



**REVIEW OF  
PROGRESS ENERGY  
FLORIDA, INC.'S  
QUALITY ASSURANCE  
PROCESS  
FOR  
DISTRIBUTION  
CONSTRUCTION**

**MARCH 2013**

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



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PROGRESS ENERGY FLORIDA, INC.'S  
QUALITY ASSURANCE PROCESS  
FOR  
DISTRIBUTION CONSTRUCTION**

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PUBLIC SERVICE COMMISSION  
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## 1.0 EXECUTIVE SUMMARY

### 1.1 OBJECTIVES

At the request of the Florida Public Service Commission's (FPSC) Division of Engineering, the Office of Auditing and Performance Analysis conducted a review of Progress Energy Florida, Inc.'s (PEF) quality assurance processes for distribution construction. The purpose was to document and assess how PEF monitors and evaluates distribution construction project quality assurance and safety inspections.

The primary objectives of this review were to determine whether:

- ◆ Adequate operating policies, procedures, and practices are in place to limit risks of constructing distribution facilities that are not in compliance;<sup>1</sup>
- ◆ Adequate monitoring of the electric distribution construction processes exists to verify compliance.

### 1.2 SCOPE

FPSC staff examined PEF's current policies, procedures, practices, and operational controls for monitoring its electric distribution construction processes and compliance. The review involved gaining an understanding of PEF's quality assurance and safety inspection procedures for its own personnel and contractors. In addition, this review evaluated the effectiveness and adherence to such policies, procedures, practices, and operational controls.

FPSC audit staff's review focused on the following:

- ◆ Company goals and objectives
- ◆ Company practices and procedures
- ◆ Company controls and monitoring

Within these areas, FPSC audit staff evaluated company practices for both PEF construction personnel and its contractors. The period focused on by FPSC audit staff is March 2011 through March 2012 for purposes of sampling work activity. In a larger sense, audit staff sought to gain an understanding of recent and current operations. Due to the Duke Power merger, some processes and activities are in a state of flux and this is noted where applicable in the report.

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<sup>1</sup>Unless otherwise specified, the use of "compliance" throughout this review means that distribution facilities are constructed in accordance with all applicable federal, state, and local regulations, the National Electrical Safety Code, and other industry standards.

## **1.3 METHODOLOGY**

FPSC audit staff prepared its review based upon analysis of company responses to document requests, on-site interviews, and telephone conversations with key quality assurance and management personnel. Specific information reviewed included company organizational charts, position descriptions and responsibilities, distribution construction quality assurance policies and procedures, documents, distribution bulletins, contracts, work orders, safety inspection checklists, training programs and manuals, design specifications, National Electrical Safety Code, and accepted industry standards.

## **1.4 BACKGROUND AND PERSPECTIVE**

### **1.4.1 FPSC JURISDICTION AND OVERSIGHT**

Under Section 366.04(6), Florida Statutes, the FPSC has jurisdiction over safety standards for distribution and transmission facilities of Florida public electric utilities, including municipal and cooperative utilities. FPSC Rule 25-6.0345(2), Florida Administrative Code, requires that each electric investor-owned utility, municipal utility, and electric cooperative file quarterly with the FPSC a listing of every completed construction work order.

### **HOW DOES THE FPSC MONITOR SAFETY COMPLIANCE OF PEF'S DISTRIBUTION CONSTRUCTION?**

The inspectors of the Commission's Division of Engineering, Bureau of Safety conduct on-going compliance inspections on a sample<sup>2</sup> of the completed work orders reported quarterly to the FPSC by PEF pursuant to FPSC Rule 25-6.034(2). FPSC engineers inspect these distribution facilities to verify whether they are constructed in accordance with all applicable requirements; federal, state, and local regulations; and National Electrical Safety Code and accepted industry standards. If a variance is identified, the FPSC notifies the utility for corrective action. A follow-up inspection is conducted to ensure compliance. Over the review period, FPSC safety engineers conducted inspections on 369 work orders completed by either PEF personnel or contractors. These projects included a total of 7,675 possible inspection variance points. FPSC inspectors found 273 total variances, including 194 electrical variances related to PEF distribution facilities and 79 communications variances related to cable TV and telecommunications facilities.

### **1.4.2 DISTRIBUTION CONSTRUCTION RESOURCE DEPLOYMENT**

From March 2011 through March 2012, the company states that it completed 20,816 distribution construction projects – 10,741 (52 percent) by PEF personnel and 10,075 (48 percent) by contractors. A total of 211,190 man hours were scheduled for the 10,741 work orders completed by PEF employees. A total of 365,289 man hours were scheduled for the 10,075 work orders completed by contractors.

### **1.4.3 DISTRIBUTION CONSTRUCTION QUALITY ASSURANCE**

Distribution construction quality assurance efforts include work order compliance processes to monitor projects by PEF's own employees and those of contractor crews. The company has field supervisors and auditors who monitor distribution construction by PEF

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<sup>2</sup>Approximately three to four percent of the completed work orders are inspected.



employees and inspectors who conduct field inspections of distribution construction work performed by contractors.

Through its audit and inspection programs, PEF documents the construction quality and compliance of distribution construction projects completed by its own personnel and contractors. The company's distribution construction standards audits and resulting performance scores for work completed by its own personnel are documented and reviewed by management.

## **1.5 OVERALL OPINION AND CONCLUSIONS**

The data analyzed by FPSC audit staff shows that distribution construction systems and goals have been in a state of change over the last several years. It is evident that, as a result of the merger with Duke Energy, these systems and goals will continue to change in the near future.

The quality assurance of distribution construction projects is reviewed by two independent inspection processes handled by the Distribution Construction Auditor for PEF employee completed projects and Distribution Contract Inspector positions for contractor completed projects. Audit staff believes that PEF should re-examine its processes, goals, and documentation related to quality assurance of distribution construction projects.

### **FINDINGS AND RECOMMENDATIONS**

Specifically, audit staff identified the following six findings and recommendations with regards to PEF's controls and practices for monitoring its electric distribution construction processes and compliance:

#### ***FINDING 1***

**PEF has no mechanism for verifying that failed inspection items are corrected for PEF employee-completed work.**

Recommendation: PEF should provide a thorough follow-up inspection process for ensuring that follow-up responses are completed.

#### ***FINDING 2***

**PEF failed to meet its Distribution Construction Auditor Operations Audit Standard performance goal for PEF employee completed projects during 2011 and 2012.**

Recommendation: PEF should evaluate the goal set for work performed by PEF employees and either develop appropriate goals that are attainable, or determine what has caused results to fall short.

#### ***FINDING 3***

**PEF is not able to determine whether the individual Distribution Contract Inspector work in progress inspection goals are being met.**

Recommendation: PEF should strengthen internal controls and documentation associated with the Distribution Contract Inspector work in progress inspections to ensure that required goals are met.

***FINDING 4***

**PEF does not capture the response to a failed inspection from PEF's Distribution Field Supervisor or the contractor in its records.**

Recommendation: The Distribution Construction Auditor should record comments regarding corrective action taken as is the current practice of the Distribution Contract Inspectors. PEF should also require the Distribution Construction Auditor and each Distribution Contract Inspector to enter the actual corrective action response from the Distribution Field Supervisor or contractor in the follow-up response section of the failed audit / inspection record.

***FINDING 5***

**PEF records do not allow follow-up corrective actions by PEF-employee crews and contractors to be verified against the original work order.**

Recommendation: PEF should link original work orders to follow-up PEF-employee and contractor actions and inspection records within the work management system to aid tracking and verification of corrective actions.

***FINDING 6***

**PEF's Distribution Contract Inspectors do not record whether each violation is a National Electrical Safety Code or a non-National Electrical Safety Code violation by contractors performing distribution construction.**

Recommendation: PEF should note and record whether each contractor deficiency is a National Electrical Safety Code violation or non-National Electrical Safety Code violation into the inspection database, for consideration by management in overall contractor evaluation.

## 2.0 CONSTRUCTION QUALITY ASSURANCE PROCESS

### HOW MANY DISTRIBUTION CONSTRUCTION WORK ORDERS DID PEF COMPLETE DURING THE REVIEW PERIOD?

During the review period, from March 2011 through March 2012, the company reports that it completed 20,816 distribution construction projects – 10,741 (52 percent) by PEF personnel and 10,075 (48 percent) by contractors. **EXHIBIT 1** provides the breakdown by service region.

<b>PROGRESS ENERGY FLORIDA, INC. COMPLETED DISTRIBUTION CONSTRUCTION WORK ORDERS MARCH 2011 – MARCH 2012</b>		
<b>Region</b>	<b>PEF</b>	<b>Contractors</b>
North Central	1,815	2,289
North Coastal	2,625	552
South Central	2,551	3,143
South Coastal	3,750	4,091
<b>Total</b>	<b>10,741</b>	<b>10,075</b>

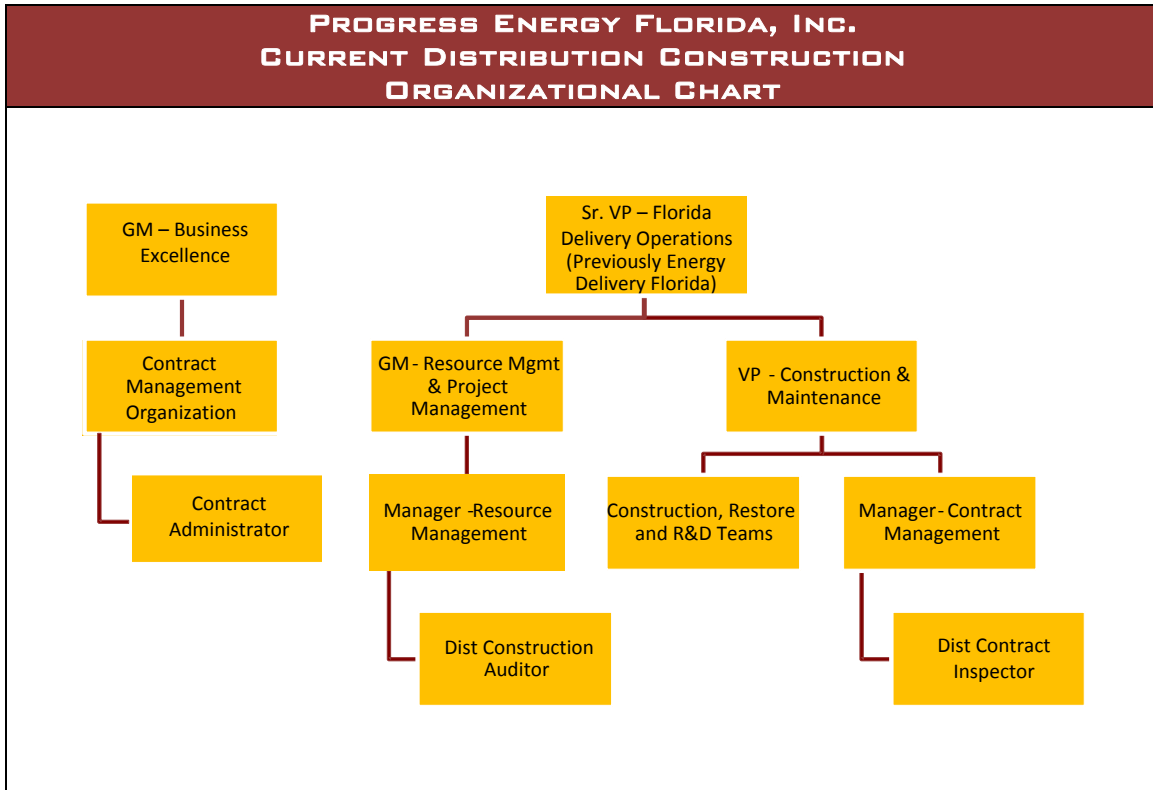
**EXHIBIT 1**

*Source: PEF Response to DR1.8a*

### WHICH WORK GROUPS ARE RESPONSIBLE FOR DISTRIBUTION CONSTRUCTION QUALITY ASSURANCE, AND HOW DOES THE COMPANY ORGANIZE THIS FUNCTION?

PEF states that it works to achieve its quality assurance goals and objectives for construction projects by providing two independent inspection processes. One process is overseen by the Distribution Construction Auditor for distribution construction projects completed by internal PEF crews. The other process is overseen by Distribution Contract Inspectors for work performed by external contractors. Both processes depend upon reviewing samples of work orders completed for compliance with standards. Additionally, the company uses jobsite supervision for distribution construction quality assurance on employee completed projects.

The Distribution Construction Auditor reports through the Resource Management organization and is independent of the Construction & Maintenance organization which includes the PEF line department employees. The Resource Management section is responsible for conducting inspections of work completed by PEF employees and the Contract Management section is responsible for conducting inspections of work completed by Progress Energy construction contractors. As a result of the merger of Progress Energy and Duke Energy during 2012, some organizational changes are occurring. An organizational chart of PEF positions directly involved in the inspections described above is shown in **EXHIBIT 2**.



**EXHIBIT 2**

Source: PEF Response to DR-3.8

**HOW DOES PEF WORK TO ACHIEVE ITS QUALITY ASSURANCE GOALS AND OBJECTIVES FOR DISTRIBUTION CONSTRUCTION PROJECTS?**

PEF’s Florida Delivery Operations group (formerly Energy Delivery Florida) is comprised of four regional organizations<sup>3</sup> each with responsibilities for line construction and maintenance within their respective boundaries. PEF uses jobsite supervision as another form of quality assurance for distribution construction projects by internal PEF crews. The company works to achieve its quality assurance goals and objectives by providing independent assessment via audit and inspection processes.

Samples of distribution construction projects completed by both internal PEF crews and external contractors were examined. Basic differences exist between the quality assurance processes for work performed by PEF employees and contractors. These are discussed separately below in sections 2.1 and 2.2.

**HOW DOES PEF GOVERN AND EXECUTE ITS QUALITY ASSURANCE PROCESS FOR ITS OWN EMPLOYEES AND CONTRACTOR CREWS?**

Employees in PEF’s Distribution Standards Unit are responsible for Design Standards used in the construction, operation and maintenance of the distribution system. The Distribution

<sup>3</sup>North Central, North Coastal, South Central, and South Coastal regions.

Standards Manual<sup>4</sup> contains the construction specifications approved by the Distribution Standards Unit and applies to both internal construction crews as well as external contractor crews. The Distribution Standards Manual is updated on a quarterly basis by the Distribution Standards Unit and was last updated April 2, 2012.

PEF has stated that the procedures are not the same for both PEF employees and contractor projects. The purpose for inspecting contractor projects is focused on ensuring adherence to contract and construction standards. In addition to adherence to construction standards, auditing of PEF employee completed projects also provides broader feedback for PEF employee development.

The Distribution Contract Inspector conducts inspections prior to validating work completion for payment. Follow-up inspections or any corrective actions necessary as a result of the Distribution Contract Inspector inspection process are administered by the Distribution Contract Inspector. PEF states that the Distribution Construction Auditor does not inspect contractor work, so no follow-up inspections are performed for this purpose.

The safety inspection requirement for each Distribution Contract Inspector is to perform a minimum of one safety inspection per contract crew, per quarter, and input the inspection results into the inspection database was in full effect during the 13-month review period. PEF states that in practice, the frequency of safety inspections has provided effective feedback and that it has no plans to change this requirement at this time.

The Distribution Construction Auditor only conducts post-construction audits, where the Distribution Contract Inspector also conducts work in progress inspections to assess the safety practices of contractor resources. PEF states that observation of safety practices is performed by PEF field supervisors.

#### **WHAT INITIATIVES HAS PEF UNDERTAKEN TO IMPROVE DISTRIBUTION CONSTRUCTION QUALITY ASSURANCE?**

The Distribution Construction Standards Audit Process and Distribution Line Contractor Inspection Process for PEF and Contractor crews, respectively, have been continually refined since 2008 to provide effective quality control and management oversight of distribution construction practices. PEF's initiatives aimed at distribution construction quality assurance improvement for projects by its own employees and contractor crews are as follows:

##### **PEF EMPLOYEES**

- ◆ The most recent improvement to the Distribution Construction Standards Audit Process was implemented in November of 2011 to enhance ad hoc reporting capabilities of the data repository.
- ◆ During the second quarter of 2011, PEF developed and implemented a new Distribution Construction Audit Database including trending and query features available to all PEF leadership and employees.

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<sup>4</sup>Other terms interchangeably used to describe the Distribution Standards Manual throughout the organization include: Distribution Construction Manual, Distribution Specifications Manual, Spec Book, etc.

- ◆ During the first quarter of 2011, the Distribution Construction Auditor began taking individual contributors including Linemen, Linemen Apprentices and Engineering staff to the field to observe and gain insight into the deviations being observed. PEF states that by including individual contributors, a greater understanding and ownership of the auditing process by front line employees occurs.

#### **CONTRACTORS**

- ◆ The most recent improvement to the Distribution Line Contractor Inspection Process was implemented in the first quarter of 2012 to shift the accountability for conducting the quarterly business reviews to the distribution contractor leadership teams.
- ◆ In 2011, PEF developed and implemented new processes to integrate the audit program with the new work management system.
- ◆ In 2009, a project team developed the PC-based inspection program and database coincident with the distribution Inspector utilizing a mobile PC. The first inspections using the new application were performed in the second quarter of 2009. The Personal Digital Assistant is no longer used for collecting inspection information.
- ◆ In 2008, a technology review was initiated to determine the need to transition from the Personal Digital Assistant as the entry device for collecting inspection data to a PC-based Inspection system.

As new opportunities to improve the Distribution Construction Standards Audit Process and Distribution Line Contractor Inspection Process are identified, they will be reviewed by the PEF leadership teams for consideration.

#### **HOW DOES PEF DECIDE WHETHER TO USE PEF EMPLOYEES OR CONTRACTORS FOR DISTRIBUTION CONSTRUCTION WORK?**

PEF uses a combination of its own personnel and outside contractors for distribution construction projects. PEF states that:

The decision to source work to an external supplier requires consideration of a number of factors. At some point in time that decision may be considered for almost every function that is performed at Progress Energy and impacts from the decision may have a lasting effect across the enterprise. Ultimately, the choice comes down to using the right people for the work at that point in time, while extracting as much value as possible.

The decision to outsource a function is driven by a wide range of factors. There is not one universal answer and each case will have unique conditions and circumstances. The best decision is the one that captures the optimal combination of price savings, risk mitigation and superior quality. When taken together, price, quality and risks drive the Total Cost of Ownership, sometimes referred to as the life cycle costs.

PEF utilizes a work planning process to assign distribution construction work to the appropriate resource. This process is based upon available construction man hours for PEF crews, skill sets, project time constraints, type of work, and specialized projects. PEF crews

typically focus on smaller construction projects, customer interfacing type work, maintenance and restoration. PEF utilizes contractors for large construction projects, underground and specialized skill sets.

PEF's scheduling team determines the resources and time needed to complete work orders and assigns them to either PEF line construction employees or to contractors. For example, maintenance and repair projects are normally assigned to PEF; new installs are normally assigned to PEF; outages may be assigned to contractors if scheduling warrants; street light installs are normally assigned to PEF; and street light maintenance is normally assigned to contractors. PEF utilizes its own company line department employees as first responders in the outage restoration process, as lone worker trouble men during the late night and early morning time periods, and for some field construction activities. PEF will use contractors to address irregular workloads and to support strong storm response.

### **CONTRACTOR PROCUREMENT STRATEGY**

For contracted work, PEF seeks bids either from contractors with an established history with PEF or with other utilities. All contractors hired to work on distribution construction projects are required to be qualified to perform the work prior to commencement of such work. Qualified contractor workers must be knowledgeable of all local, state, federal and Occupational Safety and Health Administration requirements, including National Electrical Safety Code requirements. PEF also provides contractors with the Distribution Construction Manual. This manual provides the construction specifications approved by its Distribution Standards Unit to enable construction to be completed in a timely manner pursuant to the required specifications.

A three-tiered supplier structure is utilized for all contractors to control total costs by focusing on all value components and long term impact on resources, rather than just pricing. This provides the best blend of resources, cost control of market and demand fluctuation, and means to strengthen supplier relationships. These three tiers are:

- ◆ Tier I – Supports long term benefits to PEF, the goal and focus is to have the capacity to support work in multiple regions and has deep resources to provide storm support.
- ◆ Tier II – Supports ongoing need to respond to market conditions, the goal and focus is to encourage competition and address any changes or issues in the use of Tier I contractors (resources, amount of work, performance issues, etc.), provide specialized services and develop bench strength for completion and/or future needs.
- ◆ Localized Needs – Addresses needs specific to a region, the goal and focus is that these are kept to a minimum based on circumstances that justify the impact on overall strategy,

Storm contracts are maintained with Tier I contractors, as well as multiple alternate emergency contractors to ensure sufficient capacity in event of an emergency. In addition, PEF is a part of Southeast Electric Exchange Mutual Assistance program which provides workforce sharing in storm and disaster recovery situations.

### **CONTRACTOR SELECTION**

Contracts over \$100,000 in value must be competitively bid, unless a sole or single source justification has been provided. Contracts valued at \$100,000 or less may be competitively bid. Factors which should be considered when making this decision include economic conditions, criticality of the project, level of technical expertise required, and availability of qualified bidders.

Sole or single source activity must be justified on the requisition and must be approved by the appropriate management level for the dollar value of the contract. Justifications for sole source contracts are made based on Original Equipment Manufacturer and Exclusive Rights/Design/Spare Parts, Warranty Replacement equipment, parts and accessories, Specialized Technical Services and in the instance where the contractor is the only approved safety-related source.

Single source justifications may be made where there are multiple contractors capable of providing the scope of work, but only one contractor is preferred. Justifications for single source contracts are made based on the Continuation of Prior Work (materials and services needed, but unknown at the time of original order) and for Emergencies (can meet the required delivery date and the situation does not provide time to seek elsewhere.)

The majority of distribution work is completed by PEF employees or existing contractors. In the case where some distribution work may be selected for bidding, the company seeks bids from contractors with an established history. PEF has a total of five active contractors each dedicated to certain types of construction and/or maintenance work involving above ground and underground distribution facilities.

## **2.1 QUALITY ASSURANCE OVERSIGHT OF PEF PERSONNEL**

### **DOES THE COMPANY EMPLOY ADEQUATELY TRAINED AND CERTIFIED DISTRIBUTION CONSTRUCTION PERSONNEL?**

Employees in PEF's Distribution Standards Unit are responsible for Design Standards used in the construction, operation and maintenance of the distribution system. To ensure these Standards are consistent with all applicable local, state, and federal regulations, including the National Electrical Safety Code and other industry standards, employees in the Unit are active members of various industry professional organizations and committees. The following is a list of the major organizations and committees the employees participate in to ensure the Design Standards are current:

- ◆ American National Standards Institute – Long-term Membership.
- ◆ Occupational Safety and Health Administration - Review all new and revised rules to ensure Standards are consistent with Occupational Safety and Health Administration regulations.
- ◆ National Electrical Safety Code - Three Unit employees are active participants on National Electrical Safety Code Subcommittees. In addition, one employee serves on the National Electrical Safety Code Executive Committee, the interpretation Committee, Secretary of the Grounding Committee and Represents the Edison Electric Institute on the National Electrical Safety Code Main Committee.



- ◆ Southeastern Electric Exchange - Unit employees actively participate in the Underground, Overhead and Distribution Committee.
- ◆ National Fire Protection Association - Two Unit employees actively participate in the National Electrical Code Section.

According to PEF, participation in the above organizations and committees keeps its employees updated on the latest federal regulations, industry and National Electrical Safety Code standards. Applicable state regulation and requirements are monitored at the corporate level, and local requirements are monitored at the local operations centers.

The Distribution Standards Unit incorporates all updates into the Distribution Construction Manual, which is the basis for all distribution training. The Distribution Standards Unit also works closely with the Craft & Technical Training Units to ensure applicable regulations, National Electrical Safety Code and industry standards are incorporated into operating procedures and training programs.

The Distribution Line Training Program is a performance-based program designed to build the competencies of line department employees. While it consists of four phase classes over a period of three to five years, it is paced to each individual apprentice's development. Through the coursework, the apprentices work under a Journeyman Lineman and their progress is assessed by their Distribution Field Supervisor. Some apprentices complete the Program in as little as three years, while others can take five years or more to complete.

The guide for the Program is the Distribution Construction Manual. The Program uses formalized classroom training and on-the-job training to build the knowledge and skills required. Skills are practiced at the company's training center, under the direction of the Craft and Technical Trainers, and are fully developed through repetition and hands-on work in the field under the direction of Distribution Field Supervisors and/or experienced linemen.

After completing Phase Four, the Apprentices have to be nominated to attend and complete a Linemen Assessment Review Qualification assessment program. If they "pass" that comprehensive assessment, which lasts three days, they qualify as linemen.

**DOES THE COMPANY HAVE A DETAILED PROCESS TO MONITOR THE CONSTRUCTION PRACTICES OF PEF'S OWN DISTRIBUTION CONSTRUCTION PERSONNEL?**

The Distribution Standards Unit also works closely with the Craft and Technical Training Units to ensure applicable regulations, National Electrical Safety Code and industry standards are incorporated into operating procedures and training programs.

The Distribution Field Supervisor is responsible for monitoring PEF employee performance during the course of normal line department duties including driving, field construction activities, outage restoration, etc. and for providing real-time coaching and feedback on performance to employees. The Distribution Field Supervisor is required to perform 10 written field observations per quarter. According to PEF, these are documented by the Distribution Field Supervisor utilizing a standard template indicating the specific employee observed, date of observation, positive behaviors identified, and any identified opportunities for

improvement. PEF states that these observations are used by PEF leadership to assess the observation and documentation skills of the Distribution Field Supervisor as well as monitoring observations for trends in performance.

For the observations that are conducted by the Distribution Field Supervisor that are not documented in the standard template, the Distribution Field Supervisor has the discretion to document those observations in a manner that best suits the Distribution Field Supervisor for performance management purposes. Safety practices of PEF line employees are also the responsibility of the Distribution Field Supervisor.

#### **PEF DISTRIBUTION CONSTRUCTION AUDIT PERSONNEL**

PEF's Resource Management section is responsible for assessing distribution construction quality assurance for PEF projects through the use of the Distribution Construction Auditor position. Prior to 2011, work orders selected to be audited by the Distribution Construction Auditor were selected in advance of audit activity by the work request number with no additional information to describe the work performed.

With the implementation of the new work management system in the first quarter of 2011, a new sampling methodology was developed that included additional information available for the Distribution Construction Auditor in determining audits to complete. Additional information included the type of work performed, number of work locations, engineered man-hours, and the Distribution Field Supervisor assigned to the work request.

#### **QUALITY ASSURANCE FOR PEF CREWS**

The governance structure of PEF's Florida Delivery Operations (formerly Energy Delivery Florida) includes a committee structure representing key functional areas. The Operations Committee is responsible for oversight on key decisions that impact daily business operations including the reporting process related to internal construction audits performed by the Resource Management unit. The Operations Committee is comprised of eight management team members representing various disciplines of operations within Florida Delivery Operations. The Resource Management Manager is a member of the Operations Committee and is responsible for the execution of Distribution Construction Standards Audits of work performed by PEF crews.

The current documentation related to the process for conducting these audits is referred to as a Performance Metric Outline. The process within this document involves the Resource Management Manager sending a memo to the Distribution Standards Manager requesting an assessment of the observations of the Distribution Construction Auditor in relation to the National Electrical Safety Code. The overall construction audit score is reduced by 20 points where any National Electrical Safety Code deviation was confirmed by Distribution Standards.

The Distribution Construction Auditor provides feedback to PEF management on adherence of PEF resources to the construction standards outlined in the Distribution Construction Manual. The feedback provided by the Distribution Construction Auditor serves three purposes; 1) to validate and ensure adherence to construction and documentation standards, 2) to provide an independent level of feedback to help local field supervision to enhance or improve their observation techniques, and 3) to sharpen the observation skills of PEF supervisors.

**HAS PEF ESTABLISHED GOALS AND OBJECTIVES FOR ITS QUALITY ASSURANCE PROGRAMS FOR PEF EMPLOYEE COMPLETED PROJECTS?**

Currently, the regional (zone) General Manager is the management level responsible for distribution line construction within Florida Delivery Operations. Before the 2012 merger, the position of Distribution Operations Manager was responsible for distribution line construction within Energy Delivery Florida (now Florida Delivery Operations). Audit staff notes that the number of distribution construction managers has decreased from 15 Distribution Operations Managers to a General Manager for each of four regions (zones).

In 2008, no specific goal related to construction quality assurance for PEF crews was set in the annual performance goals for the Distribution Operations Managers. Below is a summary of goals related to distribution construction quality assurance included in the annual performance goals for the Distribution Operations Manager in each Operation Center for the years 2009 through 2012.

2012:

- ◆ Achieve an Operational Readiness score of 80 percent or better.
- ◆ Achieve a Construction Audit score of at least 70 percent.

2011:

- ◆ Achieve an Operational Readiness score of 80 percent or better.

2010:

- ◆ Achieve an Operational Readiness score of 80 percent or better.

2009:

- ◆ Achieve a Construction Standards Adherence Target of 90 percent by the end of the year. This goal also entails working with Resource Management & Compliance to refine the audit process and define variances.
- ◆ Achieve an Operational Readiness score of B (80 percent) or better by 3rd and 4th quarter.

**HOW DOES THE COMPANY DOCUMENT THE CONSTRUCTION QUALITY AND COMPLIANCE OF THE PROJECTS COMPLETED BY PEF EMPLOYEES?**

All work orders audited by the Distribution Construction Auditor are selected from the PEF work management system. The Distribution Construction Auditor completed an audit in each of the 15 Operating Centers where a "Yes" is indicated. The Distribution Construction Auditor Compliance for PEF Employee Projects for the period April 2011 through March 2012 is shown in **EXHIBIT 3**.

**PROGRESS ENERGY FLORIDA, INC.  
 DISTRIBUTION CONSTRUCTION AUDITOR COMPLIANCE  
 PEF EMPLOYEE PROJECTS  
 APRIL 2011 – MARCH 2012**

Quarter	Total Number of Completed Work Orders	Work Orders Audited by Operations Centers															Total Number of System-Generated Work Orders Audited	Goal Met? Yes / No
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
		North Central region			North Coastal region			South Central region			South Coastal region							
2Q-2011	2,334	20			13			22			21			76	Yes			
3Q-2011	2,428	16			18			34			17			85	Yes			
4Q-2011	2,196	26			18			33			30			107	Yes			
1Q-2012	2,649	22			17			37			22			98	Yes			
<b>Total</b>	<b>9,607</b>	<b>84</b>			<b>66</b>			<b>126</b>			<b>90</b>			<b>366</b>				

**EXHIBIT 3**

Source: PEF Response to Document Request 2.1

In addition to measuring adherence to the construction standards outlined in the Distribution Construction Manual, the Distribution Construction Auditor also assesses the accuracy of the post-construction documentation process associated with material used to construct PEF facilities. PEF refers to this type of deviation as a “redline” deviation for purposes of the Distribution Construction Audit.

**QUARTERLY BUSINESS REVIEW**

PEF states that the Senior Vice President has conducted Quarterly Business Review meetings with each of the regional organizations since the first quarter of 2009. These meetings focus on performance related to internal scorecards including the Operational Readiness Scorecard. The Operational Readiness Scorecard was implemented in the first quarter of 2009 and measures several key metrics within the organization, including the Distribution Construction Standards Audits performed by the Distribution Construction Auditor.

During the Quarterly Business Review meetings, the local Distribution Operations Managers are asked to discuss their scores for the Construction Standards Audits and describe lessons learned and actions taken to improve the adherence to construction standards if their teams do not meet expectations for the quarter.

**ANNUAL GOAL ACHIEVEMENT**

It should be noted that to encourage perfect compliance, the construction audit standard will indicate a score of “zero” if even one deviation is observed by the Distribution Construction Auditor. Also, in 2009 and 2010, any National Electrical Safety Code deviation observed during the Construction Standards Audits would result in a score of zero for the Operating Center for the quarter.

Through the Operational Readiness Scorecard and associated processes, PEF states that the Florida Delivery Operations (formerly Energy Delivery Florida) organization has been able to improve standardization across its four regional organizations.

**DOES THE COMPANY EMPLOY ADEQUATE MANAGEMENT CONTROLS AND RESOURCES TO ENSURE PEF PERSONNEL ARE IN COMPLIANCE WITH ALL APPLICABLE CONSTRUCTION STANDARDS?**

According to PEF, the company improved its internal controls in regards to maintaining adequate quality control monitoring of distribution construction practices throughout the time period of 2008 through 2012. One example involved the improvement effort completed to enhance the ad hoc reporting capabilities of the data repository for Distribution Construction Audits. The company states that several other examples of process improvements have been implemented over the time period, but a comprehensive listing of those improvements has not been documented. PEF also states that it continues to implement improvements as new opportunities are identified.

Audit staff notes that PEF has failed to meet the Distribution Construction Auditor's Operations Audit Standard performance goal for PEF employee completed projects during 2011 and 2012. Audit staff's analysis of annual goal achievement data focuses on the "Distribution Construction Auditor Operations Audit Standards" metric only. For the 13-month review period, all of the managers responsible for construction quality assurance in their respective operation centers, failed to meet the 80 percent compliance goal in 2011, and failed to meet the 70 percent compliance goal in 2012, except for the manager at the Clearwater operation center.

Audit staff believes that PEF should establish meaningful quality assurance goals for distribution construction, and have the internal controls and oversight in place to achieve its goals. Audit staff believes that PEF should evaluate the goals set for work performed by PEF forces and either develop appropriate goals that are attainable, or determine what has caused results to fall short.

Audit staff believes that PEF should implement procedures to strengthen its Distribution Field Supervisor quality assurance oversight of PEF employee crews during actual field construction (similar to how the Distribution Contract Inspectors perform work in progress inspections of contractor work) to facilitate quality goal achievement by PEF employee crews. Audit staff recognizes that the Distribution Field Supervisors are now performing 10 field observations per quarter.

**2.2 QUALITY ASSURANCE OVERSIGHT OF CONTRACTORS**

**HAS PEF ESTABLISHED GOALS AND OBJECTIVES FOR ITS QUALITY ASSURANCE PROGRAMS FOR PROJECTS COMPLETED BY CONTRACTORS?**

**2012**

Contractor goals focus on safety in 2012. The Inspection activity continues; however, no specific goal was established relative to the pass rate for construction quality in 2012. Audit staff notes that the organization is in a post-merger state of transition, and that leadership teams will determine the next steps for the contractor goals.

### **2010 and 2011**

2010 was a transition year for the Inspection database. The system was converted from hand-held Personal Digital Assistants to a remote computer application. New goals were established and effective in the fourth quarter of 2010 to align with the functionality of the new system. Specifically, the contractor's quality rating was determined as a percentage of the value of inspected attributes from the checklist that pass out of the total value of inspected attributes. A computer generated, random sample of the contractor's closed work orders was inspected.

**Goal:** *Contractor shall achieve a minimum quality of field work rating of 98.0 percent meaning that a minimum of 98.0 percent of the value of the attributes inspected shall pass for the construction section of the Line Contractor Inspection Form.*

### **2008 and 2009**

During this period, the quality of the contractor's field work was determined by the checklist results pertaining to the Construction section of the Line Contractor Inspection Form. A computer generated, random sample of the contractor's closed work orders was inspected. The contractor's quality rating was determined by the ratio of the number of inspections that passed to the total number of inspected work orders. The quality of the contractor's work was evaluated on a regional basis.

**Goal:** *Contractor shall achieve a minimum quality of field work rating of 85.5 percent meaning that a minimum of 85.5 percent of the work orders inspected shall pass all attributes of the checklist for construction section of the Line Contractor Inspection Form.*

## **HOW DOES THE COMPANY DOCUMENT THE CONSTRUCTION QUALITY AND COMPLIANCE OF PROJECTS COMPLETED BY ITS OUTSIDE CONTRACTORS?**

Documentation of construction quality and compliance to distribution construction standards by contractors is accomplished by using an internal Work Order Inspection Program. This program provides a consistent method for measurement and documentation of work order instructions and construction standard adherence. Three specific types of documented inspections make up the quality inspection program:

- ◆ Work-In-Progress Inspection - This inspection requires a field visit and electronic entry into the inspection program.
- ◆ Post-Construction (random) Inspection - This inspection requires a field visit and electronic entry into the inspection program.
- ◆ Discretionary Inspection – A field visit is not required. An audit may be performed from the desk. The primary purpose of this inspection is to determine alignment between work order instructions and contractor reporting.

The formal recording of inspections into the inspection program is supported by the function of a designated PEF representative referred to as the Distribution Contract Inspector. While conducting daily field visits, the Inspector populates the checklist on the construction section of the Line Contractor Inspection Form appropriately after validating each item for compliance or non-compliance. Once the Inspector completes the review and verification of the

items on the list, the results are downloaded into the inspection database electronically by means of a laptop computer and air card.

If an inspection fails to meet the standard requirements, the Distribution Contract Inspector e-mails a copy of the failed inspection to the appropriate contractor manager immediately. The Distribution Contract Inspector electronically checks the “follow-up needed” box on all failed inspections. Each copy of a failed inspection sent to the contractor is accompanied by a standard signature that reads as follows:

*Please note that if the “Follow-up Needed” box on this inspection is checked, action is required on your part. An electronic response describing how you addressed any failed inspection should be sent to the originator of this inspection within 15 business days. Each response should include the specific date the correction was made. Thank you for your diligence in following up with us.*

Once the Distribution Contract Inspector receives a formal response back from the contractor defining the corrective action taken, the Distribution Contract Inspector enters the contractor’s response into the database under the follow-up section of the failed inspection number. The Distribution Contract Inspector prioritizes his field visit, according to the severity and type of failure, to verify corrections have been made. All violations require a return trip for verification that follow-up is satisfactory.

**DOES THE COMPANY EMPLOY ADEQUATE MANAGEMENT CONTROLS AND RESOURCES TO ENSURE THAT ITS CONTRACTORS ARE IN COMPLIANCE WITH ALL APPLICABLE CONSTRUCTION STANDARDS?**

Contractors working within PEF territories are contractually required to warranty all work performed. Work is required to be performed in accordance with accepted standards, and all applicable local, state and federal regulations, including National Electrical Safety Code and other industry standards.

When work fails to conform to the requirements the contractor is required to correct and make satisfactory the work to the owner at no cost. If the contractor does not correct the work in a timely manner, PEF reserves the right to correct the work internally, or by hiring an outside contractor, and pass all costs to the contractor.

The Distribution Standards Manual contains the specifications approved by the Distribution Standards Unit, and is the reference for the Distribution Contract Inspectors who monitor contractor construction. The construction specifications within the Distribution Standards Manual apply to work performed by the contractor crews. Contractors are required via contractual agreement and their own desire to perform construction as defined by the Distribution Standards Manual and meeting the National Electrical Safety Code.

**COMMUNICATION WITH CONTRACTORS**

The Distribution Standards Manual is provided to the contractor’s supervision in hardcopy format. Distribution Standards Manual updates are provided to contractors to communicate with their workforce. Updates or a new Distribution Standards Manual are provided to allow the contractor to maintain the most current version.

Distribution Contract Inspectors often observe contractor work while the work is in progress and are able to communicate specifics regarding construction standards before the

work is finalized by the contractor. Deviations observed in construction quality are entered on a form. If corrective action cannot be taken immediately by the contract crew a follow-up inspection is entered and uploaded to the database by the Inspector. Communication of a deviation may be via e-mail or verbal.

PEF is currently investigating a method to provide secure access to the Distribution Standards Manual materials via the Internet and accessible by invitation only. The electronic format could allow for near-real-time updates so that the construction crew has the opportunity to view the most current version of the standards on-line.

PEF does not directly provide formal training for contract employees. All contractors employed to work on system are required to supply employees qualified to perform the work prior to start of such work. Qualified individuals must have knowledge of all local, state, federal and Occupational Safety and Health Administration requirements, including National Electrical Safety Code requirements.

PEF uses two specific means to notify the contractors of all construction specification changes: Quarterly Business reviews and Standards Update Bulletins.

Quarterly contractor performance reviews are conducted by the Contract Resource Supervisor in collaboration with other departments. The review provides the opportunity for improved performance in meeting standards. At each quarterly business review, the contractor is supplied with a copy of quarterly construction standards updates. In this setting, the contractor can review the changes and ask clarifying questions.

Individual standards updates are also e-mailed to the contractor as they develop. These bulletins reference any significant changes to a standard, including change in law or regulation. The contractor may use the engineering group, the local Inspector, or Contract Management as a resource to clarify questions about any changes.

## **DOES THE COMPANY HAVE AN ADEQUATE PROCESS TO MONITOR THE CONSTRUCTION PRACTICES OF ITS OUTSIDE DISTRIBUTION CONTRACTORS?**

### **QUALITY ASSURANCE FOR CONTRACTOR CREWS**

The *Contractor Line Construction* process document (CON-EDGX-00001) for the Work Order Inspection Program outlines the inspection process for construction projects completed by contractors hired by PEF.

The Distribution Contract Inspector is the single line of observation regarding PEF's contractor resources and the Distribution Contract Inspector acts as an agent of PEF to ensure that the company is receiving the value expected from the contractor workforce. Distribution Contract Inspectors are accountable to conduct inspections to validate work completion for purposes of payment, but also for adherence to expectations outlined in contracts between PEF and its contract partners.

### **INSPECTIONS OF CONTRACTOR PROJECTS**

PEF has six Distribution Contract Inspectors (formerly Distribution Construction Inspectors) that share in the responsibility of inspecting projects by contractor crews. From March 2011 through March 2012, there were 10,075 contractor work orders representing



approximately 48 percent of distribution construction projects. Each PEF Distribution Contract Inspector is responsible for conducting formal contractor inspections:

- ◆ Work-In-Progress Inspections – 50 per quarter
- ◆ Post-Completion (random) Inspections – As selected by the system, with each inspector having 5 days to complete a review and enter the results in the database.
- ◆ Discretionary Inspections – Performed by desk audit or field visit.

Contract Management reviews the inspections entered into the database and compiles a monthly scorecard reflecting inspection totals. According to PEF, three Distribution Contract Inspectors out of a total of six Distribution Contract Inspectors did not meet the required goals, of their position due to reassignment of duties.

For the time period in question, PEF states that it was able to adequately ensure that contractor work orders were properly constructed, and that PEF will continue to monitor performance expectations of Distribution Contract Inspectors to ensure performance continues to meet expectations for safety inspections.

PEF is not able to determine whether the individual Distribution Contract Inspector work-in-progress inspection goals are being met. Specifically, PEF does not know whether the number of system-generated work orders chosen for work in progress inspections met or exceeded the requirements reflected in the *Contractor Line Construction* process document. The inspection results of the contractor work orders relative to work-in-progress inspections are shown in **Exhibit 4**.

**PROGRESS ENERGY FLORIDA, INC.  
WORK IN PROGRESS INSPECTION COMPLIANCE  
CONTRACTOR PROJECTS  
MARCH 2011 – MARCH 2012**

Quarter	Total Number of Completed Work Orders	Sampled Work Orders Inspected by Operations Centers															Total Number of Inspections	Total Number of System-Generated Work Orders
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
		North Central region				North Coastal region			South Central region			South Coastal region						
March 2011	414	2				11			21			45					79	9
2Q-2011	1,583	67				56			110			137					370	67
3Q-2011	2,303	41				89			71			168					369	105
4Q-2011	3,081	50				39			84			192					365	267
1Q-2012	2,694	65				33			103			256					457	58
<b>Totals</b>	<b>10,075</b>	<b>225</b>				<b>228</b>			<b>389</b>			<b>798</b>					<b>1,640</b>	<b>506</b>

**EXHIBIT 4**

Source: PEF Response to Document Request 2.1

## 2.3 WORK ORDER CLOSE-OUT PROCESS

### HOW DOES THE COMPANY PROVIDE QUALITY ASSURANCE OVERSIGHT TO THE WORK ORDER CLOSE-OUT PROCESS?

#### PEF LINE CONSTRUCTION EMPLOYEES

PEF uses a work management system that allows for all redlines (changes that have occurred during construction that are recorded in the official construction drawings) or as-built changes to be completed electronically by the PEF crew in the field. Once a job is completed in the field, the crew completes all work components in its RT ARM Mobile Unit. All compatible units have to be redlined and if there are changes in the field, a comment must be placed at the work order level, that the change was approved by the engineer. Prints and maps for smaller jobs are available online and can be viewed from the truck. Hard copies are provided for larger complex prints.

Once the job is complete in the field, the PEF work order closer ensures that accounting and materials are accurate; and corrects any discrepancy in materials. The closer verifies that the work components in the work management system are closed out and scans redlines (as built sketches) and maps for larger jobs into the work management system for future reference.

Once the work order reaches a closed status, the work management system notifies the Geographical Information System Tech automatically. Geographical Information System Tech then updates the Geographical Information System with any mapping changes and ensures the system reflects accurate construction from the field. All records are stored electronically and can be easily accessed through the work management system.

## **CONTRACTOR**

PEF uses a work management system that allows for all redlines (design changes) and as-built changes (material balances) to be completed electronically by the contractor and submitted for payment.

The contract Billing Administrator (Exception Clerk) is part of the closing process as it relates to contractors. They are responsible for:

- ◆ Reviewing invoices for payment, noting any exceptions to the original Work Request design (estimate), regardless of magnitude. Changes are to be accounted for via supporting documentation and/or approval.
- ◆ Ensuring that the facilities which were installed were documented correctly and that Time & Equipment is administered according to the compensation guidelines and accounted for as specified in the contract. In the event that any of the supporting documentation is missing, or does not align, payment is rejected and the invoice is sent back to the contractor to correct
- ◆ Reviewing the compatible units and pay items in ARM Web Portal (this is the contractor portal of the work management system).
- ◆ Contacting the inspector to ensure that any redline changes were approved.

Once the contractor completes the as-built in ARM Web portal and balances the material in the Material Web Application, the contractor submits the work times to the contract billing administrator. The contractor then scans in the prints with the marked up as-builts (small print) or sends a hard copy to PEF (large print). The billing administrator then reviews, audits, approves or rejects the items for payment based on the as-built that were input. If there are variances between the designed work order and the as-built, the contractor must scan in a Construction Authorization Form which is approved by the engineer and the inspector.

Upon approval of the pay items, the contractor submits the invoice and is paid for the work. At this point, the region Operations Support Assistant then runs a report on as-built finalization and proceeds with balancing the work order. The Operations Support Assistant then works with the contractor to balance material. Once in balance, the work order closes and the Geographical Information System is updated. All records are maintained online and are available to be accessed when necessary.

## **WORK ORDER INSPECTION PROGRAM**

According to PEF the Inspection Program is a process that:

- ◆ Provides feedback to contractors on the quality of contractor's work and where problems exist.
- ◆ Collects objective data useful in contractor evaluation.
- ◆ Allows Distribution to gain information about contractor's performance without inspecting the contractor's work.

- ◆ Provides consistent guidelines and acceptable criteria for work order inspections group wide.

Several key construction components are reviewed during and after construction. The program is intended to promote positive and constructive communication among all parties involved in work order preparation, line construction, and inspection.

Construction is inspected to determine if the job is being worked or has been worked in conjunction with construction specifications. The inspector verifies the job was constructed according to PEF’s requirements through work reviews. The quality inspection program consists of the following three types of documented inspections of contractor work:

- ◆ Work In progress Inspections (WIP) – Field visit and data entry required.
- ◆ Post-Construction (random) Inspections – Field visit and data entry required.
- ◆ Discretionary Inspections – May be performed by desk audit with field visit as an option.

The Inspector may check multiple locations per work order but they are all to be entered on one inspection form with multiple locations entered into the General Comments field.

**INSPECTION CHECKLIST**

The Line Contractor Inspection Form is loaded on the Inspector’s laptop computer and used for collecting and recording information relevant to various work order attributes. This provides a method for securing required response and rework when certain attributes do not meet established criteria. The Line Contractor Inspection Form serves as a checklist that identifies attributes that require evaluation during the inspection process to provide a basis for consistent review of work order construction and documentation.

**GOAL ACHIEVEMENT**

PEF states that the Contractors overall achieved the quality performance goals for the years 2008 through 2011. The contractor quality performance goal has been discontinued as of 2012. **Exhibit 5** below shows the year-end quality performance achievement measured by random sample inspections. The Minimum column represents the performance of the contractor with the lowest, year-end score achieved. The Maximum column represents contractor performance with the highest, year-end score achieved.

<b>PROGRESS ENERGY FLORIDA, INC. GOAL ACHIEVEMENT AT OPERATING CENTERS 2008 – 2011</b>			
<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Goal</b>
2008	97.67%	100.00%	85.50%
2009	97.87%	100.00%	85.50%
2010 <sup>5</sup>	99.00%	100.00%	98.00%
2011	97.12%	100.00%	98.00%

**EXHIBIT 5**

Source: PEF Response to DR1.2b

<sup>5</sup>Indicates fourth quarter only for 2010 as a partial year due to database transition. (See DR1.2a.)

PEF is not able to determine whether the individual Distribution Contract Inspector work in progress inspection goals are being met. PEF is not sure whether the number of system-generated work orders chosen for work in progress inspections met or exceeded the requirements reflected in the *Contractor Line Construction* process document. PEF should have internal controls in place to confirm that requirements reflected in the *Contractor Line Construction* process document are being met. Audit staff believes that PEF should strengthen internal controls and documentation associated with the Distribution Contract Inspector work in progress inspections to ensure that required goals are met.

Based on audit staff's analysis of the follow-up inspection data in Data Request 1.8c, 63 percent of the responses sent from the contractors to the Distribution Contract Inspectors did not contain the corrective action taken and were not timely provided within the 15 business-day requirement.

## **2.4 WORK ORDER POST-COMPLETION INSPECTION RESULTS**

### **HOW DOES THE COMPANY PROVIDE QUALITY ASSURANCE OVERSIGHT TO THE WORK ORDER POST-COMPLETION INSPECTION RESULTS?**

PEF states that when it becomes aware of the existence of a National Electrical Safety Code violation, it takes appropriate action to remediate the deviation whether PEF employees, contractor employees, or employees of a third party create the violation (e.g. encroachment by third party attachment).

In the case of contractor resources, National Electrical Safety Code deviations are remediated in advance of payment approval by the Distribution Contract Inspector and in the case of PEF resources, remediation is administered by the local supervisors upon notification by the Distribution Construction Auditor.

PEF has stated that it was not a standard practice of the Distribution Construction Auditor to conduct follow-up inspections to confirm that deviations coded as National Electrical Safety Code violations were resolved. However, a formal follow-up process is being developed and will be implemented going forward.

### **PEF-COMPLETED WORK ORDERS**

The Resource Management Construction and Compliance Unit produces a summary and a detail level report of all Distribution Standards Construction Audit results to the General Managers after each audit is performed each quarter. The Distribution Construction Auditor conducts audits each quarter and communicates findings to the regional (zone) General Manager (formerly Distribution Operations Managers). At that point, the accountability is transferred to the local leadership team for further follow-up action.

**EXHIBIT 6** shows the type and frequency of deficiencies found across all four regions based on the 392 audits performed on the 10,741 distribution construction projects completed by PEF's own personnel during the review period. The deficiencies are grouped by construction category.

<b>PROGRESS ENERGY FLORIDA, INC.</b> <b>DISTRIBUTION CONSTRUCTION AUDIT DEFICIENCIES</b> <b>PEF EMPLOYEE PROJECTS</b> <b>MARCH 2011 – MARCH 2012</b>										
Construction Category	Deficiency by Region								Total	
	North Central		North Coastal		South Central		South Coastal		National Electrical Safety Code	Non-National Electrical Safety Code
	National Electrical Safety Code	Non-National Electrical Safety Code	National Electrical Safety Code	Non-National Electrical Safety Code	National Electrical Safety Code	Non-National Electrical Safety Code	National Electrical Safety Code	Non-National Electrical Safety Code		
Coastal and Contaminated Installations			4				2		6	
Conductors Underground					2				2	
Enclosures and Pedestals	4		5		3		7		19	
Overhead – Underground Transition	11				10	1	25	1	46	2
Overhead General			2		3		3		8	
Pad-Mounted Transformers	9		4		11		16		40	
Pole Mount Transformers	3		12		24		13		52	
Poles, Guys and Anchors	19		7		14		23		63	
Primary Construction Overhead	12		6		12		9		39	
Secondary Construction Overhead					1				1	
Street and Area Lighting			3	1	5				8	1
Switches, Switchgear and Protective Devices	2				3		1		6	
Underground General, Housekeeping and Material	8		4		3		5		20	
Redline	28		10		29		44		111	
Safety	1		2				2		5	
<b>Total Number of Deficiencies</b>	<b>97</b>	<b>0</b>	<b>59</b>	<b>1</b>	<b>120</b>	<b>1</b>	<b>150</b>	<b>1</b>	<b>426</b>	<b>3</b>
<b>Total Work Orders Audited</b>	<b>392</b>									

**EXHIBIT 6**

Source: PEF Response to DR-2.2.1

Redline deviations account for 111 of the 426 non-National Electrical Safety Code deviations observed during the review period, or 26 percent of all deviations observed. Redline

deviations typically include non-unit of property material items. One example of a redline deviation was noted by the Distribution Construction Auditor on 10/26/2011 for work request 64850, stating,

"Used messenger clamp on the service cable at this location. Work instructions called for eyebolt and service hangers."

The deviation would be discussed among the Operation Center leadership team and field employees but no correction would be made in this example because the deviation described above met construction specifications as outlined in the Distribution Standards Manual.

In contrast, deviations noted by the Distribution Construction Auditor as National Electrical Safety Code violations are prioritized and resolved by the Operation Center leadership at the direction of the regional (zone) General Manager. A total of three National Electrical Safety Code violations were observed during the review period, or 0.70 percent of all deviations observed. All three locations were confirmed by PEF as resolved by the responsible Distribution Operations Manager.

### CONTRACTOR-COMPLETED WORK ORDERS

#### WHAT TYPE AND FREQUENCY OF DEFICIENCIES WERE FOUND BY THE PEF INSPECTORS?

During the review period, March 2011 through March 2012, PEF inspectors conducted 2,353 quality inspections on the 10,075 contractor work orders. A breakdown of the completed work orders and inspections appears in **EXHIBIT 7**

<b>PROGRESS ENERGY FLORIDA, INC.                      NUMBER AND TYPE OF INSPECTIONS                      CONTRACTOR PROJECTS                      MARCH 2011 – MARCH 2012</b>					
Construction Category	North Central region	North Coastal region	South Central region	South Coastal region	Total
<b>Completed</b>					
<b>Work Orders</b>	<b>2,289</b>	<b>552</b>	<b>3,143</b>	<b>4,091</b>	<b>10,075</b>
<b>Inspected</b>					
Work In Progress	225	228	389	798	1,640
Post-Construction (Random)	134	49	129	177	489
Discretionary	60	6	15	122	203
Variance <sup>6</sup>	11	4	6	0	21
<b>Total</b>	<b>430</b>	<b>287</b>	<b>539</b>	<b>1,097</b>	<b>2,353</b>

**EXHIBIT 7**

Source: PEF Response to DR-2.6

<sup>6</sup> From legacy STORMS system. Variance inspection type is now obsolete.

Out of the 2,353 quality inspections conducted, 106 deficiencies were found. PEF states that the database used by the Distribution Contract Inspectors does not record whether a particular deviation is a National Electrical Safety Code violation.

Upon the identification and recording of a construction deviation by the Distribution Contract Inspectors, the deviation is either remediated immediately by the contractor or a follow-up inspection is generated by the Distribution Contract Inspector. These inspections are utilized to validate invoices for payment and for adherence to standards that effect contract incentives.

PEF states that the level of documentation of observations by the Distribution Contract Inspectors in support of payment to contract partners is in line with expectations set forth by PEF in compliance with Sarbanes-Oxley regulations.

Audit staff notes that PEF failed to meet its goals with regards to performing post-construction inspections of contractor projects. The post-construction inspection results of contractor projects during the 13-month period, March 2011 to March 2012 are shown in **EXHIBIT 8**.

<b>PROGRESS ENERGY FLORIDA, INC.</b>																			
<b>POST-CONSTRUCTION INSPECTION COMPLIANCE</b>																			
<b>CONTRACTOR PROJECTS</b>																			
<b>MARCH 2011 – MARCH 2012</b>																			
Inspector ID Number	Total Number of Completed Work Orders	Sampled Work Orders Inspected by Operations Centers															Total Number of Inspections	Total Number of System-Generated Work Orders	Goal Met? Yes / No
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
		North Central region			North Coastal region			South Central region			South Coastal region								
<b>NCR</b>	2,289													134	149	No			
OT08893		134																	
<b>NCO</b>	552													49	55	No			
I32268					40														
Ot02330					9														
<b>SCR</b>	3,143													129	169	No			
OT08893								2											
OT00757								30											
I36687								97											
<b>SCO</b>	4,091													177	287	No			
I28014											33								
OT01316											108								
OT02821											36								
<b>Total</b>	<b>10,075</b>	<b>134</b>			<b>49</b>			<b>129</b>			<b>177</b>			<b>489</b>	<b>660</b>	<b>No</b>			

**EXHIBIT 8**

Source: PEF Response to Document Request 2.5.1



PEF states that for the 13-month review period, 660 work orders were flagged for random (post-construction) completion. Of the 660 selected, a total of 489 inspections were completed. PEF further states that the 171 work orders that were not completed was a result of the implementation of the new work management system in 2011, which created changes in the random inspection process. One change included the Work Request closing process for the Operational Support Assistant. Some work orders were closed prior to a random being conducted. Closing the Work Request prevented the Distribution Construction Inspector from recognizing the requirement for a random requirement and resulted in an incomplete inspection.

PEF states that the initial reporting did not clearly identify work orders ready for random inspection, making it both difficult and time consuming for the Distribution Contract Inspector to identify field ready targets. PEF states that this reason also contributed to the 171 random inspections not being completed.

PEF states that recent changes to the random process have closed the process gaps identified above and that it will look for ways to improve these processes. Distribution Contract Inspectors now have the ability to run a condensed report reflecting only those work orders actually ready for a random inspection.

## **2.5 INDEPENDENT AUDIT OVERSIGHT**

### **DOES PEF'S INTERNAL AUDIT DEPARTMENT PERIODICALLY EXAMINE ITS DISTRIBUTION QUALITY CONTROL ASSESSMENT PROCESSES?**

PEF's Audit Department completed an internal audit in October 2009 of the Operational Readiness Scorecard produced by the Resource Management Construction and Compliance Manager. The audit included a review of each metric within the scorecard including the Distribution Construction Standards Audit metric. PEF notes that the scope of the audit was stated as follows:

“To provide independent verification/substantiation of supporting data and reported scoring, ensure scores are consistently derived by each unit in accordance with the metric outlines, and to verify that a clear linkage between measurement methodology and goal objectives is established.”

PEF's Audit Department issued a conclusion of *Effective* for the Operational Readiness Scorecard which is the highest rating given for internal audits within Progress Energy.

Furthermore, the Energy Delivery management team was pleased with the overall conclusion of *Effective* for the Operational Readiness Scorecard and also welcomed the input of the Audit Department related to the support documentation of each metric. The Audit Department recognized the significant amount of documentation required to support the Operational Readiness Scorecard and encouraged Energy Delivery to revise data gathering and retention practices.

Since the audit was completed in 2009, there have been several modifications to the documentation process which include those described previously. The company states that it

reduces risk through lessons learned and best practices which are discussed among the leadership teams throughout the year and also at the Quarterly Business Reviews.

**HAVE PEF'S DISTRIBUTION CONSTRUCTION QUALITY CONTROL PROCESSES BEEN REVIEWED BY EXTERNAL AUDIT ORGANIZATIONS?**

PEF states that no studies or evaluations have been conducted by external parties during the past 36 months. The company states that it identifies, evaluates, and manages risk associated with its distribution construction practices through various internal quality assurance processes. The primary unit responsible for evaluating risk is the company's Distribution Standards Unit, where the employees within this unit develop and maintain an up-to-date manual of the design standards used in the construction, operation and maintenance of the distribution system. PEF states that it also has protocols in place to distribute the manuals and communicate all revisions and/or new standards as they are released to the appropriate PEF employees and external contractor crews.

## **3.0 FINDINGS AND RECOMMENDATIONS**

### **WHAT FINDINGS AND RECOMMENDATIONS ARE NOTED BY FPSC STAFF AUDITORS?**

Audit staff identified six findings and recommendations with regards to PEF's controls and practices for monitoring its electric distribution construction processes and compliance:

#### **FINDING 1**

PEF has no mechanism for verifying that failed inspection items are corrected for PEF employee-completed work.

#### **CONDITION – (WHAT IS HAPPENING?)**

It is not a standard practice of the Distribution Construction Auditor to conduct follow-up inspections to confirm that deviations were resolved. PEF notes that a formal follow-up process is being developed and will be implemented going forward.

#### **STANDARD – (WHAT SHOULD BE HAPPENING?)**

PEF should have internal controls in place that will ensure identified failures are corrected and brought into compliance with distribution construction standards.

#### **RECOMMENDATION**

PEF should provide a thorough follow-up inspection process for ensuring that follow-up responses are completed.

#### **FINDING 2**

PEF has failed to meet its Distribution Construction Auditor Operations Audit Standard performance goal for PEF-employee completed projects during 2011 and 2012.

#### **CONDITION – (WHAT IS HAPPENING?)**

The Distribution Construction Auditor reports through the Resource Management Construction and Compliance unit and independent of the Construction and Maintenance organization that includes the PEF line department employees. The Distribution Construction Auditor audit is one of the metrics included in the Operational Readiness Scorecard. Audit staff's analysis of annual goal achievement data focuses on the "Distribution Construction Auditor Operations Audit Standards" metric only. For the 13-month review period, all of the managers responsible for construction quality assurance in their respective operation centers, failed to meet the 80 percent compliance goal in 2011, and failed to meet the 70 percent compliance goal in 2012, except for the manager at the Clearwater operation center.

#### **STANDARD – (WHAT SHOULD BE HAPPENING?)**

PEF should establish meaningful quality assurance goals for distribution construction, and have the internal controls and oversight in place to achieve its goals. The Distribution Field Supervisors should have formal safety inspection requirements for PEF-employee projects. Audit staff recognizes that the Distribution Field Supervisors are now performing 10 field observations per quarter.

**RECOMMENDATION**

PEF should evaluate the goal set for work performed by PEF forces and either develop appropriate goals that are attainable, or determine what has caused results to fall short.

**FINDING 3**

PEF is not able to determine whether the individual Distribution Contract Inspector work in progress inspection goals are being met.

**CONDITION – (WHAT IS HAPPENING?)**

PEF does not know whether the number of system-generated work orders chosen for work in progress inspections meet or exceed the requirements reflected in the *Contractor Line Construction* process document.

**STANDARD – (WHAT SHOULD BE HAPPENING?)**

PEF should have internal controls in place to confirm that requirements reflected in the *Contractor Line Construction* process document are being met.

**RECOMMENDATION**

PEF should strengthen internal controls and documentation associated with the Distribution Contract Inspector work in progress inspections to ensure that required goals are met.

**FINDING 4**

PEF does not capture the response to a failed inspection from PEF’s Distribution Field Supervisor or the contractor in its records.

**CONDITION – (WHAT IS HAPPENING?)**

Based on audit staff’s review of Distribution Contract Inspector entries in the “contractor response” section of the follow-up inspection records reported in Data Request 1.8c, the Distribution Contract Inspector is entering its interpretation of, or comments about, the contractor’s response. The contractor is required to respond back to the Distribution Contract Inspector that initially recorded the failed inspection, but this response is not captured. Audit staff notes that PEF may be in the process of implementing a resolution to this finding with respect to the contractor’s response.

**STANDARD – (WHAT SHOULD BE HAPPENING?)**

PEF’s data entry process for the Distribution Contract Inspectors should include procedures requiring each Distribution Contract Inspector to enter into the database in the “contractor response” section of the follow-up inspection record the actual contractor corrective action response. This could be accomplished by copying and pasting the contractor’s response given via email. PEF should have a similar follow-up inspection standard in place for corrective action responses for deviations associated with PEF-employee crews.

**RECOMMENDATION**

The Distribution Construction Auditor should record comments regarding corrective action taken as is the current practice of the Distribution Contract Inspectors. PEF should also require the Distribution Construction Auditor and each Distribution Contract Inspector to enter the actual corrective action response from the Distribution Field Supervisor or contractor in the follow-up response section of the failed audit/inspection record.

## **FINDING 5**

PEF records do not allow follow-up corrective actions by PEF-employee crews and contractors to be verified against the original work order.

### **CONDITION – (WHAT IS HAPPENING?)**

Based on PEF's response to Data Request 2.3, PEF generates an additional work order for follow-up, but there is no link to the original work order. Correction dates for separate deviations were not available for review by audit staff.

### **STANDARD – (WHAT SHOULD BE HAPPENING?)**

PEF should be able to document and verify the actions taken to correct deficiencies, including, but not limited to, National Electrical Safety Code violations, and the date such deficiencies were completed.

### **RECOMMENDATION**

PEF should link original work orders to follow-up PEF-employee and contractor actions and inspection records within the work management system to aid tracking and verification of corrective actions.

## **FINDING 6**

PEF's Distribution Contract Inspectors do not record whether a violation is a National Electrical Safety Code or a non-National Electrical Safety Code violation with respect to contractors performing distribution construction.

### **CONDITION – (WHAT IS HAPPENING?)**

PEF does not monitor the number and frequency of National Electrical Safety Code and non-National Electrical Safety Code violations, including where the violations are occurring and by which contractors.

### **STANDARD – (WHAT SHOULD BE HAPPENING?)**

PEF should have internal controls in place to ensure that contractor National Electrical Safety Code and non-National Electrical Safety Code violations are captured in the same way as they are captured on PEF-employee projects. Managers should have this information for decision making.

### **RECOMMENDATION**

PEF should note and record whether each contractor deficiency is a National Electrical Safety Code violation or non-National Electrical Safety Code into the inspection database, for consideration by management in overall contractor evaluation.



## 4.0 COMPANY COMMENTS

The following comments are provided by PEF management and are included in their entirety.

### **PEF'S GENERAL COMMENTS**

PEF's objective is to construct distribution facilities that are in compliance with applicable codes and regulations, including the NESC. PEF conducts a quarterly update of our Distribution Construction Manual to ensure on-going compliance.

PEF utilizes a robust planning and scheduling process to assign distribution construction work to both company personnel and outside contractors for distribution construction projects.

PEF ensures that safety, quality and financial objectives are met for construction projects by providing two independent inspection processes. One process is overseen by the Distribution Construction Auditor for distribution construction projects completed by internal PEF crews. PEF also relies on company supervision as part of this quality assurance process. The other process is overseen by Distribution Contract Inspectors for work performed by external contractors.

PEF continually improves its Quality Assurance processes and systems. As new opportunities are identified, they are reviewed by the PEF leadership teams for consideration. Leadership has examined the findings and recommendations, PEF will make the following improvements to our internal audit and compliance process for distribution construction:

### **PEF'S COMMENTS TO SPECIFIC AUDIT FINDINGS**

#### **FINDINGS 1 AND 5**

##### **FINDING 1:**

**PEF has no mechanism for verifying that failed inspection items are corrected for PEF employee-completed work.** *Recommendation:* PEF should provide a thorough follow-up inspection process for ensuring that follow-up responses are completed.

##### **FINDING 5:**

**PEF records do not allow follow-up corrective actions by PEF-employee crews and contractors to be verified against the original work order.** *Recommendation:* PEF should link original work orders to follow-up PEF-employee and contractor actions and inspection records within the work management system to aid tracking and verification of corrective actions.

### **PEF'S COMMENTS**

PEF has modified the database, for internal crews, to allow deviations that are deemed "corrective action needed" to be tracked with attached documentation of the corrective actions taken. The local supervisor is responsible for providing evidence of the corrective action taken (including photographs), followed by completion of a certification form within 30 days. The ability to track these deviations to the original work request has also been added. For work

performed by contractors, PEF is also evaluating options that will enable the storing of more detailed comments provided for the corrective actions taken.

## **FINDING 2**

**PEF failed to meet its Distribution Construction Auditor Operations Audit Standard performance goal for PEF employee completed projects during 2011 and 2012.**

*Recommendation:* PEF should evaluate the goal set for work performed by PEF employees and either develop appropriate goals that are attainable, or determine what has caused results to fall short.

### **PEF'S COMMENTS**

PEF has reviewed its construction adherence goals and has identified an opportunity to make the goal more relevant to the actual construction adherence objective. Construction adherence and redlined changes have been separated to create two independent, measurable goals. This will enhance management's ability to clearly identify opportunities in both areas without combining two different work actions into one goal.

## **FINDING 3**

**PEF is not able to determine whether the individual Distribution Contract Inspector work in progress inspection goals are being met.** *Recommendation:* PEF should strengthen internal controls and documentation associated with the Distribution Contract Inspector work in progress inspections to ensure that required goals are met.

### **PEF'S COMMENTS**

PEF is currently meeting its goal for the total number of audit inspections of work performed by contractors. In conjunction with this audit process, PEF has begun utilizing a system-generated report to identify audit inspections that conform to our business rules. The PEF inspectors are now using this report to conduct their work in progress inspections. PEF is also assessing the value of non-system generated inspections and will modify the Contractor Line Construction process document as needed.

## **FINDINGS 4 AND 6**

### **FINDING 4:**

**PEF does not capture the response to a failed inspection from PEF's Distribution Field Supervisor or the contractor in its records.** *Recommendation:* The Distribution Construction Auditor should record comments regarding corrective action taken as is the current practice of the Distribution Contract Inspectors. PEF should also require the Distribution Construction Auditor and each Distribution Contract Inspector to enter the actual corrective action response from the Distribution Field Supervisor or contractor in the follow-up response section of the failed audit/inspection record.

### **FINDING 6:**

**PEF's Distribution Contract Inspectors do not record whether each violation is a National Electrical Safety Code or a non-National Electrical Safety Code violation by contractors performing distribution construction.** *Recommendation:* PEF should note and record whether each contractor deficiency is a National Electrical Safety Code violation or non-National Electrical Safety Code violation into the inspection database, for consideration by management in overall contractor evaluation.



**PEF'S COMMENTS**

PEF has modified the database for internal crews to allow all identified NESC violations, both internal and external (FPSC), to be tracked with documentation of the corrective actions taken. Deviations that are deemed "corrective action needed" shall be tracked in the same database with the ability to reference the original work request.

PEF will modify the Distribution Inspection database to reflect whether a contractor deficiency is an NESC violation or not. PEF agrees that this enhancement will improve overall contractor performance assessment.