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September 30, 2021

VIA: ELECTRONIC FILING

Mr. Adam J. Teitzman
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Petition of Tampa Electric Company for Approval of Revised Underground Residential Distribution Tariff
Dkt.: 20210064-EI

Dear Mr. Teitzman:

Attached for filing in the above docket is Tampa Electric Company's Response to Staff's First Supplemental Data Request (Nos. 1-3), propounded on September 23, 2021.

Thank you for your assistance in connection with this matter.

Sincerely,

Malcolm N. Means

MNM/bmp
Attachment

cc: All Parties of Record (w/attachment)
Holly Forrest, FPSC (w/attachment)

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing responses of Tampa Electric Company's to Staff's First Supplemental Data Request (Nos. 1-3), have been furnished by electronic mail on this 30th day of September 2021 to the following:

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TAMPA ELECTRIC COMPANY
DOCKET NO. 20210064-EI
STAFF'S FIRST SUPPLEMENTAL
DATA REQUEST
REQUEST NO. 1
BATES PAGES: 1-3
FILED: SEPTEMBER 30, 2021

1. Referring to TECO's supplemental response No. 1 to staff's first data request, please respond to the following questions:

a. Discuss in detail why TECO believes that a new residential subdivision may eventually qualify for conversion under TECO's Storm Protection Plan (SPP) Distribution Lateral Underground Program approved in Order No. PSC-2020-0293-AS-EI, especially given the fact that this is a new subdivision whose overhead distribution lines would be new and storm-hardened.

b. Please state the average age of the laterals that have qualified as an SPP Distribution Lateral Underground Project to date.

c. How many years of historical performance does TECO need to include overhead facilities as an SPP Distribution Lateral Underground Project.

A. a. In explaining why the company believes that new residential subdivisions may eventually qualify for conversion under the SPP, it is important to understand that not all new overhead distribution lines are necessarily "storm hardened." There is a distinction between the company's new construction standards and the company's Distribution Overhead Feeder Hardening Program. It is also important to consider the limitations of the new construction standards. Finally, a brief explanation of how company assets are evaluated for potential "hardening" under the Storm Protection Plan (SPP) will show how even relatively new assets could be selected for underground conversion.

New Construction Standards

For new, large subdivisions, Tampa Electric normally must construct a main feeder, or a 13.2 kV three-phase distribution line, that runs through the subdivision. Feeders can be installed overhead or underground. All new overhead main feeder lines are constructed above the NESC minimum requirement of Grade C, specifically to NESC Grade B and the applicable NESC Extreme Wind Loading criteria for the company's service area.

The company also constructs 7.6 kV single-phase laterals that receive power from the main feeder and distribute power throughout the subdivision to the homes (per lot). All new overhead laterals are also constructed to NESC Grade B criteria.

Storm Protection Plan Programs

Even overhead facilities that are constructed to these higher standards can be damaged in severe or extreme weather. The main cause of overhead constructed equipment failure during extreme weather is not the wind speed itself. Rather, the main cause is the wind-blown vegetation or debris that strikes the poles and conductor at high rates of speed, which causes the overhead system to fail. Thus, while building overhead lines to a higher standard does provide some resilience benefit, it does not ultimately solve this wind-blown vegetation or debris issue.

To increase the resiliency of Tampa Electric's distribution system, Tampa Electric's Commission-approved SPP includes three programs which address outages caused by wind-blown vegetation and debris. First, the company's SPP includes a Distribution Overhead Feeder Hardening Program, which focuses on hardening existing overhead feeder equipment to NESC Grade B with the NESC Extreme Wind Loading criteria applied. The Program also includes the addition of sectionalizing and automation features to feeder circuits. Second, the SPP includes a Distribution Lateral Undergrounding Program, which targets existing overhead constructed laterals for conversion to underground. Third, the SPP contains vegetation management activities designed to mitigate or avoid vegetation-related outages.

SPP Prioritization Methodology

Tampa Electric's consultant 1898 & Co. developed a prioritization model that includes a database of all system assets drawn from the company's GIS and OMS systems.[1] The model incorporates numerous data points for each asset, including but not limited to: location; outage data by cause code over the last 10 years; customer type and count served by the asset; tree canopy data; wood pole inspection data (including age and condition); the cost to underground the asset; and the applicable NESC wind zone. The model has a Storm Impact Module that includes 150 years of historical storm data, or 99 different storm types. The model uses the asset data described above and the Storm Impact Module to calculate an asset's likelihood of failure, estimated outage time, and cost to restore the asset for each of the 99 storm types. The model then performs the same calculations

[1] For a full explanation of the model, please see the company's SPP, available at http://www.psc.state.fl.us/library/filings/2020/01885-2020/01885-2020.pdf.

likelihood of failure, outage time, and cost to restore – for the asset for all 99 storm types but assumes that the asset has been "hardened."[2] The delta between the two calculations is the estimated benefit the project. Potential projects are then prioritized based on their cost-benefit ratios.

Summary

To summarize: (1) even new overhead laterals constructed to the hardened NESC Grade B standard may fail in extreme weather; (2) all assets on the company's system are included in the prioritization model; (3) asset age is only one factor in the prioritization; and (4) any outages due to wind-blown debris impacting the new overhead lines will be captured in the data inputs to the model. Consequently, even recently-constructed overhead laterals built to the higher standard could be prioritized for underground conversion. Even newly built overhead served subdivisions may suffer catastrophic damage from violent storms that kick up vegetation and debris which is thrown against the overhead construction serving the homes within. Repairs to such overhead systems take significant time to complete in the aftermath of such storms, and conversion in future years is also time consuming, expensive, and disruptive to the homeowners compared to undergrounding at the time of initial installation.

b. The average age of converted laterals is difficult to determine because the metric is not static. Each lateral is comprised of hundreds to thousands of individual components, and these components are replaced over time due to equipment failure, vegetation impacts, construction standard changes, upgrades, road widenings, customer growth, or proactive replacement.

c. As explained in the response to Data Request 1.a above, all assets included in the company's GIS and OMS systems are included in the model. Historical outage data is only one of several inputs to the prioritization model.

[2] "Hardened" could mean undergrounded in the case of a lateral, replacement of a wood transmission pole with steel, etc.

2. Please explain how the company derived the $1.2 million dollar conversion cost per mile.

A. The $1.2 million per mile conversion cost represents the company's current expected costs based on experience with underground conversions to date.

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STAFF'S FIRST SUPPLEMENTAL
DATA REQUEST
REQUEST NO. 3
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3. Referring to TECO's supplemental response No. 1 to staff's first data request, please answer the following questions about the charts titled "Low Density Scenario-Initial OH Construction and Conversion to UG" and "High Density Scenario-Initial OH Construction and Conversion to UG."

a. Please explain how the company derived the number $204,639 for cost of Initial OH construction for high density. In the response, please explain why this number differs from the numbers in the petition (i.e., 1,1216.65 x 176 lots = $ 214,130.40).

b. Please explain how the company derived the number $326,581for cost of Initial OH construction for low density. In the response, please explain why this number differs from the numbers in the petition (i.e., 1,428.53 x 210 lots = $299,991.30).

c. Please explain how the company derived the number $318,485 for cost of Initial UG construction for high density. In the response, please explain why this number differs from the petition (i.e., 1,881.43 x 176 lots = $331.131.68).

d. Please explain how the company derived the number $519,383 for Initial UG construction for low density. In the response, please explain why this number differs from the petition (i.e., 2,441.11 x 210 lots = $512,633.10).

A. a. The company calculated the $204,639 figure using current costs. The following comparison utilizes the costs filed in March of 2021:

High Density Scenario – Initial OH Construction and Conversion to UG	
Cost of Initial OH Construction	$214,130.40
Cost to Convert OH to UG	$1,404,00 (1.17mi x $1.2M)
Total	$1,618,130.40
Initial UG Construction	$331,131.68
Incremental Cost to Convert	$1,286,998.72

b. The company calculated the $326,581 figure using current costs. The following comparison utilizes the costs filed in March of 2021:

Low Density Scenario – Initial OH Construction and Conversion to UG	
Cost of Initial OH Construction	$299,991.30
Cost to Convert OH to UG	$2,304,000 (1.92mi x $1.2M)
Total	$2,603,991.30
Initial UG Construction	$512,663.10
Incremental Cost to Convert	$2,091,329.20

c. The company calculated the $318,485 figure using current costs. See the table provided in response to Request No. 3.a, above.

d. The company calculated the $519,383 figure using current costs. See the table provided in response to Request No. 3.b, above.