

Diamond Williams

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Attachments: Rev. 2009 Cost of Service Load Research Plan.pdf

- A. s/Susan D. Ritenour
 Gulf Power Company
 One Energy Place
 Pensacola FL 32520
 850.444.6231
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- B. Revised 2009 Cost of Service Load Research Plan.
- C. Gulf Power Company
- D. Document consists of 21 pages.
- E. The attached document is Gulf Power Company's Revised 2009 Cost of Service Load Research Plan.

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June 21, 2010

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

Dear Ms. Cole:

Submitted for electronic filing is Gulf Power Company's Revised 2009 Cost of Service Load Research Plan which is filed pursuant to Rule 25.6.0437(7).

The results Gulf submitted on June 17, 2010 included some errors that occurred when converting the document to a PDF file. A complete revised document is being provided for your convenience.

Sincerely,

Susan Ritenour (lrs)

vm

Enclosure

cc: Beggs & Lane
Jeffrey A. Stone, Esq.

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2009 Cost of Service
Load Research Rule
DOCKET NO. 820491-EU
GULF POWER COMPANY
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Results of the
2009 Cost of Service
Load Research Study

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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, 2009, and December 31, 2009. The Load Research Sampling Plan that was used in this study was approved by the Commission in 2008.

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.

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TABLE 1A

Rate Data Summary
 2009

<u>Rate</u>	<u>Year End Customers</u>	<u>Annual MWh</u>	<u>% of Total</u>	<u>System CP kW (2009)</u>	<u>% of Total</u>
RS	363,417	5,029,385	42.1%	1,241,857	48.9%
RSVP	8,950	163,940	1.4%	35,540	1.4%
GS	28,477	278,596	2.3%	59,523	2.4%
GSD/GSDT/GS-TOU	16,951	2,608,987	21.8%	494,719	19.5%
LP	195	545,057	4.6%	87,660	3.5%
LPT	113	1,222,967	10.2%	190,068	7.5%
RTP	25	717,287	6.0%	87,096	3.4%
SBS	3	80,095	0.7%	572	0.0%
Others (1)	<u>10,023</u>	<u>1,311,041</u>	11.0%	<u>340,630</u>	13.4%
TOTAL	428,154	11,957,355	100.0%	2,537,665	100.0%

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

TABLE 1B
 Rate Data Summary
 2009

<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	21.4%	1,241,857	5.91	1,254,706	6.54
RSVP	240	22.8%	35,540	4.27	25,920	8.27
GS	300	28.5%	59,523	6.13	57,279	9.27
GSD/GSDT/GS-TOU	160	15.2%	494,719	4.81	355,172	7.78
LP	54	5.1%	87,660	5.61	59,978	8.06
LPT	44	4.2%	190,068	1.18	146,093	2.03
RTP	24	2.3%	87,096	0.00	88,627	0.00
SBS	3	0.3%	572	0.00	930	0.00
Others (1)	<u>3</u>	0.3%	<u>340,630</u>	N/A	<u>321,180</u>	N/A
TOTAL	1053	100.0%	2,537,665	N/A	2,309,885	N/A

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

TABLE 1C
 Load Factors
 2009

<u>Rate</u>	<u>Average 12 CPKW</u>	<u>Rate NCPKW</u>	<u>Annual MWh</u>	<u>Average 12 CPKW Load Factor</u>	<u>Rate NCPKW Load Factor</u>
RS	1,016,504	1,261,150	5,029,384	0.565	0.455
RSVP	25,826	46,027	163,940	0.725	0.407
GS	50,722	69,337	278,596	0.627	0.459
GSD/GSDT /GS-TOU	406,090	535,406	2,608,986	0.733	0.556
LP	75,258	98,045	545,057	0.827	0.635
LPT	165,964	205,569	1,222,967	0.841	0.679
RTP	90,131	128,349	717,287	0.908	0.638
SBS	6,534	46,576	80,095	1.399	0.196

TABLE 2

GULF POWER COMPANY
2009 Cost of Service Load Research Rule Sample Size

<u>Rate</u>	<u>Strata Allocation</u>	<u>Sample Size</u>	
RS	1) Multifamily	59	
	2) Mobile Home	28	
	3) SFD 1150-1950 kWh	46	
	4) SFD GE 1950 kWh	45	
	5) SFD 0-1150 kWh	<u>47</u>	
	TOTAL	225	
GS	1) 0-675 kWh	72	
	2) 675-1425 kWh	79	
	3) 1425-2300 kWh	75	
	4) over 2300 kWh	<u>74</u>	
	TOTAL	300	
GSD	1) 0-20.0 kW	30	
	2) 20.1-50.0 kW	45	
	3) 50.1-130.0 kW	45	
	4) over 130.0 kW	<u>40</u>	
	TOTAL	160	
LP	1) Less than 800 kW	30	
	2) 800 kW and greater	<u>40</u>	(census)
	TOTAL	70	
LPT	1) Less than 1000 kW	20	
	2) 1000 kW and greater	<u>40</u>	(census)
	TOTAL	60	
RTP	1) All customers	24	(census)
SBS	1) All customers	3	(census)
CISR	1) All customers	1	(census)
	TOTAL	<u>843</u>	

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:

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

$$\text{And relative accuracy} = \left(\frac{CI}{T_y} \right) * 100\%$$

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.:

$$\text{Rate}_j \text{ kW} = \text{Rate}_j \text{ kW} + \text{Residual kW} \frac{S_j}{S_1 + S_2 + \dots + S_j + \dots + S_n}$$

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. The average of the estimated peak demand, confidence intervals, and relative accuracies are also based on unadjusted estimates of demand.

TABLE 3

Definitions for Formulas

^

T_y = Estimated Population Hourly kW

T_x = Population Monthly kWh

^

R = Ratio Estimator

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

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

^ ^

^

$V(T_y)$ = Estimated Variance of 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 2009. 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
2009
Coincident and Non-Coincident Peak Demand
Days and Hours

MONTH	Coincident Peak	Non-Coincident Peaks							
		RS	RSVP	GS	GSD	LP	LPT	RTP	SBS
JAN	21 0700	21 0700	17 0800	21 0900	21 0900	06 1400	06 1400	23 1300	28 1300
FEB	05 0700	05 0700	05 0600	05 0900	05 0900	11 1200	11 1100	17 1600	12 1500
MAR	03 0700	02 0700	02 0600	03 1000	10 1400	09 1400	10 1400	18 1000	30 1500
APR	29 1700	26 1700	29 1900	30 1500	29 1400	30 1300	30 1500	22 1600	18 2400
MAY	28 1700	31 1800	11 1900	14 1600	11 1400	11 1400	11 1400	14 1400	27 1400
JUN	22 1700	22 1800	22 1900	22 1500	22 1500	22 1300	22 1400	18 1100	04 1700
JUL	02 1400	05 1800	01 1900	01 1500	02 1400	02 1400	30 1400	17 1100	31 1900
AUG	10 1600	11 1800	11 1900	06 1600	07 1600	19 1100	04 1400	27 1000	12 2000
SEP	25 1600	27 1700	09 1900	25 1400	25 1400	28 1200	22 1400	10 1200	30 1700
OCT	07 1600	07 1700	12 1900	08 1400	08 1500	09 1200	07 1400	14 0900	25 1900
NOV	04 1800	26 1100	08 1900	04 1500	04 1500	10 1300	04 1500	05 2300	03 1100
DEC	29 0700	29 0700	05 1900	21 1000	09 1400	09 1200	09 1200	02 1500	14 2000

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GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE RS
 January 2009 to December 2009

2009	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	1,256,412	89,180	6.89	1,256,412	89,180	6.89
FEB	1,254,706	80,289	6.54	1,254,706	80,289	6.54
MAR	1,032,663	89,637	8.91	1,015,608	77,018	8.02
APR	735,990	75,579	10.04	666,873	51,288	7.93
MAY	1,041,385	54,900	5.37	992,949	63,445	5.92
JUN	1,261,150	74,705	5.89	1,241,857	76,681	5.91
JUL	1,205,823	61,885	4.89	1,128,213	73,521	6.29
AUG	1,122,780	53,666	4.59	1,074,969	51,367	4.64
SEP	1,024,960	59,208	5.52	1,004,191	45,356	4.36
OCT	1,016,996	45,974	4.21	989,040	47,727	4.59
NOV	671,467	78,239	11.37	509,285	49,259	8.94
DEC	1,063,944	96,027	8.96	1,063,944	96,027	8.96
AVG				1,016,504	29,765	2.86

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GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE RSVP
 January 2009 to December 2009

2009	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	36,924	2,644	7.20	22,921	2,175	9.11
FEB	41,484	2,877	7.08	25,920	2,083	8.27
MAR	32,453	2,465	7.81	28,698	2,501	9.30
APR	25,626	1,708	6.83	22,430	1,521	6.97
MAY	35,452	1,792	5.42	24,614	1,632	6.12
JUN	46,027	1,780	3.86	35,540	1,569	4.27
JUL	42,689	1,779	4.17	28,221	1,877	6.41
AUG	38,389	1,802	4.50	28,358	1,607	5.48
SEP	39,511	1,934	4.82	26,171	1,889	6.82
OCT	35,784	1,813	4.97	23,773	1,480	5.84
NOV	25,456	1,628	6.65	16,285	1,098	6.37
DEC	34,326	2,018	6.22	26,979	2,459	9.04
AVG				25,826	1,016	3.84

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE GS
 January 2009 to December 2009

2009	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	60,800	7,248	11.38	51,474	4,757	8.89
FEB	58,098	5,548	9.47	57,279	5,145	9.27
MAR	49,892	5,533	10.58	44,408	4,295	10.39
APR	49,746	4,258	8.64	43,434	3,173	7.52
MAY	57,745	4,647	8.57	50,389	3,641	6.63
JUN	69,337	3,982	5.71	59,523	3,821	6.13
JUL	66,862	3,910	5.76	63,991	5,850	8.7
AUG	63,913	4,158	6.46	55,469	4,875	8.34
SEP	59,389	4,772	7.85	55,047	5,157	8.71
OCT	59,200	4,318	7.01	52,445	4,893	8.48
NOV	38,804	4,181	10.77	28,189	2,234	7.42
DEC	53,248	6,712	12.71	47,013	5,513	11.61
AVG				50,722	2,997	5.71

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE GSD
 January 2009 to December 2009

2009	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	385,684	32,993	8.27	334,985	27,983	8.06
FEB	395,377	31,189	7.84	355,172	26,914	7.78
MAR	377,687	23,018	6.28	339,793	28,922	9.07
APR	423,857	24,480	5.87	390,544	19,754	5.16
MAY	502,974	28,731	6.16	430,117	23,939	5.2
JUN	535,406	24,585	4.57	494,719	24,655	4.81
JUL	512,150	22,817	4.35	512,150	22,817	4.35
AUG	494,629	20,707	4.17	481,030	20,894	4.23
SEP	491,596	27,702	5.54	463,689	21,846	4.54
OCT	483,863	26,817	5.35	467,419	24,651	4.99
NOV	353,536	19,967	5.65	305,264	16,861	5.27
DEC	354,679	27,807	8.02	298,198	23,562	7.85
AVG				406,090	14,637	3.53

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE LP
 January 2009 to December 2009

2009	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	85,243	6,606	8.03	59,229	5,182	8.43
FEB	79,936	5,325	6.85	59,978	4,702	8.06
MAR	81,112	5,147	6.61	56,051	4,593	8.71
APR	86,657	5,432	6.41	80,833	4,259	5.38
MAY	91,612	5,562	6.58	76,161	4,650	5.67
JUN	94,653	5,170	5.55	87,660	5,131	5.61
JUL	92,304	4,933	5.19	92,304	4,933	5.19
AUG	89,664	5,374	5.99	86,942	4,909	5.46
SEP	94,222	5,438	5.93	87,503	4,530	4.97
OCT	98,045	4,687	4.65	96,561	5,157	5.05
NOV	76,573	4,694	6.55	69,234	4,270	5.86
DEC	81,755	5,306	6.73	50,645	5,132	10.05
AVG				75,258	2,760	3.57

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE LPT
 January 2009 to December 2009

2009	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	155,085	2,889	1.88	142,481	3,843	2.67
FEB	155,397	2,353	1.53	146,093	2,948	2.03
MAR	149,321	3,324	2.25	128,690	2,487	1.96
APR	174,587	2,733	1.57	165,610	2,339	1.42
MAY	164,018	3,212	2.01	152,931	3,119	1.99
JUN	199,921	2,904	1.45	190,068	2,258	1.18
JUL	205,339	2,979	1.44	197,710	3,045	1.53
AUG	205,188	1,819	0.88	201,413	2,387	1.18
SEP	198,160	2,074	1.04	190,649	2,393	1.24
OCT	205,569	4,066	1.93	199,960	3,893	1.91
NOV	169,408	3,110	1.84	154,350	2,950	1.88
DEC	146,639	3,118	2.15	121,608	1,833	1.51
AVG				165,964	1,577	0.94

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE RTP
 January 2009 to December 2009

2009	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	110,824	0	0.00	101,999	0	0.00
FEB	105,944	0	0.00	88,627	0	0.00
MAR	103,884	0	0.00	78,243	0	0.00
APR	112,265	0	0.00	101,352	0	0.00
MAY	125,677	0	0.00	85,875	0	0.00
JUN	107,104	0	0.00	87,096	0	0.00
JUL	114,250	0	0.00	85,110	0	0.00
AUG	128,349	0	0.00	88,098	0	0.00
SEP	126,103	0	0.00	83,818	0	0.00
OCT	118,743	0	0.00	100,805	0	0.00
NOV	111,978	0	0.00	103,371	0	0.00
DEC	120,432	0	0.00	77,173	0	0.00
AVG				90,131	0	0.00

GULF POWER COMPANY
 LOAD RESEARCH DATA
 RATE SCHEDULE SBS
 January 2009 to December 2009

2009	Estimated NonCoincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %	Estimated Coincident Peak (KW)	90% Confidence Interval (KW)	Relative Accuracy %
JAN	9,253	0	0.00	295	0	0.00
FEB	35,953	0	0.00	930	0	0.00
MAR	35,264	0	0.00	245	0	0.00
APR	35,046	0	0.00	29,573	0	0.00
MAY	39,021	0	0.00	1,458	0	0.00
JUN	5,650	0	0.00	572	0	0.00
JUL	2,144	0	0.00	0	0	0.00
AUG	19,152	0	0.00	579	0	0.00
SEP	2,135	0	0.00	0	0	0.00
OCT	46,576	0	0.00	0	0	0.00
NOV	45,485	0	0.00	44,478	0	0.00
DEC	2,157	0	0.00	280	0	0.00
AVG				6,534	0	0.00