DUKE ENERGY
FLORIDA

Dianne M. Triplett
DEPUTY GENERAL COUNSEL
Duke Energy Florida, LLC

April 30, 2018

VIA ELECTRONIC DELIVERY

Ms. Carlotta Stauffer, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: *DEF Petition for Approval of Amended Standard Offer Contract (Schedule COG-2) based on a combustion turbine avoided unit*; Docket 20180073-EQ

Ms. Stauffer:

Please find enclosed for electronic filing Duke Energy Florida, LLC's Response to Staff's First Data Request (Nos. 1-6).

Thank you for your assistance in this matter. If you have any questions, please feel free to contact me at (727) 820-4692.

Sincerely,

/s/ Dianne M. Triplett

Dianne M. Triplett

DMT/cmk
Enclosures

cc: Douglas Wright

Docket 20180073-EQ
Duke Energy Florida, LLC's Response to
Staff's First Data Request regarding Duke Energy Florida, LLC's
Petition for approval of amended standard offer contract (Schedule COG-2)
based on a combustion turbine avoided unit

1. Please refer to Sheet 9.415 of the standard offer contract. Provide the rationale for selecting June 1, 2025, as the revised completed permits date.

   RESPONSE: The Completed Permits Date is twenty-four (24) months before the Avoided Unit In-Service Date because the permits need to be complete before construction of the avoided unit can begin and it is expected that the construction of the avoided unit will take twenty-four (24) months.

2. Please refer to Sheet 9.455 of the standard offer contract. Provide the calculations for the values revised in Table 3 in Microsoft Excel format with formulas intact and all input parameters identified.

   RESPONSE: See the attachment bearing Bates Numbers 20180073-Staff-DR1-2-001 through 20180073-Staff-DR1-2-004.

3. Please refer to Sheet 9.458 of the standard offer contract. Provide the calculations for the revised delivery voltage adjustment factors in Microsoft Excel format with formulas intact and all input parameters identified.

   RESPONSE: See the attachment bearing Bates Numbers 20180073-Staff-DR1-3-001 through 20180073-Staff-DR1-3-0007. Effective May 1, 2018, DEF will change its system transmission loss factor to 1.50% from 1.36%. DEF uses a calculated value that is filed with FERC every year on May 1 but available for the SOC filing on April 1. Unfortunately this year the value was updated before the FERC filing but after the SOC filing. Because this factor is a component of the Delivery Voltage Adjustment in the Standard Offer Contract, this change will impact the level of Delivery Voltage Adjustment reflected on Sheet 9.458. DEF has submitted, with its response to this data request, the updated legislative and clean sheets, with the supporting calculations for the newly proposed Delivery Voltage Adjustment factors.

4. Please refer to Section 9.467 of the standard offer contract. Provide the calculations and/or selection rationale for the revised values in Microsoft Excel format with formulas intact and all input parameters identified.

   RESPONSE: See the attachment bearing Bates Numbers 20180073-Staff-DR1-2-001 through 20180073-Staff-DR1-2-004.

5. Please refer to Sheet 9.468 of the standard offer contract. Provide the calculations and/or selection rationale for the revised values in Microsoft Excel format with formulas intact and all input parameters identified.

<u>RESPONSE</u>: See the attachment bearing Bates Numbers 20180073-Staff-DR1-2-001 through 20180073-Staff-DR1-2-004.

6. 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, 2019, 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 2019 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 ($)
2019						
2020						
2021						
2022						
2023						
2024						
2025						
2026						
2027						
2028						
2029						
2030						
2031						
2032						
2033						
2034						

2035						
2036						
2037						
2038						
Total (nominal)						
Total (NPV)						

RESPONSE: Historically DEF has used its system marginal costs as practical estimates of its as-available rates. When the volume of anticipated as-available QF purchases were low in this scenario, this estimate was reasonable. However, with the large amount of solar projects in the various DEF interconnection queues, a greater volume of as-available purchases must be assumed. It is also important to note that current estimates are only valid and effective as of May 1, 2018 due to the steady activity in the QF market. Along with these larger amounts of QF generation contributing to DEF's as-available block size, it is also anticipated that DEF will have increasing amounts of time when system generation along with potential QF generation will be expected to exceed the forecasted DEF load levels and that excess energy may not have been fully captured in the estimates herein. These factors have contributed to DEF further refining its estimate of QF future energy prices as reflected below.

See the attachment bearing Bates Numbers 20180073-Staff-DR1-6-001 through 20180073-Staff-DR1-6-005. The NPV values were calculated using monthly values and the discount rate used 7.15% and an assumed capacity factor of 95%.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	**Avoided Unit Data**															
2																
3		**FPSC Filing**														
4		**References**														
5	**Plant Data:**															
6	Avoided Unit Name		Undesignated CT P1													
7	Unit Type		CT													
8	Unit Size (MW)		226.4	Summer (Winter 240.1)												
9	Construction Start Month		1													
10	In-Service Month		6													
11	In-Service Year	n=	2027													
12	Life of Plant	L=	35													
13	Tax Life		15.0													
14	Direct Plant Cost $/kW in Year	I_n=	$ 595.46	2018	On summer rating											
15	Escalation in Plant Cost $/kW		$ 137.35													
16	Total Direct Plant Cost $/kW		$ 732.81													
17		I_n=	$ 35.14													
18	Total Plant Cost $/kW in Year	I_n=	$ 767.95													
19	Total Capital Expendures ($000)		$ 165,908													
20	Total Plant Cost ($000)		$ 173,863		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027		
21					-9	-8	-7	-6	-5	-4	-3	-2	-1	0		
22	Plant Escalation Rate	i_p=	2.50%		0.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%		
23	Capital Expenditure Spending Curve				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.00%	38.00%	51.00%	100.00%	
24	Capital Expenditure $/kw				$ 595.46	$ 610.34	$ 625.60	$ 641.24	$ 657.27	$ 673.70	$ 690.55	$ 707.81	$ 725.51	$ 743.64		
25					$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,627	$ 62,417	$ 85,864	$ 165,908	Check
26	AFUDC						$ -	$ -	$ -	$ -	$ -	$ 630	$ 3,537	$ 3,788	$ 7,955	-
27	Total Cap Reqmt. ($000)														$ 173,863	-
28	Deescalating Payment Factor		0.91													
29	Escalating Payment Factor (r factor)		0.96													
30	1st Year Avoided Capital		$ 12,288													
31	Value of K	K=	1.284													
32					Escalation of FOM											
33	**Fixed O&M data:**				2018	2019	2020	2021	2022	2023	2024	2025	2026	2027		
34	Fixed O&M Cost $/kW yr	O_n=	3.85		0.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%		
35	O&M Escalation Rate	i_o=	2.50%		3.08	$ 3.16	$ 3.24	$ 3.32	$ 3.40	$ 3.49	$ 3.58	$ 3.67	$ 3.76	$ 3.85		
36	O&M R-Factor		0.96													
37	1st Year Avoided Fixed O&M $/kW yr		$ 872													
38																
39					Escalation of VOM											
40	**Variable O&M data (info only):**				2018	2019	2020	2021	2022	2023	2024	2025	2026	2027		
41	Fixed O&M Cost $/kW yr		11.62		0.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%		
42	O&M Escalation Rate		2.50%		$ 9.31	$ 9.54	$ 9.78	$ 10.02	$ 10.27	$ 10.53	$ 10.79	$ 11.06	$ 11.34	$ 11.62		
43																
44	**Cost of Capital:**		Cost	Ratio	Weighted											
45	Cost of Debt:		4.50%	47.00%	2.12%											
46	Cost of Common		10.50%	53.00%	5.57%											
47	Cost of Capital-before tax			100.00%	7.68%											
48	Income Tax Rate (Composite)				25.35%											
49	Discount Rate	r=			7.15%											
50	Rev Reqt Rate				9.57%											
51	AFUDC Rate		7.15%													
52																
53	**Cost of Plant Ownership:**															
54	Prop Tax Rate		0.86%													
55	Property Assesed at % of Inservice Cost		100%													
56	Annual Change in Assessed Value % per Year		0%													
57	Annual Change in Assessed Value # of Years		0													
58	Property Insurance as a % of Value		0.13%													
59	Liability insurance Flat Rate		$ -													
60	Insurance Escalation		2.50%													
61																
62	**PPA Contract Terms:**															
63	Current Year		2018													
64	Years Until Contract Begins		7													
65	Year Capacity Payments Begin	m=	2025													
66	Term of Contract with Early Payments	t=	13													
67	Year Contract Ends		2037													
68																
69																
70	**Additional Information for Filing:**															
71	NPV of Capital Cost for Normal Payments	F=	259.42													
72	NPV of Fixed O&M Cost for Normal Payments	G=	18.40													
73																

Duke Energy Florida
QF Capacity Payment Rates

20180073-Staff-DR1-2-002

Avoided Unit: Undesignated CT P1

NORMAL PAYMENTS

	Capital ($/kW-mo.)	Fixed O&M ($/kW-mo.)	Capacity Payment ($/kW-mo.)
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025			
2026			
2027	4.52	0.32	4.84
2028	4.64	0.33	4.96
2029	4.75	0.34	5.09
2030	4.87	0.35	5.22
2031	4.99	0.35	5.35
2032	5.12	0.36	5.48
2033	5.25	0.37	5.62
2034	5.38	0.38	5.76
2035	5.51	0.39	5.90
2036	5.65	0.40	6.05
2037	5.79	0.41	6.20
2038			
2039			
2040			
2041			
2042			
2043			
2044			
2045			
2046			
2047			
2048			
2049			
2050			
2051			
2052			
Check	21.62	1.53	23.15
Values	259.42	18.40	277.82

EARLY ESCALATING CAPACITY PAYMENTS

	Capital ($/kW-mo.)	Fixed O&M ($/kW-mo.)	Capacity Payment ($/kW-mo.)
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025	3.47	0.25	3.72
2026	3.56	0.25	3.81
2027	3.65	0.26	3.91
2028	3.74	0.27	4.00
2029	3.83	0.27	4.10
2030	3.93	0.28	4.21
2031	4.03	0.29	4.31
2032	4.13	0.29	4.42
2033	4.23	0.30	4.53
2034	4.33	0.31	4.64
2035	4.44	0.32	4.76
2036	4.55	0.32	4.88
2037	4.67	0.33	5.00
2038			
2039			
2040			
2041			
2042			
2043			
2044			
2045			
2046			
2047			
2048			
2049			
2050			
2051			
2052			
	21.62	1.53	23.15

LEVELIZED CAPITAL PAYMENTS

	Capital ($/kW-mo.)	Fixed O&M ($/kW-mo.)	Capacity Payment ($/kW-mo.)
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025			
2026			
2027	5.05	0.32	5.37
2028	5.05	0.33	5.38
2029	5.05	0.34	5.38
2030	5.05	0.35	5.39
2031	5.05	0.35	5.40
2032	5.05	0.36	5.41
2033	5.05	0.37	5.42
2034	5.05	0.38	5.43
2035	5.05	0.39	5.44
2036	5.05	0.40	5.45
2037	5.05	0.41	5.46
2038			
2039			
2040			
2041			
2042			
2043			
2044			
2045			
2046			
2047			
2048			
2049			
2050			
2051			
2052			
	21.62	1.53	23.15
	259.42	18.40	277.82

EARLY LEVELIZED CAPITAL PAYMENTS

	Capital ($/kW-mo.)	Fixed O&M ($/kW-mo.)	Capacity Payment ($/kW-mo.)
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025	3.95	0.25	4.19
2026	3.95	0.25	4.20
2027	3.95	0.26	4.21
2028	3.95	0.27	4.21
2029	3.95	0.27	4.22
2030	3.95	0.28	4.23
2031	3.95	0.29	4.23
2032	3.95	0.29	4.24
2033	3.95	0.30	4.25
2034	3.95	0.31	4.26
2035	3.95	0.32	4.26
2036	3.95	0.32	4.27
2037	3.95	0.33	4.28
2038			
2039			
2040			
2041			
2042			
2043			
2044			
2045			
2046			
2047			
2048			
2049			
2050			
2051			
2052			
	21.62	1.53	23.15

EARLY DEESCALATING CAPITAL PAYMENTS

	Capital ($/kW-mo.)	Fixed O&M ($/kW-mo.)	Capacity Payment ($/kW-mo.)
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025	4.47	0.25	4.71
2026	4.36	0.25	4.61
2027	4.25	0.26	4.50
2028	4.14	0.27	4.41
2029	4.04	0.27	4.31
2030	3.94	0.28	4.21
2031	3.84	0.29	4.12
2032	3.74	0.29	4.03
2033	3.65	0.30	3.95
2034	3.56	0.31	3.86
2035	3.47	0.32	3.78
2036	3.38	0.32	3.70
2037	3.30	0.33	3.63
2038			
2039			
2040			
2041			
2042			
2043			
2044			
2045			
2046			
2047			
2048			
2049			
2050			
2051			
2052			
	21.62	1.53	23.15

NORMAL PAYMENTS

	Capital ($000/yr.)	Fixed O&M ($000/yr.)	Capacity Payment ($000/yr.)
2018	-	-	-
2019	-	-	-
2020	-	-	-
2021	-	-	-
2022	-	-	-
2023	-	-	-
2024	-	-	-
2025	-	-	-
2026	-	-	-
2027	12,288	872	13,160
2028	12,595	893	13,489
2029	12,910	916	13,826
2030	13,233	939	14,172
2031	13,564	962	14,526
2032	13,903	986	14,889
2033	14,250	1,011	15,261
2034	14,607	1,036	15,643
2035	14,972	1,062	16,034
2036	15,346	1,089	16,435
2037	15,730	1,116	16,846
2038	-	-	-
2039	-	-	-
2040	-	-	-
2041	-	-	-
2042	-	-	-
2043	-	-	-
2044	-	-	-
2045	-	-	-
2046	-	-	-
2047	-	-	-
2048	-	-	-
2049	-	-	-
2050	-	-	-
2051	-	-	-
2052	-	-	-
NPV in Current Year	58,732	4,166	62,898
NPV When Contract Begins	95,240	6,756	101,996
Check			

EARLY CAPACITY PAYMENTS

	Capital ($000/yr.)	Fixed O&M ($000/yr.)	Capacity Payment ($000/yr.)
2018	-	-	-
2019	-	-	-
2020	-	-	-
2021	-	-	-
2022	-	-	-
2023	-	-	-
2024	-	-	-
2025	9,430	669	10,099
2026	9,666	686	10,352
2027	9,908	703	10,610
2028	10,155	720	10,876
2029	10,409	738	11,147
2030	10,669	757	11,426
2031	10,936	776	11,712
2032	11,209	795	12,005
2033	11,490	815	12,305
2034	11,777	835	12,612
2035	12,071	856	12,928
2036	12,373	878	13,251
2037	12,682	900	13,582
2038	-	-	-
2039	-	-	-
2040	-	-	-
2041	-	-	-
2042	-	-	-
2043	-	-	-
2044	-	-	-
2045	-	-	-
2046	-	-	-
2047	-	-	-
2048	-	-	-
2049	-	-	-
2050	-	-	-
2051	-	-	-
2052	-	-	-
		-	
NPV in Current Year	58,732	4,166	62,898
NPV When Contract Begins	95,240	6,756	101,996
	-	-	-

LEVELIZED CAPITAL PAYMENTS

	Capital ($000/yr.)	Fixed O&M ($000/yr.)	Capacity Payment ($000/yr.)
2018	-	-	-
2019	-	-	-
2020	-	-	-
2021	-	-	-
2022	-	-	-
2023	-	-	-
2024	-	-	-
2025	-	-	-
2026	-	-	-
2027	13,711	872	14,583
2028	13,711	893	14,604
2029	13,711	916	14,627
2030	13,711	939	14,650
2031	13,711	962	14,673
2032	13,711	986	14,697
2033	13,711	1,011	14,722
2034	13,711	1,036	14,747
2035	13,711	1,062	14,773
2036	13,711	1,089	14,799
2037	13,711	1,116	14,827
2038	-	-	-
2039	-	-	-
2040	-	-	-
2041	-	-	-
2042	-	-	-
2043	-	-	-
2044	-	-	-
2045	-	-	-
2046	-	-	-
2047	-	-	-
2048	-	-	-
2049	-	-	-
2050	-	-	-
2051	-	-	-
2052	-	-	-
NPV in Current Year	58,732	4,166	62,898
LEVELIZED PMT =	13,711		
	-		

EARLY LEVELIZED CAPITAL PAYMENTS

	Capital ($000/yr.)	Fixed O&M ($000/yr.)	Capacity Payment ($000/yr.)
2018	-	-	-
2019	-	-	-
2020	-	-	-
2021	-	-	-
2022	-	-	-
2023	-	-	-
2024	-	-	-
2025	10,726	669	11,395
2026	10,726	686	11,411
2027	10,726	703	11,429
2028	10,726	720	11,446
2029	10,726	738	11,464
2030	10,726	757	11,483
2031	10,726	776	11,501
2032	10,726	795	11,521
2033	10,726	815	11,541
2034	10,726	835	11,561
2035	10,726	856	11,582
2036	10,726	878	11,603
2037	10,726	900	11,625
2038	-	-	-
2039	-	-	-
2040	-	-	-
2041	-	-	-
2042	-	-	-
2043	-	-	-
2044	-	-	-
2045	-	-	-
2046	-	-	-
2047	-	-	-
2048	-	-	-
2049	-	-	-
2050	-	-	-
2051	-	-	-
2052	-	-	-
NPV in Current Year	58,732	4,166	62,898
LEVELIZED PMT =	10,726		
	-		

EARLY DEESCALATING CAPITAL PAYMENTS

	Capital ($000/yr.)	Fixed O&M ($000/yr.)	Capacity Payment ($000/yr.)
2018	-	-	-
2019	-	-	-
2020	-	-	-
2021	-	-	-
2022	-	-	-
2023	-	-	-
2024	-	-	-
2025	12,135	669	12,804
2026	11,832	686	12,518
2027	11,536	703	12,239
2028	11,248	720	11,968
2029	10,967	738	11,705
2030	10,693	757	11,449
2031	10,425	776	11,201
2032	10,165	795	10,960
2033	9,910	815	10,725
2034	9,663	835	10,498
2035	9,421	856	10,277
2036	9,186	878	10,063
2037	8,956	900	9,856
2038	-	-	-
2039	-	-	-
2040	-	-	-
2041	-	-	-
2042	-	-	-
2043	-	-	-
2044	-	-	-
2045	-	-	-
2046	-	-	-
2047	-	-	-
2048	-	-	-
2049	-	-	-
2050	-	-	-
2051	-	-	-
2052	-	-	-
NPV in Current Year	58,732	4,166	62,898
NPV When Contract Begins	95,240	6,756	101,996
	-	-	-

1986 TAX REFORM ACT DEPRECIATION SCHEDULES

Year	**1.0**	**3.0**	**5.0**	**7.0**	**CT 15.0**	**CC 20.0**	**31.5**	**45.0**	**67.0**
1	100.00%	33.33%	20.00%	14.29%	5.00%	3.75%	1.59%	1.11%	0.75%
2		44.44%	32.00%	24.49%	9 50%	7.22%	3.17%	2.22%	1.49%
3		14.81%	19.20%	17.49%	8 55%	6.68%	3.17%	2.22%	1.49%
4		7.41%	11 52%	12.49%	7.70%	6.18%	3.17%	2.22%	1.49%
5			11 52%	8.92%	6.93%	5.71%	3.17%	2.22%	1.49%
6			5.76%	8.92%	6.23%	5.28%	3.17%	2.22%	1.49%
7				8.92%	5.90%	4.89%	3.17%	2.22%	1.49%
8				4.46%	5.90%	4.52%	3.17%	2.22%	1.49%
9					5.90%	4.46%	3.17%	2.22%	1.49%
10					5.90%	4.46%	3.17%	2.22%	1.49%
11					5.90%	4.46%	3.17%	2.22%	1.49%
12					5.90%	4.46%	3.17%	2.22%	1.49%
13					5.90%	4.46%	3.17%	2.22%	1.49%
14					5.90%	4.46%	3.17%	2.22%	1.49%
15					5.90%	4.46%	3.17%	2.22%	1.49%
16					2.95%	4.46%	3.17%	2.22%	1.49%
17						4.46%	3.17%	2.22%	1.49%
18						4.46%	3.17%	2.22%	1.49%
19						4.46%	3.17%	2.22%	1.49%
20						4.46%	3.17%	2.22%	1.49%
21						2.23%	3.17%	2.22%	1.49%
22							3.17%	2.22%	1.49%
23							3.17%	2.22%	1.49%
24							3.17%	2.22%	1.49%
25							3.17%	2.22%	1.49%
26							3.17%	2.22%	1.49%
27							3.17%	2.22%	1.49%
28							3.17%	2.22%	1.49%
29							3.17%	2.22%	1.49%
30							3.17%	2.22%	1.49%
31							3.17%	2.22%	1.49%
32							3.17%	2.22%	1.49%
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45								2.22%	1.49%
46								1.11%	1.49%
47									1.49%
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99									
100									
TOTAL		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Annual Revenue Requirement Calculations

K-Factor =	1.28393

						Gross Plant			Property	Book Accum. Depreciation				Book		Deferred Income Tax			Average	Based on Average of Beginning & End of Year Rate Base								Disc. Factor
Year	Construction Spending	AFUDC	CPI	Book Basis	Tax Basis	Beg Balance	Additions	Ending Balance	Tax Valuation	Beg Balance	Additions	Ending Balance	Tax Depreciation	Depreciation w/o AFUDC	Temporary Difference	Beginning Balance	Annual Activity	Ending Balance	Beg/End Rate Base	Book Depr	Interest Expense	Equity Return	Income Tax	Inc. Tax on Perm. Diff	Property Tax	Insurance	Revenue Requirement	to In- Service
2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.86
2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.74
2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.62
2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.51
2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.41
2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.32
2024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.23
2025	17,627	630	397	18,257	18,024	-	-	-	-	-	-	-	-	-	(397)	-	(101)	(101)	50	-	1	3	1	-	-	-	5	1.15
2026	62,417	3,537	2,215	84,211	82,656	-	-	-	-	-	-	-	-	-	(2,215)	(101)	(562)	(662)	381	-	8	21	7	-	-	-	36	1.07
2027	85,864	3,788	2,355	173,863	170,875	-	173,863	173,863	-	-	2,898	2,898	8,544	2,765	3,424	(662)	868	206	85,711	2,898	1,813	4,770	1,620	45	-	-	11,145	1.00
2028	-	-	-	173,863	170,875	173,863	-	173,863	173,863	2,898	4,968	7,865	16,233	4,740	11,493	206	2,913	3,119	166,819	4,968	3,528	9,283	3,153	77	1,494	229	22,733	0.93
2029	-	-	-	173,863	170,875	173,863	-	173,863	173,863	7,865	4,968	12,833	14,610	4,740	9,870	3,119	2,502	5,621	159,144	4,968	3,366	8,856	3,007	77	1,494	229	21,998	0.87
2030	-	-	-	173,863	170,875	173,863	-	173,863	173,863	12,833	4,968	17,800	13,149	4,740	8,409	5,621	2,132	7,753	151,859	4,968	3,212	8,451	2,870	77	1,494	229	21,301	0.81
2031	-	-	-	173,863	170,875	173,863	-	173,863	173,863	17,800	4,968	22,768	11,834	4,740	7,094	7,753	1,798	9,551	144,927	4,968	3,065	8,065	2,739	77	1,494	229	20,638	0.76
2032	-	-	-	173,863	170,875	173,863	-	173,863	173,863	22,768	4,968	27,735	10,651	4,740	5,910	9,551	1,498	11,049	138,311	4,968	2,925	7,697	2,614	77	1,494	229	20,004	0.71
2033	-	-	-	173,863	170,875	173,863	-	173,863	173,863	27,735	4,968	32,703	10,090	4,740	5,350	11,049	1,356	12,405	131,917	4,968	2,790	7,341	2,493	77	1,494	229	19,393	0.66
2034	-	-	-	173,863	170,875	173,863	-	173,863	173,863	32,703	4,968	37,670	10,090	4,740	5,350	12,405	1,356	13,762	125,593	4,968	2,656	6,989	2,373	77	1,494	229	18,787	0.62
2035	-	-	-	173,863	170,875	173,863	-	173,863	173,863	37,670	4,968	42,638	10,090	4,740	5,350	13,762	1,356	15,118	119,269	4,968	2,523	6,637	2,254	77	1,494	229	18,182	0.58
2036	-	-	-	173,863	170,875	173,863	-	173,863	173,863	42,638	4,968	47,605	10,090	4,740	5,350	15,118	1,356	16,474	112,945	4,968	2,389	6,285	2,134	77	1,494	229	17,577	0.54
2037	-	-	-	173,863	170,875	173,863	-	173,863	173,863	47,605	4,968	52,573	10,090	4,740	5,350	16,474	1,356	17,830	106,622	4,968	2,255	5,934	2,015	77	1,494	229	16,972	0.50
2038	-	-	-	173,863	170,875	173,863	-	173,863	173,863	52,573	4,968	57,540	10,090	4,740	5,350	17,830	1,356	19,186	100,298	4,968	2,121	5,582	1,895	77	1,494	229	16,367	0.47
2039	-	-	-	173,863	170,875	173,863	-	173,863	173,863	57,540	4,968	62,508	10,090	4,740	5,350	19,186	1,356	20,542	93,974	4,968	1,988	5,230	1,776	77	1,494	229	15,762	0.44
2040	-	-	-	173,863	170,875	173,863	-	173,863	173,863	62,508	4,968	67,475	10,090	4,740	5,350	20,542	1,356	21,899	87,651	4,968	1,854	4,878	1,656	77	1,494	229	15,156	0.41
2041	-	-	-	173,863	170,875	173,863	-	173,863	173,863	67,475	4,968	72,443	10,090	4,740	5,350	21,899	1,356	23,255	81,327	4,968	1,720	4,526	1,537	77	1,494	229	14,551	0.38
2042	-	-	-	173,863	170,875	173,863	-	173,863	173,863	72,443	4,968	77,410	5,045	4,740	305	23,255	77	23,332	75,643	4,968	1,600	4,210	1,429	77	1,494	229	14,007	0.35
2043	-	-	-	173,863	170,875	173,863	-	173,863	173,863	77,410	4,968	82,378	-	4,740	(4,740)	23,332	(1,202)	22,130	71,238	4,968	1,507	3,964	1,346	77	1,494	229	13,586	0.33
2044	-	-	-	173,863	170,875	173,863	-	173,863	173,863	82,378	4,968	87,345	-	4,740	(4,740)	22,130	(1,202)	20,929	67,472	4,968	1,427	3,755	1,275	77	1,494	229	13,225	0.31
2045	-	-	-	173,863	170,875	173,863	-	173,863	173,863	87,345	4,968	92,313	-	4,740	(4,740)	20,929	(1,202)	19,727	63,706	4,968	1,347	3,545	1,204	77	1,494	229	12,865	0.29
2046	-	-	-	173,863	170,875	173,863	-	173,863	173,863	92,313	4,968	97,280	-	4,740	(4,740)	19,727	(1,202)	18,525	59,940	4,968	1,268	3,336	1,133	77	1,494	229	12,504	0.27
2047	-	-	-	173,863	170,875	173,863	-	173,863	173,863	97,280	4,968	102,248	-	4,740	(4,740)	18,525	(1,202)	17,324	56,174	4,968	1,188	3,126	1,062	77	1,494	229	12,144	0.25
2048	-	-	-	173,863	170,875	173,863	-	173,863	173,863	102,248	4,968	107,215	-	4,740	(4,740)	17,324	(1,202)	16,122	52,408	4,968	1,108	2,917	990	77	1,494	229	11,784	0.23
2049	-	-	-	173,863	170,875	173,863	-	173,863	173,863	107,215	4,968	112,183	-	4,740	(4,740)	16,122	(1,202)	14,920	48,642	4,968	1,029	2,707	919	77	1,494	229	11,423	0.22
2050	-	-	-	173,863	170,875	173,863	-	173,863	173,863	112,183	4,968	117,150	-	4,740	(4,740)	14,920	(1,202)	13,719	44,877	4,968	949	2,497	848	77	1,494	229	11,063	0.20
2051	-	-	-	173,863	170,875	173,863	-	173,863	173,863	117,150	4,968	122,118	-	4,740	(4,740)	13,719	(1,202)	12,517	41,111	4,968	869	2,288	777	77	1,494	229	10,703	0.19
2052	-	-	-	173,863	170,875	173,863	-	173,863	173,863	122,118	4,968	127,086	-	4,740	(4,740)	12,517	(1,202)	11,316	37,345	4,968	790	2,078	706	77	1,494	229	10,342	0.18
2053	-	-	-	173,863	170,875	173,863	-	173,863	173,863	127,086	4,968	132,053	-	4,740	(4,740)	11,316	(1,202)	10,114	33,579	4,968	710	1,869	635	77	1,494	229	9,982	0.17
2054	-	-	-	173,863	170,875	173,863	-	173,863	173,863	132,053	4,968	137,021	-	4,740	(4,740)	10,114	(1,202)	8,912	29,813	4,968	631	1,659	563	77	1,494	229	9,621	0.15
2055	-	-	-	173,863	170,875	173,863	-	173,863	173,863	137,021	4,968	141,988	-	4,740	(4,740)	8,912	(1,202)	7,711	26,047	4,968	551	1,450	492	77	1,494	229	9,261	0.14
2056	-	-	-	173,863	170,875	173,863	-	173,863	173,863	141,988	4,968	146,956	-	4,740	(4,740)	7,711	(1,202)	6,509	22,281	4,968	471	1,240	421	77	1,494	229	8,901	0.13
2057	-	-	-	173,863	170,875	173,863	-	173,863	173,863	146,956	4,968	151,923	-	4,740	(4,740)	6,509	(1,202)	5,307	18,515	4,968	392	1,030	350	77	1,494	229	8,540	0.13
2058	-	-	-	173,863	170,875	173,863	-	173,863	173,863	151,923	4,968	156,891	-	4,740	(4,740)	5,307	(1,202)	4,106	14,750	4,968	312	821	279	77	1,494	229	8,180	0.12
2059	-	-	-	173,863	170,875	173,863	-	173,863	173,863	156,891	4,968	161,858	-	4,740	(4,740)	4,106	(1,202)	2,904	10,984	4,968	232	611	208	77	1,494	229	7,819	0.11
2060	-	-	-	173,863	170,875	173,863	-	173,863	173,863	161,858	4,968	166,826	-	4,740	(4,740)	2,904	(1,202)	1,702	7,218	4,968	153	402	136	77	1,494	229	7,459	0.10
2061	-	-	-	173,863	170,875	173,863	-	173,863	173,863	166,826	4,968	171,793	-	4,740	(4,740)	1,702	(1,202)	501	3,452	4,968	73	192	65	77	1,494	229	7,099	0.10
2062	-	-	-	173,863	170,875	173,863	-	173,863	173,863	171,793	2,070	173,863	-	1,975	(1,975)	501	(501)	(0)	785	2,070	17	44	15	32	1,494	229	3,901	0.09
	165,908	7,955	4,967				173,863				173,863		170,875	165,908	(0)	435,334	(0)			173,863	54,837	144,288	48,998	2,701	52,296	8,032	485,016.29	
Check $	-			-	-						-		(0)	-										0				

Duke Energy Florida
Summary of Class Annual mWh Requirements

Rate Class	(1) Sales	(2) Unbilled	(3) Total	(4) Delivery Efficiency Factor	(5) Source Level mWh	(6) Percent of Retail Total
	METER LEVEL MWH					
I. **Retail**						
A. Residential - RS	19,765,684	156,633	19,922,317	0.9410	21,171,063	52.187%
B. General Service - GS						
1. Transmission	2,442	19	2,461	0.9850	2,498	0.006%
2. Primary	15,628	124	15,752	0.9750	16,156	0.040%
3. Secondary/Primary	13	0	13	0.9750	13	0.000%
4. Secondary	1,959,491	15,528	1,975,019	0.9410	2,098,815	5.174%
Total GS	1,977,574	15,671	1,993,245		2,117,482	5 220%
C. GS-2 100% LF	170,209	1,349	171,558	0.9410	182,312	0.449%
D. General Service Demand - GSD						
1. Transmission	0	0	0	0.9850	0	0.000%
2. Primary	2,136,173	16,928	2,153,101	0.9750	2,208,393	5.444%
3. Sec Delivery/Prim Mtr	28,708	227	28,935	0.9750	29,678	0.073%
4. Transm Del/Prim Mtr	0	0	0	0.9750	0	0.000%
5. Secondary	11,498,057	91,117	11,589,174	0.9410	12,315,593	30 358%
Total GSD	13,662,938	108,272	13,771,210		14,553,664	35.875%
E. Curtailable Service - CS						
1. Transmission	0	0	0	0.9850	0	0.000%
2. Primary	68,871	546	69,417	0.9750	71,199	0.176%
3. Secondary	0	0	0	0.9410	0	0.000%
Total CS	68,871	546	69,417		71,199	0.176%
F. Interruptible Service - IS						
1. Transmission	337,223	2,672	339,895	0.9850	345,084	0.851%
2. Trans Del/Prim Mtr	217,328	1,722	219,050	0.9750	224,676	0 554%
3. Prim Del/Trans Mtr	240	2	242	0.9850	245	0.001%
4. Primary	1,082,681	8,580	1,091,261	0.9750	1,119,285	2.759%
5. Sec Del/Prim Mtr	4,847	38	4,885	0.9750	5,011	0.012%
6. Secondary	86,906	689	87,595	0.9410	93,086	0 229%
Total IS	1,729,225	13,703	1,742,928		1,787,387	4.406%
G. Standby Service - SS-1 (Firm)						
1. Transmission	8,288	66	8,354	0.9850	8,481	0.021%
2. Trans Del/Prim Mtr	1,818	14	1,832	0.9750	1,879	0.005%
3. Primary	42,814	339	43,153	0.9750	44,261	0.109%
Total SS-1	52,919	419	53,338		54,621	0.135%
H. Standby Service - SS-2 (IS)						
1. Transmission	89,072	706	89,778	0.9850	91,149	0 225%
2. Primary	10,610	84	10,694	0.9750	10,969	0.027%
3. Trans Del/Prim Mtr	58,010	460	58,470	0.9750	59,971	0.148%
Total SS-2	157,692	1,250	158,942		162,089	0.400%
I. Standby Service - SS-3 (CS)						
1. Transmission	0	0	0	0.9850	0	0.000%
2. Primary	63,742	505	64,247	0.9750	65,897	0.162%
Total SS-3	63,742	505	64,247		65,897	0.162%
J. Lighting-OL & SL	375,156	2,973	378,129	0.9410	401,831	0 991%
Total Retail	38,024,010	301,321	38,325,331		40,567,545	100.000%

Duke Energy Florida
Summary of Class Annual mWh Requirements

Rate Class	(1) Sales	(2) Meter Level mWh Unbilled	(3) Total	(4) Delivery Efficiency Factor	(5) Source Level mWh
II. Wholesale					
A. Full Requirements Municipals					
1. Mount Dora (560)	91,905	0	91,905	1.0000	91,905
2. Williston (496)	36,181	0	36,181	1.0000	36,181
3. Seminole Talquin/Tricounty (504)	199	0	199	0.9750	204
4. Chattahoochee (502)	25,958	0	25,958	0.9750	26,625
Total Full Requirements Municipals	154,243	0	154,243		154,915
B. Partial Requirements - Non-Stratified					
1. NSB 55MW (514)	68,590	0	68,590	1.0000	68,590
2. TECO (513,518) / Other	7,020		7,020	1.0000	7,020
3. SECI - CC Sys Avg (535)	-	0	0	1.0000	0
Total Partial Requirements - Non-Stratified	75,610	0	75,610		75,610
C. Partial Requirements - Stratified					
1. Homestead Base (512) & Int (559)	67,700	0	67,700	1.0000	67,700
2. NSB - Peaking (570)	-		0	1.0000	0
3. Reedy Creek Base (500) & Int (499)	533,762	0	533,762	1.0000	533,762
4. Reedy Creek Hines	429,936	0	429,936	1.0000	429,936
5. SECI CC	691,402	0	691,402	1.0000	691,402
6. SECI Base (533/534)	70,800	0	70,800	1.0000	70,800
7. SECI Intermediate (537)	137,290	0	137,290	1.0000	137,290
8. SECI Peaking (536)	9,007	0	9,007	1.0000	9,007
Total Partial Requirements - Stratified	1,939,897	0	1,939,897		1,939,897
Total Wholesale	2,169,750	-	2,169,750		2,170,422
	-				
Total Class: I & II	40,193,761	301,321	40,495,082		42,737,967
III. NON-CLASS					
1. Company Use	166,031		166,031	0.9410	176,438
2. Interchange	70,215		70,215	1.0000	70,215
3. SEPA (009)	26,315		26,315	0.9850	26,717
4. Net Metered Delivered	(29,171)		(29,171)	1.0000	(29,171)
Total Non-Class	233,390		233,390		244,199
	0	0	0		0
Total System Available	40,427,151	301,321	40,728,472		42,982,166

Duke Energy Florida
Summary of Retail Classes Effective Sales by Function

Rate Class	(1) Meter Level mWh Sales Including Unbilled Sales	(2) Energy & Prod Capacity mWh mWh 1 & mWh 5 Effective Sales	(3) Transmission Capacity mWh 2 Effective Sales	(4) Distribution Primary mWh 3 Effective Sales	(5) Distribution Secondary mWh 4 Effective Sales
I. Retail					
A. Residential - RS	19,922,317	19,922,317	19,922,317	19,922,317	19,922,317
B. General Service - GS					
1. Transmission	2,461	0	0	0	0
2. Primary	15,752	0	0	0	0
3. Secondary/Primary	13	0	0	0	0
4. Secondary	1,975,019	1,975,019	1,975,019	1,975,019	1,975,019
Total GS	1,993,245	1,975,019	1,975,019	1,975,019	1,975,019
C. GS-2 100% LF	171,558	171,558	171,558	171,558	171,558
D. General Service Demand - GSD					
1. Transmission	0	0	0	0	0
2. Primary	2,153,101	0	0	0	0
3. Sec Delivery/Prim Mtr	28,935	0	0	0	0
4. Transm Del/Prim Mtr	0	0	0	0	0
5. Secondary	11,589,174	11,589,174	11,589,174	11,589,174	11,589,174
Total GSD	13,771,210	11,589,174	11,589,174	11,589,174	11,589,174
E. Curtailable Service - CS					
1. Transmission	0	0	0	0	0
2. Primary	69,417	0	0	0	0
3. Secondary	0	0	0	0	0
Total CS	69,417	0	0	0	0
F. Interruptible Service - IS					
1. Transmission	339,895	0	0	0	0
2. Trans Del/Prim Mtr	219,050	0	0	0	0
3. Prim Del/Trans Mtr	242	0	0	0	0
4. Primary	1,091,261	0	0	0	0
5. Sec Del/Prim Mtr	4,885	0	0	0	0
6. Secondary	87,595	87,595	87,595	87,595	87,595
Total IS	1,742,928	87,595	87,595	87,595	87,595
G. Standby Service - SS-1 (Firm)					
1. Transmission	8,354	0	0	0	0
2. Trans Del/Prim Mtr	1,832	0	0	0	0
3. Primary	43,153	43,153	43,153	43,153	43,153
Total SS-1	53,338	43,153	43,153	43,153	43,153
H. Standby Service - SS-2 (IS)					
1. Transmission	89,778	0	0	0	0
2. Primary	10,694	0	0	0	0
3. Trans Del/Prim Mtr	58,470	58,470	58,470	0	0
Total SS-2	158,942	58,470	58,470	0	0
I. Standby Service - SS-3 (CS)					
1. Transmission	0	0	0	0	0
2. Primary	64,247	0	0	0	0
Total SS-3	64,247	0	0	0	0
J. Lighting-OL & SL	378,129	378,129	378,129	378,129	378,129
Total Retail	38,325,331	34,225,415	34,225,415	34,166,945	34,166,945

INPUTS:

Transmission Losses		0.0150
Transmission Delivery Efficiency Factor	t	0.9850
Primary Delivery Efficiency Factor	p	0.9750
Secondary Delivery Efficiency Factor	s	0.9410
Generation Delivery Efficiency Factor	g	1.0000
Total Non-Secondary MWH - at Meter		6,438,648
Total Non-Secondary MWH - at Source		6,543,742
UNBILLED MWH - RETAIL ONLY		301,322
UNBILLED MWH - OTHER WHLSE-MUNIS		-
UNBILLED MWH - SECI		-
UNBILLED MWH - Tall, FPL, NSB, Hmstd, TECO, RC D		-

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20180073-Staff-DR1-3-005

ANALYSIS OF 2017 SUMMER AND WINTER TRANSMISSION SYSTEM LINE LOSSES
BASED UPON LOAD FLOW STUDY RESULTS AT 5% INTERVALS BETWEEN 40% AND 100%

			JANUARY thru MARCH 2017												
			100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%
1	I. Load Embedded in DEF Transmission System														
2															
3		DEF Native Load and other Network Customers	9541.0	9080.8	8621.2	8161.1	7701.4	7241.7	6781.6	6321.6	5861.7	5402.0	4942.1	4482.1	4022.2
4		SECI Load	2694.6	2559.9	2425.1	2290.4	2155.6	2020.9	1886.0	1751.4	1616.8	1482.0	1347.3	1212.6	1077.8
5		FMPA Load	404.8	384.7	364.2	344.2	323.8	303.6	283.4	263.1	243.0	222.5	202.5	182.3	161.8
6		DEF Embedded Sub-total	12640.4	12025.4	11410.5	10795.7	10180.8	9566.2	8951.0	8336.1	7721.5	7106.5	6491.9	5877.0	5261.8
7															
8	II. Wheeling Transactions														
9															
10		Gainesville - G2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
11		Sale to Gainesville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12		Ga. Power (Intercession City Peaker #11)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13		Homestead	20.0	19.0	18.0	17.0	16.0	15.0	14.0	13.0	12.0	11.0	10.0	9.0	8.0
14		New Smyrna Beach	30.0	28.5	27.0	25.5	24.0	22.5	21.0	19.5	18.0	16.5	15.0	13.5	12.0
15		NSB Peaking (Purchase ends 12/31/2016)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16		Orange Co-gen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17															
18	TOTAL TRANSMISSION LOADING (I + II)		12694.4	12076.9	11459.5	10842.2	10224.8	9607.7	8990.0	8372.6	7755.5	7138.0	6520.9	5903.5	5285.8
19															
20	III DEF System Losses *(minus GSU losses)*		238.6	217.0	189.8	170.9	154.9	142.9	132.4	124.0	115.3	109.1	94.8	82.7	70.5
21															
22		Percent Losses (based on Load Flow Model)	1.9%	1.8%	1.7%	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.4%	1.3%
23		Hours at Load Level (EEI Comparison)	0	0	0	0	0	0	0	5	16	45	97	225	1784
24		Weighted Factors (Line 22 x Line 23)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.074	0.238	0.688	1.410	3.152	23.794
25															

Duke Energy Florida

ANALYSIS OF 2017 SUMMER AND WINTER TRANSMISSION SYSTEM LINE LOSSES
BASED UPON LOAD FLOW STUDY RESULTS AT 5% INTERVALS BETWEEN 40% AND 100%

26			APRIL thru SEPTEMBER 2017												
27			100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%
28	I. Load Embedded in DEF Transmission System														
29															
30		DEF Native Load and other Network Customers	8995.4	8550.8	8105.9	7661.0	7216.0	6770.9	6326.2	5881.3	5436.5	4991.6	4546.7	4101.9	3656.9
31		SECI Load	2302.7	2183.6	2064.5	1945.5	1826.6	1707.6	1588.5	1469.6	1350.5	1231.4	1112.5	993.4	874.5
32		FMPA Load	423.6	401.8	379.8	358.0	336.0	314.1	292.2	270.3	248.4	226.5	204.8	182.6	160.9
33		DEF Embedded Sub-total	11721.7	11136.2	10550.2	9964.5	9378.6	8792.6	8206.9	7621.2	7035.4	6449.5	5864.0	5277.9	4692.3
34															
35	II. Wheeling Transactions														
36															
37		Gainesville - G2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
38		Sale to Gainesville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39		Ga. Power (Intercession City Peaker #11)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40		Homestead	40.0	38.0	36.0	34.0	32.0	30.0	28.0	26.0	24.0	22.0	20.0	18.0	16.0
41		New Smyrna Beach	30.0	28.5	27.0	25.5	24.0	22.5	21.0	19.5	18.0	16.5	15.0	13.5	12.0
42		NSB Peaking (Purchase ends 12/31/2016)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43		Orange Co-gen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44															
45	TOTAL TRANSMISSION LOADING (I + II)		11795.7	11206.7	10617.2	10028.0	9438.6	8849.1	8259.9	7670.7	7081.4	6492.0	5903.0	5313.4	4724.3
46															
47	III DEF System Losses *(minus GSU losses)*		209.0	188.1	165.8	153.7	139.6	122.7	114.5	110.2	105.1	98.9	92.8	84.3	71.3
48															
49		Percent Losses (based on Load Flow Model)	1.8%	1.7%	1.6%	1.5%	1.5%	1.4%	1.4%	1.4%	1.5%	1.5%	1.6%	1.6%	1.5%
50		Hours at Load Level (EEI Comparison)	0	0	19	112	215	287	311	394	371	468	404	480	1331
51		Weighted Factors (Line 49 x Line 50)	0.000	0.000	0.297	1.717	3.180	3.979	4.311	5.660	5.506	7.130	6.351	7.615	20.088
52															

Duke Energy Florida

ANALYSIS OF 2017 SUMMER AND WINTER TRANSMISSION SYSTEM LINE LOSSES
BASED UPON LOAD FLOW STUDY RESULTS AT 5% INTERVALS BETWEEN 40% AND 100%

		OCTOBER thru DECEMBER 2017												
54		100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%
55	**I. Load Embedded in DEF Transmission System**													
56														
57	DEF Native Load and other Network Customers	8994.0	8549.8	8105.8	7661.6	7217.6	6773.5	6329.5	5885.5	5441.5	4997.5	4553.3	4109.3	3665.0
58	SECI Load	2669.3	2531.2	2393.1	2255.0	2117.0	1978.9	1840.7	1702.7	1564.5	1426.4	1288.5	1150.3	1012.2
59	FMPA Load	414.6	393.3	371.7	350.4	328.7	307.4	285.9	264.5	243.1	221.6	200.0	178.7	157.1
60	**DEF Embedded Sub-total**	12077.9	11474.3	10870.6	10267.0	9663.3	9059.8	8456.1	7852.7	7249.1	6645.5	6041.8	5438.3	4834.3
61														
62	**II. Wheeling Transactions**													
63														
64	Gainesville - G2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
65	Sale to Gainesville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	Homestead	17.1	16.2	15.4	14.5	13.7	12.8	12.0	11.1	10.3	9.4	8.5	7.7	6.8
67	New Smyrna Beach	30.0	28.5	27.0	25.5	24.0	22.5	21.0	19.5	18.0	16.5	15.0	13.5	12.0
68	NSB Peaking (Purchase ends 12/31/2016)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69	Orange Co-gen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70														
71	**TOTAL TRANSMISSION LOADING (I + II)**	12129.0	11523.0	10917.0	10311.0	9705.0	9099.1	8493.1	7887.3	7281.4	6675.4	6069.3	5463.5	4857.1
72														
73	**III DEF System Losses *(minus GSU losses)***	243.8	216 8	193.2	170.0	156.6	139.1	132.5	127.9	121.9	111.2	104.0	92.3	80.3
74														
75	Percent Losses (based on Load Flow Model)	2.0%	1.9%	1.8%	1.6%	1.6%	1.5%	1.6%	1.6%	1.7%	1.7%	1.7%	1.7%	1.7%
76	Hours at Load Level (EEI Comparison)	0	0	0	0	14	25	39	55	97	163	219	410	1174
77	Weighted Factors (Line 75 x Line 76)	0.000	0.000	0.000	0.000	0.226	0.382	0.608	0.892	1.624	2.715	3.753	6.927	19.409
78														
79														
80	**OVERALL 2017 Weighted Average Percent Losses**	1.50%												
81														

82 **NOTES:**
83 Transmission losses were determined from a load flow study which separated hourly load levels from — total hours* = 8760
84 minimum (40%) to maximum (100%) in 5% intervals for Summer and Winter months. The losses derived
85 from the model were divided by the total transmission load which resulted in a loss ratio for each interval. — total weighted fact 131.7
86 The loss ratios were multiplied by the number of hours with load falling within each respective interval
87 as determined from the EEI system load deck which identifies system load for each hour in the calendar year.
88 The thirty-nine weighted factors were accumulated and divided by 8760 hours in the year to derive the transmission loss factor.

As Available Only

	Energy (MWH)	Capacity Rates ($/kw-month)	Total Capacity Payments ($000)	Energy Rates ($/MWh)	Total Energy Payments ($000)	Total Payments to Renewable Provider ($000)
2019	416,362	$ -	$ -	$ 20.54	$ 8,553	$ 8,553
2020	417,503	$ -	$ -	$ 16.01	$ 6,683	$ 6,683
2021	416,362	$ -	$ -	$ 12.79	$ 5,323	$ 5,323
2022	416,362	$ -	$ -	$ 13.42	$ 5,589	$ 5,589
2023	416,362	$ -	$ -	$ 15.24	$ 6,343	$ 6,343
2024	417,503	$ -	$ -	$ 18.34	$ 7,655	$ 7,655
2025	416,362	$ -	$ -	$ 21.78	$ 9,068	$ 9,068
2026	416,362	$ -	$ -	$ 24.50	$ 10,200	$ 10,200
2027	416,362	$ -	$ -	$ 27.56	$ 11,473	$ 11,473
2028	417,503	$ -	$ -	$ 29.47	$ 12,305	$ 12,305
2029	416,362	$ -	$ -	$ 31.26	$ 13,014	$ 13,014
2030	416,362	$ -	$ -	$ 33.61	$ 13,993	$ 13,993
2031	416,362	$ -	$ -	$ 33.88	$ 14,108	$ 14,108
2032	417,503	$ -	$ -	$ 34.56	$ 14,427	$ 14,427
2033	416,362	$ -	$ -	$ 36.94	$ 15,380	$ 15,380
2034	416,362	$ -	$ -	$ 39.46	$ 16,430	$ 16,430
2035	416,362	$ -	$ -	$ 40.07	$ 16,682	$ 16,682
2036	417,503	$ -	$ -	$ 43.45	$ 18,141	$ 18,141
2037	416,362	$ -	$ -	$ 44.98	$ 18,727	$ 18,727
2038	416,362	$ -	$ -	$ 48.17	$ 20,057	$ 20,057
Total	8,332,945		-		244,151	244,151
NPV 2018$			$ -		$ 114,628	$ 114,628

Normal Capacity Payments

	Energy (MWH)	Capacity Rates ($/kw-month)	Total Capacity Payments ($000)	Energy Rates ($/MWh)	Total Energy Payments ($000)	Total Payments to Renewable Provider ($000)
2019	416,362	$ -	$ -	$ 20.54	$ 8,553	$ 8,553
2020	417,503	$ -	$ -	$ 16.01	$ 6,683	$ 6,683
2021	416,362	$ -	$ -	$ 12.79	$ 5,323	$ 5,323
2022	416,362	$ -	$ -	$ 13.42	$ 5,589	$ 5,589
2023	416,362	$ -	$ -	$ 15.24	$ 6,343	$ 6,343
2024	417,503	$ -	$ -	$ 18.34	$ 7,655	$ 7,655
2025	416,362	$ -	$ -	$ 21.78	$ 9,068	$ 9,068
2026	416,362	$ -	$ -	$ 24.50	$ 10,200	$ 10,200
2027	416,362	$ 4.84	$ 1,695	$ 27.56	$ 11,473	$ 13,168
2028	417,503	$ 4.96	$ 2,978	$ 29.47	$ 12,305	$ 15,283
2029	416,362	$ 5.09	$ 3,053	$ 31.26	$ 13,014	$ 16,067
2030	416,362	$ 5.22	$ 3,129	$ 33.61	$ 13,993	$ 17,122
2031	416,362	$ 5.35	$ 3,207	$ 33.88	$ 14,108	$ 17,315
2032	417,503	$ 5.48	$ 3,288	$ 34.56	$ 14,427	$ 17,714
2033	416,362	$ 5.62	$ 3,370	$ 36.94	$ 15,380	$ 18,749
2034	416,362	$ 5.76	$ 3,454	$ 39.46	$ 16,430	$ 19,884
2035	416,362	$ 5.90	$ 3,540	$ 40.07	$ 16,682	$ 20,222
2036	417,503	$ 6.05	$ 3,629	$ 43.45	$ 18,141	$ 21,770
2037	416,362	$ 6.20	$ 3,720	$ 44.98	$ 18,727	$ 22,447
2038	416,362	$ 6.35	$ 3,813	$ 48.17	$ 20,057	$ 23,869
Total	8,332,945		38,875		244,151	283,027
NPV 2018$			$ 14,718		$ 114,628	$ 129,346

Levelized Capacity Payments

	Energy (MWH)	Capacity Rates ($/kw-month)	Total Capacity Payments ($000)	Energy Rates ($/MWh)	Total Energy Payments ($000)	Total Payments to Renewable Provider ($000)
2019	416,362	$ -	$ -	$ 20.54	$ 8,553	$ 8,553
2020	417,503	$ -	$ -	$ 16.01	$ 6,683	$ 6,683
2021	416,362	$ -	$ -	$ 12.79	$ 5,323	$ 5,323
2022	416,362	$ -	$ -	$ 13.42	$ 5,589	$ 5,589
2023	416,362	$ -	$ -	$ 15.24	$ 6,343	$ 6,343
2024	417,503	$ -	$ -	$ 18.34	$ 7,655	$ 7,655
2025	416,362	$ -	$ -	$ 21.78	$ 9,068	$ 9,068
2026	416,362	$ -	$ -	$ 24.50	$ 10,200	$ 10,200
2027	416,362	$ 5.45	$ 1,906	$ 27.56	$ 11,473	$ 13,379
2028	417,503	$ 5.45	$ 3,272	$ 29.47	$ 12,305	$ 15,577
2029	416,362	$ 5.46	$ 3,277	$ 31.26	$ 13,014	$ 16,291
2030	416,362	$ 5.47	$ 3,282	$ 33.61	$ 13,993	$ 17,275
2031	416,362	$ 5.48	$ 3,287	$ 33.88	$ 14,108	$ 17,395
2032	417,503	$ 5.49	$ 3,293	$ 34.56	$ 14,427	$ 17,720
2033	416,362	$ 5.50	$ 3,298	$ 36.94	$ 15,380	$ 18,678
2034	416,362	$ 5.51	$ 3,304	$ 39.46	$ 16,430	$ 19,734
2035	416,362	$ 5.52	$ 3,310	$ 40.07	$ 16,682	$ 19,991
2036	417,503	$ 5.53	$ 3,316	$ 43.45	$ 18,141	$ 21,457
2037	416,362	$ 5.54	$ 3,322	$ 44.98	$ 18,727	$ 22,049
2038	416,362	$ 5.55	$ 3,328	$ 48.17	$ 20,057	$ 23,385
Total	8,332,945		38,195		244,151	282,346
NPV 2018$			$ 14,718		$ 114,628	$ 129,346

Early Capacity Payments

	Energy (MWH)	Capacity Rates ($/kw-month)	Total Capacity Payments ($000)	Energy Rates ($/MWh)	Total Energy Payments ($000)	Total Payments to Renewable Provider ($000)
2019	416,362	$ -	$ -	$ 20.54	$ 8,553	$ 8,553
2020	417,503	$ -	$ -	$ 16.01	$ 6,683	$ 6,683
2021	416,362	$ -	$ -	$ 12.79	$ 5,323	$ 5,323
2022	416,362	$ -	$ -	$ 13.42	$ 5,589	$ 5,589
2023	416,362	$ -	$ -	$ 15.24	$ 6,343	$ 6,343
2024	417,503	$ -	$ -	$ 18.34	$ 7,655	$ 7,655
2025	416,362	$ 3.60	$ 2,157	$ 21.78	$ 9,068	$ 11,225
2026	416,362	$ 3.68	$ 2,211	$ 24.50	$ 10,200	$ 12,411
2027	416,362	$ 3.78	$ 2,266	$ 27.56	$ 11,473	$ 13,739
2028	417,503	$ 3.87	$ 2,323	$ 29.47	$ 12,305	$ 14,628
2029	416,362	$ 3.97	$ 2,381	$ 31.26	$ 13,014	$ 15,395
2030	416,362	$ 4.07	$ 2,441	$ 33.61	$ 13,993	$ 16,433
2031	416,362	$ 4.17	$ 2,502	$ 33.88	$ 14,108	$ 16,609
2032	417,503	$ 4.27	$ 2,564	$ 34.56	$ 14,427	$ 16,991
2033	416,362	$ 4.38	$ 2,628	$ 36.94	$ 15,380	$ 18,008
2034	416,362	$ 4.49	$ 2,694	$ 39.46	$ 16,430	$ 19,124
2035	416,362	$ 4.60	$ 2,761	$ 40.07	$ 16,682	$ 19,443
2036	417,503	$ 4.72	$ 2,830	$ 43.45	$ 18,141	$ 20,972
2037	416,362	$ 4.84	$ 2,901	$ 44.98	$ 18,727	$ 21,628
2038	416,362	$ 4.96	$ 2,974	$ 48.17	$ 20,057	$ 23,030
Total	8,332,945		35,632		244,151	279,784
NPV 2018$			$ 14,718		$ 114,628	$ 129,346

Early Levelized Capacity Payments

	Energy (MWH)	Capacity Rates ($/kw-month)	Total Capacity Payments ($000)	Energy Rates ($/MWh)	Total Energy Payments ($000)	Total Payments to Renewable Provider ($000)
2019	416,362	$ -	$ -	$ 20.54	$ 8,553	$ 8,553
2020	417,503	$ -	$ -	$ 16.01	$ 6,683	$ 6,683
2021	416,362	$ -	$ -	$ 12.79	$ 5,323	$ 5,323
2022	416,362	$ -	$ -	$ 13.42	$ 5,589	$ 5,589
2023	416,362	$ -	$ -	$ 15.24	$ 6,343	$ 6,343
2024	417,503	$ -	$ -	$ 18.34	$ 7,655	$ 7,655
2025	416,362	$ 4.09	$ 2,455	$ 21.78	$ 9,068	$ 11,523
2026	416,362	$ 4.10	$ 2,459	$ 24.50	$ 10,200	$ 12,659
2027	416,362	$ 4.10	$ 2,462	$ 27.56	$ 11,473	$ 13,935
2028	417,503	$ 4.11	$ 2,466	$ 29.47	$ 12,305	$ 14,771
2029	416,362	$ 4.12	$ 2,470	$ 31.26	$ 13,014	$ 15,484
2030	416,362	$ 4.12	$ 2,474	$ 33.61	$ 13,993	$ 16,466
2031	416,362	$ 4.13	$ 2,478	$ 33.88	$ 14,108	$ 16,585
2032	417,503	$ 4.14	$ 2,482	$ 34.56	$ 14,427	$ 16,909
2033	416,362	$ 4.14	$ 2,486	$ 36.94	$ 15,380	$ 17,866
2034	416,362	$ 4.15	$ 2,491	$ 39.46	$ 16,430	$ 18,921
2035	416,362	$ 4.16	$ 2,495	$ 40.07	$ 16,682	$ 19,177
2036	417,503	$ 4.17	$ 2,500	$ 43.45	$ 18,141	$ 20,641
2037	416,362	$ 4.17	$ 2,504	$ 44.98	$ 18,727	$ 21,231
2038	416,362	$ 4.18	$ 2,509	$ 48.17	$ 20,057	$ 22,566
Total	8,332,945		34,731		244,151	278,882
NPV 2018$			$ 14,718		$ 114,628	$ 129,346

ESTIMATED UNIT FUEL COST

As required in Section 25-17.0832, F.A.C., the estimated fuel costs associated with DEF's Avoided Unit are based on current estimates of the price of natural gas and will be provided within 30 days of a written request for such projections by any interested person.

DELIVERY VOLTAGE ADJUSTMENT

DEF's average system line losses are analyzed annually for the prior calendar year, and delivery efficiencies are developed for the transmission, distribution primary, and distribution secondary voltage levels. This analysis is provided in the DEF's Procedures For Changing The Real Power Loss Factor (currently Attachment Q) in its Open Access Transmission Tariff and DEF's fuel cost recovery filing with the FPSC. An adjustment factor, calculated as the reciprocal of the appropriate delivery efficiency factor, is applicable to the above determined energy costs if the RF/QF is within DEF's service territory to reflect the delivery voltage level at which RF/QF energy is received by the DEF.

The current delivery voltage adjustment factors are:

Delivery Voltage	Adjustment Factor
Transmission Voltage Delivery	1.0150~~36~~
Primary Voltage Delivery	1.0250~~36~~
Secondary Voltage Delivery	1.0590~~629~~

PERFORMANCE CRITERIA

Payments for firm Capacity are conditioned on the RF/QF's ability to maintain the following performance criteria:

A. Capacity Delivery Date

The Capacity Delivery Date shall be no later than the Required Capacity Delivery Date.

B. Availability and Capacity Factor

The Facility's availability and capacity factor are used in the determination of firm Capacity Payments through a performance based calculation as detailed in Appendix A to the Contract.

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