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April 15, 2019

VIA: ELECTRONIC FILING

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

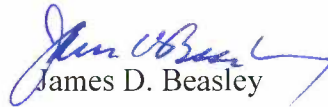
Re: Petition for approval of revisions to standard offer contract and rate schedule
COG-2, by Tampa Electric Company; Docket No. 20190077-EQ

Dear Mr. Teitzman:

Attached for filing in the above docket are Tampa Electric Company's responses to
Staff's First Data Request (No. 1) dated April 4, 2019.

Thank you for your assistance in connection with this matter.

Sincerely,


James D. Beasley

JDB/pp
Attachment

**TAMPA ELECTRIC COMPANY
DOCKET NO. 20180077-EQ
STAFF'S FIRST DATA REQUEST
REQUEST NO. 1
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1. Please complete the following table describing payments to a renewable provider based on the proposed tariffs included in the Utility's revised standard offer contract. Assume a renewable generator with a 50 MW output providing firm capacity with an in-service date of January 1, 2020, operating at the minimum capacity factor required for full capacity payments and a contract duration of 20 years. Please state the capacity factor assumed for the calculations. Calculate the total Net Present Value (NPV) of all payments in 2020 dollars, and also provide an explanation of the method and rate used to calculate the NPV.

Please provide the completed table for each of the following five scenarios:

- As-available energy (energy only payments)
- Normal capacity payments
- Levelized payments
- Early payments
- Early levelized payments

| Year | Energy (MWh) | Capacity Rate (\$/kw-mo) | Total Capacity Payments (\$) | Energy Rate (\$/MWh) | Total Energy Payments (\$) | Total Payments (\$) | Year Energy |
|-----------------|--------------|--------------------------|------------------------------|----------------------|----------------------------|---------------------|-------------|
| 2020 | | | | | | | |
| 2021 | | | | | | | |
| 2022 | | | | | | | |
| 2023 | | | | | | | |
| 2024 | | | | | | | |
| 2025 | | | | | | | |
| 2026 | | | | | | | |
| 2027 | | | | | | | |
| 2028 | | | | | | | |
| 2029 | | | | | | | |
| 2030 | | | | | | | |
| 2031 | | | | | | | |
| 2032 | | | | | | | |
| 2033 | | | | | | | |
| 2034 | | | | | | | |
| 2035 | | | | | | | |
| 2036 | | | | | | | |
| 2037 | | | | | | | |
| 2038 | | | | | | | |
| 2039 | | | | | | | |
| Total (nominal) | | | | | | | |
| Total (NPV) | | | | | | | |

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- A. The payments for capacity and energy from a 50 MW a renewable facility with an in-service date of January 1, 2020 under the various options (i.e., as-available only, standard, levelized, early, and early levelized) are provided in the tables on Pages 3 through 7 of 7.

The payments are based on the renewable facility operating at an 80% capacity factor which is the minimum performance standard. The Monthly Capacity Factor for the period April 1st through October 31st shall be defined as the sum of 80% of the Monthly Average On-Peak Operating Factor plus 20% of the Monthly Average Off-peak Operating Factor. The Monthly Capacity Factor for the period November 1st through March 31st shall be defined as the sum of 90% of the Monthly Average On-peak Operating Factor plus 10% of the Monthly Average Off-peak Operating Factor.

To determine if the sums of the payment streams of the various payment methods were equal on a Net Present Value or Net Present Worth basis, the company multiplied the payment in each year by the Present Worth Factor which is calculated as follows:

$$\frac{1}{(1+i)^n}$$

Where:

i = discount rate = 7.012 %

n = (payment year – 2020)

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Payment Type: As-Available (Energy Only)
Committed Capacity: 50 MW
Capacity Factor: 80%

| Year | Energy | Capacity Rate | Total Capacity Payments | Energy Rate | Total Energy Payments | Total Payments |
|---------------------------|-----------|---------------|-------------------------|-------------|-----------------------|----------------|
| | (MWh) | (\$/kW-mo) | (\$) | (\$/MWh) | (\$) | (\$) |
| 2020 | 350,400 | - | - | 28.12 | 9,851,760 | 9,851,760 |
| 2021 | 351,360 | - | - | 25.90 | 9,101,107 | 9,101,107 |
| 2022 | 350,400 | - | - | 26.35 | 9,234,147 | 9,234,147 |
| 2023 | 350,400 | - | - | 27.72 | 9,712,200 | 9,712,200 |
| 2024 | 350,400 | - | - | 27.57 | 9,662,267 | 9,662,267 |
| 2025 | 351,360 | - | - | 29.60 | 10,400,920 | 10,400,920 |
| 2026 | 350,400 | - | - | 31.05 | 10,880,627 | 10,880,627 |
| 2027 | 350,400 | - | - | 32.68 | 11,450,320 | 11,450,320 |
| 2028 | 350,400 | - | - | 35.45 | 12,421,707 | 12,421,707 |
| 2029 | 351,360 | - | - | 38.19 | 13,419,440 | 13,419,440 |
| 2030 | 350,400 | - | - | 40.05 | 14,034,933 | 14,034,933 |
| 2031 | 350,400 | - | - | 41.92 | 14,688,160 | 14,688,160 |
| 2032 | 350,400 | - | - | 43.72 | 15,320,613 | 15,320,613 |
| 2033 | 351,360 | - | - | 46.03 | 16,173,987 | 16,173,987 |
| 2034 | 350,400 | - | - | 48.53 | 17,003,307 | 17,003,307 |
| 2035 | 350,400 | - | - | 50.00 | 17,519,707 | 17,519,707 |
| 2036 | 350,400 | - | - | 54.01 | 18,925,427 | 18,925,427 |
| 2037 | 351,360 | - | - | 54.77 | 19,243,120 | 19,243,120 |
| 2038 | 350,400 | - | - | 58.23 | 20,402,960 | 20,402,960 |
| 2038 | 350,400 | - | - | 59.70 | 20,917,547 | 20,917,547 |
| 2039 | 350,400 | - | - | 63.24 | 22,160,440 | 22,160,440 |
| Total (Nominal) | 7,363,200 | - | - | | 302,524,693 | 302,524,693 |
| Total NPV (\$2020) | | | | | 164,768,480 | 164,768,480 |

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Payment Type: Normal
Committed Capacity: 50 MW
Capacity Factor: 80%

| Year | Energy | Capacity Rate | Total Capacity Payments ⁽¹⁾ | Energy Rate | Total Energy Payments | Total Payments |
|---------------------------|-----------|---------------|--|-------------|-----------------------|----------------|
| | (MWh) | (\$/kW-mo) | (\$) | (\$/MWh) | (\$) | (\$) |
| 2020 | 350,400 | - | - | 28.12 | 9,851,760 | 9,851,760 |
| 2021 | 351,360 | - | - | 25.90 | 9,101,107 | 9,101,107 |
| 2022 | 350,400 | - | - | 26.35 | 9,234,147 | 9,234,147 |
| 2023 | 350,400 | 4.66 | 2,798,645 | 27.72 | 9,712,200 | 12,510,845 |
| 2024 | 350,400 | 4.76 | 2,857,717 | 27.57 | 9,662,267 | 12,519,984 |
| 2025 | 351,360 | 4.86 | 2,918,037 | 29.60 | 10,400,920 | 13,318,957 |
| 2026 | 350,400 | 4.97 | 2,979,630 | 31.05 | 10,880,627 | 13,860,257 |
| 2027 | 350,400 | 5.07 | 3,042,524 | 32.68 | 11,450,320 | 14,492,844 |
| 2028 | 350,400 | 5.18 | 3,106,745 | 35.45 | 12,421,707 | 15,528,452 |
| 2029 | 351,360 | 5.29 | 3,172,322 | 38.19 | 13,419,440 | 16,591,762 |
| 2030 | 350,400 | 5.40 | 3,239,284 | 40.05 | 14,034,933 | 17,274,217 |
| 2031 | 350,400 | 5.51 | 3,307,659 | 41.92 | 14,688,160 | 17,995,819 |
| 2032 | 350,400 | 5.63 | 3,377,478 | 43.72 | 15,320,613 | 18,698,092 |
| 2033 | 351,360 | 5.75 | 3,448,772 | 46.03 | 16,173,987 | 19,622,758 |
| 2034 | 350,400 | 5.87 | 3,521,570 | 48.53 | 17,003,307 | 20,524,877 |
| 2035 | 350,400 | 5.99 | 3,595,905 | 50.00 | 17,519,707 | 21,115,612 |
| 2036 | 350,400 | 6.12 | 3,671,810 | 54.01 | 18,925,427 | 22,597,237 |
| 2037 | 351,360 | 6.25 | 3,749,318 | 54.77 | 19,243,120 | 22,992,438 |
| 2038 | 350,400 | 6.38 | 3,828,462 | 58.23 | 20,402,960 | 24,231,422 |
| 2039 | 350,400 | 6.52 | 3,909,276 | 59.70 | 20,917,547 | 24,826,823 |
| Total (Nominal) | 7,012,800 | | 56,525,154 | | 280,364,253 | 336,889,407 |
| Total NPV (\$2020) | | | 27,391,785 | | 164,768,480 | 192,160,264 |

(1) The capacity payment under the Normal payment option begins January 1st of 2023 which is the in-service date of the avoided unit.

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Payment Type: Levelized
Committed Capacity: 50 MW
Capacity Factor: 80%

| Year | Energy | Capacity Rate | Total Capacity Payments ⁽¹⁾ | Energy Rate | Total Energy Payments | Total Payments |
|---------------------------|-----------|---------------|--|-------------|-----------------------|----------------|
| | (MWh) | (\$/kW-mo) | (\$) | (\$/MWh) | (\$) | (\$) |
| 2020 | 350,400 | - | - | 28.12 | 9,851,760 | 9,851,760 |
| 2021 | 351,360 | - | - | 25.90 | 9,101,107 | 9,101,107 |
| 2022 | 350,400 | - | - | 26.35 | 9,234,147 | 9,234,147 |
| 2023 | 350,400 | 5.36 | 3,215,441 | 27.72 | 9,712,200 | 12,927,641 |
| 2024 | 350,400 | 5.36 | 3,215,441 | 27.57 | 9,662,267 | 12,877,708 |
| 2025 | 351,360 | 5.36 | 3,215,441 | 29.60 | 10,400,920 | 13,616,361 |
| 2026 | 350,400 | 5.36 | 3,215,441 | 31.05 | 10,880,627 | 14,096,068 |
| 2027 | 350,400 | 5.36 | 3,215,441 | 32.68 | 11,450,320 | 14,665,761 |
| 2028 | 350,400 | 5.36 | 3,215,441 | 35.45 | 12,421,707 | 15,637,148 |
| 2029 | 351,360 | 5.36 | 3,215,441 | 38.19 | 13,419,440 | 16,634,881 |
| 2030 | 350,400 | 5.36 | 3,215,441 | 40.05 | 14,034,933 | 17,250,375 |
| 2031 | 350,400 | 5.36 | 3,215,441 | 41.92 | 14,688,160 | 17,903,601 |
| 2032 | 350,400 | 5.36 | 3,215,441 | 43.72 | 15,320,613 | 18,536,055 |
| 2033 | 351,360 | 5.36 | 3,215,441 | 46.03 | 16,173,987 | 19,389,428 |
| 2034 | 350,400 | 5.36 | 3,215,441 | 48.53 | 17,003,307 | 20,218,748 |
| 2035 | 350,400 | 5.36 | 3,215,441 | 50.00 | 17,519,707 | 20,735,148 |
| 2036 | 350,400 | 5.36 | 3,215,441 | 54.01 | 18,925,427 | 22,140,868 |
| 2037 | 351,360 | 5.36 | 3,215,441 | 54.77 | 19,243,120 | 22,458,561 |
| 2038 | 350,400 | 5.36 | 3,215,441 | 58.23 | 20,402,960 | 23,618,401 |
| 2039 | 350,400 | 5.36 | 3,215,441 | 59.70 | 20,917,547 | 24,132,988 |
| Total (Nominal) | 7,012,800 | | 54,662,503 | | 280,364,253 | 335,026,756 |
| Total NPV (\$2020) | | | 27,391,785 | | 164,768,480 | 192,160,265 |

(1) The capacity payment under the Normal payment option begins January 1st of 2023 which is the in-service date of the avoided unit.

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Payment Type: Early
Committed Capacity: 50 MW
Capacity Factor: 80%

| Year | Energy | Capacity Rate | Total Capacity Payments | Energy Rate | Total Energy Payments | Total Payments |
|---------------------------|-----------|---------------|-------------------------|-------------|-----------------------|----------------|
| | (MWh) | (\$/kW-mo) | (\$) | (\$/MWh) | (\$) | (\$) |
| 2020 | 350,400 | 3.44 | 2,061,830 | 28.12 | 9,851,760 | 11,913,590 |
| 2021 | 351,360 | 3.51 | 2,105,350 | 25.90 | 9,101,107 | 11,206,457 |
| 2022 | 350,400 | 3.58 | 2,149,789 | 26.35 | 9,234,147 | 11,383,936 |
| 2023 | 350,400 | 3.66 | 2,195,166 | 27.72 | 9,712,200 | 11,907,366 |
| 2024 | 350,400 | 3.74 | 2,241,501 | 27.57 | 9,662,267 | 11,903,768 |
| 2025 | 351,360 | 3.81 | 2,288,814 | 29.60 | 10,400,920 | 12,689,734 |
| 2026 | 350,400 | 3.90 | 2,337,126 | 31.05 | 10,880,627 | 13,217,753 |
| 2027 | 350,400 | 3.98 | 2,386,458 | 32.68 | 11,450,320 | 13,836,778 |
| 2028 | 350,400 | 4.06 | 2,436,832 | 35.45 | 12,421,707 | 14,858,539 |
| 2029 | 351,360 | 4.15 | 2,488,269 | 38.19 | 13,419,440 | 15,907,709 |
| 2030 | 350,400 | 4.23 | 2,540,792 | 40.05 | 14,034,933 | 16,575,726 |
| 2031 | 350,400 | 4.32 | 2,594,424 | 41.92 | 14,688,160 | 17,282,584 |
| 2032 | 350,400 | 4.42 | 2,649,189 | 43.72 | 15,320,613 | 17,969,802 |
| 2033 | 351,360 | 4.51 | 2,705,109 | 46.03 | 16,173,987 | 18,879,096 |
| 2034 | 350,400 | 4.60 | 2,762,211 | 48.53 | 17,003,307 | 19,765,517 |
| 2035 | 350,400 | 4.70 | 2,820,517 | 50.00 | 17,519,707 | 20,340,224 |
| 2036 | 350,400 | 4.80 | 2,880,055 | 54.01 | 18,925,427 | 21,805,482 |
| 2037 | 351,360 | 4.90 | 2,940,850 | 54.77 | 19,243,120 | 22,183,970 |
| 2038 | 350,400 | 5.00 | 3,002,929 | 58.23 | 20,402,960 | 23,405,889 |
| 2039 | 350,400 | 5.11 | 3,066,318 | 59.70 | 20,917,547 | 23,983,865 |
| Total (Nominal) | 7,012,800 | | 50,653,532 | | 280,364,253 | 331,017,785 |
| Total NPV (\$2020) | | | 27,391,785 | | 164,768,480 | 192,160,264 |

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Payment Type: Early Levelized
Committed Capacity: 50 MW
Capacity Factor: 80%

| Year | Energy | Capacity Rate | Total Capacity Payments | Energy Rate | Total Energy Payments | Total Payments |
|---------------------------|-----------|---------------|-------------------------|-------------|-----------------------|----------------|
| | (MWh) | (\$/kW-mo) | (\$) | (\$/MWh) | (\$) | (\$) |
| 2020 | 350,400 | 4.03 | 2,418,369 | 28.12 | 9,851,760 | 12,270,129 |
| 2021 | 351,360 | 4.03 | 2,418,369 | 25.90 | 9,101,107 | 11,519,476 |
| 2022 | 350,400 | 4.03 | 2,418,369 | 26.35 | 9,234,147 | 11,652,516 |
| 2023 | 350,400 | 4.03 | 2,418,369 | 27.72 | 9,712,200 | 12,130,569 |
| 2024 | 350,400 | 4.03 | 2,418,369 | 27.57 | 9,662,267 | 12,080,636 |
| 2025 | 351,360 | 4.03 | 2,418,369 | 29.60 | 10,400,920 | 12,819,289 |
| 2026 | 350,400 | 4.03 | 2,418,369 | 31.05 | 10,880,627 | 13,298,996 |
| 2027 | 350,400 | 4.03 | 2,418,369 | 32.68 | 11,450,320 | 13,868,689 |
| 2028 | 350,400 | 4.03 | 2,418,369 | 35.45 | 12,421,707 | 14,840,076 |
| 2029 | 351,360 | 4.03 | 2,418,369 | 38.19 | 13,419,440 | 15,837,809 |
| 2030 | 350,400 | 4.03 | 2,418,369 | 40.05 | 14,034,933 | 16,453,303 |
| 2031 | 350,400 | 4.03 | 2,418,369 | 41.92 | 14,688,160 | 17,106,529 |
| 2032 | 350,400 | 4.03 | 2,418,369 | 43.72 | 15,320,613 | 17,738,983 |
| 2033 | 351,360 | 4.03 | 2,418,369 | 46.03 | 16,173,987 | 18,592,356 |
| 2034 | 350,400 | 4.03 | 2,418,369 | 48.53 | 17,003,307 | 19,421,676 |
| 2035 | 350,400 | 4.03 | 2,418,369 | 50.00 | 17,519,707 | 19,938,076 |
| 2036 | 350,400 | 4.03 | 2,418,369 | 54.01 | 18,925,427 | 21,343,796 |
| 2037 | 351,360 | 4.03 | 2,418,369 | 54.77 | 19,243,120 | 21,661,489 |
| 2038 | 350,400 | 4.03 | 2,418,369 | 58.23 | 20,402,960 | 22,821,329 |
| 2039 | 350,400 | 4.03 | 2,418,369 | 59.70 | 20,917,547 | 23,335,916 |
| Total (Nominal) | 7,012,800 | | 48,367,383 | | 280,364,253 | 328,731,637 |
| Total NPV (\$2020) | | | 27,391,783 | | 164,768,480 | 192,160,263 |