inconsistencies in how the company reported its testing results to the Commission hindered technical staff's ability to assess FCG's compliance with its testing plan.

It is evident to audit staff that a disconnection between FCG management and the technical team at AGL appears when they complete the tests. FCG management relies on data supplied by the AGL technical group to populate this report to the Commission. However, audit staff does not believe that FCG management verified with its AGL support staff that the given data adequately represented the information required in the filing requirements. Audit staff believes this lack of understanding by FCG management contributed to the errors in the company's annual filings.

Staff was unable to verify the accuracy of the sample pool selection process prior to 2008, given that the former owner NUI performed this task, but, it apparently the company's filings prior to 2008 contained similar errors. For example, the number of meters reported in the 2006 filing in the "Testing This Period" field is 5,033, while the company only includes 432 meter tests in the itemized list.

Finding 7: FCG's 2006 through 2009 Annual Report of Meters, Consumers, and Refunds contain incorrect and inconsistent information.

3.9 RELATED COMMISSION REQUIREMENTS

3.9.1 METER TESTING EQUIPMENT

Rule 25-7.061, F.A.C., requires each gas utility to own and maintain or have access to all necessary meter testing equipment. This equipment includes at least one bell type meter prover of not less than five cubic feet capacity or another meter testing device approved by the Commission. The rule requires this equipment be able to determine meter accuracy within one-half of one percent. Additionally, all alterations, accidents, or repairs to meter proving equipment which might affect the accuracy of meter testing equipment or the method of operation shall be reported promptly to the Commission in writing.

Until 2009, FCG tested all its meters *less than* 1000 cfh through two provers located at the Miami division's Hialeah headquarters. In September 2009, FCG purchased and installed a meter testing prover for the Brevard division. The company provided documentation of the Miami and Brevard test provers showing that they were calibrated annually during 2007-2010.

For meters with a capacity *greater than* 1000 cfh, the company performs the testing in the field using portable testing devices. FCG stated that two Meriam differential gauges are used by the company for field testing its large industrial meter groups. However, FCG does not have written company procedures prescribing calibration time frames for field testing units to ensure the units are accurate. The company reported that one of these gauges was sent back to the manufacturer for recalibration in early 2011. The other gauge had not been serviced as of February 2011. Additionally, the company has not shown that these gauges received testing for the period 2007-2010.

Audit staff notes that while the company provided proper calibration of both the Miami and Brevard prover test units from 2007-2010, the company could not provide the same evidence for its field testing units for the same period. Therefore, audit staff believes the company did not maintain full compliance with Rule 25-7.061, F.A.C., during the period 2007-2010.

Finding 8: FCG does not have a prescribed process for calibrating its field-testing meter equipment, as required by Rule 25-7.061, F.A.C.

Staff Confirmation:

After the completion of the audit, the company implemented new procedures for ensuring the accuracy of its testing equipment. Staff verified these procedures and confirmed that FCG recently calibrated each device. As such, staff believes the company has now resolved this finding.

3.9.2 METER ACCURACY AT INSTALLATION

Rule 25-7.063, F.A.C., requires the company to ensure that all newly-installed meters are accurate within a specified range. The manufacturer's test data may be used in place of initial company testing if there is no evidence of shipping damage to the meters. Paragraph 3 of the rule states that no meter may be installed unless it is tested within the previous 12 months and found to be within accuracy limits. Audit staff reviewed the company's process for purchasing, documenting, and installing new meters to ensure that all new meters are installed in accordance with the rule's requirements.

AGL uses a third-party distribution warehouse for its enterprise-wide supplies. According to FCG management, when it places an order for new meters, the supplier orders the meters requested along with other meter orders made by AGL affiliates. Upon receipt from the manufacturer, the third-party distribution warehouse takes possession of the meters and distributes them to the appropriate companies.

The third-party warehouse ships the meters directly to FCG and submits the original manufacturer testing results to the corporate AGL Meter Department. The AGL Meter Department uploads test data into the Meter History system at that time, and the original test results are maintained at the Atlanta headquarters in the Meter History system.

When a meter is set in service, a new record is created in the Meter History system containing the install date. However, the original manufacturer test data is not transferred into the new records. This process does not allow the company to verify that the manufacturer test date is within the 12 month period at installation, as required by Rule 25-7.063(3), F.A.C.

Finding 9: FCG’s current process for documenting the manufacturer’s testing date for new meters limits its ability to ensure calibration tests were performed within the prior 12 months, as required by Rule 25-7.063(3), F.A.C.

If the meter shipment is damaged when received by the company, the rule requires that the company complete a sample test of at least ten percent of the meters to ensure the meters remain within the accuracy limits. While the company states that it performs testing on damaged shipments, it does not document and maintain these results. Therefore, audit staff cannot verify that the company is in compliance with this requirement.

Finding 10: FCG does not maintain the results for meter tests triggered by damaged shipping containers, as required by Rule 25-7.063(1), F.A.C.

3.9.3 TESTING METERS PER CUSTOMER’S REQUEST

Rule 25-7.065, F.A.C., requires gas utilities operating in Florida to perform a test of meter accuracy for any customer providing written request to the company. The customer may have a Commission engineer or an authorized representative witness the test and have a written report of the test results provided upon request.

FCG states that when a customer or Commission meter test request is received, an electronic meter order is generated to perform the test and any further actions necessary. A technician is dispatched to conduct a field test. These meters are tested in accordance with the company’s standard testing practices. The company states that it maintains these meters in its warehouse for two years after the testing dates to support its testing results. **Exhibit 5** shows that FCG reported a total of 307 requested meter tests during 2006-2009.

NUMBER OF CUSTOMER AND COMMISSION REQUESTED TESTS 2005-2009					
	2006	2007	2008	2009	Total
Customer Request	66	87	48	5	206
Commission Request	27	33	18	23	101
Total	93	120	66	28	307

EXHIBIT 5

Source: Report of Meters, Consumers, and Refunds, 2005-2009

This Rule allows the company to collect a deposit when performing customer-requested meter tests more than once in a twelve-month period. However, FCG states that this fee is not a company practice. The company recognizes that customers typically request their meters to be tested in response to a high bill. Management states that as a good-faith customer relations effort, the company does not ask customers to submit a deposit to ensure that meters are performing accurately.

4.0 CONCLUSIONS

4.1 OVERALL OPINION

In 1998, Florida City Gas implemented a meter testing program to monitor and assess the accuracy and performance of its meters. During this time, the company has made few changes to its process for performing this program. Audit staff reviewed the company's performance results since 2006 and determined that the company did not make efforts to ensure the program was managed efficiently.

For 2006 through 2009, the company was not able to maintain its testing schedule for residential, commercial, and industrial meter categories. The 2010 results show an overall improvement in timely inspections. However, based on the company's general performance trend during the last five years, audit staff believes continued monitoring of the company's results are necessary to ensure the company remains on task.

The company did not maintain its meter replacement schedule for poor performing meters. As with its meter testing schedule, the company allowed a significant backlog to occur, resulting in the removal of over 22,000 meters after the required removal schedule. With this delay, the company allowed potential fast meters to remain in service for an extended period of time. While the company applied a credit for the previous 12 months if a meter tested fast, audit staff has concerns that allowing these meters to remain in service past their scheduled removal dates could have resulted in customers incurring more than 12 months of overbilling.

Audit staff believes that the company's process for testing and documenting its meter performance creates opportunities for errors and omissions in recordkeeping. During the audit, staff determined that incorrect or missing meter testing records and meter installation records exist in the company's Meter History and Customer Management Application systems. This situation can, in part, be attributed to a manual data entry process for meter testing results and lack of a uniform recordkeeping repository or database. In some cases, the company had the specific information in question; however, the data was not recorded in the correct database. This lack of information can be problematic when a customer is due a credit. Audit staff determined that over 1,400 test results were not recorded in the necessary database to generate a customer credit, if necessary.

Overall, audit staff has concerns with management's oversight and monitoring of the testing program. At times, company management did not appear to have a full grasp of the process and results of the testing program. In addition, there were inconsistencies in the company's responses to audit staff's data requests. These inconsistencies continued throughout the audit process and required audit staff to request updates and revisions to the company's responses. Much of the audit data conflicted with data in its annual filings with the Commission. Audit staff does not believe that management places sufficient emphasis on monitoring and analyzing the accuracy of its sample data to ensure that the information provided to the Commission is accurate and representative of its testing efforts for the period.

4.2 AUDIT FINDINGS

Audit staff notes the following findings regarding the company's meter testing program and related Commission requirements:

1. FCG did not perform the prescribed number of residential and commercial (up to 2500 cfh) meter tests during the review period of 2006 through 2009, as required in the company's Gas Meter Sampling Plan and Rule 25-7.064, F.A.C.
2. FCG did not perform the prescribed number of industrial meter (greater than 2500 cfh) tests during the review period of 2006 through 2009, as required in the company's Gas Meter Sampling Plan and Rule 25-7.064(3) and (4), F.A.C.
3. FCG could not provide staff industrial meter test data for 2006, indicating the company was not fully in compliance with Rule 25-7.021, F.A.C; which requires the company to maintain meter testing records on its standard forms for all active meters.

After completion of the audit, the company notified audit staff that it was able to obtain these records from the archived database of the previous company. Staff verified that these testing records are now accessible, as required by Rule 25-7.021 F.A.C. As such, staff believes the company has now resolved this finding

4. FCG did not timely replace its poor-performing meters in accordance with its Commission-approved Gas Meter Sampling Plan and Rule 25-7.064, F.A.C.
5. Since 2006, FCG removed at least 1,400 poor performing meters for which test results were not recorded in the Meter History system, without which, the company was unable to issue any necessary credits to customers, as required by Rule 25-7.087, F.A.C.
6. Staff determined, through a sample review of FCG's 2010 performance program, that approximately eight percent of meter test results were not entered into the meter records database.
7. FCG's 2006 through 2009 *Annual Report of Meters, Consumers, and Refunds* contain incorrect and inconsistent information.
8. FCG does not have a prescribed process for calibrating its field-testing meter equipment, as required by Rule 25-7.061, F.A.C.

After the completion of the audit, the company implemented new procedures for ensuring the accuracy of its testing equipment. Staff verified these procedures and confirmed that FCG recently calibrated each device. As such, staff believes the company has now resolved this finding.

9. FCG's current process for documenting the manufacturer's testing date for new meters limits its ability to ensure calibration tests were performed within the prior 12 months, as required by Rule 25-7.063(3), F.A.C.

- 1 □. FCG does not maintain the results for meter tests triggered by damaged shipping containers, as required by Rule 25-7.063(1), F.A.C.

5.0 COMPANY COMMENTS

This section provides a venue for the company to comment on report content. All comments have been reproduced verbatim.

5.1 FLORIDA CITY GAS RESPONSE

Finding 1: FCG did not perform the prescribed number of residential and commercial (up to 2500 cfh) meter tests during the review period of 2006 through 2009, as required in the company's Gas Meter Sampling Plan and Rule 25-7.064, F.A.C.

FCG Response:

FCG has already implemented a process to better ensure that the appropriate number of meters are tested each year. Specifically, since 2009, the Company has implemented a policy to ensure that all PT and sampling program meters are removed and tested for all groups. *Attachment I* is a copy of the policy implemented in 2009 by Florida City Gas.

While the Company currently does not have an automated process in place for scheduling meter changes, the Company believes that it has implemented procedural changes and assigned appropriate oversight to ensure all sample meters are scheduled in a timely manner.

Finding 2: FCG did not perform the prescribed number of industrial meter (greater than 2500 cfh) tests during the review period of 2006 through 2009, as required in the company's Gas Meter Sampling Plan and Rule 25-7.064(3) and (4), F.A.C.

FCG Response:

The Company has ensured that all backlogged and pending industrial meter inspections are current and up to date. The Company does, however, acknowledge that, due to system integration issues and staffing changes during the period of 2006-2008, FCG was unable to complete all the large meter inspections (>2500) as required. Specifically, the Company implemented some staffing changes, which necessitated that the new FTE assigned to meter inspections be trained and Operator Qualified before the employee could be allowed to actually test any large meters. This comprehensive training took most of 2007 and part of 2008. Once the training was completed, the newly qualified FTE worked overtime and some weekends to complete all backlogged and current meter inspections. Consequently, as noted herein, as of the beginning of 2011, all backlogged and pending 2010 meter inspections have been completed. All industrial meter information and inspection schedules have been implemented in D7i. Tracking, completing and reporting of meter inspections and schedules are now handled using wireless work orders sent directly to the field technician. The field technician completes the work order and attaches inspection data and electronically uploads to D7i. Manual entry of inspection paper work has been eliminated.

Currently, all in-service large meters >2500 are in D7i. Any new meters being installed at FCG are entered in D7i. It should be noted that older test information still remaining in the old NUI MMS is not being converted to D7i. D7i only contains test information on meters from 2008 going forward. Test information prior to 2008 will still remain in MMS. There is currently no plan underway to transfer all the old NUI MMS large meter inspection data to D7i.

Reports developed in D7i that will provide transparency for work required and work completed. This transparency will give management a better view of the workload and work completion that we did not have with the old MMS system or MHS (Meter History System) for large meters.

Finding 3: FCG could not provide staff industrial meter test data for 2006, indicating the company was not fully in compliance with Rule 25-7.021, F.A.C; which requires the company to maintain meter testing records on its standard forms for all active meters.

FCG Response:

At the time of the audit, FCG's Gas Measurement team did not have the ability to retrieve information from the old NUI MMS system, which is a different measurement platform than that used by the AGL companies. For this reason, the Company could not readily retrieve the MMS test data. Recently, with the assistance of the AGL IT team, FCG has, however, been able to retrieve all previous large meter information from the old MMS system. As of today, we have retrieved all large meter information from MMS, and that information is now saved in an Excel spreadsheet format.

The Gas Measurement team will maintain the old NUI MMS large meter inspection data as an Excel spreadsheet on a local computer for future reference.

Staff Confirmation:

After completion of the audit, the company notified audit staff that it was able to obtain these records from the archived database of the previous company. Staff verified that these testing records are now accessible, as required by Rule 25-7.021 F.A.C. As such, staff believes the company has now resolved this finding.

Finding 4: FCG did not timely replace its poor-performing meters in accordance with its Commission-approved Gas Meter Sampling Plan and Rule 25-7.064, F.A.C.

FCG Response:

As noted in the Company's audit response to data request 1 question 18, after the acquisition Florida City Gas by AGL in 2004, there were system integration challenges and labor constraints associated with the existing bargaining union, which resulted in delays removing poor performing meters. In February 2008, the union decertified, thus effectively removing prior labor constraints and FCG begun aggressively removing poor performing meters from service. As of today, FCG has removed all accessible poor performing meters that were out of compliance.

Finding 5: Since 2006, FCG removed at least 1,400 poor performing meters for which test results were not recorded in the Meter History system, without which, the company was unable to issue any necessary credits to customers, as required by Rule 25-7.087, F.A.C.

FCG Response:

The Company is currently taking steps that will better address this issue and allow the process to be effectuated electronically. Currently, FCG meter testing equipment (SNAPP

provers) automatically stores all test results on compact disks; however, the current system is not able to upload these results into meter history system through an automated process. FCG is in the process of automating the in-test data collection process. The SNAPP provers at Brevard and Miami will have software upgrades for custom data output. This upgrade will enable FCG to perform data uploads directly to MHS. FCG has already begun working with Elster Meter Services (manufacturer of the SNAPP provers) to upgrade the software.

In the meantime, to verify that all meters removed from the field have been tested and results are accurately entered into Meter History, the Company will run monthly reports indicating which meters have been tested for this period compared to those removed. Discrepancies between the two files will be identified and investigated to ensure all removed meter test information is entered into MHS.

Finding 6: Staff determined, through a sample review of FCG's 2010 performance program, that approximately eight percent of meter test results were not entered into the meter records database.

FCG Response:

Please refer to FCG's Response above to Audit Finding 5.

Finding 7: FCG's 2006 through 2009 Annual Report of Meters, Consumers, and Refunds contain incorrect and inconsistent information.

FCG Response:

The Company acknowledges that, unfortunately, some inaccuracies in the MHS reporting did result in discrepancies in the annual filings. However, those inaccuracies have been identified and corrective measures have been implemented. Specifically, the MHS reports have been corrected to provide accurate information such that any issues identified in the 2008 to 2009 sample have been corrected and meters selected for removal will not be included in the sample selection.

FCG has developed a clear definition for what each item on the Annual Meter Report should represent. These definitions will be included in the policy maintained for the annual filing which will ensure the information filed is consistent and accurate. In addition, the annual report has been modified to include all the required items listed in the Gas Meter Sampling Test Program and all reports generated from the MHS have been redesigned to accurately meet this requirement.

Finding 8: FCG does not have a prescribed process for calibrating its field-testing meter equipment, as required by Rule 25-7.061, F.A.C.

FCG Response:

Since the audit, both differential pressure gauges have been recertified by the manufacturer and documentation of that recertification is available. Additionally, the Company has taken steps to more definitively prescribe its process for calibrating its field-testing meter equipment.

On a going-forward basis, the Company's prescribed process will be to implement an annual work order in D7i to notify the field supervisors to calibrate the gauges, which will ensure the gauges continue to meet the AGA standard. Once the gauges have been calibrated, D7i will store the completed work order for FCG management. The procedure for the periodic calibration of gauges is described in the Company's Operations Procedure Manual in Division II section 12.6 page 9.

Staff Confirmation:

After the completion of the audit, the company implemented new procedures for ensuring the accuracy of its testing equipment. Staff verified these procedures and confirmed that FCG recently calibrated each device. As such, staff believes the company has now resolved this finding.

Finding 9: FCG's current process for documenting the manufacturer's testing date for new meters limits its ability to ensure calibration tests were performed within the prior 12 months, as required by Rule 25-7.063(3), F.A.C.

FCG Response:

FCG's Meter History System stores the installation dates of meters, as well as the manufacturer's test data for all meters purchased. This data, while stored in separate files, is readily accessible. While the Company does not currently have a process in place for ensuring manufacturer meter tests are performed within 12 months of installation, the Company is working diligently to establish that process.

Finding 10: FCG does not maintain the results for meter tests triggered by damaged shipping containers, as required by Rule 25-7.063(1), F.A.C.

FCG Response:

The Company acknowledges that it is currently unable to differentiate meter tests triggered by damaged shipping containers, because the current software used by the SNAPP provers does not distinguish between meters damaged during shipment and normal in-test inspections. In order to remedy this, the Company has implemented a process whereby any meter tested as a result of a damaged pallet will be noted as such in MHS and available for reporting as a test triggered under Rule 25-7.063(1), F.A.C.. In addition, the warehouse personnel will keep a record of the 10% of meters tested due to a damaged container and such records will be readily available as needed.

As part of the process described in the response to Finding 5, when the SNAPP prover software upgrade is made a designation marker will be added to the user screen. This marker will require the user to assign the in-test reason. When the in-test data is uploaded to MHS, MHS will now have a field containing this marker for future reporting. FCG is currently working with Elster Meter Services (manufacturer of the SNAPP provers) to redesign and develop the software to accomplish these goals.

FCG Response
ATTACHMENT 1

PT METER CHANGE AND METER SAMPLING PROCEDURE

Analyst Steps

Pull reports showing Program details for year

- ✓ *December- Pull reports to show*
 - *Total number of meters in sample group by type residential*
 - *Total number of meters per location in sample group by type residential*
 - *List of meters needing sampled by years end for each group type/Location*
 - *List of Commercial meters needing changed 10 yr mandatory change*
 - *List of Industrial meters that needs field test 5 yr*

Management team steps

- *Set up meeting with all members of FCG management team to discuss program , Staffing needs, develop plan and timeline to complete program by years end*
- *Develop budget around program*
- *Set up schedule to get samples in for testing*
- *Set up schedule for four year meter changes that failed sampling process*
- *Set up commercial meter change schedule*
- *Set up Industrial meter test schedule*
- *Monitor results monthly to ensure program will complete by years end*
- *Review obstacles, barriers, and issues with program monthly*
- *Pull resources between divisions to complete sampling and testing by programs end date*
- *July Set up plan to deal with any backlog of changes or samples and engineer plan to satisfy needs for remainder of year*

Management team will ultimately be responsible to keep Regulations in compliance and address any issues with staffing and budget to complete project on time and efficiently as possible

FSR Steps

- *Work on changing sample meters*
- *Label sample meters and return to meter shop as soon as possible for testing. {ALL METERS NEED TO HAVE DUST CAPS INSTALLED AND LABELED AS SAMPLE METER, they also need to be HANDLED with Care during transportation to ensure we get correct samples and testing is not compromised}.*
- *Complete meter changes in a timely manner to reach goals and timelines*

- Change out all commercial meters on 10 year basis
- Measurement field checks on all Industrial meters on a 5 yr basis

Meter Technician

- Will test and document all sample meter results
- Will oversee calibration of testing equipment
- Will make sure Supervisor is notified weekly of testing results for program

Scope of program

- All residential meter 250 and smaller will be included in the sampling program
- The sample size for any group of meters is 10 percent or 200 whichever is the smallest
- Group types of meters must have an 80 % pass rate of meters in sample group with an accuracy of 2 percent slow or 2 percent fast at the LOW FLOW CHECK RATE with no more than 10 % of the meters in this group exceeding the 2 percent fast category for test. {example 200 meters in test group ac-250 200 meters tested and 40 meters fail and 22 meters failed 2 % fast then the whole AC-250 group would have to be changed for this year or the selective meter removal procedure would need to be used. This would mean that the AC-250 meter group would fail the sample test}.
- **The selective meter Removal procedure is as follows:**
 - ✓ If, as described in Section IV (c), the group consists of more than one sub-group, and test results indicate that one or more sub-groups do not meet the performance standards, then the sub-group or sub-groups can be removed from the sampling plan or,
 - ✓ If a sub-group consists of one or more utility meter code numbers, and test results indicate that one or more utility meter code numbers do not meet the performance standards, then the meters covered by these code numbers can be removed from the sampling plan, or
 - ✓ If a utility meter code number covers more than one meter, manufacturer and size, and test results indicate that one or more do not meet the performance standards, then these meters can be removed from the sampling plan

FIELD TEST AND INSPECTION PROCEDURE FOR LARGE METERS

Upon Initial Arrival at Customer Premise

1. Notify customer when arriving on premises.
2. Check meter bypass. If bypass valve is found open, call office immediately and notify supervisor. Supervisor will notify Corporate Security if necessary.
3. Meter Installations with remote meter reading equipment.
 - a) Unplug the correcting device pulse switches by disconnecting the common wire lead from the switch. (Generally the black wire is common.)

Instrument Calibrations

Mechanical Corrector Calibration (Base Pressure Index or Mercury Mercor III)

If either of these correctors requires repair parts, replace the corrector.

1. If meter pressure fluctuates, open bypass and make sure gas is flowing before proceeding further.
 - a) Close meter outlet valve.
 - b) Close meter inlet valve.
2. Record index readings on test sheet and check meter installation for vandalism or tampering.
3. Install test gauge.
4. Compare test gauge pressure reading to correcting device pressure scale reading. Be sure both readings match. If necessary calibrate correcting device pressure element.
5. Check the corrector calibration.
 - a) Test the metering pressure
 - b) Rotate cam through 10 integrating cycles.
 - c) Be sure to maintain a constant test pressure during cam rotation.
 - d) Complete the as found calibration before correcting any defects in the corrector.
6. Check the corrector for mechanical problems
 - A. Base Pressure Index
 - a) Check uncorrected and corrected counters for ease of operation and correct mask.
 - b) Check gam gears, ratchet gears, and micrometer gears for damage and dirt.
 - c) Be sure cam is clean.
 - d) Inspect pressure stylus arm for wear.
 - e) Check horizontal drive for proper end clearance.
 - f) Check rocker lever assembly for proper operation and endplay.
 - g) Inspect base plate for gear wear and free operation.
 - h) Inspect pressure element and linkage for ease of operation.
 - i) Replace the corrector if it cannot easily be adjusted into calibration.
 - B. Mercury Mercor III
 - a) Check uncorrected index and corrected counter for gear wear, ease of operation, and correct masking.
 - b) Check cam to be sure it is clean and has no excessive wear.
 - c) Inspect pressure element and linkage.
 - d) Check counter wheel shaft and wheel. Shaft should rotate freely and wheel should slide without binding.
 - e) CHECK TO BE SURE COUNTER WHEEL AND PUSHER BLOCK ARE ENGAGED.
 - f) Replace the corrector if it cannot easily be adjusted into calibration.

Volume and Pressure Recorder Calibration (V & P gauge or Full Scallop)

1. Open bypass and make sure gas is flowing before proceeding further.
2. Close meter outlet valve.
3. Close meter inlet valve.
4. Record index readings on test sheet and check meter installation for vandalism or tampering.
5. Check pressure on chart and compare to test gauge. Also check at zero pressure.

6. Check pens for proper inking and arc on chart.
7. Inspect clock and battery condition.
8. Inspect pressure element and all operating linkage and gearing for ease of operation.
9. Note test on chart. Record all index readings (Front, Back, and R.C.). Sign your name, time, and date on the chart.

Electronic Volume Corrector Calibration

1. Establish that the test gauge is accurate and is working correctly.
2. Install the test gauge.
3. Record the pressure readings from the test gauge and the corrector on the Field Meter Test Report.
4. Record the pressure factor for the pressure read from the test gauge and the pressure factor from the corrector on the Field Meter Test Report.
5. If the pressure from the test gauge and the corrector are within $\frac{1}{2}$ psig of each other, the corrector is ok. If the two pressures are not within $\frac{1}{2}$ psig of each other, calibrate and check the corrector per manufacturer instructions. If after the corrector is calibrated, the pressure readings are still not within $\frac{1}{2}$ psig of each other, the corrector should be returned to the manufacturer for repairs.

Large Meter Testing

Meters will be tested by one of the following methods: Transfer proving, Differential testing, or Spin testing. Diaphragm meters (AL1400 and larger) shall always be prover tested. Rotary meters may either be differential tested or prover tested. Turbine meters can either be spin tested or prover tested. The following procedures provide details for testing each type of meter.

Diaphragm Meter

1. Initial Prover Test
 - a) Open bypass and make sure gas is flowing before proceeding further.
 - b) Close meter outlet valve.
 - c) Close meter inlet valve.
 - d) Record index readings on test sheet and check meter installation for vandalism or tampering.
 - e) Remove index/corrector from the meter and check wriggler for leaks.
 - f) Bleed pressure from meter.
 - g) Setup transfer prover, purging the meter with air before connecting to transfer prover inlet.
 - h) Run open and check prover test on the meter. Record results. If the test shows both the open and check rates are between 2% fast and 2% slow the meter is ok. If either test is out of range, proceed to step 2.
2. Meter adjustments
 - a) Inspect top for excess oil or grease, clean if necessary.
 - b) Inspect condition of valves and grates.
 - c) Inspect tangent and all linkage for wear.
 - d) Oil linkage point. Lubricate tangent bearings and flag rod stuffing box.
 - e) Adjust meter and run final test on meter. Record results.

- f) If the meter is 20 years old or older and the initial prover test shows the open or check rates are greater than +/- 3%, contact the service center about replacing the meter.

Rotary Meter

The volumetric displacement of the measurement chambers of a rotary meter cannot change. Therefore, only a change in internal friction can change the accuracy of the meter. A differential test will show any change in friction. However, if the actual proof of the meter is needed or if the differential test shows questionable results, a transfer prover test will be needed.

1. Differential Test of a Rotary Meter:

Generally a differential test at one flow rate as described below will be a sufficient test of the meter; however, if the field technician feels that an additional flow rate needs to be checked, the second flow rate shall be between 60% and 100% of the rated capacity of the meter. If the field technician feels that more than two differential tests are needed, the meter shall be prover tested.

All rotary meters approved for use at AGLC/CGC will have an upstream and downstream pressure point with Fairfax fittings or equivalent installed. The following equipment may be needed to differential test a rotary meter: stopwatch, differential test gauge, pressure gauge, and factory supplied typical differential curves.

- a) Clock the meter. A differential test should be conducted with a flow rate between 10% and 30% of the rated flow of the meter (For instructions on how to determine the flow rate percentage see step (e) below.). If the flow rate is within the correct range, proceed to step (b). If the flow rate is less than 10% or greater than 30%, either prover test the meter, introduce an adequate flow rate to the meter or reschedule the test.
- b) Place a pressure gauge in the upstream pressure point on the meter and record the pressure.
- c) Remove the pressure gauge and connect the differential test gauge according to manufacturer's instructions.
- d) Clock the meter. When the flow rate is steady, record the uncorrected flow rate and differential across the meter.
- e) Determine the percentage of meter rating using the following equation:

$$\% \text{ Meter Rating} = (F_M/F_R) * 100\%$$

Where:

F_M = Uncorrected Measured Flow rate

F_R = Rated Meter Capacity

- f) Using factory supplied typical differential curves for the make and model of the meter being tested, determine the typical differential using the % Meter Rating from step (e).
- g) Since the typical differential is based on atmospheric pressure, it will need to be adjusted to reflect the actual pressure found on the meter. The following equation will adjust the differential.

$$\text{Calculated DP} = (P_2/P_1) * \text{DP}$$

Where:

P_2 = Absolute Metering Pressure = Gauge Pressure +14.4

P_1 = Absolute Atmospheric Pressure = 14.4

DP = Typical differential from step (f)

- h) Compare the Calculated DP from step (g) to the measured differential from step (d). If the measured differential has not increased above the Calculated DP by more than 50%, the meter is ok. If the measured differential has increased by more than 50%, transfer prover test the meter.

2. Transfer Prover Testing a Rotary Meter:

A. Initial Prover Test

- a) Open bypass and make sure gas is flowing before proceeding further.
- b) Close meter outlet valve.
- c) Close meter inlet valve.
- d) Record index readings on test sheet and check meter installation for vandalism or tampering.
- e) Bleed pressure from meter.
- f) Setup transfer prover, purging the meter with air before connecting to transfer prover inlet.
- g) Run open and check prover test on the meter. Record results. If the test shows both the open and check rates are between 2% fast and 2% slow the meter is ok. If either test is out of range, proceed to Meter Adjustments.

B. Meter Adjustments

The accuracy of a rotary meter is not adjustable; however, if the proof of the meter is out of the -2% to +2% range, the following items should be checked.

- a) Is the valve at the test opening of adequate size to flow the test air?
- b) Inspect the instrument drive for gear wear, shaft binds, etc.
- c) Check for binds in the meter.
- d) Check the oil level in the meter and adjust as needed.
- e) Flush the meter with a safety solvent to remove any deposits in the meter.
- f) Re-test the meter. If the test results are not within the -2% to +2% range, replace the meter.

Turbine Meter

Because a Turbine Meter is a large volume meter, a spin test is the easiest way to check the condition of the meter. A spin test is not a measurement of accuracy. It is an indicator of increased friction, which can impact accuracy. A prover test will be used on a 4", 6" and 8" meter cartridge/module to determine accuracy. This test is performed in a temperature controlled shop environment. 12" Turbine meters are returned to the manufacture for calibration if spin test fails meets the requirements. A prover test on the larger meters will only verify the accuracy of the meter at reduced flow rates.

- I. Spin Testing a Turbine Meter:
- a) Open bypass and make sure gas is flowing before proceeding further.
 - b) Close meter outlet valve.

- c) Close meter inlet valve.
- d) Record index readings on test sheet and check meter installation for vandalism or tampering.
- e) Bleed pressure from meter.
- f) Remove the readout device from meter.
- g) Remove bolts attaching meter top plate to the body.
- h) Carefully lift the complete internal mechanism assembly vertically out of the meter body and position it out of any wind.
- i) Visually inspect the interior of the body along with the rotor and flow passages of the internal housing assembly.
- j) Spin test the cartridge and record spin times and average the times.
- k) Compare average spin time to the minimum spin times listed in the tables below. If the average spin time is less than the minimum acceptable spin time, lubricate the rotor shaft bearings and repeat the spin test.

American Meter Minimum Spin Times (Cartridge less Index):

4" GT	6" GT	8" GT	12" GT L.P.
28	45	80	88

	4" GTS	6" GTS	8" GTS	12" GTS L.P.
45-Deg. Plastic Rotor (All Pressures)	52	68	148	88
45-Deg. Metal Rotor (All Pressures)	68	138	204	N/A
30-Deg. Metal Rotor (All Pressures)	66	118	177	N/A

Invensys Meter Minimum Spin Times (502 Module):

4" T-18 Plastic Rotor All Pressures	4" T-18/27 All Pressures	6" T-35/57 All Pressures	8" T-60 Plastic Rotor ANSI 125	8" T-60/90 All Pressures	12" T-140/230 All Pressures
50	70	140	170	180	300

- l) If the spin times are low and lubrication does not correct the problem, replace the cartridge.
 - m) Remove gear train housing and inspect gearing for wear and damage.
 - n) Lightly oil gear train gears and shafts with turbine meter oil. Reinstall housing.
2. Transfer Prover Testing a Turbine Meter:
- a) Open bypass and make sure gas is flowing before proceeding further.
 - b) Close meter outlet valve.

- c) Close meter inlet valve.
- d) Record index readings on test sheet and check meter installation for vandalism or tampering.
- e) Bleed pressure from meter.
- f) Setup transfer prover, purging the meter with air before connecting to transfer prover inlet.
- g) Run prover test at an open rate and a check rate. Record results. If on a 4" meter, the tests show that the accuracy is between 2% fast and 2% slow, the meter is ok. On meters larger than 4" and the spin test was acceptable, plot the accuracy on a typical accuracy curve that corresponds to the meter size being tested to determine how well the meter is performing at low flows.

COMPLETION OF TESTS AND CALIBRATIONS

Upon completion of any meter tests or instrument calibrations, if the meter has been taken out of service place the meter back in service by:

- a) Open the inlet valve to the meter slowly.
- b) Purge the meter through the downstream meter test valve.
- c) Open outlet valve.
- d) Close bypass valve and lock.
- e) Slowly open any pressure lines to the meter instrumentation.
- f) Verify that the meter is operating.
- g) Record index readings (corrected uncorrected, any internal counter readings).
- h) Check for leaks.
- i) Paint all areas of the meter set that have had the paint damaged or are showing signs of atmospheric corrosion.
- j) Meters with remote meter reading equipment
 - 1) Connect all wires from pulse switch to the remote meter reading device.
 - 2) Check pulse switches for proper operation.
 - 3) Initiate a call to the remote host by activating the tamper/magnet read switch.
- k) Check for any tools around the meter set and pick up any debris that was dropped during testing.

Rev. 6/25/09

6.0 APPENDIX

6.1 SUMMARY OF RELEVANT COMMISSION RULES

The Florida Public Service Commission governs the performance testing, accuracy, and recordkeeping of meters in service for gas utilities in Florida under Chapter 25-7 of the Florida Administrative Code. The rules providing guidelines and direction to gas utilities are discussed below:

RULE 25-7.021, F.A.C., RECORDS OF METERS AND METER TESTS

This rule requires each gas utility to keep permanent meter records indicating the date of purchase, meter identification number, size or capacity, date and the place of each meter installation or removal for the last three locations. The rule requires that the utility preserve these records, on its standard forms, until the meter is destroyed or permanently removed from service. The rule also requires the utility to preserve original test data until it is superseded by a later test. Upon request the utility must report a summary of "as found" tests as may be required by the Commission. The rule further requires the utility to file, on or before February 10 of each year, a report with the Commission. The report format is prescribed by the Commission and includes complete information regarding the number of meters in service by installation date, number of meters tested, meters past due for tests, refunds and other information requests as necessary.

RULE 25-7.049, F.A.C., TESTING EQUIPMENT

This rule requires that the gas utility provide or have access to all testing equipment and facilities necessary to complete the tests required to meet Commission rules. The rule states that this equipment should be of an approved type, properly maintained, subject to the approval of the Commission staff, and be available for inspection by Commission representatives at any reasonable time.

RULE 25-7.061, F.A.C., METER TESTING EQUIPMENT

This rule requires each gas utility to own and maintain or have access to all necessary meter testing equipment. This includes at least one bell type meter prover of not less than five cubic feet capacity or other meter testing device approved by Commission staff. The rule requires that this equipment be able to determine meter accuracy within one half of one percent (0.5%). Additionally, the accuracy of meter testing equipment will be in compliance with procedures from the 1978 edition of the American Gas Association's Gas Measurement Manual: Meter Proving Part 12. The rule also requires that all alterations, accidents, or repairs to meter proving equipment which might affect the accuracy of meter testing equipment or the method of operation be reported promptly to the Commission's Division of Auditing in writing.

RULE 25-7.062, F.A.C., METER TEST RECORDS

This rule requires meter tests to be performed by competent, trained personnel using approved methods and equipment. The rule does not specifically state that this testing be performed by the gas utility. However, Florida City Gas performs much of its own meter testing in-house. Rule 25-7.062, paragraph (1) provides specific instructions for diaphragm meters with a test dial of five cubic feet or less. Paragraph (1) requires that the accuracy of customer meters of this type be:

determined by passing air from a standard bell type meter prover or a calibrated test meter at a rate of flow designated herein when the liquid in the prover tank, the test equipment, the atmosphere of the room and the meter to be tested are at practically the same temperature. The meter shall be tested at two rates of flow, viz: a check rate test which shall be at a rate of flow of approximately twenty percent (20%) of rated capacity, and also a one hundred percent (100%) of rated capacity or open run test. The average of the tests at the two rates of flow shall agree within one percent (1%) and the average error of the meter shall be considered to be the algebraic sum of twenty-five (25%) of the error indicated by open run test and seventy-five percent (75%) of the error indicated by the check rate test.

Paragraph (2) provides specific instructions for the accuracy of meters with a test dial over five (5) cubic feet, or other meter types and prescribes:

Any utility furnishing large volume gas service through diaphragm type meters with a test dial over five (5) cubic feet or other type meters such as turbine, rotary displacement, or orifice meters shall make provision for factory or other tests in accordance with manufacturer's recommendations and American Gas Association's Gas Measurement Manual: Meter Proving Part Twelve, 1978 edition.

RULE 25-7.063, F.A.C., METER ACCURACY AT INSTALLATION

This rule describes the requirements for new meters prior to initial installation. Paragraph (1) of the rule states:

A new gas meter shall be within plus or minus one percent of accuracy to be installed for customer use. Manufacturer's test data may be used if there is no indication of damage to the meters resulting from the shipping process. If damage is apparent, in order for the manufacturer's test data to be used, a representative sample of not less than ten percent of the meters in the damaged shipping unit, such as a pallet or container, shall be tested and found to be within accuracy limits. If any meter of the sample is found not to be within accuracy limits, the entire shipping unit must be tested, and where necessary, the meters adjusted within the plus or minus one percent accuracy limits.

Paragraph (2) of the rule addresses meters removed from service for repairs and states that:

Every meter removed from service when opened for repairs shall be adjusted to be not more than 1 percent fast or 1 percent slow before being reset. If not opened for repairs, the meter may be reset without adjustment if found to be not more than 1 percent fast or not more than 1 percent slow provided the meter is otherwise in good condition.

Paragraph (3) of the rule states that:

No meter may be installed unless it has been tested within the previous 12 months and found to be within the accuracy limits established by this rule.

RULE 25-7.064, F.A.C., PERIODIC METER TESTS

This rule describes the sample testing requirements for meters of different capacity ratings and for instruments or auxiliary devices used in conjunction with gas meters. Paragraph 1(a) addresses the formulation of a statistical sampling plan for periodic testing of installed gas service meters having a capacity rating of 250 cubic feet hourly (cfh) or less. Such plans are subject to approval by Florida Public Service Commission's Division of Service, Safety and Consumer Assistance prior to being implemented. Paragraph 1(b) prescribes that all meters of this capacity not included within an approved Random Sampling Plan shall be periodically removed, inspected and tested at least every one hundred twenty months.

Paragraph (2) of the rule addresses meters having a capacity rating of 250 cfh through 2500 cfh. Meters having these capacities measured at the manufacturer's specifications for one half inch differential shall be field tested or shop tested at least once every 120 months.

Paragraph (3) provides guidelines for meters having a capacity rating above 2500 cfh. Meters having these capacities measured at the manufacturer's specifications for one half inch differential shall be field tested or shop tested at least once every sixty months.

Paragraph (4) addresses meters having instruments or auxiliary devices used in conjunction with gas meters to correct the metered volume for pressure or temperature. The rule requires these instruments or auxiliary devices to be:

adjusted to an accuracy level to assure that the combined accuracy of the instrument or auxiliary device, or both, and the associated meter does not exceed one percent (1%) error fast or two percent (2%) error slow. Each instrument and auxiliary device shall be checked at least the same test interval as prescribed for the associated meter to insure and verify the performance.

In addition to the Commission rules mentioned in this section, gas utilities must also follow other Commission rules, such as *Rule 25-7.015, F.A.C., Location and Preservation of Records*. This rule describes the company's responsibilities for preservation of records, the retention of records, the storage of documents, and the retrieval of company records and source documents.

RULE 25-7.065, F.A.C., METER TEST BY REQUEST

This rule requires gas utilities operating in Florida to perform a test of meter accuracy for any customer providing a written request to the company provided the meter has not already been tested by the utility or by the Commission within the twelve months prior to the customer request. According to the rule, if the customer requests a meter accuracy test more frequently than twelve months, the company may require a deposit to defray the cost of testing. If the meter is found to be more than two percent fast, the deposit must be refunded to the customer. However, if the meter is below the accuracy threshold, the company may retain the deposit as a service charge for conducting the test. The customer may also have an authorized

representative witness the test and have a written report of the test results provided upon request.

RULE 25-7.066, F.A.C., METER TEST - REFEREE

This rule provides for prompt supervision by Commission representatives for a written customer request of a consumer meter. The meter must not be disturbed in any way after the utility has received proper notice of a referee test unless a representative of the Commission is present or unless written authority is given by the Commission or by the customer. A written result of the report results of the test will be made by the Commission to the customer.

RULE 25-7.087, F.A.C., ADJUSTMENT OF BILLS FOR METER ERROR

This rule describes the treatment of billing adjustments made to customers experiencing inaccurate meters. Meters found to have an average error of more than two percent fast are due a refund of the amount billed in error for one-half the period since the last test, not to exceed twelve months. The rule states that if available company records show that the error was due to an identified cause recorded beyond the date that the overcharge will be computed back to that date. If the meter has not been tested according to Rule 25-7.064, F.A.C., the time it has been in service beyond the regular test period will be added to the twelve months in computing the refund.

In the event the utility meter has been recording slow, non-registering, or partially-registering, a utility may back bill the customer for up to twelve months back from the date it removes the meter and later finds the meter was slow, non-registering, or partially-registering. The customer may extend the repayment to the utility over the same amount of time for which the utility issued the back bill. When a meter is found to measure more than two percent slow the utility may bill the customer an amount equal to the unbilled error unless the utility has required a deposit. If a deposit was required by the utility the customer may only be billed for the portion of the unbilled error in excess of the deposit held by the utility. The rule also provides further explanation and guidance for treating non-registering, partially-registering, and unauthorized use of gas meters.