DUKE ENERGY FLORIDA

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VIA ELECTRONIC FILING

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

Re: *Duke Energy Florida, LLC's Load Research Sampling Plan; Undocketed*

Dear Mr. Teitzman:

Please find attached Duke Energy Florida, LLC's ("DEF"), response to Staff's First Data Request regarding DEF's 2019 Load Research Sampling Plan.

Thank you for your assistance in this matter. Please feel free to call me at (850) 521-1428 should you have any questions concerning this filing.

Sincerely,

s/ Matthew R. Bernier

Matthew R. Bernier

MRB/mw
Enclosures

cc: Zachary Rogers
Michael Barrett
Bill McNulty

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DUKE ENERGY FLORIDA, LLC'S RESPONSE TO STAFF'S FIRST DATA REQUEST REGARDING DEF'S 2019 LOAD RESEARCH SAMPLING PLAN (Nos. 1-9)

DR1.1 In DEF's 2016 Load Research Sampling Plan (2016 Plan), the strata were over-sampled to account for missed load profile reads and temporary equipment failure throughout the study period for the Residential (RS), General Service Non-Demand (GS), and General Service Demand (GSD) Rate Classes. Does the 2019 Plan over-sample the strata for the RS, GS, and GSD Rate Classes in the same manner as was done for the 2016 Plan? Please explain your response.

Response:
Yes, the strata were over-sampled, but more so than in years past. Due to the DEF smart meter deployment initiative that began Q1 2019, it is anticipated that interval data will be readily available for our load research sample points. This is much more cost effective being that Duke Energy will not have to install special metering to capture interval data on load research sample points. Metering and installation cost were a key consideration in previous sample designs that impacted the sample sizes.

DR1.2 Comparing the 2019 and the 2016 Plans, please explain why the sampling size for the 2019 RS increased to 570 from 325?

Response:
The sample size increased because we can take advantage of having access to more interval data due to the smart meter roll-out.

DR1.3 Comparing the 2019 and the 2016 Plans, please explain why the sampling size for the 2019 GS increased to 855 from 620?

Response:
The sample size increased because we can take advantage of having access to more interval data due to the smart meter roll-out.

DR1.4 Comparing the 2019 and the 2016 Plans, please explain why the sampling size for the 2019 GSD decreased from 524 to 521.

Response:
The sample design is based on the most recent historical billing data, so we expect to see minor differences between studies. See more details about the GSD design in the response to DR1.5(c).

DR1.5 Comparing the 2019 and the 2016 Plans, the Company states that for the GS Rate Class, the number of strata were increased due to the accessibility of interval data from smart meters:

a. What effect did the smart meters have on the strata for the RS Rate Class?
b. What effect did the smart meters have on the strata for any other rate classes?
c. Staff observed that the GSD Rate Class strata were increased. Please explain whether this increase was due to the accessibility of the interval data from smart meters, or for other reasons?

Response:

a. Since we have access to more data at a lower cost, we increased the number of sample points within each stratum.
b. Historically, the GS Rate Class has the most diversity among their customers, so more sample points are needed to obtain the required precision levels. Samples are stratified to create more homogeneous groups. Typically, the overall sample size decreases when you increase the number of strata. However, an individual stratum needs to have enough sample points to represent their group. With access to more data at a lower cost, we can increase the number strata and still have enough sample points within each group.
c. The increase in the number of strata for GSD was due to the accessibility of interval data from smart meters. For many years, all accounts with their third highest demand > 1000 kW have had interval data meters. Since no meter changes were necessary, these were incorporated into the prior samples. As you can see in the 2016 study, the last stratum in each revenue class had a breakpoint of 1000 kW, and were "census" groups, which means we used all accounts in the population. (Since each stratum is weighted, this group was not over-represented by including all the accounts in the sample.) With the accessibility of smart meter data, we are no longer constrained by the > 1000 kW breakpoint. The 2019 study used a similar number of meters, but the meters are dispersed more evenly among the strata. The strata breakpoints are more aligned with the population billing data. For the GSD Commercial strata, we reduced the number of sample points in the highest stratum, and added an additional stratum, due to the large number of smaller accounts in the commercial group.

DR1.6 For ease of reference, please review the following table for the purposes of addressing this Data Request:

2019	Commercial: 3rd highest kW > 900	Sample Size: 75
2016	Commercial: 3rd highest kW > 1000 (Census)	Sample Size: 113

In DEF's 2016 Plan, Commercial customers in the GSD Rate Class with the 3rd highest demand greater than 1000 kW were already equipped with mass memory meters for

power factor billing, so they were included in a Census stratum. Comparing the 2019 and the 2016 Plans, please explain:

a. The threshold change from greater than 1,000 kW to greater than 900kW.
b. The sample size change from 113 to 75.

Response:
Please see response to DR1.5(c).

DR1.7 For ease of reference, please review the following table for the purposes of addressing this Data Request.

2019	Public Authority: 3rd highest kW> 600, but<= 4,300 Public Authority: 3rd highest kW> 4,300 (Census)	Sample Size: 50 Sample Size: 6
2016	Public Authority: 3rd highest kW> 1000 (Census)	Sample Size: 59

In DEF's 2016 Plan, Public Authority customers with the 3rd highest demand greater than 1000 kW were already equipped with mass memory meters for power factor billing, so they were included in a Census stratum. Comparing the 2019 and the 2016 Plans, please explain:

a. The threshold change between the 2019 and 2016 Plans.
b. The corresponding sample size changes between the 2019 and 2016 Plans.

Response:
Please see response to DR1.5(c).

DR1.8 In the development of stratum breakpoints for each rate class, please provide:

a. A description of the procedure DEF used to apply the Delanius Hodges Method cumulative square-root "uf" technique to determine stratum breakpoints.
b. The intermediate statistics which were sequentially used to derive the stratum breakpoints.

Response:
Load Research uses Oracle's Load Analysis software, which is widely used in the utility industry. We input billing data for the population, and desired confidence and precision levels, then run a series of programs, which provide stratum boundaries, weights, and sample sizes. Statistics are calculated on the design variable, such as summer kwh, for both the population and the selected sample. A Z-test is used to verify that the two means are not significantly different. It also calculates the expected accuracy of the sample. All reference materials associated with the statistical calculations used by Load Research can be found within Oracle's Load Analysis software documentation or the AEIC Load Research Manual.

DR1.9 In the development of each stratum's sample size for each rate class, please provide:

a. A description of the procedure DEF used to apply the Neyman allocation to determine each stratum's sample size.
b. The intermediate statistics which were sequentially used to derive each stratum's sample size.

Response:
Please see response to DR1.8.