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June 28, 2013

Ms. Ann Cole
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

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Dear Ms. Cole:

Enclosed are an original and fifteen copies of Gulf Power Company's 2012 Cost of Service Load Research Study which is filed pursuant to Rule 25-6.0437(7).

Sincerely,

Robert L. McGee, Jr.
Regulatory and Pricing Manager

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Enclosure

cc: Beggs and Lane
Jeffrey A. Stone

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2012 Cost of Service
Load Research Rule
DOCKET NO. 820491-EU
GULF POWER COMPANY
June 2013
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Results of the
2012 Cost of Service
Load Research Study

INTRODUCTION

The purpose of this document is to meet the filing requirements of the Cost of Service Load Research Rule, Docket No. 820491-EU, Order No. 13026, issued February 23, 1984, by the Florida Public Service Commission (FPSC). This rule was amended by the FPSC on January 6, 2004.

This rule requires the reporting of results of each load research study conducted in accordance with the specifications of this rule. The results reported here are for load research studies conducted based on data collected between January 1, 2012, and December 31, 2012.

A rate data summary is provided on Tables 1A and 1B and provides a comparison of various significant variables between rate classes. The number of sample points for each rate class is provided in these tables, as well as the coincident system peak (CP) demand, summer and winter CP demands, and relative accuracies. Table 1C provides, for each rate class, load factors based on the average of the 12 CPKW and on each rate class NCPKW. Table 2 shows the sample sizes for all rates by strata.

TABLE 1A

Rate Data Summary
2012

Rate	<u>Year End Customers</u>	<u>Annual MWH</u>	<u>% of Total</u>	<u>System CP KW (2012)</u>	<u>% of Total</u>
RS	367,592	4,812,740	41.6%	1,114,169	47.5%
RSVP	10,478	161,143	1.4%	35,807	1.5%
GS	28,690	257,653	2.2%	62,477	2.7%
GSD/GSDT/GS-TOU	17,180	2,548,107	22.0%	468,973	20.0%
LP	181	541,391	4.7%	86,764	3.7%
LPT	98	900,065	7.8%	138,249	5.9%
RTP	64	1,154,699	10.0%	162,998	7.0%
SBS	3	19,455	0.2%	507	0.0%
Others (1)	<u>10,285</u>	<u>1,189,107</u>	<u>10.3%</u>	<u>274,026</u>	<u>11.7%</u>
Total	434,571	11,584,360	100.0%	2,343,970	100%

(1) Sales for Resale, Unbilled, Rates OS and CISR,
Company Use and Losses.

TABLE 1B

Rate Data Summary
2012

<u>Rate</u>	<u>Sample Points</u>	<u>% of Total</u>	<u>Summer CPKW</u>	<u>Relative Accuracy (%)</u>	<u>Winter CPKW</u>	<u>Relative Accuracy (%)</u>
RS	225	20.5%	1,114,169	4.59%	1,152,969	9.74%
RSVP	225	20.5%	35,807	4.37%	31,515	8.23%
GS	300	27.3%	62,477	7.29%	39,218	11.41%
GSD/GSDT/GS-TOU	175	15.9%	468,973	5.07%	312,423	9.50%
LP	81	7.4%	86,764	5.03%	59,001	5.86%
LPT	51	4.6%	138,249	2.43%	123,618	2.79%
RTP	38	3.5%	162,998	0.00%	139,430	0.00%
SBS	3	0.3%	507	0.00%	0	0.00%
Others (1)	<u>2</u>	0.2%	<u>274,026</u>	N/A	<u>271,832</u>	N/A
TOTAL	1100	100.0%	2,343,970	N/A	2,130,006	N/A

(1) Sales for Resale, Rates OS and CISR, Company Use and Losses.

TABLE 1C
 Load Factors
 2012

Rate	<u>12 CPKW</u>	<u>Rate NCPKW</u>	<u>Annual MWH</u>	<u>12 CPKW Load Factor</u>	<u>Rate NCPKW Load Factor</u>
RS	974,021	1,216,540	4,812,740	0.563	0.450
RSVP	30,609	42,363	161,143	0.599	0.433
GS	45,424	66,523	257,653	0.646	0.441
GSD/GSDT/GS-TOU	384,137	488,934	2,548,107	0.755	0.593
LP	72,521	99,129	541,391	0.850	0.622
LPT	115,969	144,818	900,065	0.884	0.708
RTP	155,046	212,171	1,154,699	0.848	0.620
SBS	581	55,982	19,455	3.812	0.040

TABLE 2
GULF POWER COMPANY
2012 Cost of Service Load Research Rule Sample Size

<u>Rate</u>	<u>Strata Allocation</u>	<u>Sample Size</u>
RS	1) Multifamily	67
	2) Mobile Home	25
	3) SFD 0-1150 kWh	46
	4) SFD 1150-1950 kWh	45
	5) SFD 1950 kWh and greater	42
	TOTAL	225
RSVP	1) SFD 0-1150 kWh	33
	2) SFD 1150-1950 kWh	91
	3) SFD 1950 kWh and greater	101
	TOTAL	225
GS	1) 0-700 kWh	68
	2) 700-1400 kWh	77
	3) 1400-2500 kWh	77
	4) 2500 kWh and greater	76
	CENSUS *	2
TOTAL	300	
GSD	1) 0-20.0 kW	20
	2) 20.1-50.0 kW	39
	3) 50.1-150.0 kW	54
	4) 150.0 kW and greater	36
	CENSUS *	26
TOTAL	175	
LP	1) 0-500.0 kW	30
	2) 500 kW and greater	33
	CENSUS *	18
TOTAL	81	
LPT	1) Secondary Voltage Level	30
	CENSUS *	21
TOTAL	51	
RTP	1) All customers (census)	28
SBS	1) All customers (census)	3
CIS	1) All customers (census)	1
TOTAL		1089

* These are primary or transmission voltage level customers.

DATA ANALYSIS METHODOLOGY

Load profiles for each rate schedule were estimated using the combined ratio technique. The equation used to calculate the demand estimate for each hour of the year is provided below. The definitions for the variables for these formulas are provided in Table 3.

$$\hat{T}_y = T_x * \frac{\sum_{h=1}^L W_h \bar{Y}_h}{\sum_{h=1}^L W_h \bar{X}_h} = T_x \hat{R}$$

The variance of each hourly demand is estimated as follows:

$$\hat{V}(\hat{T}_y) = \sum_{h=1}^L \left[N_h^2 \left(\frac{1-n_h}{n_h} \right) \left(S_{yh}^2 + \left(\hat{R}^2 * S_{xh}^2 \right) - 2\hat{R}r_h * S_{yh} * S_{xh} \right) \right]$$

The 90% confidence interval is:

$$CI = 1.645 \sqrt{\hat{V}(\hat{T}_y)}$$

And relative accuracy = $(CI / \hat{T}_y) * 100\%$

Load profiles were balanced to territorial input as follows:

$$\begin{aligned} &(\text{Input kW}) - (\text{Losses}) - (\text{Rate 1 kW}) - (\text{Rate 2 kW}) - \dots \\ &- (\text{Rate } n\text{ kW}) = \text{Residual kW} \end{aligned}$$

This residual profile was distributed to the rate schedule profiles by allocating on the standard deviation(s) of the demand estimate, i.e.:

$$\text{Rate}_i \text{ kW} = \text{Rate}_i \text{ kW} + \text{Residual kW} \frac{S_i}{S_1 + S_2 + \dots + S_i + \dots + S_n}$$

The coincident and non-coincident demands and residential load profile shown in this report have been adjusted per this balancing process. Confidence intervals and relative accuracies are based on unadjusted estimates of demand.

TABLE 3

Definitions for Formulas

\hat{T}_y

\hat{T}_y = Estimated Population Hourly kW

T_x = Population Monthly kWh

\hat{R}

\hat{R} = Ratio Estimator

\bar{Y}_h

\bar{Y}_h = Stratum Sample Average Hourly kWh

\bar{X}_h

\bar{X}_h = Stratum Sample Average Monthly kWh

$\hat{V}(\hat{T}_y)$

$\hat{V}(\hat{T}_y)$ = Estimated Variance of \hat{T}_y

n_h = Number of Good Sample Points in Stratum h

N_h = Population Number of Customers in stratum h

S_{yh} = Stratum Sample Standard Deviation of kW

S_{xh} = Stratum Sample Standard Deviation of kWh

r_h = Stratum Correlation Coefficient Between kW & kWh

Subscripts

h = Stratum number

v = kW variable

L = Total Number of Strata

x = kWh variable

STUDY RESULTS

Provided on the following pages are the rate class estimated non-coincident and coincident peak kW demands for each month of the year 2012. The relative accuracy and the confidence interval at the 90% confidence level are also provided. Results for rate classes RS, RSVP, GS, GSD/GSDT/GS-TOU, LP, LPT, RTP, and SBS are included. Provided also on Table 4 are the monthly coincident and non-coincident peak dates and times.

Table 4
2012
Coincident and Non-Coincident Peak Demand
Days and Hours

MONTH	Coincident Peak		Non-Coincident Peaks								
	RS	RSVP	GS	GSD	LP	LPT	RTP	SBS			
JAN	04 0700	04 0700	04 0600	04 0900	25 1300	26 1200	09 1300	04 1300	09 0200		
FEB	13 0800	12 0900	12 0800	13 1100	13 0900	02 1400	16 1400	13 1400	24 0300		
MAR	28 1800	18 1700	26 1900	20 1600	15 1600	21 1300	22 1200	29 1400	01 0400		
APR	30 1600	30 1800	30 1900	30 1500	02 1600	02 1300	02 1400	17 1200	11 2400		
MAY	29 1600	27 1700	28 1900	29 1200	29 1200	29 1200	31 1200	02 1300	14 2400		
JUN	29 1700	30 1600	26 1900	29 1600	06 1200	06 1200	06 1200	06 1300	14 0800		
JUL	03 1500	29 1800	16 1900	03 1600	24 1500	24 1500	02 1400	19 1200	11 1000		
AUG	01 1700	01 1900	01 1900	01 1600	16 1500	30 1100	02 1200	24 1200	13 0600		
SEP	03 1700	01 1800	03 1900	07 1600	06 1400	07 1100	07 1300	07 1000	10 0400		
OCT	06 1600	06 1600	06 1700	04 1500	01 1500	15 1300	01 1100	17 1300	28 2300		
NOV	29 0800	25 0800	25 0800	01 1500	02 1400	02 1400	02 1400	27 1000	04 0600		
DEC	30 0800	30 0800	30 0600	27 1000	03 1200	10 1100	10 1400	04 1200	27 0200		

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 LOAD RESEARCH DATA
 RATE SCHEDULE RS
 January 2012 to December 2012

2012	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	1,152,969	111,521	9.74%	1,152,969	111,521	9.74%
FEB	1,131,519	121,028	9.78%	958,913	85,662	9.13%
MAR	706,246	70,505	9.69%	642,631	57,505	9.06%
APR	870,929	55,194	6.23%	820,672	52,391	6.27%
MAY	1,180,251	65,451	5.53%	1,059,430	49,045	4.68%
JUN	1,177,439	64,433	5.51%	1,113,588	53,723	4.87%
JUL	1,216,540	65,636	5.21%	1,106,806	50,254	4.60%
AUG	1,147,682	61,247	5.15%	1,114,169	52,270	4.59%
SEP	1,099,519	62,261	5.25%	1,079,212	51,205	4.70%
OCT	920,203	60,742	6.40%	920,203	60,742	6.40%
NOV	772,272	85,462	10.58%	685,247	56,612	8.76%
DEC	1,034,411	120,912	10.81%	1,034,411	120,912	10.81%
AVG				974,021	28,523	2.92%

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 LOAD RESEARCH DATA
 RATE SCHEDULE RSVP
 January 2012 to December 2012

2012	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	36,269	2,611	7.09%	31,515	2,578	8.23%
FEB	35,115	2,724	7.46%	28,298	2,247	8.10%
MAR	23,516	1,477	6.23%	21,351	1,212	5.72%
APR	30,780	1,634	5.28%	25,391	1,470	5.69%
MAY	37,920	1,750	4.62%	29,562	1,560	5.34%
JUN	42,238	1,721	3.88%	34,685	1,471	4.27%
JUL	42,335	1,721	3.95%	32,236	1,579	4.96%
AUG	42,363	1,621	3.73%	35,807	1,597	4.37%
SEP	40,406	1,839	4.48%	37,749	1,548	4.07%
OCT	32,817	1,679	4.95%	32,233	1,880	5.67%
NOV	26,365	2,761	10.04%	22,946	1,944	9.00%
DEC	35,814	2,803	8.07%	35,540	3,401	8.97%
AVG				30,609	903	2.94%

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE GS
 January 2012 to December 2012

2012	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	46,612	4,089	15.68%	39,218	4,439	11.41%
FEB	43,956	4,659	16.43%	36,189	4,291	12.20%
MAR	49,203	3,169	12.02%	40,072	3,941	9.97%
APR	48,729	2,364	7.81%	48,421	3,935	7.94%
MAY	61,688	3,934	10.99%	61,520	4,438	7.33%
JUN	62,624	2,997	8.02%	56,958	4,093	7.28%
JUL	66,523	2,796	7.11%	65,366	4,435	6.92%
AUG	62,790	2,652	6.69%	62,477	4,713	7.29%
SEP	55,000	3,450	10.06%	38,464	4,063	10.34%
OCT	48,871	2,834	9.14%	32,559	3,241	9.50%
NOV	38,433	2,231	10.05%	28,745	3,122	11.74%
DEC	42,351	3,062	12.44%	35,099	6,980	17.46%
AVG				45,424	2,230	4.88%

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 LOAD RESEARCH DATA
 RATE SCHEDULE GSD
 January 2012 to December 2012

2012	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	384,821	13,656	6.00%	312,423	29,470	9.50%
FEB	391,758	19,905	8.47%	355,250	30,421	8.74%
MAR	426,702	17,156	7.09%	379,293	23,520	6.25%
APR	437,234	17,712	6.82%	429,955	30,072	6.86%
MAY	480,338	18,859	6.65%	456,411	27,767	6.17%
JUN	469,889	17,134	6.50%	445,197	22,426	5.08%
JUL	483,405	17,109	5.82%	465,149	27,487	6.01%
AUG	488,934	16,677	5.57%	468,973	24,336	5.07%
SEP	481,835	16,731	5.53%	393,200	18,362	4.63%
OCT	437,025	14,489	5.41%	371,977	20,693	5.42%
NOV	373,515	16,781	7.67%	277,355	20,748	7.89%
DEC	376,713	16,644	7.84%	254,459	33,244	11.97%
AVG				384,137	15,482	4.04%

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GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE LP
 January 2012 to December 2012

2012	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	86,902	2,669	5.17%	59,001	3,445	5.86%
FEB	84,987	2,536	5.15%	66,722	3,854	5.86%
MAR	88,697	3,171	6.51%	75,127	4,077	5.46%
APR	96,006	3,637	6.76%	82,277	5,141	6.15%
MAY	99,129	3,707	6.31%	93,214	4,611	5.00%
JUN	97,815	2,861	5.11%	85,839	3,494	4.10%
JUL	93,297	2,395	4.22%	87,278	6,096	7.12%
AUG	91,396	3,348	6.14%	86,764	4,454	5.03%
SEP	93,705	2,958	5.31%	75,105	2,977	3.93%
OCT	88,381	2,578	4.88%	62,346	3,524	5.51%
NOV	74,491	2,164	4.89%	56,017	3,170	5.86%
DEC	76,147	2,574	5.74%	40,564	3,037	7.13%
AVG				72,521	1,954	3.34%

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE LPT
 January 2012 to December 2012

2012	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	131,204	1,082	1.36%	123,618	3,448	2.79%
FEB	110,176	1,040	1.56%	104,927	2,383	2.28%
MAR	120,550	2,377	3.37%	110,632	4,226	3.84%
APR	129,308	3,160	4.16%	116,353	4,950	4.20%
MAY	134,888	3,044	3.76%	133,749	3,065	2.30%
JUN	142,240	3,004	3.64%	134,296	4,622	3.46%
JUL	143,641	3,373	4.01%	136,184	1,712	1.26%
AUG	144,818	2,857	3.22%	138,249	3,399	2.43%
SEP	143,729	2,446	2.79%	130,072	4,042	3.09%
OCT	137,512	2,227	2.66%	113,679	2,004	1.75%
NOV	107,604	1,271	1.96%	80,601	1,161	1.45%
DEC	93,711	1,373	2.42%	69,262	3,063	4.29%
AVG				115,969	1,999	3.94%

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 RATE SCHEDULE RTP
 January 2012 to December 2012

2012	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	174,420	0	0%	139,430	0	0%
FEB	164,558	0	0%	141,837	0	0%
MAR	170,548	0	0%	163,301	0	0%
APR	189,798	0	0%	170,312	0	0%
MAY	211,521	0	0%	159,748	0	0%
JUN	185,205	0	0%	153,394	0	0%
JUL	195,799	0	0%	171,016	0	0%
AUG	209,506	0	0%	162,998	0	0%
SEP	212,171	0	0%	188,995	0	0%
OCT	203,748	0	0%	135,638	0	0%
NOV	185,281	0	0%	164,691	0	0%
DEC	179,077	0	0%	109,188	0	0%
AVG				155,046	0	0%

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE SBS
 January 2012 to December 2012

2012	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	3,408	0	0%	0	0	0%
FEB	55,982	0	0%	613	0	0%
MAR	1,825	0	0%	634	0	0%
APR	659	0	0%	187	0	0%
MAY	5,094	0	0%	1,090	0	0%
JUN	10,513	0	0%	454	0	0%
JUL	46,020	0	0%	439	0	0%
AUG	2,336	0	0%	507	0	0%
SEP	2,297	0	0%	518	0	0%
OCT	41,411	0	0%	887	0	0%
NOV	42,647	0	0%	459	0	0%
DEC	2,368	0	0%	1,184	0	0%
AVG				581	0	0%