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May 31, 2024

VIA ELECTRONIC FILING

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

Re: Docket No. 20240000-OT
Florida Power & Light Company – 2024 Load Research Sampling Plan

Dear Mr. Teitzman:

Pursuant to Rule 25-6.0437(6), F.A.C., enclosed for filing on behalf of Florida Power & Light Company is the Load Research Sampling Plan for the approval of sample deployments for the year 2024.

Should you have any questions concerning this filing, please contact **Tara B. DuBose, Sr. Manager, Cost of Service and Wholesale, at (561) 691-2391.**

Respectfully submitted,

/s Christopher T. Wright

Christopher T. Wright

Fla. Auth. House Counsel No. 1007055

Enclosures

cc: Judy Harlow, Director of Economics
Elisabeth Draper, Chief of Economic Impact & Rate Design
Bill McNulty, Chief of Conservation & Forecasting

FLORIDA POWER & LIGHT COMPANY

Load Research Sampling Plan
FPSC Rule 25-6.0437, Florida Administrative
Code

MAY 2024

Rates and Tariff Administration Department
Load Research Section

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I. INTRODUCTION

Florida Power & Light Company (FPL) filed its last Load Research Sampling Plan on November 4, 2022 (“2022 Plan”). The Commission Staff approved the 2022 Plan on February 20, 2023. FPL herein submits this 2024 Load Research Sampling Plan (“2024 Plan”) pursuant to Rule 25-6.0437, Florida Administrative Code (Rule).

The Rule is applicable to electric utilities that provide electric service to more than 50,000 retail customers at the end of any calendar year and requires those utilities to sample all rate classes that account for more than 1 percent of a utility's annual retail sales. The Rule further provides that the sampling plan shall be designed to provide estimates of the averages of the 12 monthly coincident peaks for each class within plus or minus 10 percent at the 90 percent confidence level. The sampling plan shall also be designed to provide estimates of the summer and winter peak demands for each rate class within plus or minus 10 percent at the 90 percent confidence level, except for the General Service Non-Demand rate class. The sampling plan shall be designed to provide estimates of the summer and winter peak demands for the General Service Non-Demand rate class within plus or minus 15 percent at the 90 percent confidence level. The Rule also requires the filing of a revised sampling plan to the Commission no less often than every three years after the most recent sampling plan was required to be submitted.

This report summarizes FPL’s proposed 2024 Plan designs for the following rate classes:

- RS(T)-1:** Residential Service (RS-1, RSFB, RS-1(EV) and RTR-1)
- GS(T)-1:** General Service Non-Demand (GS-1 & GST-1)
- GSD(T)-1:** General Service Demand (GSD-1, GSDT-1, GSD-1EV, HLFT-1, UEV, SDTR-1A & SDTR-1B)
- GSLD(T)-1:** General Service Large Demand (GSLD-1, GSLDT-1, GSLD-1EV, CS-1, CST-1, HLFT-2, SDTR-2A & SDTR-2B)

As shown on Table 1, the total population of all other rate classes meeting the “more than 1%” of annual retail sales criterion is 100 percent studied and, therefore, does not require statistical sampling.

Consistent with FPL’s previously approved sampling plans, for purposes of this plan, time-of-use (TOU), non-TOU, and other optional rate schedules were combined into their related rate classes and studied together. For example, General Service Demand (GSD-1), General Service Demand - Time of Use (GSDT-1), Electric Vehicle Charging Infrastructure Rider Pilot (GSD-1EV), High Load Factor - Time of Use 1 (HLFT-1), Utility-Owned Public Charging for Electric Vehicles Pilot (UEV), Seasonal Demand - Time of Use Rider 1A (SDTR-1A) and Seasonal Demand - Time of Use Rider 1B (SDTR-1B) were analyzed together as one class—GSD(T)-1.

Table 1

Rate Classes	2023 Annual Retail Billed Sales		Data Collection Process
	MWH	Percent	
RS(T)-1 Residential Service (RS-1, RSFB, RS-1(EV) and RTR-1)	70,161,113	54.85%	Sampling
GS(T)-1 General Service Non-Demand (GS-1 & GST-1)	8,206,644	6.42%	Sampling
GSD(T)-1 General Service Demand (GSD-1, GSDD-1, GSD-1EV, HLFT-1, UEV, SDTR-1A & SDTR-1B)	29,137,716	22.78%	Sampling
GSLD(T)-1 General Service Large Demand 1 (500-1999 kW) (GSLD-1, GSLDT-1, GSLD- 1EV, CS-1, CST-1, HLFT-2, SDTR-2A and SDTR-2B)	10,822,084	8.46%	Sampling
GSLD(T)-2 General Service Large Demand 2 (2000+ kW) (GSLD-2, GSLDT-2, CS-2, CST- 2, HLFT-3, SDTR-3A and SDTR-3B)	3,696,033	2.89%	Sampling
CILC-1D Commercial/Industrial Load Control, Distribution	2,520,872	1.97%	100% Studied
CILC-1T Commercial/Industrial Load Control, Transmission	1,389,368	1.09%	100% Studied
All Other Rate Classes ¹	1,969,963	1.54%	Not Applicable
Total	127,903,793	100%	

¹. Each rate class in this category falls below the 1% of annual retail sales criterion. Thus, load research sampling plans are not required under the Rule.

II. PROPOSED SAMPLING PLAN DESIGN METHODOLOGY

The proposed sampling plan methodology utilizes a three-year replacement cycle for all sampled rate classes. FPL’s most recent sampling plan was filed in 2022 following the merger and rate unification of FPL and former Gulf Power Company. Prior to the merger, the two Companies had different sampling plans and schedules. As part of the review of its 2022 Plan, Staff requested and FPL agreed to file a new plan in May 2024 for the consolidated Company to restart the three-year cycle. Thus, the proposed 2024 Plan provides for the RS(T)-1, GS(T)-1, GSD(T)-1, and GSLD(T)-1 rate class samples to be updated every 3 years consistent with the express requirements of the Rule.

The proposed sampling plan was developed using two years of FPL’s most currently available load research data and seasonal peak information. To ensure that a sufficient number of sample points would be selected, sample sizes were calculated for every month starting January 2022 through December 2023. The month with the largest number of required sample points over this period was selected for each rate class.

Based on the results obtained from this data, FPL proposes to continue the use a one-dimensional stratified random design based on the annual average monthly energy for the RS(T)-1, GS(T)-1, GSD(T)-1, and GSLD(T)-1 rate classes.

The sample sizes reported herein are designed to meet accuracy requirements of the Rule based on the requisite confidence level and expected data loss factors, while simultaneously minimizing costs.

RS(T)-1 Residential Service (RS-1, RSFB, RS-1(EV) and RTR-1)

A one-dimensional stratified random sample design process was used for the RS(T)-1 rate class. The customer population was stratified based on the average monthly energy consumption (kWh) for the period January to December 2023.

Stratum breakpoints were defined using the Dalenius-Hodges method. This process generated four strata based on energy consumption:

1. 0 to 800 kWh
2. 801 to 1,440 kWh
3. 1,441 to 2,560 kWh
4. 2,561 kWh and Above

Stratum Number	Stratum Range (kWh)	Stratum Population	Stratum Weights	Suggested Sample Size
1	0 – 800	1,905,003	0.37088	254
2	801 – 1,440	1,837,921	0.35782	313
3	1,441 – 2,560	1,152,001	0.22428	257
4	2,561+	241,515	0.04702	75

GS(T)-1 General Service Non-Demand (GS-1 & GST-1)

A one-dimensional stratified random sample design process was used for the GS(T)-1 rate class. The customer population was stratified based on the average monthly energy consumption (kWh) for the period January to December 2023.

Stratum breakpoints were defined using the Dalenius-Hodges method. This process generated four strata based on energy consumption:

1. 0 to 685 kWh
2. 686 to 1,885 kWh
3. 1,886 to 3,985 kWh
4. 3,986 kWh and Above

Stratum Number	Stratum Range (kWh)	Stratum Population	Stratum Weights	Suggested Sample Size
1	0 – 685	249,790	0.47531	87
2	686 – 1,885	158,957	0.30247	249
3	1,886 – 3,985	82,041	0.15611	175
4	3,986+	34,743	0.06611	173

GSD(T)-1 General Service Demand (GSD-1, GSdT-1, GSD-1EV, HLFT-1, UEV, SDTR-1A & SDTR-1B)

A one-dimensional stratified random sample design process was used for the GSD(T)-1 rate class. The customer population was stratified based on the average monthly energy consumption (kWh) for the period January to December 2023.

Stratum breakpoints were defined using the Dalenius-Hodges method. The process generated three strata based on energy consumption, which are as follows:

1. 0 to 19,200 kWh
2. 19,201 to 70,200 kWh
3. 70,201 kWh and Above

Stratum Number	Stratum Range (kWh)	Stratum Population	Stratum Weights	Suggested Sample Size
1	0 – 19,200	67,735	0.65989	115
2	19,201 – 70,200	26,882	0.26189	122
3	70,201+	8,029	0.07822	68

GSLD(T)-1 (GSLD-1, GSLDT-1, GSLD-1EV, CS-1, CST-1, HLFT-2, SDTR-2A and SDTR-2B)

A one-dimensional stratified random sample design process was used for the GSLD(T)-1 rate class. The customer population was stratified based on the average monthly energy consumption (kWh) for the period January to December 2023.

Stratum breakpoints were defined using the Dalenius-Hodges method. This process generated two strata based on energy consumption:

1. 0 to 307,800 kWh
2. 307,801 kWh and Above

Stratum Number	Stratum Range (kWh)	Stratum Population	Stratum Weights	Suggested Sample Size
1	0 - 307,800	1,845	0.61379	74
2	307,801+	1,161	0.38621	65

III. PROPOSED SAMPLING PLAN SUMMARY

The following table lists by strata and deployment year of 2025 for each rate class. For the detailed design statistics for each rate class, refer to their respective tables.

Rate Class	Sample Points	# of Strata	Detailed Design Statistics
RS(T)-1	899	4	Table 2
GS(T)-1	684	4	Table 3
GSD(T)-1	305	3	Table 4
GSLD(T)-1	139	2	Table 5

Please refer to Table 6 for definitions of variables and indices and Table 7 for formulas used in the design and estimation of these samples.

Table 2

Proposed RS(T)-1 Sample Design

Rate Classes : RS-1, RSFB, RS-1(EV) and RTR-1 (Rates Codes: 41, 44, 46, and 145)
Deployment Year : 2025
Sample Design : One Dimensional Stratified Random Sample - Combined Ratio Estimation, Dalenius-Hodges Procedure, Neyman Allocation, With Finite Population Correction
Design Precision(P) : 10%
Design Confidence : 90% (1.645)
Stratification Variable : Annual Monthly Mean Energy (KWH)

[1]	[2]	[3]	[4]	[4]x[5]	[3]x[4]	[4]x([3]^2)	[6]	[7]
Strata	Sample Size	SDRh	Wh	Nh	Wh(SDRh)	Wh(SDRh)^2	Neyman Alloc. of n with losses (nh)	Proposed Sample
1	182	1.7469	0.37088	1,905,003	0.64789	1.132	253.013	254
2	192	2.2363	0.35782	1,837,921	0.80019	1.789	312.490	313
3	193	2.9274	0.22428	1,152,001	0.65656	1.922	256.398	257
4	195	4.040	0.04702	241,515	0.18996	0.767	74.181	75
Sum(Σ)	762	10.951	1.00000	5,136,441	2.295	5.611	896.081	899
Combined		2.882		[5]				

CALCULATIONS	
YBAR =	2.3021
$n = (\sum Wh * SDRh)^2 / ((P * YBAR / Z)^2 + (\sum Wh (SDRh)^2 / \sum Nh))$	
=	268.824
$n(\text{with losses}) = n / 0.3 =$	896.081

DEFINITIONS:

[1] Strata Break Points (KWH)

- Strata 1 = 0 - 800
- Strata 2 = 801 - 1440
- Strata 3 = 1441 - 2560
- Strata 4 = 2561 - INF

[2] Number of valid sample points in OULA for the month of January 2023 (Refer to Note B)

[3] Standard deviation for the month of January 2023 coincident peak, per OULA. (Refer to Note B)

[4] Percent of customers per strata for the summer and winter peak months from FPL's Billing Systems. (Refer to Note C)

[5] Total number of customers for the month of January 2023 from FPL's Billing Systems. (Refer to Note B)

[6] $nh = Wh(SDRh) / \sum Wh(SDRh)$

[7] Based on Neyman Allocation of n with losses. Minimum strata size = 30, via central limit theorem.

NOTES:

A) The most current load research data available was obtained from OULA (FPL's Load Research System) for the period January 2022 to December 2023.

B) The above calculations were performed for every month of 2022 and 2023. January 2023 load research data produced the largest sample size requirement and was therefore selected.

C) The strata break points and weights were defined on the basis of average monthly energy consumption (KWH) for 2023.

Table 3

Proposed GS(T)-1 Sample Design

Rate Classes : GS-1 & GST-1 (Rate Codes 68 & 69)
Deployment Year : 2025
Sample Design : One Dimensional Stratified Random Sample - Combined Ratio Estimation, Dalenius-Hodges Procedure, Neyman Allocation, With Finite Population Correction
Design Precision(P) : 15%
Design Confidence : 90% (1.645)
Stratification Variable : Annual Monthly Mean Energy (KWH)

[1]	[2]	[3]	[4]	[4]x[5]	[3]x[4]	[4]x([3]^2)	[6]	[7]
Strata	Sample Size	SDRh	Wh	Nh	Wh(SDRh)	Wh(SDRh)^2	Neyman Alloc. of n with losses (nh)	Proposed Sample
1	188	0.4007	0.47531	249,790	0.190	0.076	86.859	87
2	132	1.8046	0.30247	158,957	0.546	0.985	248.932	249
3	154	2.4574	0.15611	82,041	0.384	0.943	174.954	175
4	149	5.7340	0.06611	34,743	0.379	2.174	172.879	173
Sum(Σ)	623	10.397	1.00000	525,531	1.499	4.178	683.623	684
Combined		3.169		[5]				

CALCULATIONS	
YBAR =	1.1475
$n = (\sum Wh * SDRh)^2 / ((P * YBAR / Z)^2 + (\sum Wh (SDRh)^2 / \sum Nh))$	
=	205.087
$n(\text{with losses}) = n / 0.3 =$	683.623

DEFINITIONS:

[1] Strata Break Points (KWH)

- Strata 1 = 0 - 685
- Strata 2 = 686 - 1885
- Strata 3 = 1886 - 3985
- Strata 4 = 3986 - INF

[2] Number of valid sample points in OULA for the month of January 2022 (Refer to Note B)

[3] Standard deviation for the month of January 2022 coincident peak, per OULA. (Refer to Note B)

[4] Percent of customers per strata for the summer and winter peak months from FPL's Billing Systems. (Refer to Note C)

[5] Total number of customers for the month of January 2022 from FPL's Billing Systems. (Refer to Note B)

[6] $nh = Wh(SDRh) / \sum Wh(SDRh)$

[7] Based on Neyman Allocation of n with losses. Minimum strata size = 30, via central limit theorem.

NOTES:

A) The most current load research data available was obtained from OULA (FPL's Load Research System) for the period January 2022 to December 2023.

B) The above calculations were performed for every month of 2022 and 2023. January 2022 load research data produced the largest sample size requirement and was therefore selected.

C) The strata break points and weights were defined on the basis of average monthly energy consumption (KWH) for 2023.

Table 4

Proposed GSD(T)-1 Sample Design

Rate Classes : GSD-1, GSDT-1, GSD-1EV, HLFT-1, UEV, SDTR-1A & SDTR-1B (Rate Codes: 70, 72, 170, 172, 270, 370, 401)	
Deployment Year : 2025	
Sample Design : One Dimensional Stratified Random Sample - Combined Ratio Estimation, Dalenius-Hodges Procedure, Neyman Allocation, With Finite Population Correction	
Design Precision(P) :	10%
Design Confidence :	90% (1.645)
Stratification Variable : Annual Monthly Mean Energy (KWH)	

[1]	[2]	[3]	[4]	[4]x[5]	[3]x[4]	[4]x([3]^2)	[6]	[7]
Strata	Sample Size	SDRh	Wh	Nh	Wh(SDRh)	Wh(SDRh)^2	Neyman Alloc. of n with losses (nh)	Proposed Sample
1	112	9.3242	0.65989	67,735	6.153	57.371	114.064	115
2	136	25.0386	0.26189	26,882	6.557	164.187	121.561	122
3	133	46.7601	0.07822	8,029	3.658	171.029	67.804	68
Sum(Σ)	381	81.123	1.00000	102,646	16.368	392.587	303.429	305
Combined		31.743		[5]				

CALCULATIONS			
YBAR =	28.2024		
$n = (\sum Wh * SDRh)^2 / ((P * YBAR / Z)^2 + (\sum Wh (SDRh)^2 / \sum Nh))$			
=	91.029		
$n(\text{with losses}) = n / 0.3 =$			303.429

DEFINITIONS:

- [1] Strata Break Points (KWH)
Strata 1 = 0 - 19,200
Strata 2 = 19,201 - 70,200
Strata 3 = 70,201 - INF

- [2] Number of valid sample points in OULA for the month of January 2023 (Refer to Note B)

- [3] Standard deviation for the month of January 2023 coincident peak, per OULA. (Refer to Note B)

- [4] Percent of customers per strata for the summer and winter peak months from FPL's Billing Systems. (Refer to Note C)

- [5] Total number of customers for the month of January 2023 from FPL's Billing Systems. (Refer to Note B)

- [6] $nh = Wh(SDRh) / \sum Wh(SDRh)$

- [7] Based on Neyman Allocation of n with losses. Minimum strata size = 30, via central limit theorem.

NOTES:

A) The most current load research data available was obtained from OULA (FPL's Load Research System) for the period January 2022 to December 2023.

B) The above calculations were performed for every month of 2022 and 2023. January 2023 load research data produced the largest sample size requirement and was therefore selected.

C) The strata break points and weights were defined on the basis of average monthly energy consumption (KWH) for 2023.

Table 5

Proposed GSLD(T)-1 Sample Design

Rate Classes : CS-1, CST-1, GSLD-1, GSLD-1EV, GSLDT-1, HILFT-2, SDTR-2A, SDTR-2B (Rate Codes: 62, 64, 73, 74, 162, 164, 264, 364)	
Deployment Year : 2025	
Sample Design : One Dimensional Stratified Random Sample - Combined Ratio Estimation, Dalenius-Hodges Procedure, Neyman Allocation, With Finite Population Correction	
Design Precision(P) :	10%
Design Confidence :	90% (1.645)
Stratification Variable : Annual Monthly Mean Energy (KWH)	

[1]	[2]	[3]	[4]	[4]x[5]	[3]x[4]	[4]x([3]^2)	[6]	[7]
Strata	Sample Size	SDRh	Wh	Nh	Wh(SDRh)	Wh(SDRh)^2	Neyman Alloc. of n with losses (nh)	Proposed Sample
1	128	110.2683	0.61379	1,845	67.682	7463.133	73.392	74
2	254	153.4636	0.38621	1,161	59.269	9095.661	64.270	65
Sum(Σ)	382	263.732	1.00000	3,006	126.951	16558.794	137.662	139
Combined		140.328		[5]				

CALCULATIONS	
YBAR =	322.6609
$n = (\Sigma Wh * SDRh)^2 / ((P * YBAR / Z)^2 + (\Sigma Wh (SDRh)^2 / \Sigma Nh))$	
=	41.299
$n(\text{with losses}) = n / 0.3 =$	137.662

DEFINITIONS:

[1] Strata Break Points (KWH)
 Strata 1 = 0 - 307,800
 Strata 2 = 307,801 - INF

[2] Number of valid sample points in OULA for the month of January 2023 (Refer to Note B)

[3] Standard deviation for the month of January 2023 coincident peak, per OULA. (Refer to Note B)

[4] Percent of customers per strata for the summer and winter peak months from FPL's Billing Systems. (Refer to Note C)

[5] Total number of customers for the month of January 2023 from FPL's Billing Systems. (Refer to Note B)

[6] $nh = Wh(SDRh) / \Sigma Wh(SDRh)$

[7] Based on Neyman Allocation of n with losses. Minimum strata size = 30, via central limit theorem

NOTES:

A) The most current load research data available was obtained from OULA (FPL's Load Research System) for the period January 2022 to December 2023.

B) The above calculations were performed for every month of 2022 and 2023. January 2023 load research data produced the largest sample size requirement and was therefore selected.

C) The strata break points and weights were defined on the basis of average monthly energy consumption (KWH) for 2023.

Table 6

DEFINITIONS OF VARIABLES AND INDICES

$YBAR$	=	Existing sample mean coincident demand (kW)
$XBAR$	=	Existing sample mean energy (kWh)
R	=	Ratio of mean coincident demand to mean energy for the existing sample
h	=	Index for each strata within the sample
i	=	Index for each customer
Y_{hi}	=	Coincident demand for each customer “i” in stratum “h”
X_{hi}	=	Energy for each customer “i” in stratum “h”
nCh	=	Number of customers in the existing sample in stratum “h”
SDR_h	=	Standard deviation of the residuals in stratum “h”
W_h	=	Stratum “h” weight
P	=	Precision (0.10 for RS, GSD & GSLD and 0.15 for GS)
$Z_{\alpha/2}$	=	Two tailed normal variate (1.645 for 90% confidence)
n	=	Required new sample size
N_h	=	Stratum “h” population (customers)
n_h	=	Required new sample size for stratum “h”

Table 7

FORMULAS USED IN SAMPLE DESIGNS

I. Calculations using rate load research data (Refer to Table 6 for definitions):

$$YBAR = \sum_h W_h \mathcal{X} \left[\frac{\sum_i Y_{hi}}{nC_h} \right] \quad XBAR = \sum_h W_h \mathcal{X} \left[\frac{\sum_i X_{hi}}{nC_h} \right] \quad R = \frac{YBAR}{XBAR}$$

$$SDR_h = \sqrt{\frac{\sum_i (Y_{hi} - R X_{hi})^2}{nC_h - 1}}$$

II. Sample size calculation (Refer to Table 6 for definitions):

$$n = \frac{\left[\sum_h (W_h \mathcal{X} SDR_h) \right]^2}{\left[\frac{P \mathcal{X} YBAR}{Z_{\alpha/2}} \right]^2 + \frac{\sum_h (W_h \mathcal{X} SDR_h^2)}{\sum_h N_h}}$$

$$n_h = \left[\frac{W_h \mathcal{X} SDR_h}{\sum_h W_h \mathcal{X} SDR_h} \right] \mathcal{X} n$$