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July 6, 2020

VIA ELECTRONIC FILING

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

Re: Review of 2020 Ten-Year Site Plans - Supplemental Data Request #4 (Nos. 1-2)
Undocketed 20200000-OT

Dear Mr. Teitzman:

Pursuant to an email from Douglas Wright to Tampa Electric Company dated June 19, 2020, enclosed for filing are Tampa Electric Company's responses to Staff's Fourth Supplemental Data Request (Nos. 1-2) regarding the company's 2020 Ten-Year Site Plan filed with the Commission on April 1, 2020.

Thank you for your assistance in connection with this matter.

Sincerely,



James D. Beasley

JDB/bmp
Enclosures

cc: Douglas Wright (w/encl.)
Donald Phillips (w/encl.)
Damian Kistner (w/encl.)

**TAMPA ELECTRIC COMPANY
UNDOCKETED: REVIEW OF TYSP'S
FOURTH SUPPLEMENTAL DATA REQUEST
REQUEST NO. 1
PAGE 1 OF 2
FILED: JULY 06, 2020**

1. Please refer to Schedule 8.1 of TECO's 2020 TYSP.
 - a. Please explain if TECO's 7 percent supply-side reserve margin was the driving factor for any of the resource additions listed in Schedule 8.1.
 - b. Please explain the driving factors behind TECO's plan to add several Reciprocating Engines and Battery Storage units to its system over the period 2020-2029.
 - c. For each of the planned solar additions, please provide the summer and winter capacities TECO uses for reserve margin planning purposes.

- A.
 - a. The 7 percent supply-side reserve margin was not the driving factor in any of the resource additions listed in Schedule 8.1.
 - b. There are many driving factors behind our plan to add several reciprocating engines and battery storage units to our system. Advancements in this technology, as well as decreasing costs have made reciprocating engines and battery storage viable options. Both resources provide system resiliency and allow for quick, precise and reliable reserve margin satisfaction. Additionally, battery storage can be used to take advantage of low cost solar and off-peak energy. Lastly, reciprocating engines and battery storage can be sized to fill small needs in reserve margin more precisely and provide operational flexibility and environmental and reliability benefits for customers.

**TAMPA ELECTRIC COMPANY
UNDOCKETED: REVIEW OF TYSP'S
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- c. Below are the summer and winter solar capacities for the planned solar additions we use for reserve margin planning purposes as of December 31, 2019.

| Total Additional Solar | | |
|-------------------------------|------------------------|------------------------|
| | Winter (MW) | Summer (MW) |
| 2020 | - | 81 |
| 2021 | - | 115 |
| 2022 | - | 199 |
| 2023 | - | 324 |
| 2024 | - | 448 |
| 2025 | - | 447 |
| 2026 | - | 445 |
| 2027 | - | 444 |
| 2028 | - | 442 |
| 2029 | - | 441 |

*Values represent firm solar capacity at time of peak.

**TAMPA ELECTRIC COMPANY
UNDOCKETED: REVIEW OF TYSP'S
FOURTH SUPPLEMENTAL DATA REQUEST
REQUEST NO. 2
PAGE 1 OF 8
FILED: JULY 06, 2020**

- 2.** Please refer to pages 9 and 13-18 of Schedule 9 of TECO's 2020 TYSP. Please provide updated schedules that replace all values marked "TBD" with those values used by TECO in their most recent planning process.

- A.** Please see the following pages for the updated schedules.

**Schedule 9
 (Page 9 of 18)**

Status Report and Specifications of Proposed Generating Facilities

| | | |
|------|---|-----------------|
| (1) | Plant Name and Unit Number | Battery Storage |
| (2) | Net Capability | |
| | A. Summer | 30 MW |
| | B. Winter | 30 MW |
| (3) | Technology Type | Battery |
| (4) | Anticipated Construction Timing | |
| | A. Field Construction Start Date | December 2020 |
| | B. Commercial In-Service Date | December 2021 |
| (5) | Fuel | |
| | A. Primary Fuel | N/A |
| | B. Alternate Fuel | N/A |
| (6) | Air Pollution Control Strategy | N/A |
| (7) | Cooling Method | N/A |
| (8) | Total Site Area | Undetermined |
| (9) | Construction Status | Proposed |
| (10) | Certification Status | N/A |
| (11) | Status with Federal Agencies | N/A |
| (12) | Projected Unit Performance Data | |
| | Planned Outage Factor (POF) | N/A |
| | Forced Outage Factor (FOF) | N/A |
| | Equivalent Availability Factor (EAF) | N/A |
| | Resulting Capacity Factor (2026) | N/A |
| | Average Net Operating Heat Rate (In-Service Year ANOHR) | N/A |
| (13) | Projected Unit Financial Data | |
| | Book Life (Years) | 10 |
| | Total Installed Cost (In-Service Year \$/kW) | 911.10 |
| | Direct Construction Cost (\$/kW) | 836.04 |
| | AFUDC ¹ Amount (\$/kW) | 39.25 |
| | Escalation (\$/kW) | 35.82 |
| | Fixed O&M (In-Service Year \$/kW – Yr) | 33.16 |
| | Variable O&M (In-Service Year \$/MWh) | N/A |
| | K-Factor | 1.452 |

¹ Based on the current AFUDC rate of 6.46%

Schedule 9
(Page 13 of 18)
Status Report and Specifications of Proposed Generating Facilities

| | | |
|------|---|----------------------|
| (1) | Plant Name and Unit Number | Reciprocating Engine |
| (2) | Net Capability | |
| | A. Summer | 18.5 MW |
| | B. Winter | 18.5 MW |
| (3) | Technology Type | Combustion Turbine |
| (4) | Anticipated Construction Timing | |
| | A. Field Construction Start Date | January 2024 |
| | B. Commercial In-Service Date | January 2025 |
| (5) | Fuel | |
| | A. Primary Fuel | Natural Gas |
| | B. Alternate Fuel | N/A |
| (6) | Air Pollution Control Strategy | N/A |
| (7) | Cooling Method | N/A |
| (8) | Total Site Area | Undetermined |
| (9) | Construction Status | Proposed |
| (10) | Certification Status | N/A |
| (11) | Status with Federal Agencies | N/A |
| (12) | Projected Unit Performance Data | |
| | Planned Outage Factor (POF) | 0.02 |
| | Forced Outage Factor (FOF) | 0.02 |
| | Equivalent Availability Factor (EAF) | 0.96 |
| | Resulting Capacity Factor (2023) | 0.44% |
| | Average Net Operating Heat Rate (In-Service Year ANOHR) | 8,100 Btu/kWh |
| (13) | Projected Unit Financial Data | |
| | Book Life (Years) | 30 |
| | Total Installed Cost (In-Service Year \$/kW) | 1,266.32 |
| | Direct Construction Cost (\$/kW) | 1,027.76 |
| | AFUDC ¹ Amount (\$/kW) | 80.09 |
| | Escalation (\$/kW) | 158.48 |
| | Fixed O&M (In-Service Year \$/kW – Yr) | 23.02 |
| | Variable O&M (In-Service Year \$/MWh) | 9.52 |
| | K-Factor | 1.340 |

¹ Based on the current AFUDC rate of 6.46%

Schedule 9
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Status Report and Specifications of Proposed Generating Facilities

| | | |
|------|---|-----------------|
| (1) | Plant Name and Unit Number | Battery Storage |
| (2) | Net Capability | |
| | A. Summer | 10 MW |
| | B. Winter | 10 MW |
| (3) | Technology Type | Battery |
| (4) | Anticipated Construction Timing | |
| | A. Field Construction Start Date | January 2024 |
| | B. Commercial In-Service Date | January 2025 |
| (5) | Fuel | |
| | A. Primary Fuel | N/A |
| | B. Alternate Fuel | N/A |
| (6) | Air Pollution Control Strategy | N/A |
| (7) | Cooling Method | N/A |
| (8) | Total Site Area | Undetermined |
| (9) | Construction Status | Proposed |
| (10) | Certification Status | N/A |
| (11) | Status with Federal Agencies | N/A |
| (12) | Projected Unit Performance Data | |
| | Planned Outage Factor (POF) | N/A |
| | Forced Outage Factor (FOF) | N/A |
| | Equivalent Availability Factor (EAF) | N/A |
| | Resulting Capacity Factor (2026) | N/A |
| | Average Net Operating Heat Rate (In-Service Year ANOHR) | N/A |
| (13) | Projected Unit Financial Data | |
| | Book Life (Years) | 10 |
| | Total Installed Cost (In-Service Year \$/kW) | 781.79 |
| | Direct Construction Cost (\$/kW) | 660.18 |
| | AFUDC ¹ Amount (\$/kW) | 33.68 |
| | Escalation (\$/kW) | 87.93 |
| | Fixed O&M (In-Service Year \$/kW – Yr) | 29.33 |
| | Variable O&M (In-Service Year \$/MWh) | N/A |
| | K-Factor | 1.180 |

¹ Based on the current AFUDC rate of 6.46%

Schedule 9
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Status Report and Specifications of Proposed Generating Facilities

| | | |
|------|---|-----------------|
| (1) | Plant Name and Unit Number | Battery Storage |
| (2) | Net Capability | |
| | A. Summer | 60 MW |
| | B. Winter | 60 MW |
| (3) | Technology Type | Battery |
| (4) | Anticipated Construction Timing | |
| | A. Field Construction Start Date | January 2025 |
| | B. Commercial In-Service Date | January 2026 |
| (5) | Fuel | |
| | A. Primary Fuel | N/A |
| | B. Alternate Fuel | N/A |
| (6) | Air Pollution Control Strategy | N/A |
| (7) | Cooling Method | N/A |
| (8) | Total Site Area | Undetermined |
| (9) | Construction Status | Proposed |
| (10) | Certification Status | N/A |
| (11) | Status with Federal Agencies | N/A |
| (12) | Projected Unit Performance Data | |
| | Planned Outage Factor (POF) | N/A |
| | Forced Outage Factor (FOF) | N/A |
| | Equivalent Availability Factor (EAF) | N/A |
| | Resulting Capacity Factor (2026) | N/A |
| | Average Net Operating Heat Rate (In-Service Year ANOHR) | N/A |
| (13) | Projected Unit Financial Data | |
| | Book Life (Years) | 10 |
| | Total Installed Cost (In-Service Year \$/kW) | 763.38 |
| | Direct Construction Cost (\$/kW) | 631.35 |
| | AFUDC ¹ Amount (\$/kW) | 32.88 |
| | Escalation (\$/kW) | 99.14 |
| | Fixed O&M (In-Service Year \$/kW – Yr) | 28.96 |
| | Variable O&M (In-Service Year \$/MWh) | N/A |
| | K-Factor | 1.180 |

¹ Based on the current AFUDC rate of 6.46%

Schedule 9
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Status Report and Specifications of Proposed Generating Facilities

| | | |
|------|---|---------------------------------|
| (1) | Plant Name and Unit Number | Reciprocating Engine |
| (2) | Net Capability | |
| | A. Summer | 74 MW (Consisting of 4 engines) |
| | B. Winter | 74 MW (Consisting of 4 engines) |
| (3) | Technology Type | Combustion Turbine |
| (4) | Anticipated Construction Timing | |
| | A. Field Construction Start Date | January 2026 |
| | B. Commercial In-Service Date | January 2027 |
| (5) | Fuel | |
| | A. Primary Fuel | Natural Gas |
| | B. Alternate Fuel | N/A |
| (6) | Air Pollution Control Strategy | N/A |
| (7) | Cooling Method | N/A |
| (8) | Total Site Area | Undetermined |
| (9) | Construction Status | Proposed |
| (10) | Certification Status | N/A |
| (11) | Status with Federal Agencies | N/A |
| (12) | Projected Unit Performance Data | |
| | Planned Outage Factor (POF) | 0.02 |
| | Forced Outage Factor (FOF) | 0.02 |
| | Equivalent Availability Factor (EAF) | 0.96 |
| | Resulting Capacity Factor (2023) | 0.38% |
| | Average Net Operating Heat Rate (In-Service Year ANOHR) | 8,100 Btu/kWh |
| (13) | Projected Unit Financial Data | |
| | Book Life (Years) | 30 |
| | Total Installed Cost (In-Service Year \$/kW) | 1,317.48 |
| | Direct Construction Cost (\$/kW) | 1,024.53 |
| | AFUDC ¹ Amount (\$/kW) | 83.32 |
| | Escalation (\$/kW) | 209.64 |
| | Fixed O&M (In-Service Year \$/kW – Yr) | 24.05 |
| | Variable O&M (In-Service Year \$/MWh) | 9.94 |
| | K-Factor | 1.340 |

¹ Based on the current AFUDC rate of 6.46%

Schedule 9
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Status Report and Specifications of Proposed Generating Facilities

| | | |
|------|---|-----------------|
| (1) | Plant Name and Unit Number | Battery Storage |
| (2) | Net Capability | |
| | A. Summer | 60 MW |
| | B. Winter | 60 MW |
| (3) | Technology Type | Battery |
| (4) | Anticipated Construction Timing | |
| | A. Field Construction Start Date | January 2027 |
| | B. Commercial In-Service Date | January 2028 |
| (5) | Fuel | |
| | A. Primary Fuel | N/A |
| | B. Alternate Fuel | N/A |
| (6) | Air Pollution Control Strategy | N/A |
| (7) | Cooling Method | N/A |
| (8) | Total Site Area | Undetermined |
| (9) | Construction Status | Proposed |
| (10) | Certification Status | N/A |
| (11) | Status with Federal Agencies | N/A |
| (12) | Projected Unit Performance Data | |
| | Planned Outage Factor (POF) | N/A |
| | Forced Outage Factor (FOF) | N/A |
| | Equivalent Availability Factor (EAF) | N/A |
| | Resulting Capacity Factor (2026) | N/A |
| | Average Net Operating Heat Rate (In-Service Year ANOHR) | N/A |
| (13) | Projected Unit Financial Data | |
| | Book Life (Years) | 10 |
| | Total Installed Cost (In-Service Year \$/kW) | 1,100.64 |
| | Direct Construction Cost (\$/kW) | 873.10 |
| | AFUDC ¹ Amount (\$/kW) | 47.41 |
| | Escalation (\$/kW) | 180.13 |
| | Fixed O&M (In-Service Year \$/kW – Yr) | 39.40 |
| | Variable O&M (In-Service Year \$/MWh) | N/A |
| | K-Factor | 1.180 |

¹ Based on the current AFUDC rate of 6.46%

Schedule 9
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Status Report and Specifications of Proposed Generating Facilities

| | | |
|------|--|--|
| (1) | Plant Name and Unit Number | Battery Storage |
| (2) | Net Capability A. Summer B. Winter | 60 MW 60 MW |
| (3) | Technology Type | Battery |
| (4) | Anticipated Construction Timing A. Field Construction Start Date B. Commercial In-Service Date | January 2028 January 2029 |
| (5) | Fuel A. Primary Fuel B. Alternate Fuel | N/A N/A |
| (6) | Air Pollution Control Strategy | N/A |
| (7) | Cooling Method | N/A |
| (8) | Total Site Area | Undetermined |
| (9) | Construction Status | Proposed |
| (10) | Certification Status | N/A |
| (11) | Status with Federal Agencies | N/A |
| (12) | Projected Unit Performance Data Planned Outage Factor (POF) Forced Outage Factor (FOF) Equivalent Availability Factor (EAF) Resulting Capacity Factor (2026) Average Net Operating Heat Rate (In-Service Year ANOHR) | N/A N/A N/A N/A N/A |
| (13) | Projected Unit Financial Data Book Life (Years) Total Installed Cost (In-Service Year \$/kW) Direct Construction Cost (\$/kW) AFUDC ¹ Amount (\$/kW) Escalation (\$/kW) Fixed O&M (In-Service Year \$/kW – Yr) Variable O&M (In-Service Year \$/MWh) K-Factor | 10 1,094.05 849.93 47.13 197.00 39.41 N/A 1.180 |

¹ Based on the current AFUDC rate of 6.46%