

**BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION  
DOCKET NO. 130040-EI**

**IN RE: TAMPA ELECTRIC COMPANY'S  
PETITION FOR AN INCREASE IN BASE RATES  
AND MISCELLANEOUS SERVICE CHARGES**



**DIRECT TESTIMONY AND EXHIBIT  
OF  
S. BETH YOUNG**

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DOCUMENT NUMBER DATE  
01686 APR-5 2002  
FPSC-COMMISSION CLERK



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DOCUMENT NUMBER DATE

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FPSC-COMMISSION CLERK

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**OF**  
**S. BETH YOUNG**

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1                                   **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2                                   **PREPARED DIRECT TESTIMONY**

3                                   **OF**

4                                   **S. BETH YOUNG**

5  
6   **Q.**   Please state your name, address, employer, and  
7           occupation.

8  
9   **A.**   My name is S. Beth Young. My business address is 820 S.  
10           78<sup>th</sup> St, Tampa, Florida 33619. I am employed by Tampa  
11           Electric Company ("Tampa Electric" or "company") as  
12           Director, Transmission.

13  
14   **Q.**   Please provide a brief outline of your educational  
15           background and business experience.

16  
17   **A.**   I received my Bachelor's of Science degree in Electrical  
18           Engineering from the University of South Florida in  
19           1983. I am a registered professional engineer in the  
20           state of Florida. I joined Tampa Electric as a co-  
21           operative education student in 1980 and became a full  
22           time team member as an associate engineer in 1983. From  
23           1983 through 2012, I have held various positions as an  
24           engineer, manager, and director in Tampa Electric's  
25           Electric Delivery Department working in System

DOCUMENT NUMBER DATE

01686 APR-5 2013

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1 Operations, Substation Services, Meter Services, System  
2 Service, Project Management, Lighting and Standards. In  
3 December 2012, I became the Director, Transmission. My  
4 current responsibilities include the planning,  
5 engineering, construction, operation, maintenance and  
6 billing of the transmission system.  
7

8 **Q.** Have you previously testified before the Florida Public  
9 Service Commission ("Commission" or "FPSC")?  
10

11 **A.** Yes. I testified before the Commission in Docket No.  
12 120234-EI, Tampa Electric's Petition to Determine Need  
13 for Polk 2-5 Combined Cycle Conversion.  
14

15 **Q.** What is the purpose of your direct testimony?  
16

17 **A.** My direct testimony supports Tampa Electric's Energy  
18 Delivery ("ED") related capital spending and operations  
19 and maintenance ("O&M") expenses of \$215,786,000 and  
20 \$71,383,000, respectively, for the 2014 test year. I  
21 will also discuss storm hardening, system reliability  
22 and Tampa Electric's plan for continued safe, reliable,  
23 and cost-effective service to its customers. I will  
24 describe the impact of increased federal regulations the  
25 company is facing. Finally, I will discuss and support

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the company's T&D O&M benchmark comparisons.

**Q.** Have you prepared an exhibit to support your direct testimony?

**A.** Yes. I am sponsoring Exhibit No. \_\_\_\_ (SBY-1) consisting of six documents, prepared under my direction and supervision. These consist of:

- Document No. 1 List of Minimum Filing Requirement Schedules Sponsored or Co-Sponsored By S. Beth Young
- Document No. 2 Energy Delivery O&M Budget for 2014
- Document No. 3 Transmission and Distribution Capital Investment for 2014
- Document No. 4 Florida Investor Owned Utility Historical SAIDI Comparison (Distribution only)
- Document No. 5 2011 SAIDI Comparison - Southern Company Benchmark Consortium Study
- Document No. 6 Storm Hardening Activity 2014 Projections

**Q.** Are you sponsoring any sections of Tampa Electric's Minimum Filing Requirements ("MFR")?

1 **A.** Yes. I am sponsoring or co-sponsoring the MFR Schedules  
2 listed in Document No. 1 of my exhibit.

3  
4 **Q.** Describe Tampa Electric's Transmission and Distribution  
5 ("T&D") system.

6  
7 **A.** Tampa Electric's service area covers approximately 2,000  
8 square miles in West Central Florida, including all of  
9 Hillsborough County and portions of Polk, Pasco and  
10 Pinellas counties. Tampa Electric's transmission system  
11 consists of over 1,300 miles of overhead facilities,  
12 25,500 towers and poles, and 15 miles of underground  
13 facilities. The company's distribution system consists  
14 of approximately 6,300 miles of overhead facilities,  
15 393,000 poles and 4,800 miles of underground facilities.  
16 Tampa Electric's transmission and distribution system is  
17 connected through 220 substations throughout its service  
18 territory.

19

20 **THE COSTS TO PROPERLY SERVE RETAIL CUSTOMERS**

21 **Cost Overview**

22 **Q.** Please describe the expenditures you will be addressing  
23 in your direct testimony.

24

25 **A.** The expenditures I will be addressing are T&D related

1 O&M expenses and capital investment. I will describe  
2 why these expenditures are required and how Tampa  
3 Electric is efficiently balancing short-term  
4 operation/maintenance expenses and long-term capital  
5 investments in an effort to provide the most cost-  
6 effective reliable power to its customers, while meeting  
7 the Federal Energy Regulatory Commission ("FERC"), the  
8 North American Electric Reliability Corporation  
9 ("NERC"), the Florida Reliability Coordinating Council  
10 ("FRCC") and the FPSC requirements.

11  
12 **Q.** What has Tampa Electric's Energy Delivery team done to  
13 minimize these expenditures?

14  
15 **A.** As noted in the testimony of Tampa Electric witnesses  
16 Gordon L. Gillette and Lorraine L. Cifuentes, the  
17 company's revenues and load were less than expected  
18 during 2009 to 2012. Consequently, Tampa Electric's  
19 Energy Delivery ("ED") team reviewed its O&M budgets and  
20 planned capital expenditures to eliminate any outlays  
21 that were not essential to meeting the needs of our  
22 customers. In fact, T&D O&M spending has been  
23 essentially flat since the last rate proceeding despite  
24 inflationary pressures, increased costs due to aging  
25 infrastructure, and increased federal regulations.



1 Transmission and Distribution O&M spending will remain  
2 below the FPSC's benchmark for the projected 2014 test  
3 year. The ED team has also developed operational  
4 efficiencies in key areas to reduce overall costs. These  
5 will be outlined later in my testimony.  
6

7 **Q.** Does Tampa Electric expect increases in O&M and capital  
8 costs in the 2014 test year?  
9

10 **A.** Yes. Tampa Electric's Energy Delivery team has devoted  
11 significant effort to keep T&D costs flat, but must  
12 increase expenditures to a more sustainable level to  
13 maintain reliability and customer service. The increased  
14 O&M costs for T&D in the test year are driven by the  
15 following major items: increased O&M expenditures  
16 associated with the rising cost of wages, materials and  
17 services; increased and new software maintenance fees;  
18 increased activities associated with aging infrastructure  
19 and activity related to increasing federal regulations.  
20

21 The incremental T&D capital activity in the test year is  
22 primarily the Polk 2-5 Conversion Project with expenses  
23 of approximately \$59,500,000, which will accrue AFUDC and  
24 will not be included in total adjusted rate base for the  
25 test year. Tampa Electric witness Jeffrey S. Chronister

1 explains the accounting for the Polk 2-5 Conversion  
2 Project in his direct testimony.

3  
4 The T&D O&M costs outlined above include the addition of  
5 several positions to address the company's aging  
6 workforce. For 2013 and 2014, the company will hire new  
7 apprentice linemen, apprentice substation journeymen, two  
8 cable splicers, and a relay tester to meet NERC  
9 requirements. These positions are needed to ensure that  
10 there is an adequate front line workforce to maintain  
11 existing service levels and to respond to an aging  
12 infrastructure and increasing federal regulations. The  
13 level of O&M spending for 2014 is reasonable and  
14 necessary to ensure the company maintains the level of  
15 service that customers expect.

16  
17 **Operations And Maintenance Expense**

18 **Q.** What are the main drivers for the company's T&D related  
19 O&M expenses.

20  
21 **A.** The five main drivers are maintenance expenses,  
22 vegetation management, meter services, restoration, and  
23 Grid Operations Control Center and Compliance costs.  
24 Document No. 2 of my exhibit reflects the T&D related  
25 O&M expenses.

1 Q. What is included in the T&D related maintenance  
2 expenses?

3  
4 A. ED's maintenance expenses include the following T&D  
5 programs: an eight-year pole inspection cycle, a six-  
6 year transmission structure inspection cycle, annual  
7 substation inspections, condition-based substation  
8 preventative maintenance, and downtown Tampa network  
9 inspections. It also includes activities to correct or  
10 repair non-operable or unsafe conditions on the system  
11 that have been identified through an inspection program  
12 or as a result of another event. Aging infrastructure  
13 has increased maintenance expenses. Most T&D equipment  
14 has a thirty-year useful life. Tampa Electric installed  
15 a significant amount of T&D infrastructure to support  
16 the 216,000 customers that were added from 1965 to 1985.  
17 This infrastructure is approaching or is at the end of  
18 its useful life, which has resulted in increased  
19 failures and higher maintenance costs.

20  
21 Q. Please describe Tampa Electric's vegetation management  
22 program.

23  
24 A. Tampa Electric's vegetation management program includes  
25 a four-year tree trim cycle for distribution circuits, a

1 three-year trim cycle for 69 kV transmission circuits, a  
2 two-year trim cycle for 138 kV and 230 kV transmission  
3 circuits, and a Right-Of-Way ("ROW") maintenance  
4 program. Each of these programs is designed to maintain  
5 or improve system reliability. To ensure the company  
6 is implementing the most cost-effective program, Tampa  
7 Electric's System Reliability and Line Clearance  
8 departments take into consideration many factors in  
9 developing the annual plan for distribution tree  
10 trimming such as: multi-year circuit performance data,  
11 last trim date, circuit priorities and cost. This  
12 information is utilized in a vegetation management  
13 software application and results in the development of a  
14 multi-year vegetation management plan which optimizes  
15 activities from both a reliability-based and cost-  
16 effectiveness standpoint. Tampa Electric has devoted a  
17 great deal of effort to reduce the costs for this  
18 program while maintaining quality. The distribution  
19 tree trim cost per mile in 2008 was \$6,920. Costs have  
20 been steadily reduced year over year since 2008. The  
21 forecasted cost per mile for 2014 is \$4,866, a 30  
22 percent reduction.

23  
24 The transmission vegetation management program is  
25 designed based on the NERC Standard FAC-003:

1 "Transmission Vegetation Management Program." Its main  
2 components are a two-year trim cycle for 138 kV and 230  
3 kV lines and a three-year trim cycle for 69 kV lines to  
4 ensure designated clearances are being maintained. The  
5 ROW maintenance program includes clearing two times per  
6 year in order to minimize vegetation growth under  
7 transmission lines.

8  
9 Tampa Electric will continue to review system  
10 reliability and all pertinent field and customer  
11 information along with its annual trimming plan in order  
12 to manage its overall vegetation management program  
13 effectively.

14  
15 **Q.** What is included in the meter services activities?  
16

17 **A.** The meter services activities include meter reading,  
18 disconnect and reconnect services (meter credit  
19 activities), testing, service, and installation.  
20

21 **Q.** What has Tampa Electric done since the last base rate  
22 proceeding with respect to meter reading?  
23

24 **A.** Tampa Electric completed the installation of residential  
25 Automated Meter Reading ("AMR") meters in the first

1 quarter of 2012. Since the last rate proceeding, the  
2 number of required meter readers has been reduced and  
3 the cost per read has dropped. This is explained in  
4 more detail later in my direct testimony.

5  
6 **Q.** What is included in the restoration cost category for  
7 the test year?

8  
9 **A.** Restoration expenditures include costs required to  
10 identify and isolate facilities that have failed as a  
11 result of weather or other causes and the costs to  
12 restore service. The weather, which can vary from year-  
13 to-year, creates outages and system outage restoration  
14 activities. Restoration expenditures projected for the  
15 test year have been based on a normal weather year.

16  
17 **Q.** Describe what is included in Grid Operations Control  
18 Center and Compliance costs?

19  
20 **A.** The Grid Operations Control Center requires a team of  
21 NERC-certified system operators and support personnel to  
22 operate the balancing area and the bulk electric system.  
23 This is performed following rules and standards issued  
24 by FERC, NERC, and FRCC. These regulatory rules and  
25 standards have increased since the company's last rate

1 proceeding and the corresponding costs have increased.  
2 More detail on these changes is provided later in my  
3 testimony.

4

5 **O&M Benchmark Comparison**

6 **Q.** Have you made a comparison of Tampa Electric's test year  
7 T&D O&M budget to the Commission's benchmark?

8

9 **A.** Yes. The comparison for T&D O&M expenses is shown in  
10 MFR Schedule C-37. It demonstrates that the projected  
11 T&D O&M expenses of \$65,033,000 for the test year are  
12 below the O&M benchmark by \$7,113,000. Transmission  
13 expenditures are \$631,000 below the benchmark and  
14 distribution expenditures are \$6,482,000 below.

15

16 **Q.** Why is the overall 2014 T&D O&M budget below the  
17 Commission's benchmark?

18

19 **A.** Tampa Electric's ED team has continuously reviewed its  
20 O&M budgets and eliminated any outlays that are not  
21 essential to meeting the needs of customers. In  
22 addition to eliminating any non-essential spending, the  
23 ED team has developed operational efficiencies in key  
24 areas (e.g. vegetation management and AMR) to reduce  
25 overall costs. Additional details about the operational

1 efficiencies are described later in my testimony.  
2 Keeping O&M costs flat for the last five years and  
3 staying below the benchmark have been achieved despite  
4 increasing costs due to the need to replace aging  
5 infrastructure and increasing federal regulation.  
6

7 **Capital Investment**

8 **Q.** What are the main drivers of capital spending?  
9

10 **A.** The three main drivers are customer growth, aging  
11 infrastructure and regulatory compliance.  
12

13 **Q.** Please describe how customer growth drives capital  
14 spending?  
15

16 **A.** Tampa Electric's customer base has increased from  
17 667,266 customers in 2008 to 684,235 customers in 2012  
18 and is forecasted to be 701,415 customers in 2014.  
19 While this level of growth is modest compared to the  
20 past, the associated demand increases use of the  
21 existing T&D system and requires new construction to  
22 provide electric service to the new customers.  
23

24 **Q.** Please explain the impact of aging infrastructure.  
25



1     **A.**    Most T&D equipment has a thirty-year useful life. Tampa  
2            Electric installed a significant amount of T&D  
3            infrastructure to support the 216,000 customers that  
4            were added to the company's system from 1965 to 1985.  
5            This infrastructure is approaching or is at the end of  
6            its useful life, which typically results in increased  
7            equipment failures and higher maintenance costs.  
8            Capital investments are required to replace equipment  
9            that is nearing the end of its useful life and equipment  
10           that fails. In addition, Tampa Electric has a program  
11           to replace some of these assets prior to failure and to  
12           upgrade the system in specific areas to maintain or, in  
13           some cases, improve existing reliability levels.

14  
15     **Q.**    Describe the impact of regulatory requirements on  
16            capital costs.

17  
18     **A.**    Regulatory requirements, including storm hardening and  
19            federal compliance costs, have increased since 2008 for  
20            both O&M and capital. FERC, NERC and FRCC have  
21            increased reliability and compliance requirements. Some  
22            of the significant changes that have impacted Tampa  
23            Electric are the NERC cyber security standards, the  
24            increased documentation required for NERC compliance,  
25            NERC Alerts and changes to standards that cause

1 increased work and costs to improve reliability.

2

3 Tampa Electric instituted a storm hardening program in  
4 2006 under the direction of the Commission. The costs  
5 associated with hardening the system include replacement  
6 of poles and hardening of identified infrastructure in  
7 order to improve reliability and resiliency following a  
8 major weather event.

9

10 **Q.** Can you summarize Tampa Electric's T&D capital  
11 investment plans during 2014?

12

13 **A.** Tampa Electric plans to invest approximately  
14 \$215,786,000 in T&D related capital in 2014. The  
15 company's forecasted T&D capital spending plans are  
16 listed and described in Document No. 3 of my exhibit.  
17 This T&D capital investment is required to provide  
18 reliable service to customers. In general, these  
19 expenditures include capital projects such as substation  
20 construction and upgrades, new lighting systems, new  
21 distribution construction, transmission upgrades, road  
22 widening projects, storm hardening projects, replacement  
23 of aging equipment, changes for NERC Critical  
24 Infrastructure Protection ("CIP") standards and changes  
25 for compliance with the NERC Vegetation Management

1 standard as required by FERC Order 777. Additional  
2 capital investments will be made to leverage technology  
3 including a Volt/VAR project (Smart Grid), a Geographic  
4 Information System ("GIS") upgrade and a Synergee  
5 (distribution modeling software) upgrade.  
6

7 **Q.** What have the company's T&D capital expenditures been  
8 during the period 2010 through 2012?  
9

10 **A.** Capital expenditures in the company's T&D area for the  
11 three-year period of 2010 through 2012 were \$425,000,000.  
12 The expenditures represent normal recurring capital  
13 requirements to account for modest customer growth,  
14 replacement of assets, federal regulation and compliance  
15 requirements and system hardening initiatives.  
16

17 **Q.** Are T&D capital expenditures expected to increase in 2013  
18 and 2014?  
19

20 **A.** Yes. The company will continue to require investments in  
21 new T&D infrastructure necessitated by the continued  
22 customer growth described in the direct testimony of  
23 witness Cifuentes. The normal replacement of aging  
24 assets, system hardening and increased capital needed for  
25 cyber security is expected to result in a slight increase

1 to capital expenditures in 2013 and 2014. Additionally,  
2 approximately \$59,500,000 of AFUDC eligible capital  
3 associated with the Polk 2-5 conversion will occur in the  
4 2014 test year plus \$7,000,000 in 2013 resulting in  
5 \$66,500,000 of capital expenditures over the two-year  
6 period.

7  
8 **SIGNIFICANT ACTIVITIES TO MAINTAIN AND IMPROVE SERVICE**

9 **Reliability**

10 **Q.** Please provide a general overview of the company's  
11 approach to providing reliable service to its customers.

12  
13 **A.** Tampa Electric views reliability as a fundamental  
14 commitment to our customers. The company takes actions  
15 to minimize the impact of weather, including storms and  
16 lightning, damage caused by animals, and aging  
17 infrastructure. These actions reduce or eliminate the  
18 number of times a customer is out-of-service, improve how  
19 fast service is restored and reduces the number of times  
20 a customer experiences a momentary outage. There has  
21 also been an ongoing effort to improve communication to  
22 customers about outage events. To maximize the impact of  
23 each dollar spent, the company takes a long and near term  
24 view of each action in support of reliability.

25

1 Over the last five years, Tampa Electric has held its T&D  
2 O&M expenses flat while maintaining its reliability  
3 position. However, with a significant portion of  
4 infrastructure having been installed thirty to fifty  
5 years ago, the cost impact of replacing aging  
6 infrastructure is increasing and will require ongoing  
7 spending to respond.

8  
9 **Q.** Please describe the indicators the company uses to  
10 monitor reliability and how they relate to what  
11 customers experience.

12  
13 **A.** Tampa Electric reviews multiple reliability indices, but  
14 primarily monitors System Average Interruption Duration  
15 Index ("SAIDI") and Momentary Average Interruption Event  
16 Frequency Index ("MAIFIE"). SAIDI indicates the total  
17 minutes of interruption time the average customer  
18 experiences in a year. It is the most relevant and best  
19 overall reliability indicator because it encompasses two  
20 other standard performance metrics for overall  
21 reliability: the System Average Interruption Frequency  
22 Index ("SAIFI") and the Customer Average Interruption  
23 Duration Index ("CAIDI").

24  
25 MAIFIE is reflective of the overall impact of momentary

1 outages on customers and is defined as the average  
2 number of times a customer experiences a momentary  
3 interruption event. Tampa Electric annually sets  
4 reliability goals for both SAIDI and MAIFIE.

5

6 **Q.** Please describe the company's system reliability  
7 performance.

8

9 **A.** Document No. 4 of my exhibit reflects Tampa Electric's  
10 performance relative to the other investor-owned  
11 utilities ("IOUs") in Florida since 2008. Tampa  
12 Electric has consistently performed better than the  
13 average SAIDI for the IOUs. In fact, the company is  
14 second in the state when looking at the five-year  
15 average. In addition, Document No. 5 of my exhibit  
16 reflects that Tampa Electric's SAIDI performance is in  
17 the top quartile when compared to other southeastern  
18 utilities.

19

20 **Q.** Please provide an overview of the company's reliability  
21 programs.

22

23 **A.** Tampa Electric uses a systematic approach to maintain  
24 and improve reliability. It monitors and assesses the  
25 system and its equipment to anticipate potential

1 failures. Tampa Electric identifies results from the  
2 assessments that are out of the normal range and  
3 determines whether equipment maintenance is appropriate  
4 or equipment replacement is required. Lastly, Tampa  
5 Electric has systems and personnel in place to minimize  
6 the duration of outages, if they do occur.

7  
8 **Q.** Please describe what the company does to monitor and  
9 assess its T&D Energy Delivery system.

10  
11 **A.** Tampa Electric monitors the system and its equipment in  
12 real time. The control center is constantly monitoring  
13 key parameters such as voltage, loading, VAR support,  
14 equipment heating and the operating condition of  
15 equipment.

16  
17 In addition, the company uses onsite inspections and  
18 testing to provide information about the physical  
19 condition of the infrastructure. Examples of Tampa  
20 Electric's inspection and testing programs are: ground  
21 line pole inspections; aerial inspections of  
22 transmission structures; thermal imaging of transmission  
23 and substation equipment; transformer, load tap changer  
24 ("LTC"), and circuit breaker oil testing; transformer  
25 Doble testing and substation inspections. All of these

1 inspections and testing give Tampa Electric an  
2 assessment of the equipment and its health.

3  
4 **Q.** Please describe the assessments further, explain how the  
5 company uses these assessments to prevent outages, and  
6 any other actions the company takes to prevent outages.

7  
8 **A.** Targeted maintenance is conducted based on condition  
9 assessments to extend the life of critical T&D  
10 equipment. Substation assets are evaluated using a  
11 condition-based and interval-based program for targeted  
12 maintenance activities, such as circuit breaker  
13 maintenance, transformer maintenance, transformer LTC  
14 maintenance and switch maintenance. These maintenance  
15 programs extend the life of the equipment, thus avoiding  
16 outages to customers and more expensive replacements.

17  
18 Tampa Electric's Ground-line Inspection Program for its  
19 distribution, lighting, and transmission poles is based  
20 on the requirements of the National Electrical Safety  
21 Code ("NESC") and is designed to inspect 12.5 percent or  
22 one-eighth of the pole population each year. In  
23 addition, a loading analysis is completed to ensure the  
24 pole meets Tampa Electric's wind loading criteria. If  
25 the pole fails the inspection or loading analysis, it



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will be either reinforced or replaced.

Any equipment determined to be at the end of its life is replaced. Examples of these replacement programs to prevent outages include replacing transmission and distribution poles and replacing end of life circuit breakers.

Tampa Electric has taken other actions to prevent outages. Construction standards have been enhanced to improve the strength and reliability performance of the electrical system. An example is enhanced lightning arrester designs that reduce the impact of lightning strikes. Substation design standards have been improved to provide better isolation capabilities, thus reducing the time customers are out-of-service. Animal guards have been installed on substation and distribution equipment to minimize outages caused by animals.

The company is using technology to reduce momentary outages. Tampa Electric has implemented a program utilizing the protective relay on the distribution circuit and the Energy Management System (EMS) to reduce the number of momentary outages customers experience. After implementation of the program, MAIFIE results for

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2012 improved by 14 percent from 2011.

The last area of note for outage prevention is Tampa Electric's vegetation management program. A regular program of vegetation management reduces the number of momentary and sustained outages that customers experience.

**Q.** Please describe the company's approach to restoration.

**A.** Tampa Electric strives to avoid outages through the preventative measures I have described. If outages occur, Tampa Electric responds quickly to restore power. There are two key resources utilized to provide this quick response: manpower and technology. Tampa Electric's control center is manned twenty-four hours a day, seven days a week. First responders are also working the same schedule and are assigned geographic areas. Tampa Electric crews cover eighteen hours a day, seven days a week and are available to switch to restoration work if needed. This coverage ensures manpower is available to restore customers in a timely fashion.

The company also uses technology to restore customers

1 quickly. Switch position indication and remote control  
2 is available on most transmission switching devices and  
3 all substation circuit breakers for transmission and  
4 distribution. Alarms will chime for the dispatchers if  
5 any of this equipment is in an abnormal state. In  
6 addition, if there is an outage of distribution  
7 equipment that is not monitored, the Outage Management  
8 System ("OMS") will group customer outage calls and  
9 identify the potential failed equipment and create an  
10 electronic ticket for the first responder. The first  
11 responder uses this information, the electronic maps,  
12 and test equipment to determine the faulted equipment,  
13 isolate it and return customers to service. In  
14 addition, the first responder uses strategically placed  
15 strobe fault indicators on main line distribution  
16 circuits to pinpoint the faulted equipment.

17  
18 For transmission first responders, fault location is  
19 determined by a protective relay and displayed to the  
20 dispatcher. This information enables the first  
21 responder to locate the fault and isolate it. Using  
22 both technology and the appropriate level of manpower  
23 ensures that Tampa Electric restores service in a timely  
24 fashion.

25

1     **Storm Hardening Activities**

2     **Q.**    Is the company taking other actions    to strengthen and  
3            add resiliency to its T&D system?

4  
5     **A.**    Yes.        The hurricane activity of 2004 and 2005  
6            significantly impacted customers of Tampa Electric and  
7            other Florida utilities and required extraordinary  
8            efforts to restore service.    The Commission opened  
9            dockets that resulted in orders and rules requiring,  
10           among other actions, an eight-year pole inspection  
11           program and plans to address ten new storm preparedness  
12           initiatives, as well as storm hardening plans. All of  
13           these items have been addressed by Tampa Electric and  
14           have resulted in a stronger, more resilient T&D system.  
15           These initiatives have also provided benefits to the  
16           system on a day-to-day basis.

17  
18     **Pole Inspection Program**

19           Tampa Electric expects to conduct approximately 49,000  
20           distribution and 3,300 transmission pole inspections in  
21           2014. The proposed O&M budget for pole inspections is  
22           \$1.8 million in 2014. Capital replacement and upgrades  
23           associated with equipment identified through the Pole  
24           Inspection Program are budgeted at \$41 million for the  
25           same period.

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**Ten-Point Storm Preparedness Plan**

Tampa Electric's Ten-Point Storm Preparedness Plan positions the company well for major storm events as well as for day-to-day response to normal weather events. The vegetation management program has had the most significant benefit for overall system reliability. The Ten-Point Plan will cost an estimated \$10.5 million in O&M and \$564,000 in capital during the 2014 test year.

**Storm Hardening Plan**

The objective of the company's storm hardening plan is to improve system reliability and resiliency during and after extreme weather events. Projects that have been completed are: the testing and maintenance of all downtown Tampa network protectors (including the replacement of three network protectors); elimination of 4 kV distribution on Tampa Electric's system; conversion of twelve overhead distribution circuit interstate crossings to underground construction; upgrading of distribution feeding the Port of Tampa to extreme wind standards; and the upgrade of the distribution circuit feeding a Tampa hospital to extreme wind standards. Tampa Electric has not experienced a hurricane since this work has been completed, but has had some tropical

1 storm activity and the system has performed well. The  
2 total storm hardening cost projection for the test year  
3 is detailed in Document No. 6 of my exhibit.  
4

5 **Storm Preparedness**

6 **Q.** You have discussed the reliability of the T&D system and  
7 steps you have taken to improve reliability and  
8 strengthen the system. What impact do these steps have  
9 on restoration after a major storm event?

10  
11 **A.** These steps reduce the amount of damage, reduce the  
12 number of outages and reduce the overall restoration  
13 time for Tampa Electric's system for a major storm  
14 event.

15  
16 **Q.** What other steps has Tampa Electric taken to improve  
17 response for a major storm event?

18  
19 **A.** Annually, Tampa Electric meets with city and county  
20 emergency preparedness officials to review priorities  
21 for restoration of critical infrastructure facilities.  
22 In addition, Tampa Electric reviews its emergency  
23 preparedness plan. Prior to storm season, a "mock  
24 storm" exercise is held to review the roles and  
25 responsibilities of team members and to test the

1 robustness of the plan. A debriefing session is held  
2 following the exercise and action items are identified  
3 to be completed prior to storm season to improve the  
4 overall storm plan.

5  
6 In addition, Tampa Electric works with other utilities  
7 to identify best practices in storm restoration and  
8 incorporates these best practices into its plan. Tampa  
9 Electric participates on the Southeastern Electric  
10 Exchange ("SEE") Mutual Assistance committee and is also  
11 participating on the Association Edison Illuminating  
12 Company's Storm Practices subcommittee.

13  
14 **SAFETY**

15 **Q.** Please describe how safety is emphasized within ED and  
16 throughout Tampa Electric.

17  
18 **A.** Safety is a core value at Tampa Electric and is  
19 emphasized in all areas of work. It is important to  
20 incorporate safety for team members, but it also  
21 benefits customers due to reduced costs. Since 2008,  
22 the costs for ED Worker Compensation medical claims have  
23 fallen 83 percent. The Occupational Safety & Health  
24 Administration's ("OSHA") industry-standard metric of  
25 reportable injuries per 200,000 man-hours has dropped by

1 61 percent since 2008. The company's absolute number of  
2 injuries has declined by 67 percent. Tampa Electric's  
3 ED department finished number one in the third quarter  
4 of 2012 in the SEE for safety when measured against its  
5 peers. The ED department finished the year in the top  
6 quartile of the SEE peer group.

7  
8 **REGULATORY COMPLIANCE**

9 **Q.** You mentioned earlier that increased federal regulation  
10 has impacted Tampa Electric. Please describe this  
11 impact.

12  
13 **A.** FERC, NERC, and FRCC have increased reliability and  
14 compliance requirements since 2008. Some of the  
15 significant changes that have impacted Tampa Electric  
16 are the CIP standards, the increased documentation  
17 required for NERC compliance, NERC Alerts and changes to  
18 standards that cause increased work and costs related to  
19 system reliability. Specific examples include:  
20 increased ROW clearing for transmission corridors,  
21 additional evidence and justification for transmission  
22 facility ratings utilizing Light Detection and Ranging  
23 ("LIDAR") technology to measure clearances, additional  
24 protection for an AURORA (rotating equipment connecting  
25 to the grid out of synchronization) event, and upgrades



1 in system protection at some locations to account for  
2 potential system protection failures.

3  
4 **SPECIFIC STEPS TAKEN TO IMPROVE EFFICIENCY OF SERVICE**

5 **Q.** What steps has the company taken to manage its T&D  
6 related capital and O&M expenditures effectively?

7  
8 **A.** Tampa Electric's management team has taken a number of  
9 steps to ensure that a focus is placed on the right  
10 priorities, that proposed budgets are reasonable and  
11 that all expenditures are occurring in a prudent manner.  
12 The company has implemented practices to both improve  
13 the safety and the effectiveness of its workforce, and  
14 to create an environment for continuous improvement.  
15 Improvement in practices that have favorably affected  
16 performance of the business include: Implementation of  
17 Alternate Schedule Line Crews, Vegetation Management,  
18 Automated Meter Reading, Lighting Repair, Automated  
19 Vehicle Locating ("AVL"), Planned Outage Notification  
20 and Training. These initiatives are explained below.

21  
22 **Alternate Schedule Line Crews**

23 In 2010, Tampa Electric implemented a schedule that it  
24 negotiated with the union to shift the work hours that  
25 some crews work to incorporate more of the evening hours

1 and weekend hours as a normal "straight time" schedule.  
2 This has reduced overtime, reduced meals being paid per  
3 the union contract, and reduced non-productive time  
4 being paid to team members. All of these impacts have  
5 reduced O&M expenditures. In addition, these schedule  
6 changes allow the company to provide a higher level of  
7 customer service with faster responses to outages as  
8 crews are already on hand, reducing the need to call  
9 crews out.

#### 11 **Vegetation Management**

12 Tampa Electric's vegetation management program has  
13 significantly improved over the last several years.  
14 Since implementing the Storm Hardening Plan in 2006, the  
15 company's tree trimming cost per mile has steadily  
16 declined 30 percent in six years. This can be attributed  
17 to several factors: improved workforce training and  
18 abilities, optimized planning and scheduling of the work  
19 and the impact of implementing an aggressive tree trim  
20 cycle. The abilities of the tree trimming workforce have  
21 improved through ongoing training and a steady  
22 accumulation of experience. Using software to analyze  
23 tree trim costs versus reliability has resulted in  
24 optimized planning and scheduling of crew resources. The  
25 implementation of an aggressive trim cycle has resulted

1 in the successful reduction of "old growth" vegetation  
2 resulting in a much lighter trim requirement. These  
3 improvements have provided better reliability to  
4 customers while reducing costs.

5  
6 In 2012, Tampa Electric was recognized for the fourth  
7 straight year as a Tree Line USA Utility by the National  
8 Arbor Day Foundation for the company's tree-trimming  
9 efforts to maintain reliability without excessively  
10 cutting back vegetation. Tampa Electric has received  
11 this award by utilizing a holistic approach to vegetation  
12 management and implementing best practices into its  
13 operational model.

14  
15 **Automated Meter Reading**

16 In 2003, Tampa Electric initiated an AMR project, which  
17 is the application of electronic and communication  
18 technology to enable the reading of electric meters  
19 remotely. This technology has helped to increase  
20 operational efficiencies reflected in the test year by  
21 enabling drive-by meter reads instead of walking to each  
22 meter. The deployment of the AMR residential project  
23 was completed at the beginning of 2012.

24  
25 The operational benefits from AMR have been significant.

1 The cost to read a meter has been reduced from  
2 approximately fifty cents per read to thirteen cents per  
3 read. In general, the time needed to read meters  
4 declined by approximately 70 percent. AMR also lowers  
5 the quantity of estimated meter reads.

6  
7 Tampa Electric ended 2008 with fifty-eight meter readers  
8 and it is projected that only nineteen meter readers  
9 will be required at the end of 2014. Tampa Electric's  
10 displaced meter readers have been assigned to other  
11 vacant positions within the company. The company has  
12 factored in the productivity improvements gained from  
13 this initiative into its cost projections for the test  
14 year.

15  
16 **Lighting Repair**

17 The Lighting Department applied process improvement  
18 practices beginning in 2011 to improve the lighting  
19 repair process. Four specific areas were analyzed,  
20 reviewed and improved: light trouble ticket accuracy,  
21 repairman routing, lighting troubleshooting  
22 standardization, and standardized truck materials and  
23 organization. The results were 16 percent more lights  
24 repaired at a 23 percent decrease in cost per light  
25 repaired.

1     **Automatic Vehicle Location ("AVL")**

2             The AVL Fleet software was implemented in 2011. AVL  
3             provides accurate, real-time information about the  
4             location and speed of fleet vehicles. Utilization of the  
5             management reports produced by the AVL system results in  
6             operational productivity improvements and reduces Tampa  
7             Electric's exposure to potential liabilities associated  
8             with customer property damage claims and vehicle  
9             accidents. It also leads to reduced costs related to  
10            preventive maintenance and fuel.

11  
12     **Planned Outage Notification**

13            In March 2012, Tampa Electric began an automated process  
14            for planned outage notification for customers that will  
15            be affected during a planned outage-type job.  
16            Previously, a team member would fill out outage  
17            notification door hangers and go to the location in the  
18            field and physically hang the tags on all doors of  
19            customers who would be affected during the outage. Now,  
20            leveraging the technology available in our OMS and the  
21            Interactive Voice Response ("IVR") outbound dialer  
22            already in place, a request is entered in the system as a  
23            planned outage which creates a call list of the customers  
24            who will experience the outage. The call list is then  
25            staged in the IVR until the time specified for the

1 notification. At the specified time, the customers  
2 receive a phone call with the date and time frame they  
3 can expect their power to be out. Using this automated  
4 process for outage notification has eliminated time and  
5 effort for the field team member and has also improved  
6 customer satisfaction.

### 8 **Training**

9 In 1978, Tampa Electric developed a series of highly  
10 effective training programs for front line personnel.  
11 The series consists of the following programs: Lineman,  
12 Substation Electrician, Distribution Design Technician,  
13 Meter Mechanic and Light Repairman. These programs  
14 deliver a consistent standard curriculum to team members  
15 and helps to produce a highly qualified, safe and  
16 productive work force. Team members attend training at  
17 six-month intervals. After completing the required  
18 training modules, team members return to their work sites  
19 to immediately perform the tasks they have learned. This  
20 gives the team member the practice needed to reinforce  
21 and retain the skills they have mastered.

22  
23 In the past our trainers maintained over 450 three-ring  
24 manuals, and the curriculum within these manuals were  
25 constantly revised to incorporate new OSHA directives,

1 new tools, methods, materials, policies, as well as any  
2 changes to state and federal laws. Along with updates,  
3 maintaining the condition of the paper documents required  
4 ongoing labor, printer and paper costs.

5  
6 Beginning in January 2012, the Tampa Electric Skills  
7 Training Department began using iPads for this technical  
8 instruction. The estimated annual savings realized by  
9 transferring these word documents into the tablet library  
10 is over \$15,000. In addition to these recurring savings,  
11 the trainers have the ability to quickly update any  
12 document and quickly get it into the hands of the team  
13 members. The Skills Training iPad project has created  
14 tremendous efficiencies within the department and has,  
15 through the reduced use of paper, lessened Tampa  
16 Electric's environmental footprint.

17  
18 **Q.** How does ED ensure O&M is performed in a timely,  
19 efficient and effective manner, and that funds are spent  
20 appropriately?

21  
22 **A.** ED verifies the status of goal achievement through  
23 budgeting, planning and tracking systems and internal  
24 business control processes. The company monitors and  
25 measures performance through work management, system

1 planning, project scheduling and asset tracking tools in  
2 several ways. For example, key performance indicators  
3 are used to report on the performance of distribution  
4 and transmission work. Another example is the further  
5 delineation of the O&M and capital budgets through the  
6 use of an activity-based costing tool, which tracks  
7 activities for both production units and costs per unit.  
8 ED also tracks system performance for outage analysis  
9 and for input to maintenance and capital spending  
10 decisions. Additionally, the company prioritizes the  
11 numerous capital projects considered each year and  
12 utilizes Primavera software for planning and scheduling  
13 many complex capital projects. Finally, ED has  
14 implemented new financial processes and systems to  
15 prioritize, track and monitor spending against its  
16 business plans. All of these systems and processes  
17 allow ED to perform work efficiently and effectively.  
18 These activities are aimed at providing quality service  
19 to customers at the lowest long-term cost, consistent  
20 with meeting the service standards that customers want  
21 and deserve.

22  
23 **SUMMARY**

24 **Q.** Please summarize your direct testimony.  
25



1     **A.** Tampa Electric forecasts that it will invest  
2     \$215,786,000 in T&D-related capital and incur  
3     \$71,383,000 in T&D-related O&M expenses in 2014. The ED  
4     capital budget includes system expansion/upgrades of  
5     transmission, substation and distribution facilities to  
6     support customer growth, storm hardening initiatives,  
7     replacement of aging infrastructure and regulatory  
8     requirements. The 2014 O&M budget includes those  
9     activities required for maintenance of equipment and  
10    computer systems, system operations and restoration,  
11    meter services, vegetation management, inspection  
12    programs and compliance. These capital investments and  
13    O&M expenses are necessary to preserve the company's  
14    reliable electric service. ED has worked hard to keep  
15    both O&M and capital costs flat since the last rate  
16    proceeding even with the increasing impact of aging  
17    infrastructure and increased federal regulation.

18  
19    To ensure that the T&D system is reliable, Tampa  
20    Electric monitors and assesses the system, reviews  
21    assessment results to determine appropriate action to  
22    prevent outages, and has systems and personnel in place  
23    to minimize the outage time when outages may occur.  
24    Tampa Electric's five-year SAIDI average is second in  
25    the state when compared to the other IOUs and in the top

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quartile when compared to Southeastern utilities.

To efficiently and effectively manage costs, Tampa Electric's management team has implemented a number of practices to improve the safety and the effectiveness of its workforce, and generally to promote an environment for continuous improvement. These practices have favorably impacted performance in various areas of the business including workforce utilization, vegetation management, lighting repairs, training and meter reading.

Overall, Tampa Electric has been able to maintain its system reliability performance and is positioned within the first quartile of comparable peer utilities, while remaining below the Commission's O&M benchmark. This represents an appropriate balance between reasonable costs and the quality of service that customers expect.

**Q.** Does this conclude your direct testimony?

**A.** Yes, it does.

TAMPA ELECTRIC COMPANY  
DOCKET NO. 130040-EI  
WITNESS: YOUNG

EXHIBIT

OF

S. BETH YOUNG

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TAMPA ELECTRIC COMPANY  
DOCKET NO. 130040-EI  
EXHIBIT NO. \_\_\_\_\_ (SBY-1)  
WITNESS: YOUNG  
DOCUMENT NO. 1  
PAGE 1 OF 1  
FILED: 04/05/2013

**LIST OF MINIMUM FILING REQUIREMENT SCHEDULES**  
**SPONSORED OR CO-SPONSORED BY S. BETH YOUNG**

<b>MFR Schedule</b>	<b>Title</b>
B-13	Construction Work In Progress
B-15	Property Held for Future Use - 13-Month Average
C-8	Detail of Changes In Expenses
C-9	Five Year Analysis - Change In Cost
C-33	Performance Indices
C-34	Statistical Information
C-37	O&M Benchmark Comparison By Function
C-38	O&M Adjustments By Function
C-39	Benchmark Year Recoverable O&M Expenses By Function
C-41	O&M Benchmark Variance By Function
C-43	Security Costs
F-8	Assumptions

**Energy Delivery  
O&M Budget for 2014**

<b>Production</b>	<b>(\$000s)</b>
Load Dispatching	955
	<u>\$955</u>

<b>Transmission</b>	<b>(\$000s)</b>
Operation Supervision & Engineering	\$672
Load Dispatching	2,312
Station Expenses	1,125
Overhead Line Expense	515
Misc Transmission Expense	1,179
Rents	107
Maintenance of Structures	3,597
Maintenance of Station Equipment	1,460
Maintenance of Overhead Lines	2,782
	<u>\$13,749</u>

<b>Distribution</b>	
Operation Supervision & Engineering	\$438
Load Dispatching	498
Station Expense	1,118
Overhead Line Expense	5,533
Underground Line Expense	523
Street Lighting & Signal System Expense	310
Meter Expense	2,877
Customer Installation Expense	585
Misc Distribution Expense	10,330
Rents	503
Maintenance of Structures	377
Maintenance of Station Equipment	1,232
Maintenance of Overhead Lines	19,790
Maintenance of Underground Lines	3,741
Maintenance of Line Transformers	347
Maintenance of Street Lighting & Signal Systems	2,150
Maintenance of Meters	932
	<u>\$51,284</u>

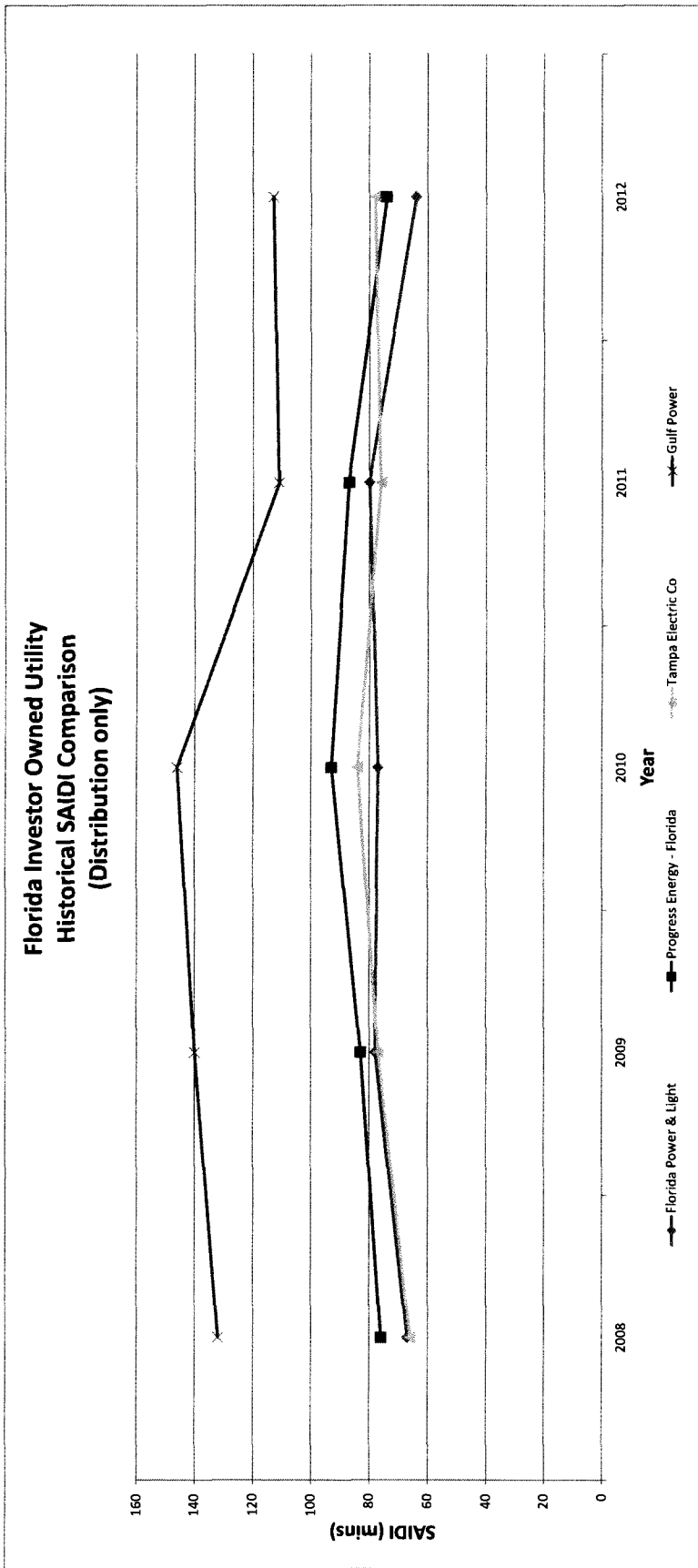
<b>Customer Service</b>	
Meter Reading	\$2,685
Customer Records & Collection	2,312
Maintenance & General Plant	398
<b>Total</b>	<u>\$5,395</u>

<b>Grand Total</b>	<u>\$71,383</u>
--------------------	-----------------

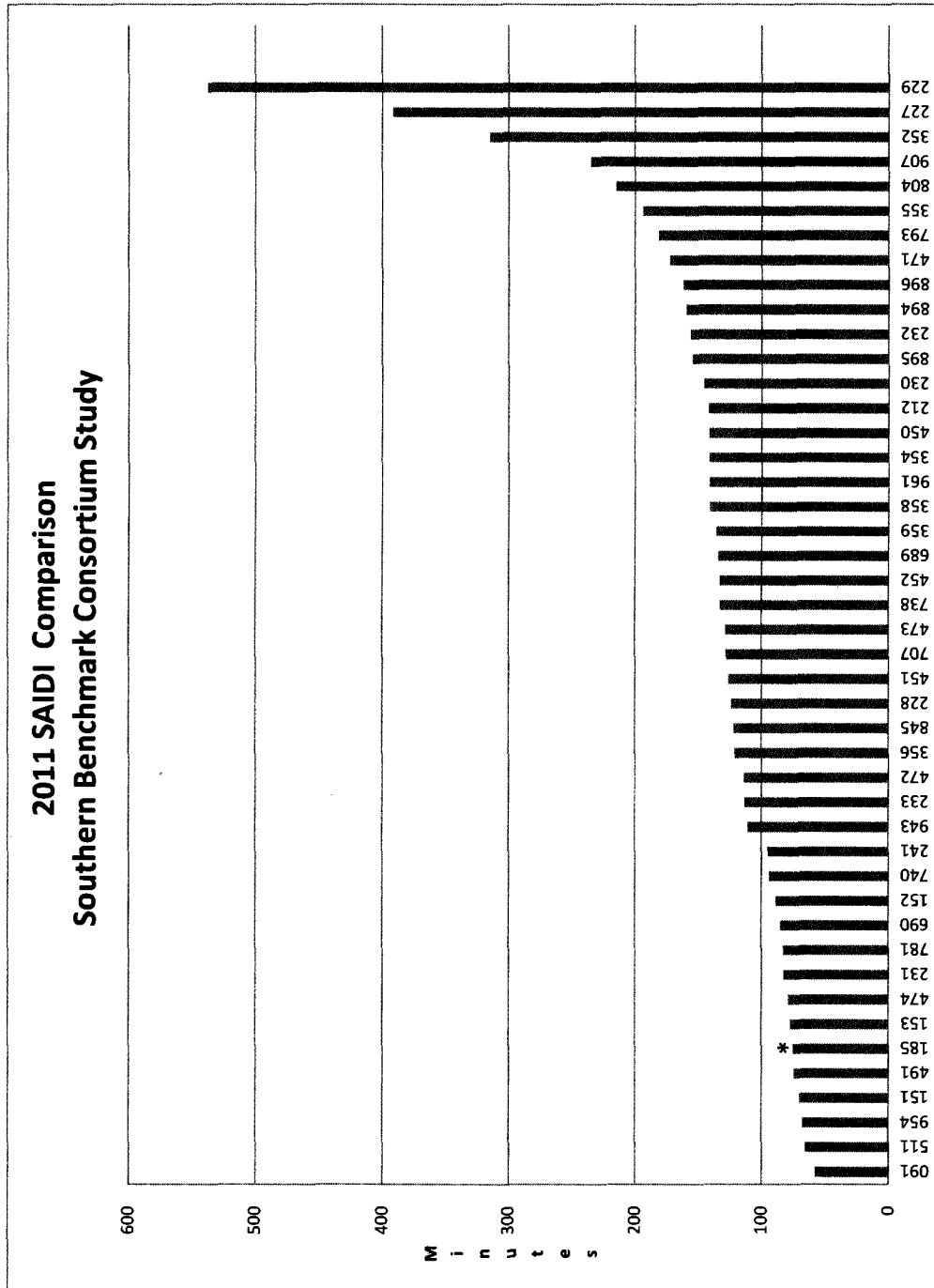
**Transmission and Distribution  
Capital Investment for 2014  
(\$000)**

---

Distribution	\$97,201
Transmission	22,146
Substation	18,776
Meter	4,196
Lighting	6,841
Property held for future use	1,750
Non-Construction (Primarily Technology)	5,741
Tools/Equipment/Structures/Vehicle Purchases	2,059
Equipment/Vehicle Salvage	-2,415
<b>Total Recurring Capital</b>	<b>\$156,294</b>
Non-Recurring Capital:	
Polk CC Project	\$59,492
<b>Total Delivery Capital</b>	<b>\$215,786</b>







\* Note: Tampa Electric is represented as utility number 185 on this chart.

**Storm Hardening Activity  
2014 Projections  
(\$000s)**

<b>Storm Hardening Initiatives</b>	<b>O&amp;M</b>	<b>Capital</b>	<b>Total</b>
<b>1) Vegetation Management - Distribution Circuits:</b>			
Planned	\$8,262		
Unplanned	693		
<b>Vegetation Management Subtotal</b>	<b>\$8,955</b>		<b>\$8,955</b>
<b>2) Transmission Structure Inspection Program</b>			
Transmission Line O&M	\$497		
Transmission Line Capital		\$564	
Transmission Substation	653		
<b>3) Other 10-Point Plan Activities</b>			
Ten-Point Storm Preparedness Plan Subtotal (items 1-3)	357		
	<b>\$10,462</b>	<b>\$564</b>	<b>\$11,026</b>
<b>4) Pole Inspection &amp; Change-Out Program:</b>			
T&D Pole Inspections	\$1,728		
Distribution Pole Change-Outs		\$29,866	
Distribution Pole Reinforcements		128	
Transmission Pole Change-Outs		10,840	
Comprehensive Loading Analysis	100		
Change-Outs due to TEC Loading		154	
<b>Pole Inspection Program Subtotal</b>	<b>\$1,828</b>	<b>\$40,988</b>	<b>\$42,816</b>
<b>Total</b>	<b>\$12,290</b>	<b>\$41,552</b>	<b>\$53,842</b>