State of Florida

Public Service Commission

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-M-E-M-O-R-A-N-D-U-M-

DATE: June 7, 2012

TO: Office of Commission Clerk (Cole)

FROM: Division of Economic Regulation (Draper)
Office of the General Counsel (Barrera)

RE: Docket No. 110293-EI – Petition for approval of revised underground residential distribution tariffs, by Progress Energy Florida, Inc.

AGENDA: 06/19/12 – Regular Agenda – Tariff Filing – Interested Persons May Participate

COMMISSIONERS ASSIGNED: All Commissioners

PREHEARING OFFICER: Administrative

CRITICAL DATES: 8-Month Effective Date Waived by Company

SPECIAL INSTRUCTIONS: None

FILE NAME AND LOCATION: S:\PSC\ECR\WP\110293.RCM.DOC

Case Background

Rule 25-6.078, Florida Administrative Code (F.A.C.), defines investor-owned utilities' (IOU) responsibilities for filing updated underground residential distribution (URD) tariffs. The URD tariffs provide standard charges for underground service in new residential subdivisions and represent the additional costs the utility incurs to provide underground service in place of overhead service. Rule 25-6.078, F.A.C., requires IOUs to file updated URD charges for Commission approval at least every three years, or sooner if a utility's underground cost differential for the standard low-density subdivision varies from the last approved charge by 10 percent or more.

Progress Energy Florida's, Inc. (PEF) current URD charges were approved in Order No. PSC-09-0650-TRF-EI.[1] On October 14, 2011, PEF filed a petition for Commission approval of revision to its URD Tariff Sheet Nos. 4.113, 4.114, 4.115, and 4.122, and their associated charges. The Commission suspended PEF's proposed tariffs in Order No. PSC-11-0588-PCO-EI. On March 7 and May 16, 2012, PEF provided responses to staff's data requests. On May 2, 2012, PEF waived the eight month statutory time frame for the Commission to make a decision in this docket with the understanding that staff would complete its analysis to file a recommendation for the June 19, 2012 Agenda Conference.

The Commission has jurisdiction over this matter pursuant to Sections 366.03, 366.04, 366.05, and 366.06, Florida Statutes.

[1] Order No. PSC-09-0650-TRF-EI, issued September 25, 2009, in Docket No. 080719-EI, In re: Petition to modify Tariff Sheet Nos. 4.113 and 4.122 regarding conversion of and construction of underground residential facilities by Progress Energy Florida, Inc.

Discussion of Issues

Issue 1: Should the Commission approve PEF's proposed underground residential distribution (URD) tariffs and associated charges?

Recommendation: Yes, the proposed URD tariffs and associated charges should be approved. (Draper)

Staff Analysis: The URD charges represent the additional costs PEF incurs to provide underground distribution facilities in place of overhead facilities, and are calculated as differentials between the cost of underground and overhead facilities. The cost of standard overhead construction is recovered through base rates from all ratepayers. In lieu of overhead construction, customers have the option of requesting underground facilities. Costs for underground construction have historically been higher than for standard overhead construction and the additional cost is paid by the customer as a contribution-in-aid-of-construction (CIAC). Typically the URD customer is the developer of the subdivision. The URD tariffs provide standard charges for certain types of underground service, and apply to new residential developments such as subdivisions and townhouses.

PEF developed URD charges based on three standard model subdivisions: (1) a 210-lot low density subdivision with a density of one or more, but less than six, dwelling units per acre; (2) a 176-lot high density subdivision with a density of six or more dwelling units per acre; and (3) a 176-lot high density subdivision with a density of six or more dwelling units per acre taking service at grouped meter pedestals. Examples of this last subdivision type include mobile home and recreational vehicle parks. While actual construction may differ from the model subdivisions, the model subdivisions are designed to reflect average overhead and underground subdivisions.

The following table shows PEF's currently approved and proposed URD differentials. The charges shown are per-lot charges.

Table 1

	Current URD differential per lot	Proposed URD differential per lot
210-lot low density	$646	$791[2]
176-lot high density	$528	$524
176-lot ganged meters	$306	$241

The calculation of PEF's proposed URD charges includes the following three components: (1) Design changes; (2) Updated labor and material costs; and (3) Calculation of operational costs. Each of the components impact the proposed URD charges. For the low

[2] $791 is calculated as follows: $512 (Table 2) + $279 (Table 3) = $791.

density subdivision, PEF proposed a revised underground design which requires less primary underground cable, resulting in a decrease in the differential in material costs, however, the operational cost differential increased, resulting in an overall increase in the URD charge. For the high density and ganged subdivisions, the differential in material costs increased mainly as a result of increases in underground primary and secondary cable costs, however, the increase in underground material costs is offset by decreases in the operational costs, resulting in an overall decrease in the URD charges. The three components are discussed in more detail below.

Design Changes

The URD differential is developed by estimating the cost difference between building an underground system and an equivalent overhead system based on the utility's standard engineering and design practices. PEF explained that as part of this URD filing process, PEF reviewed its current construction practices for each of the three theoretical subdivisions to determine if they still meet current National Electric Safety Code (NESC) and PEF's construction design standards. As a result of this review, PEF stated that the underground design for the low and high density subdivisions was redesigned using PEF's automated design tools to help reduce costs by increasing efficiency and utilization of facilities. PEF's methodology also optimizes for line losses, flicker, and voltage sag. The changes for each subdivision design are discussed below.

Low density underground design

The main design change PEF proposed in the low density underground design is a reduction in the number of primary loops from three loops to two loops. PEF stated that the primary cable was underutilized, and therefore three primary loops are not necessary. This design change reduces the length of primary cable used in the design from 17,989 to 13,762 feet. PEF explained that with the addition of one transformer and additional loading on the remaining two primary cables, PEF will be able to maintain reliability while reducing material costs.

PEF also reduced the length of 350 secondary cable used from 8,094 feet to 2,354 feet, while increasing the length of 2/0 and 4/0 secondary cable. The 350 cable is larger and more expensive than the 2/0 or 4/0 cables, thus, using less of the 350 cable reduces material costs. Finally PEF added one transformer to the design, increasing the number of transformers from 22 to 23, and adjusted transformer positions. All the changes resulted in a low density underground design with fewer materials required, resulting in lower material costs.

Low density overhead design

PEF only proposed minor changes to low density overhead design to meet current design specifications. Specifically, PEF made adjustments in wire sizing and length, and increased the length of the overhead service drop from 40 feet to 80 feet. PEF states that this is more reflective of the length of an overhead service drop in a low density subdivision.

High density underground and overhead design

Rule 25-6.0342(1), F.A.C., requires that electric distribution facilities be placed adjacent to a public road, normally in front of the customer's premises. PEF's existing overhead and underground design utilizes back lot construction which pursuant to Rule 25-6.0342(1), F.A.C., is no longer standard PEF construction. This redesign resulted in a larger increase in the cost and usage of underground primary and secondary cable as compared to the equivalent overhead design. To illustrate, under the underground back lot design, PEF is able to feed four homes from one pedestal. Under the front lot design, PEF will only be able to feed two homes from each pedestal, thus, requiring more secondary cable.

Ganged Meter underground and overhead design

The design for this subdivision remains unchanged, however, due to an error, the 2008 URD filing did not include the trenching for the underground service cable. The additional trenching labor costs increase the differential.

Updated labor and material costs

The installation costs of both underground and overhead facilities include the material and labor costs to provide primary, secondary, and service distribution lines, and transformers. The cost to provide overhead service also includes poles. The cost to provide underground service includes the cost of trenching and backfilling. The utilities are required to use current cost data. The existing URD charges are based on 2007 labor and material costs, and the proposed charges are based on 2011 costs.

Table 2 shows current and proposed per lot overhead and underground labor and material costs for the three subdivisions. Staff notes that the changes in material and labor costs need to be considered in conjunction with the design changes discussed above, as the design changes resulted in variances in the amount of certain materials used between the 2008 URD filing and the current filing, thus impacting total costs.

Table 2 - Total Material and Labor Costs per Lot

Low Density/Lot	Current	Proposed	Difference
Total underground costs	$1,291	$1,475	$184
Total overhead costs	$774	$963	$189
Difference	$517	$512	**($5)**

High Density/Lot	Current	Proposed	Difference
Total underground costs	$915	$1,170	$255
Total overhead costs	$551	$750	$199
Difference	$364	$420	**$56**

Ganged meter/Lot	Current	Proposed	Difference
Total underground costs	$556	$664	$108
Total overhead costs	$437	$512	$75
Difference	$119	$152	**$33**

As can be seen in Table 2 above, the differential for the low density subdivision material and labor costs decreased slightly ($5), while for the high density and ganger meter subdivision, the differential increased by $56 and $33 respectively. The changes in labor and material costs are discussed below.

Labor

Total labor costs for both overhead and underground construction increased by approximately the same percentage (2.5-3.5 percent), and therefore did not materially impact the differential. PEF labor rates are based upon actual labor costs negotiated in bargaining unit contracts. Contracts are negotiated typically every 2 to 3 years. PEF's union labor contract that expired in December 2011 was extended for 12 months. To obtain contractors, PEF uses a competitive bidding process and contracts are typically negotiated annually. PEF explained that the selection decision is based upon pricing, availability, efficiency, and quality of work. Underground contractors are used to install PEF-supplied underground cable and related secondary pedestals. This work accounts for an average 35 to 40 percent of the labor on an underground job.

Staff notes that PEF increased the time for installing overhead poles. Pole setting now includes an additional safety briefing and review of work order requirements on site prior to beginning work. The additional time for pole setting increases the labor costs associated with poles.

Materials

Increased underground primary and secondary cable costs are the major drivers in the higher labor and material differentials seen in Table 2 in the high density and ganged meter subdivisions. As discussed under design changes, the low density underground subdivision was redesigned with a reduced amount of primary cable, which held the differential stable despite the increase in underground primary cable cost. Each of the cost changes in the major materials is discussed below

Primary Cable The price for underground primary cable has increased substantially whereas much of the equivalent overhead aluminum wire cost has remained flat, thus increasing the differential. Specifically, the per foot cost of 1/0 aluminum primary underground cable increased from $1.17 in 2008 to $1.90 in 2011, while the 1/0 aluminum overhead primary cable remained at $0.21 per foot. The underground primary cable uses copper for the neutral while the overhead primary cable is all aluminum. PEF explained that copper has continued to be a volatile commodity and the marked demand for copper increased due to the change in transformer efficiencies mandated by the United States Department of Energy (USDOE).

Secondary Cable The price for underground secondary cables increased more than overhead secondary cable, increasing the differential. PEF uses three different secondary underground cables, and their per foot price increases are as follows between 2008 and 2011: (1) 350 wire: $2 to $2.50; (2) 4/0 wire: $1.27 to $1.45; and (3) 2/0 wire: $0.81 to $1.31. Overhead secondary cables, on the other hand, only saw minimal price increases.

Transformers The cost for both overhead and underground transformers increased substantially. However, the increase in transformer costs affected both overhead and underground, resulting in a small impact on the differential. The USDOE phased in new transformer efficiency standards effective after January 1, 2010. The new, more efficient transformers use more copper, and thus have increased needs for high price raw materials such as copper and core steel.

Poles The overhead subdivision designs incorporate four different distribution size poles, and their material cost increased by approximately 20 percent. However, factoring in the increase in labor associated with installing the poles, total pole costs increased by 37 percent to 62 percent, depending on the pole size. This increase in pole costs decreases the differential.

Indirect Costs PEF recently installed a new software system to calculate distribution costs, and certain changes were made to the calculation of indirect cost or loadings. This does not change total indirect costs, but changes how indirect costs are applied to materials and labor. Previous PEF URD filings included two adders to account for indirect cost: stores handling and engineering. PEF now identifies the costs in four separate categories: stores handling, engineering, supervision, and fleet.

The stores handling adder, which represents the cost of managing inventory, remains 8.34 percent of material costs. The previous engineering adder was 20 percent and was applied to material and labor. PEF is now separating out management and supervision costs from engineering costs. The new loading rate for engineering is 7.23 percent of labor and material costs, and the loading rate for supervision is 23.12 percent of labor costs. Finally, the fleet loading rate is 17.26 percent of labor costs and represents the cost of receiving and moving material from the central warehouse to the local operation centers. It also includes vehicles, gas, drivers, and maintenance for the vehicles. These costs were previously part of the labor rate and not identified separately.

Operational Costs

Subsection (4) of Rule 25-6.078, F.A.C., prescribes that the differences in Net Present Value (NPV) of operational costs, including average historical storm restoration costs over the life of the facilities, between underground and overhead systems, be included in the URD charge. The inclusion of the operational cost is intended to capture longer term costs and benefits of undergrounding. Operational costs include operations and maintenance (O&M) costs and capital costs. Table 3 shows the per lot differential for the existing and the proposed NPV of operational and storm restoration costs.

Table 3 - NPV of Operational Costs (per lot differential)

Low Density	Current	Proposed	Difference
Operational cost (excl. storm)	$268	$332	$64
Storm	-$137	-$53	$84
Total Operational Cost	$131	$279	**$148**

High Density	Current	Proposed	Difference
Operational cost (excl. storm)	$232	$136	-$96
Storm	-$67	-$33	$34
Total Operational Cost	$165	$104	**-$61**

Ganged meter	Current	Proposed	Difference
Operational cost (excl. storm)	$251	$113	-$138
Storm	-$64	-$24	$40
Total Operational Cost	$187	$89	**-$98**

Overall, both overhead and underground distribution operational costs are down for the 5-year period 2006-2010, as compared to the 5-year period 2002-2006, which was used to calculate the 2008 URD charges. However, underground costs decreased more significantly than overhead costs, due to a reduction in the amount spent on work activity for underground outage restoration and repair, resulting in an overall decrease in the operational differential for the high density and ganged meter subdivisions as seen above in Table 3.

PEF's methodology for calculating the NPV of operational cost has been approved in Order No. PSC-09-0650-TRF-EI. PEF has used the same methodology, with the exception of using circuit miles instead of miles per line to calculate the per-lot operational differential. That change impacts mainly the low density subdivision resulting in an increase in the operational cost differential and is discussed below, in the per lot NPV differentials section of the recommendation.

Calculation of non-storm operational difference

PEF used its actual, historical capital and O&M expenses for the period 2006 through 2010 to calculate the non-storm operational difference for underground and overhead facilities. PEF's analysis of its historical operational costs shows that the underground facilities are more expensive to operate and maintain than the equivalent overhead facilities. The materials for underground repairs are more expensive than their overhead counterparts and the repair of underground equipment is a more lengthy process than overhead.

In order to calculate operational costs per circuit mile, i.e., unit costs, PEF divided the annual total operational costs for underground and overhead facilities by the number of miles of underground and overhead distribution lines in PEF's service territory. PEF then calculated a 5-year average of the underground and overhead operational costs per circuit mile for the years

2006 through 2010. The resulting 5-year average operational costs per circuit mile for overhead is $3,262, and $3,936 for underground.

To calculate the NPV of the overhead and underground operational unit costs, PEF escalated the unit costs out over 34 years to adjust for inflation. The 34 years represent the average service life from PEF's 2009 depreciation study. The escalated values are then discounted back to arrive at the NPV for overhead operational costs per circuit mile of $57,862, and $69,817 for underground, resulting in a NPV differential of $11,955 per circuit mile. In the 2008 URD filing the NPV differential was $20,826 per circuit mile.

PEF's analysis assumed a 6.82 percent discount rate for the calculation of the NPV. This after-tax weighted average cost of capital (WACC) is based on a capital structure consisting of 53 percent equity at a cost rate of 10.50 percent and 47 percent debt at a cost rate of 4.24 percent.

Per lot NPV differentials

The next step is to apply the operational unit cost to the three subdivisions, which vary in circuit miles and number of lots. The circuit miles for each subdivision are determined by the subdivision drawings and are multiplied by the NPV unit costs.

PEF proposed to change the derivation of "circuit miles" for each subdivision design. In the 2008 URD filing, circuit miles were referred to as "miles of line" and were taken directly from the subdivision designs and all wire was included, even if the lines were running in parallel. For instance, an overhead 3-phase line may include two primary lines, and one neutral line. In the 2008 URD filing, PEF added the length of all three lines. However, in PEF's determination of circuit miles, the overhead 3-phase line counts as only one line. PEF's circuit miles thus are comprised of the total distance between poles, regardless of the number of wires on the poles. In underground design, two primary lines may occupy the same trench. In the 2008 URD filing, PEF counted both lines. In this filing, PEF proposes to no longer includes duplicate facilities occupying the same space, and only includes trench miles.

This change from the use of miles of lines to circuit miles has the biggest impact on the low density subdivision, increasing its operational differential as shown in Table 3. For the high density and ganged subdivisions, the change from miles of lines to circuit miles had a similar impact on overhead and underground, and thus did not impact the differential significantly. However, for the low density subdivision, the change from miles of line to circuit miles was much greater in the overhead design than in the underground design, resulting in an increase in the differential.

PEF explained that PEF uses circuit miles for budgeting tree trimming, or maintenance work on lines. Furthermore, the NPV analysis uses circuit miles to arrive at the operational unit cost, and thus it is appropriate to also use circuit miles to calculate the operational differential for the subdivisions. Staff notes that Rule 25-6.078, F.A.C., was modified in 2007 to include the NPV of operational costs for the first time. It was expected that utilities would continue to modify and improve the calculation as they gained more experience with the concept. Staff also notes the Florida Power & Light Company has been using pole line miles for overhead and trench miles for underground in its URD filings.

Calculation of storm restoration costs

The inclusion of the storm restoration costs in the URD differential lowers the differential, since an underground distribution system incurs less damage than an overhead system as a result of a storm, and thus less restoration costs when compared to an overhead system. In Docket No. 090079-EI, PEF's most recent rate case, PEF calculated an expected annual storm damage cost of $20.2 million. Based on actual experience for the 2004 and 2005 storm seasons, PEF allocated 80 percent of the $20.2 million to distribution. Since residential subdivisions, which are at issue in this docket, are served by distribution lines only, it is appropriate to only consider storm damage costs associated with distribution lines.

To isolate the impact of the storm restoration costs, PEF performed a NPV analysis as described above with and without the storm restoration costs.

Conclusion

Staff has reviewed PEF's proposed URD charges and believes they are reasonable and should be approved.

Issue 2: Should this docket be closed?

Recommendation: Yes. If Issue 1 is approved, this tariff should become effective on June 19, 2012. If a protest is filed within 21 days of the issuance of the order, this tariff should remain in effect, with any revenues held subject to refund, pending resolution of the protest. If no timely protest is filed, this docket should be closed upon the issuance of a consummating order. (Barrera)

Staff Analysis: If Issue 1 is approved, this tariff should become effective on June 19, 2012. If a protest is filed within 21 days of the issuance of the order, this tariff should remain in effect, with any revenues held subject to refund, pending resolution of the protest. If no timely protest is filed, this docket should be closed upon the issuance of a consummating order.