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Gulf Power Company
Real Time Pricing Pilot

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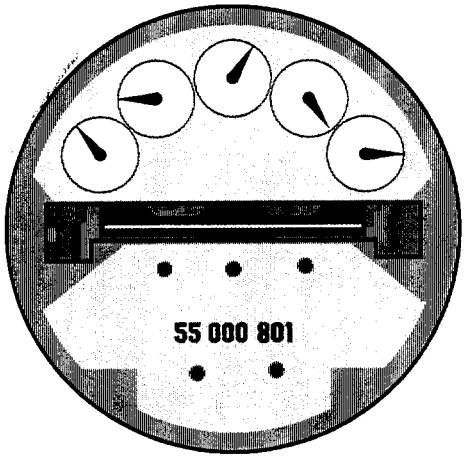


DECLASSIFIED

Report To The
Florida Public Service Commission

~~CONFIDENTIAL~~

GULF POWER

A SOUTHERN COMPANY

APRIL 1999

per PSC-99-1360-CFO-EI

EXECUTIVE SUMMARY

On February 7, 1995, the Florida Public Service Commission approved Gulf Power Company's proposed real time pricing rate schedule as a pilot program. As a condition of the pilot, Gulf Power Company was required to prepare a report on the pilot project. The information contained in the following pages provides a quantitative and qualitative analysis of the pilot program from Gulf Power Company's and the customer's perspective.

The five original program objectives were customer response, conservation, economic efficiency, value based pricing, and customer satisfaction. The first three objectives are highly related. Customer reactions to price signals impacted demand response (conservation) and economic efficiency. Customer satisfaction with the pilot was partly influenced by the value the customer received or perceived from hourly price signals.

Customer Response
Actual customer response to hourly real time prices provided the basis for the estimates of peak demand reduction and thereby conservation of peak supply resources. The quantitative analysis indicated that participating customers reduced peak demand during the summer of 1998 by an average of 20.4 mW. Customer response was estimated using three techniques. The graphical analysis compared segment load response by price divisions and gave informal evidence on response. Multivariate regression analysis was used to isolate the effects of price on customer loads from changes in weather. Finally, further evidence to support the results of the regression analysis was developed using a statistical panel. This methodology incorporated pre- and post-RTP load data.

Conservation
Much of the analysis on conservation is contained in the customer response portion of the report as outlined above. However, the qualitative interviews also provided information on conservation and how the customers were able to respond. Participants tended to view on-site generation as a key to utilizing RTP. When customers were able to respond to RTP signals, usually they did so with equipment modifications or subtle changes in how equipment was employed. Participants most frequently made adjustments in climate control, 24 percent, or in various pieces of non-essential equipment, 20 percent, in an attempt to shed load when prices rose. Relatively few customers had conservation programs to complement real time pricing. However, participants indicated that in some instances RTP exerted a profound influence on others within their organization. Among these customers, because electricity prices received unusual attention as a result of RTP, more individuals within the organization became conscious of conservation issues and attempted to be more careful users of energy.

Economic Efficiency
The hourly price signals derived on a marginal basis were sent as indicators of Gulf Power Company's cost of supply. Customers were then able to decide what costs are saved if less electricity is purchased and conversely the lost savings from additional electricity purchases. The customer's response to these price signals was a significant measure of economic efficiency. The customer response to RTP as noted above can also be seen graphically. The graphical analysis shows how each segment responded by price bins to the RTP signal. The industrial group and those with on-site generation were most likely to show load reductions or shifts. The data also show that the load alteration took place during the on-peak period, per design. The most commonly sited method of conservation was equipment adjustment – 68 percent, followed by scheduling modification – 36 percent.

Value Based Pricing
One measure of value based pricing from the customer's view was the ability to match production schedules with price signals. This allowed customers to maximize the electricity input in their operation. Again, this was reflected in the customer's ability to respond. Value based pricing to some customers was the opportunity to reduce or alter consumption to manage overall electricity costs. Two-thirds of the participants were able to reduce or shift electricity consumption to achieve actual savings in their electricity costs.

Customer Satisfaction
Evidence of customer satisfaction with RTP was the customer's expressed willingness to continue RTP service. Nearly one-half, 48 percent, of the participants were eager to continue, with another 32 percent generally amenable to continued participation. Only 4 percent of pilot participants expressed reluctance to continue. The basic results of the pilot indicated that Gulf Power Company customers appreciated real time pricing because of what it did for the benefit of their organization and because of the effect it had on their working relationship with Gulf Power Company. In nearly every instance, customers hoped to see real time pricing available—at least in some form—in the future. In a similar vein, the most recurring theme in the study from the customer's perspective was that RTP clearly moved the relationship with Gulf Power Company to a new arena where customers, in their words, felt "in control."

Gulf Power Company's RTP Pilot Program

History and Customers

On February 7, 1995, the Florida Public Service Commission approved Gulf Power Company's proposed real time pricing rate schedule as a pilot program. The rate was originally made available only to the largest customers served by Gulf Power – customers with a minimum monthly demand of 2,000 kW or higher. Participation in the RTP pilot was voluntary and was initially limited to twelve (12) customers. The first group of six customers volunteered for the pilot in February and March 1995. This group of participants consisted of industrial customers who were considered by Gulf Power Company to be those with the most capability to respond to day-ahead hourly price signals.

In its original petition, Gulf Power Company identified five program objectives.

1. Conservation: Starting with the 1994 conservation goals docket, Gulf Power Company expected RTP to achieve a significant portion of the Company's conservation goals through improved pricing mechanisms.

2. Economic Efficiency: Prices derived on the basis of marginal costs provide each purchaser a better indication of what it will cost to supply more, or what costs are saved if less is purchased. Such a pricing arrangement provides for a better alignment of the respective objectives of the participating customers, Gulf Power Company, and society at large.

3. Gain Information about Customer Response: As with any marketing program, a primary objective is to learn about the customer response to alternative offerings. This objective would supplement or supply the demand and energy changes associated with conservation as well as customer acceptance and response to alternative price offerings.

4. Value Based Pricing: The pilot was a step toward consideration of customer value in establishing electric service pricing. The value would be revealed in the overall average price level as well as the hourly energy prices themselves. Value of service from the customers' perspective has long been acknowledged as an appropriate consideration in pricing. Chapter 366 of the Florida Statutes lists value of service as one of the factors to be considered in developing utility rates.

5. Customer Satisfaction: Prior to the RTP pilot, Gulf Power Company customer satisfaction surveys indicated room for improvement with commercial and

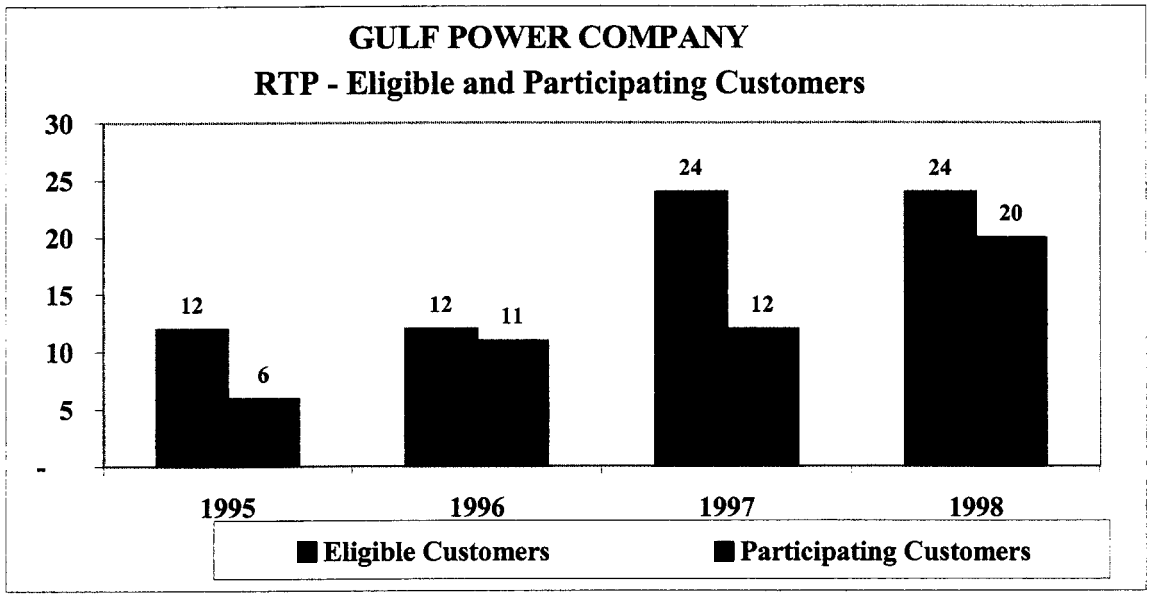
industrial customers. Two important areas of improvement suggested were in "providing energy efficiency options" and "pricing."

In December 1996, Gulf Power Company petitioned the Florida Public Service Commission to enlarge the limit on the maximum number of customers eligible to participate in the pilot RTP program. The FPSC subsequently approved the Company's request and the pilot was opened to a maximum of twenty-four (24) customers. Increasing the number of possibilities allowed Gulf Power Company to broaden the base and gain information on different customer segments response to alternative price offerings.

The total number of customers increased by two (2) for the summer of 1996 for a total of eight (8). By the summer of 1997, the number of customers had grown to twelve (12). The last summer of the RTP pilot, 1998 had a total of twenty (20) customers receiving hourly price signals. In total twenty-two (22) customers have participated in the RTP pilot. Only two customers have left during the course of the pilot. In both instances, these customers left RTP for another rate offering.

The last group of customers in the pilot was generally commercial in nature and more weather sensitive than the original industrial participants. This allowed Gulf Power Company the unique opportunity to gather data on a much different segment of the customer population. As noted, this latter group of participants was more weather sensitive, did not have co-generation facilities, and were more process oriented than product driven.

The last action by Gulf Power Company in its four-year pilot was to petition the FPSC for an extension in the pilot to continue to send RTP signals to the customers through May 31, 1999. The request for extension was to maintain the integrity of the data collection. With so many new customers and the price volatility experienced in the summer/on-peak period, the Company wished to keep as many of the participants on the rate schedule as possible. Extending the price signals through May of 1999 was the incentive needed by the customer to remain on RTP through the summer of 1998. The extension also provided continuity in allowing the customers to remaining on RTP and not migrate between rates waiting for the final RTP program and rate schedule to be approved.



Customers by SIC Code

Industrial	**13**
Oil & Gas Extraction	1
Food & Kindred Products	1
Paper & Allied Products	2
Chemicals	6
Transportation Equipment	1
Stone, Clay & Glass	1
Special Trade	1
Commercial	**5**
Schools	1
Health Care	3
Other	1
Governmental Agencies	**4**

Derivation of RTP Hourly Prices

Real time pricing is a refinement of time-of-use pricing that has been widely used throughout the industry for many years. Real time pricing was introduced to encourage customers to shift consumption from on-peak periods of high cost for the utility to lower utility cost periods or off-peak hours. This was achieved by setting prices on a real time basis, which reflected Gulf Power Company's expected costs during those periods. Each day Gulf Power Company sent a set of hourly prices that would be in effect for the following 24-hour period beginning at midnight. The hourly real time prices were sent to customers by 4:00 PM the preceding day. Upon receiving the hourly prices, customers had the option or incentive to adjust their consumption to take advantage of the low price hours and avoid the higher cost hours.

The monthly electric bill for Gulf Power Company customers in the real time pricing pilot consisted of a monthly energy charge and a customer charge. The monthly energy charge was the sum of the kilowatt-hours consumed in a given hour multiplied by the stated price of electricity for that same hour for all hours in the billing period.

The RTP overall price level was linked with Gulf Power Company's embedded costs. Marginal costs served to shape the price for each hour throughout the year. The marginal cost indicator used was the Southern Company system lambda. Lambda represented the incremental cost of generating the next kWh based on the system loading at any point in time.

RTP hourly prices were derived using the day ahead projection of Southern Company system lambdas, and adjusting these lambdas to recognize embedded costs. The resulting prices quoted to the participating customers for the following day consisted of a single cents per kWh component for each hour. Prices quoted were uniform for all participating customers. The hourly price quoted to the customer also included adjustment factors: Energy Conservation Cost Recovery, Purchased Power Capacity Cost Recovery, Fuel Cost Recovery, and Environmental Cost Recovery.

In addition, added to each customer's bill was a customer charge which was unrelated to actual usage and did not vary from month to month or seasonally. Applicable taxes and franchise fees were added to the customer bill but were not included in the hourly prices delivered to the customer.

Determination of the Customer Bill

The following illustrates the derivation of the customer's total bill under RTP and the components.

Customer Charge: $1,000.00

Energy Charge: The RTP hourly energy prices were derived using the day ahead projection of Southern Company system lambdas adjusted to recognize embedded costs. This price was determined as follows:

$$P = (I * M) + D$$

Where,

"P" = hourly price in ¢/KWH
"I" = Southern Company territorial system lambda, projected a day ahead for each hour of the day
"M" = multiplier used to adjust "I" to recognize embedded costs
"D" = constant amount of 0.25¢/kWh added to each hourly price

"M" was determined as follows:

Generation and transmission embedded cost revenue requirements for Gulf Power Company's industrial customers were assigned to each of three periods, into which the year was divided. The total revenue requirement for each period was then divided by the total relevant energy sales (kWh) for each respective period, to arrive at a total revenue requirement on a cents per kWh basis for each of the periods. For each period, this revenue requirement (cents/kWh) was divided by the average of the hourly Southern Company system lambdas for that period; which lambdas are projected a year in advance. The result was a multiplier, "M", for each of the three periods.

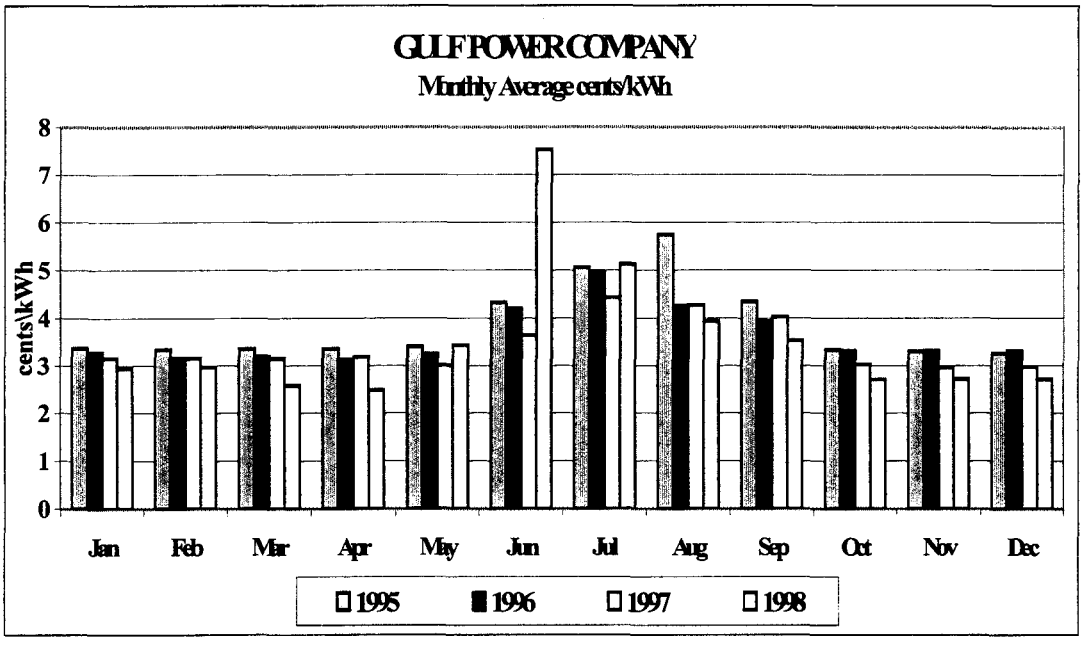
"D" was determined as follows:

Total embedded distribution revenue requirements for Gulf Power Company's industrial customers were divided by the total annual energy sales (kWh) to derive this cents per kilowatt-hour (kWh) constant for each hour of the year. These distribution costs were not included in the determination of the multiplier (M).

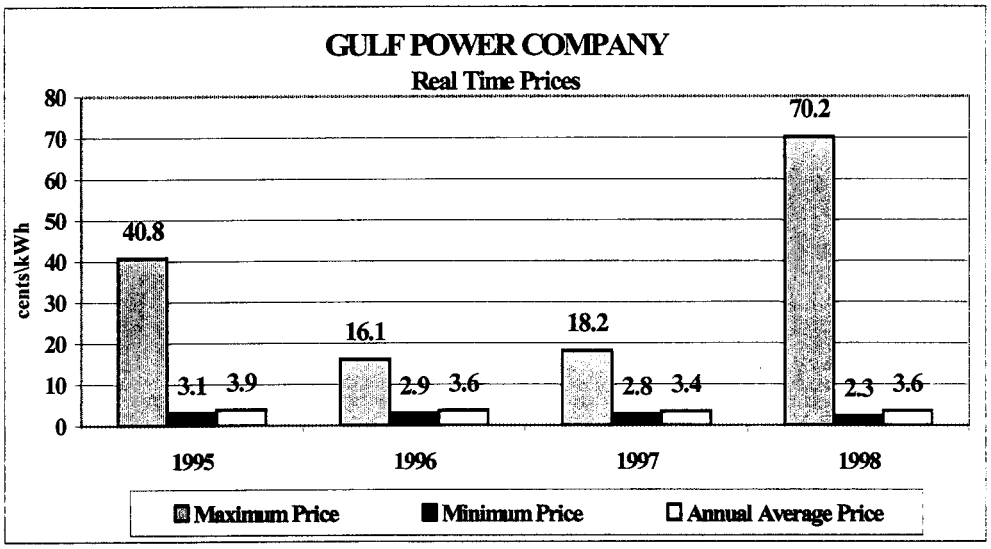
Minimum Bill - In consideration of the readiness of Gulf Power Company to furnish such service, no monthly bill would be rendered for less than $1,000.00.

Brief Overview of RTP Prices

The average hourly prices quoted to the RTP pilot group can be viewed in a number of ways. The simplest method is to show the average monthly prices for the period 1995 to 1998. The simple monthly average prices are shown graphically below.



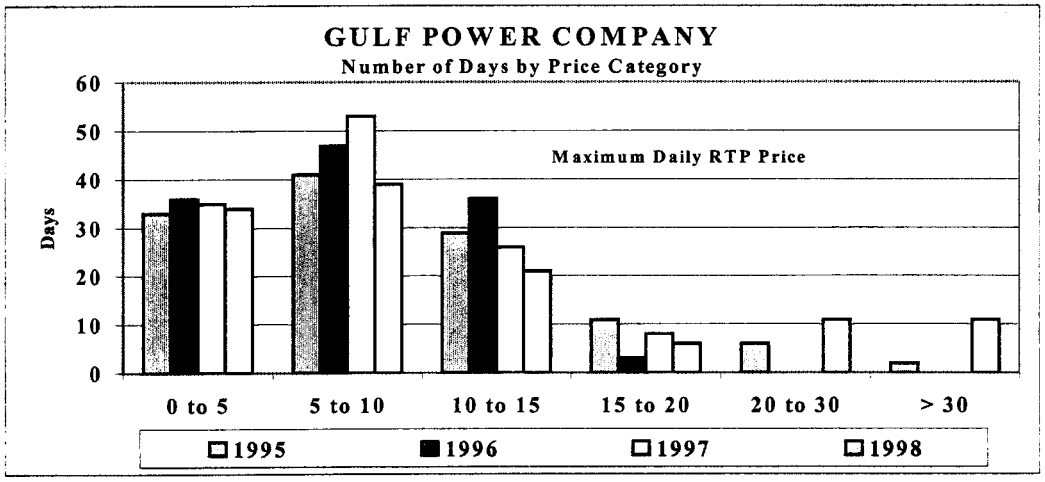
Over the four-year period of the pilot, average monthly prices over the spring, fall, and winter have trended downward. The spike in June 1998 is also noticeable. The chart following gives another perspective of the RTP prices over the pilot period. The graph depicts the maximum, minimum and average annual prices seen by participating customers.



This graphic representation provides a good depiction of the price volatility that can occur in real time pricing schemes. Prior to June 1998, the pilot participants had seen a maximum price of 40.8 cents/kWh in 1995. The next two summers saw RTP prices reach 16.1 and 18.2 cents/kWh. The summer of 1998 provided Gulf Power Company a unique opportunity to gather a set of data not present in the previous years of the pilot. Not only were prices more volatile, seven new customers were added to the pilot to bring the total to twenty customers during this time frame.

The final graph on RTP prices shows the number of days customers faced various price levels during the summer. The summer or peak months in the RTP pilot were defined as June through September. The prices are the maximum price for each day of the summer.

In the 0 to 5-cent range, the occurrence is quite similar each year of the pilot. In the years with relatively moderate price swings - 1996 and 1997 - the customers experienced more days in the 5 to 15-cent range. These years also had only a total of 11 days when prices exceeded 15 cents. In contrast, 1995 had 19 days when the maximum daily RTP prices exceeded 15 cents. The same is true in 1998 – 28 days when the maximum daily RTP price exceeded 15 cents. Days when prices were in the upper two tiers in 1998 exceeded the sum of all previous years.



Customer Response

Overview and Objective

One of the primary objectives of the RTP pilot program was to obtain estimates of customer response to price signals. The ways and degrees to which customers responded to price signals were and are integral to the conservation aspect of the pilot program. Gulf Power Company contracted with Regional Economic Research, Inc., to perform an independent analysis of customer response. In the winter of 1998-1999, Gulf Power Company provided Regional Economic Research (RER) the load, weather, and price data for each of the twenty participating customers. The data were for all of calendar year 1997 and January through September 1998. The focus of the analysis was on the summer of 1998. Gulf Power Company was most interested in the 1998 data because of the diversity of customers participating that summer and the diversity of real time prices experienced. The following information was taken from the RER analysis.

The structure of the pilot RTP rate was such that the peak price signal would be coincident with Gulf Power Company's peak cost period(s). Under the pilot, the following day's hourly price schedule was announced to each customer by 4:00 p.m. This gave each customer the opportunity to schedule load reduction activities for the following day in response to the prices. The price signal's impact on the load shapes would depend on the type of load reduction activities that customers employed. It was expected that customers would take one or more of the following steps in response to higher than average hourly prices.

- **Turn Off Equipment.** During the on-peak hours, customers may have elected to simply turn off nonessential equipment in an effort to reduce their total demand for electricity.

- **Pre-Cool Building.** Customers with significant cooling loads could elect to pre-cool their facilities before the on-peak hours. The pre-cooling would then reduce the load on the HVAC system during the on-peak period, and hence reduce electricity usage levels during peak hours.

- **Shift Operations to Off-Peak Periods.** Certain customers, mainly industrial customers, may have the ability to shift operating schedules to reduce their workloads during the on-peak hours. In these cases, the work would be scheduled for the off-peak hours. The net amount of electricity usage may be the same, but the on-peak loads would be lower than usual.

- **On-Site Generation.** Several of the RTP pilot subscribers had the ability to displace electricity purchases from Gulf Power Company with electricity generated on-site. It was expected that this option would be used when it was economical to do so.

Estimates could be made of the amount of load reduction activity that took place during high price episodes without on-site information of process or scheduling changes. The approach used to estimate the impact of the RTP price signals was based on a comparison of on-peak loads under alternative price scenarios. The difference between the loads under high price conditions versus average price conditions gave the measure of the load impact. Both graphical and statistical comparisons were performed. Graphical comparisons were relatively straightforward to make and provided informal evidence of program impacts. The graphical analysis was not conclusive, however, because of the impacts of weather on customer loads. Multivariate regression analysis was used to isolate the effect of prices on customer loads from changes in weather. The results from the multivariate analysis provided formal evidence of program impacts. This analysis was performed for the RTP program participants in total, as well as for five market segments. Finally, further evidence to support the results of the multivariate regression analysis was developed using a statistical panel.

Data

Three types of data were used in the analysis: hourly loads, RTP prices, and weather data. These data types are described below.

Load Data

For this study, hourly load data were analyzed beginning in 1997 and continuing through September 1998. The data was for 20 customers. Eleven of the 20 customers were on

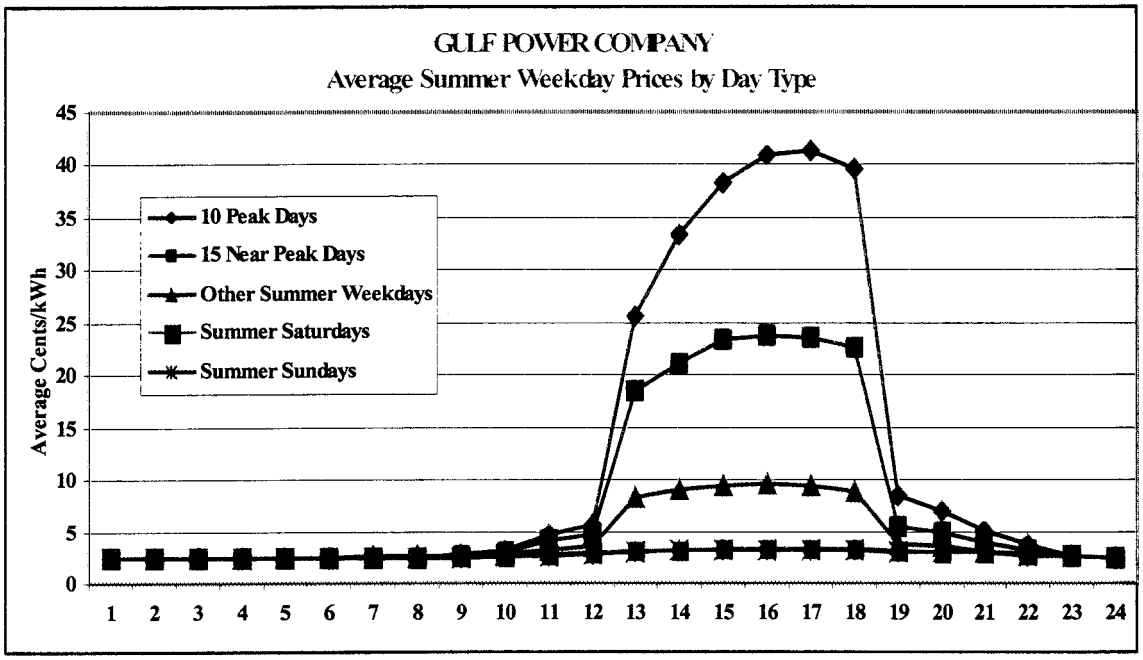
the RTP rate for both the 1997 and 1998 summer on-peak periods. All of these customers were on the rate during the summer of 1998. Several of the customers had on-site generation facilities.

For purposes of this analysis, customers were grouped by market segment: industrial, governmental agencies, health care, and other commercial. Detailed analysis was performed for each market segment, as well as for the total customer group.

RTP Price Data

By 4:00 p.m. each day, the hourly prices that would prevail for the following day were provided to the RTP customers. The prices varied mostly in the summer months, ranging between 2.3 and 70 cents/kWh. The average 1998 summer monthly prices are summarized by day type in following graphic. The day types are defined as follows:

- Peak Day is the average of the 10 days with the highest on-peak price.
- Near Peak Day is the average of the next 15 highest priced days.
- Other Summer Weekdays is the average of the remaining summer weekdays.
- Summer Saturdays is the average of the Saturdays in the summer season.
- Summer Sundays is the average of the Sundays in the summer season.

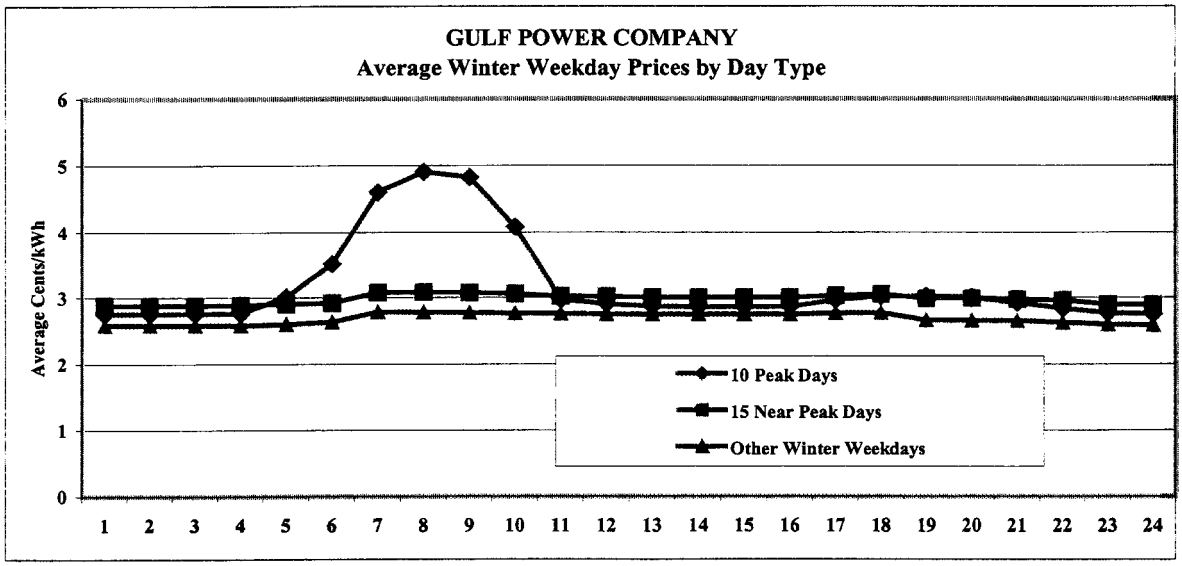


The distribution of the maximum on-peak and off-peak prices during the summer months of 1998 is presented below. During the off-peak period, all price signals were below 25 cents/kWh. During the on-peak period, this same price range accounted for 85 percent of the price signals.

Distribution of Maximum Off- and On-Peak Prices, Summer Months

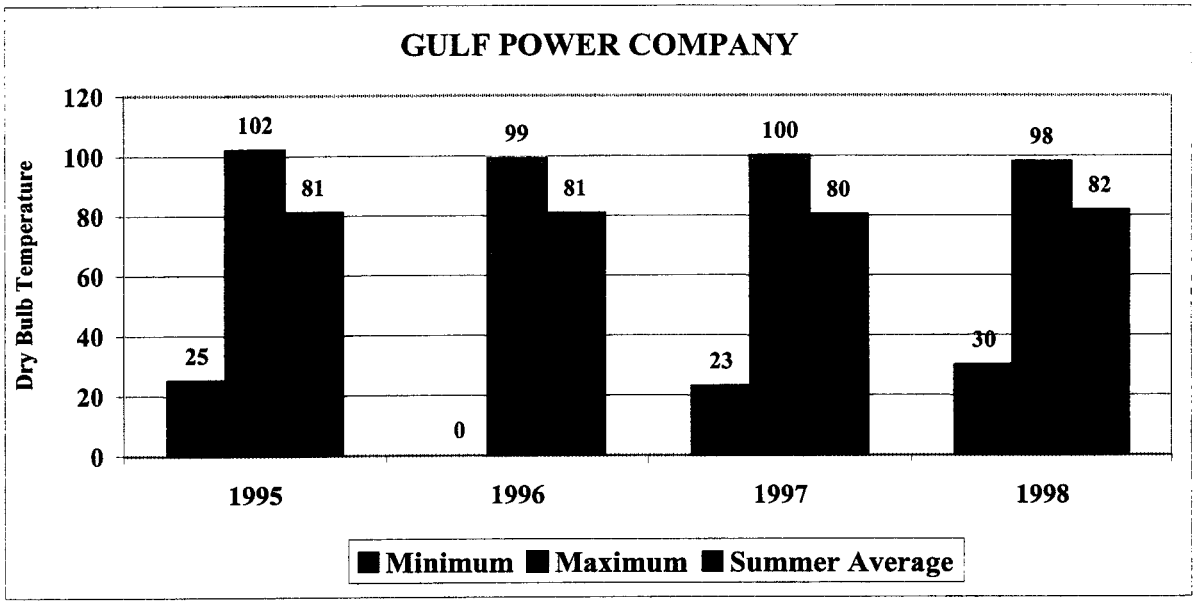
Price Range cents/kWh	Off-Peak	On-Peak
0-5	53	0
5-10	6	51
10-15	0	38
15-20	1	13
20-25	3	1
25-30	0	7
30-35	0	3
35-40	0	5
40-45	0	0
45-50	0	0
50-55	0	1
55-60	0	1
60-75	0	1

The winter period prices show a much more stable picture. The peak prices also occur at a different time of the day. The winter peak prices occur in the morning hours versus the afternoon summer peak period. This pattern is very similar to the winter load shapes, which also peak in the morning as demand for heating and water heating takes place.



Weather Data

Daily maximum and minimum dry bulb temperatures were used to control for changes in loads associated with variations in weather. The daily maximum and minimum temperatures were derived from hourly dry bulb temperatures for Pensacola. Summary weather statistics are presented below for the years 1995 through 1998.



Graphical Analysis

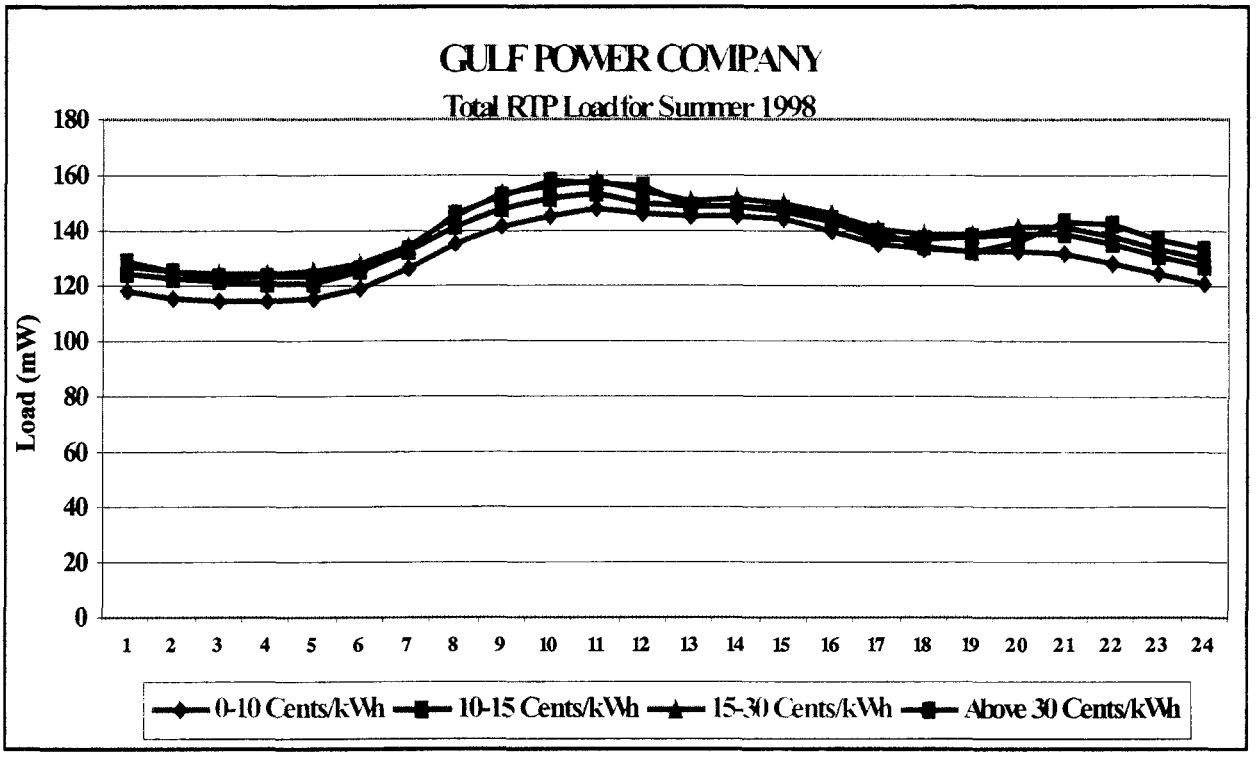
As discussed above, three types of analyses were performed to identify the impact of the RTP price signals. In this section, the results of a graphical analysis are presented. This analysis involves comparing day-type load shapes, where the day types are defined by price category. The day-type shapes are the average summer weekday loads by price category. The price categories were based on the maximum on-peak price and were defined as follows:

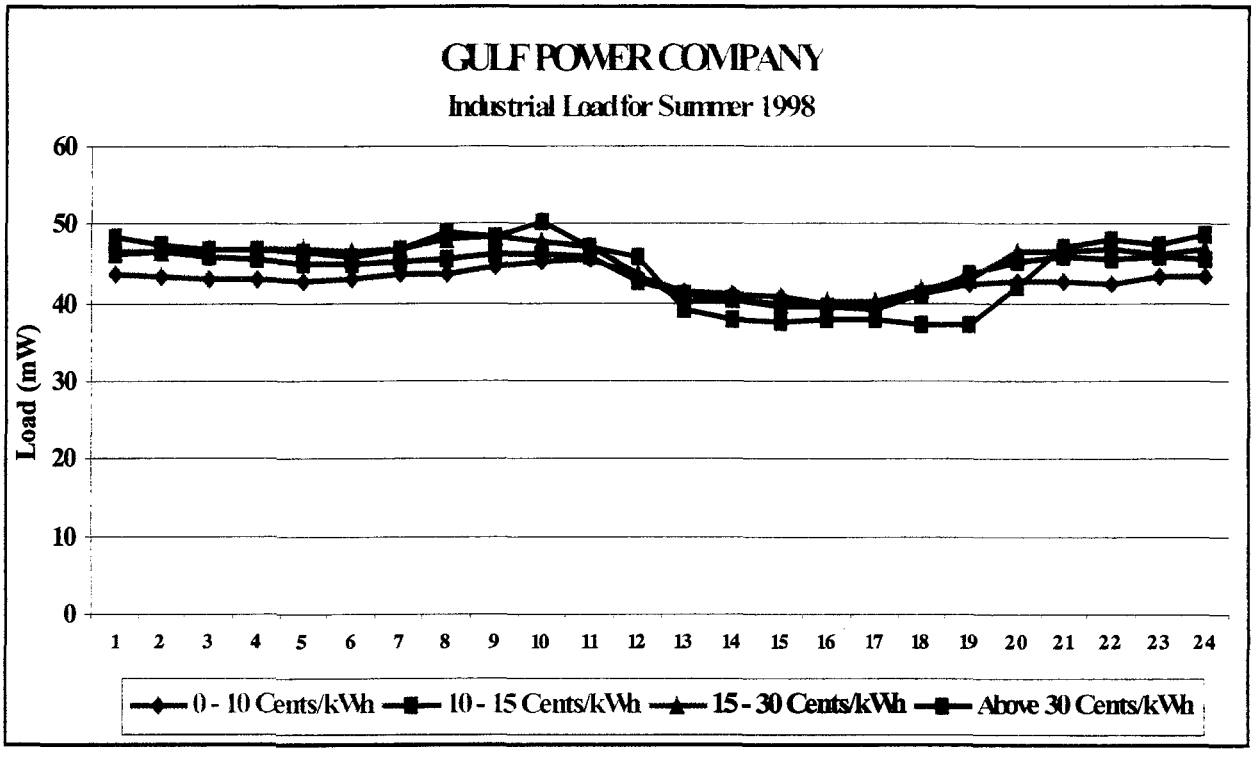
- Under 10 cents/kWh,
- 10 to 15 cents/kWh,
- 15 to 30 cents/kWh, and
- Over 30 cents/kWh.

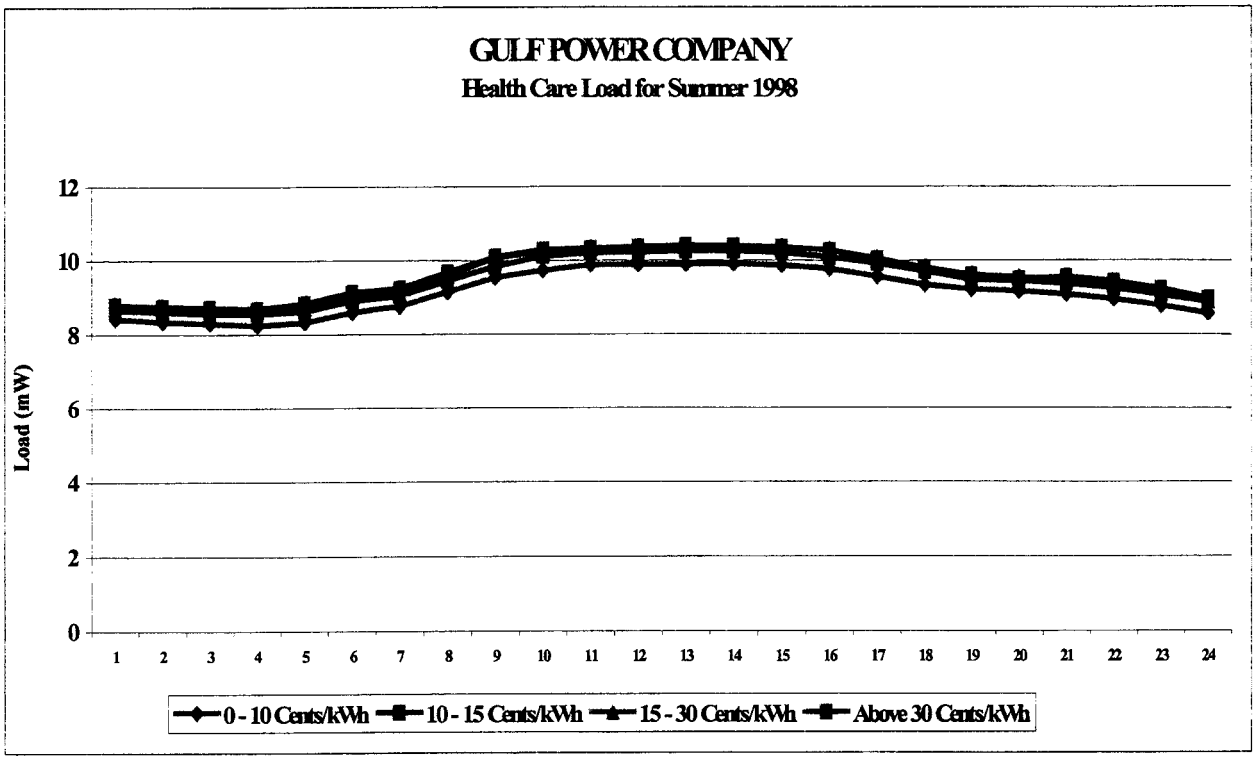
Day-type graphs were developed for the total RTP customer group and by market segment. The graphs show the apparent impact of RTP prices on loads for the industrial and other commercial segments. The on-site generation customers appeared to account

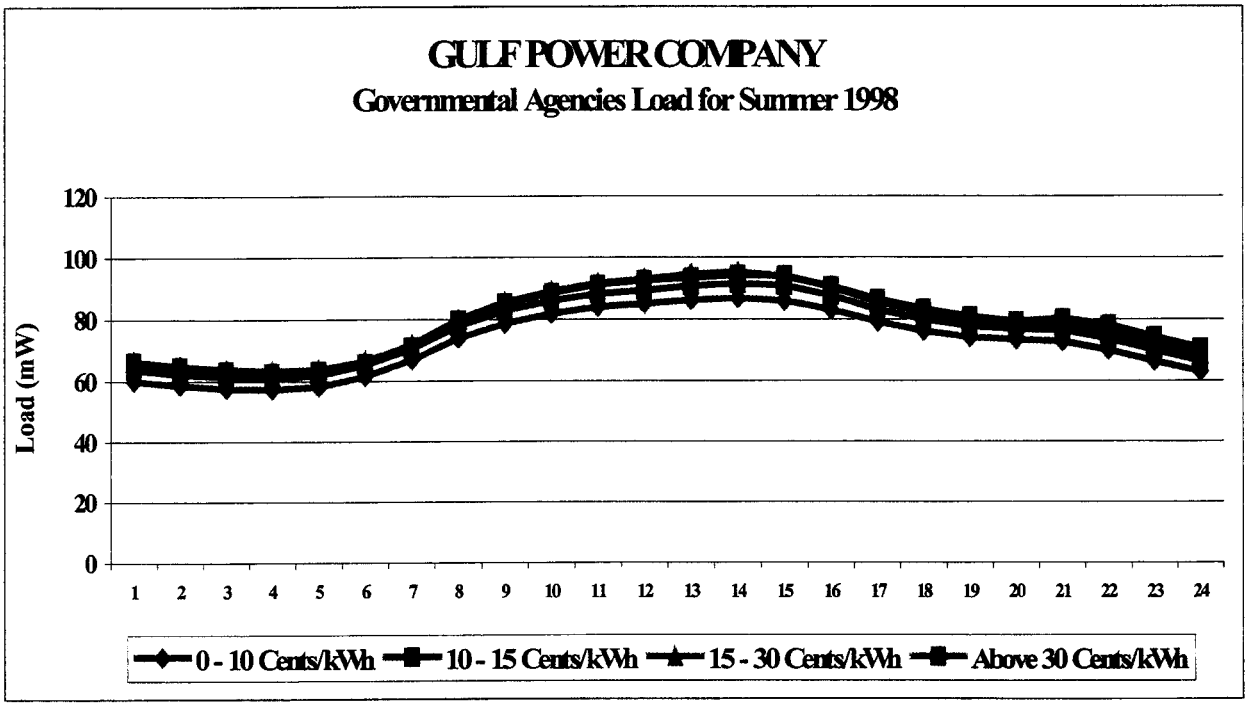
for the majority of the impacts in these two segments. The industrial customers generally had been on the RTP rate longer than the governmental agencies and health care customers. The availability of on-site generation and process control allowed these customers more latitude in responding to price signals.

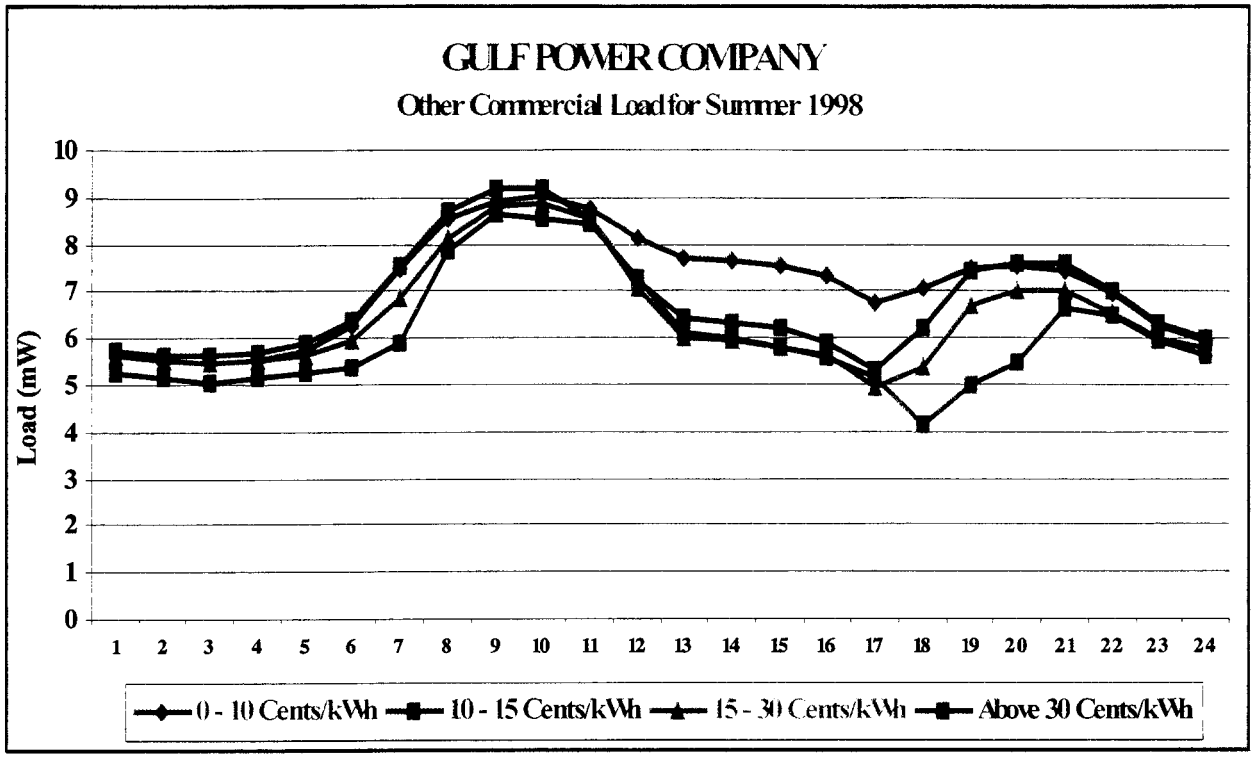
For the health care and governmental facilities segments, the graphs show no apparent impact. These customers tend to be weather sensitive. RTP prices tend to be highly correlated to weather. As temperatures rise RTP prices are inclined to approach peak levels as the system responds to additional load requirements. The ability to respond to price signals was dependent upon several factors. For certain customers, health and safety concerns are of primary importance and limit response alternatives. For governmental facilities, national defense and public health and safety priorities dominated decisions relating to load building or shedding. The ability to respond was a function of time as well. Adjusting on-site generation to price signals can be done in a relatively short period of time. Production work schedules can also be tailored with some degree of short-term flexibility. However, capital investments in energy management systems or modifications in behavior take time to implement. The governmental agencies and commercial customers were confronted with these choices for the first time in the summer of 1998. The long-term response to RTP signals would be determined over the course of several years as customers experiment with alternative choices and evaluate cost effectiveness.

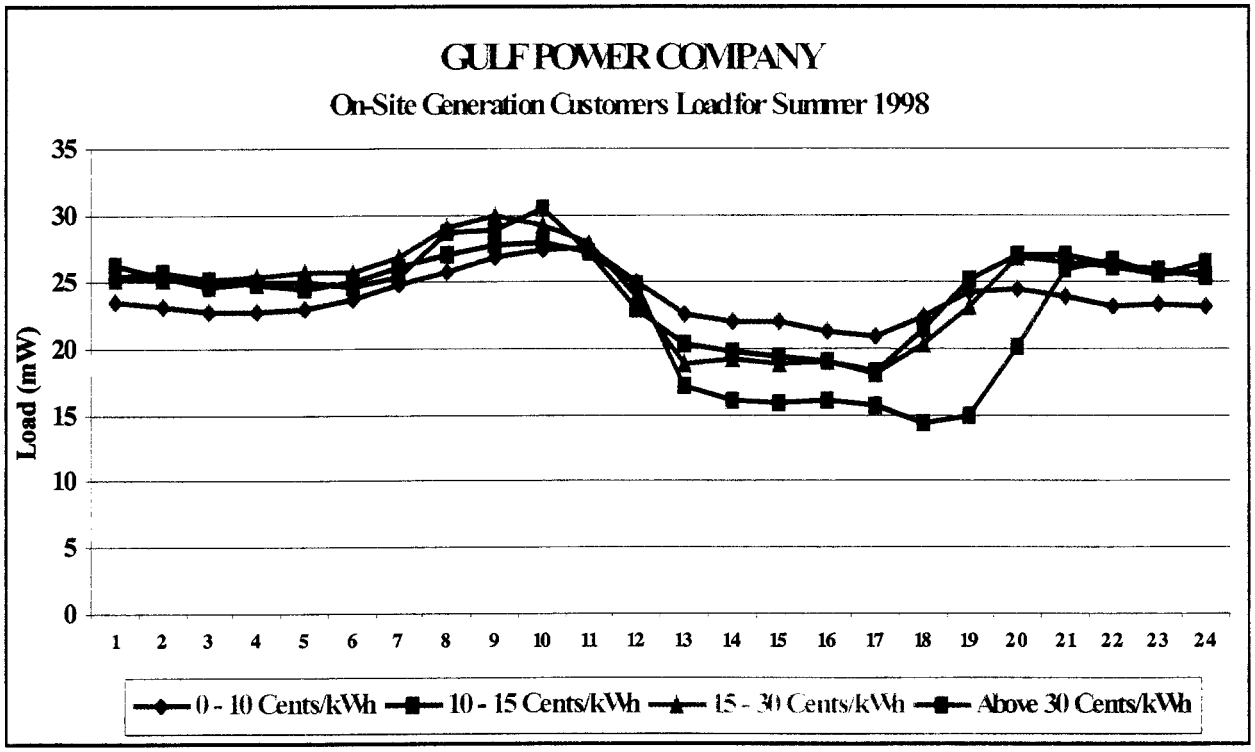

GULF POWER COMPANY
Total RTP Load for Summer 1998
Load (mW)
180
160
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
0-10 Cents/kWh
10-15 Cents/kWh
15-30 Cents/kWh
Above 30 Cents/kWh


GULF POWER COMPANY
Industrial Load for Summer 1998
Load (mW)
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
0 - 10 Cents/kWh
10 - 15 Cents/kWh
15 - 30 Cents/kWh
Above 30 Cents/kWh


GULF POWER COMPANY
Health Care Load for Summer 1998
Load (mW)
12
10
8
6
4
2
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
0 - 10 Cents/kWh
10 - 15 Cents/kWh
15 - 30 Cents/kWh
Above 30 Cents/kWh


GULF POWER COMPANY
Governmental Agencies Load for Summer 1998
Load (mW)
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
0 - 10 Cents/kWh
10 - 15 Cents/kWh
15 - 30 Cents/kWh
Above 30 Cents/kWh


GULF POWER COMPANY
Other Commercial Load for Summer 1998
Load (mW)
0 1 2 3 4 5 6 7 8 9 10
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
0 - 10 Cents/kWh
10 - 15 Cents/kWh
15 - 30 Cents/kWh
Above 30 Cents/kWh


GULF POWER COMPANY
On-Site Generation Customers Load for Summer 1998
Load (mW)
0 5 10 15 20 25 30 35
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
0 - 10 Cents/kWh
10 - 15 Cents/kWh
15 - 30 Cents/kWh
Above 30 Cents/kWh

Ratio of Off-Peak to On-Peak Loads

The average on-peak and off-peak loads associated with the day-type graphs are given in the following table. One measure of the impact that prices had on the load profiles of the RTP customers was the ratio of average off-peak loads to average on-peak loads. If customers acted to reduce on-peak loads in response to higher prices, then this ratio would be higher at higher price levels. As can be seen in the table, the ratio grows for the RTP class in total and for the industrial and other commercial market segments. It remains relatively flat for the governmental agencies and health care segments. The fact that the ratio for the governmental agencies and health care segments remains relatively flat does not mean these customers did not reduce loads during the high price scenarios. For these segments, it was possible that increases in weather-sensitive loads during the high price episodes neutralized the impact of any load reduction activity that may have implemented.

Average On-Peak and Off-Peak Loads by Market Segment and Day Type

Market Segment	0–10 cents/kWh	10–15 cents/kWh	15–30 cents/kWh	30–80 cents/kWh
Maximum On-Peak Loads (MW)				
Total	140.7	143.8	146.7	144.3
Industrial	40.7	40.2	40.4	38.0
Government	82.9	87.4	90.4	90.5
Health Care	9.7	10.1	10.2	10.2
Other Comm.	7.3	6.1	5.6	5.5
On-Site Gen.	21.8	19.8	19.1	15.9
Average Off-Peak Loads (MW)				
Total	128.5	134.7	137.9	137.9
Industrial	43.5	45.5	46.6	46.8
Government	69.0	72.8	75.2	75.4
Health Care	8.9	9.2	9.4	9.4
Other Comm.	7.0	7.1	6.7	6.3
On-Site Gen.	24.4	25.9	26.3	25.4
Ratio of Average Off-Peak Loads to Average On-Peak Loads				
Total	91.3	93.7	94.0	95.6
Industrial	106.7	113.1	115.3	122.9
Government	83.2	83.4	83.2	83.3
Health Care	91.9	91.7	91.6	92.0
Other Comm.	96.0	116.4	119.9	115.1
On-Site Gen.	111.6	131.1	137.6	159.5

Statistical Models of Price Response

The graphical analysis presented above was not conclusive because of the impacts of weather on customer loads. That is, high price days also tend to be days requiring significant cooling. In this case, weather-sensitive customers had the potential of exhibiting higher than average loads on high price days. The data presented in the following table illustrates how much on-peak loads could vary at a given price point. For example, for the price range of 10 to 15 cents/kWh, the average on-peak loads ranged from a low of 135.3 mW at a temperature ranging between 50 and 55° to a high of 146.4 mW at a temperature between 45 and 50°. Likewise, for a temperature range of 55 to

60°, the average loads vary from a low of 127.5 mW at a price of 0 to 5 cents/kWh to a high of 148.3 mW at a price of 15 to 20 cents/kWh.

Average On-Peak Load (kW) by Price and Weather Bin

Price cents/kWh	Temp 25–40°	Temp 40–45°	Temp 45–50°	Temp 50–55°	Temp 55–60°	Temp 60–65°	Temp 65–70°	Temp 70–75°
0-5	119,409	115,808	127,115	113,728	127,456	122,575	114,646	113,589
5-10		144,745	144,852	137,840	142,338	127,638	137,721	
10-15		144,451	146,382	135,266	143,195	142,164	138,495	
15-20			150,462		148,251	146,595		
20-25					146,781			
25-30					144,511	145,446		
30-35					143,131			
35-40		140,775				147,336		
40-45					137,038			
50-55					142,953			
55-60						147,406		
70-75						143,638		

A multivariate regression analysis was performed to isolate the effect of the RTP price signals from changes in weather. The overall analysis approach had two steps:

- **Develop Hourly Load Models.** The first step was to develop a set of hourly regression models for each market segment. These models took into account changes in loads associated with variations in weather, calendar effects, and prices. The difference between the predicted loads derived from the models and the actual segment loads was attributed to random variations in operating behavior.

- **Price Simulations.** Once the regression models had been estimated, they could be used to provide estimates of what loads would be under alternative prices. To compute the impact of the RTP signals, it was then reasonable to ask what loads would have been if average time-of-use (TOU) prices were used instead. In the second step, the estimated models were used to simulate hourly loads under RTP price signals and average TOU prices. The difference between the loads under these two alternative price paths provided a measure of the RTP program impact.

A more detailed discussion of these steps follows.

Develop Hourly Load Models

The analysis began with estimating a set of hourly regression models for each market segment. These regression models were used in the next step to predicted hourly loads under alternative price schedules. These equations related changes in loads to weather, day-of-the-week, season, holidays, and prices. The equations had the following general form:

$$\begin{aligned} Load_{d,h} = {} & B_0 + B_1 DayofWeekVars_d + B_2 SeasonVars_d + B_3 HolidayVars_d \\ & + B_4 TemperatureVars_d + B_5 TemperatureVars_d \times WeekEndBinary_d \\ & + B_6 AverageOnPeakPrice_d + B_7 AverageOffPeakPrice_d \\ & + B_8 AverageOnPeakPrice_d \times WeekEndBinary_d \\ & + B_9 AverageOffPeakPrice_d \times WeekEndBinary_d \end{aligned}$$

The key explanatory variables included in the models were as follows:

- **Day-of-the-Week Variables.** These variables measured the average load that could be expected on each day of the week. If a market segment had different weekday versus weekend operating profiles, then this set of binary variables (e.g., Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday) would account for the variation in the average loads across the day types.

- **Season Variables.** These binary variables measured any systematic seasonal swings in loads. The impact of these variables depended on the magnitude of the seasonal fluctuations in a market segment's loads.

- **Holiday Variables.** These binary variables measured the change in loads associated with holidays.

- **Weather Variables.** For weather sensitive segments like health care, much of the fluctuations in the daily loads were driven by changes in weather. To control for weather induced changes in loads, a set of temperature variables was included in the equation. Because the response of loads to changes in temperatures is nonlinear, a set of temperature splines was used. These temperature splines are interacted with a weekend binary variable to allow a different load response between weekends and weekdays.

- **Price Variables.** The price variables included in each equation were the daily average on-peak and off-peak prices. The price variables were interacted with a weekend binary variable to allow a different load response between weekends and weekdays. It was expected that these variables would imply that the higher the

on-peak price, the lower the on-peak load. Further, the effect of higher on-peak prices on off-peak loads would depend on whether customers were shifting loads around, using on-site generation, or simply turning off equipment.

Price Simulations

The impact of the RTP price signals on the customer load shapes was estimated by using the models developed above to simulate two cases:

- **RTP Prices.** In this scenario, the models were used to predict loads under actual weather and actual RTP prices.

- **Average Time of Use Prices.** In this scenario, the models were used to predict loads under actual weather and average time of use prices.

The average TOU prices used for the simulations were defined by season and TOU period, and were computed using the RTP price history, giving the following:

- Average on-peak TOU price for winter (4.72 cents/kWh),
- Average off-peak TOU price for winter (3.15 cents/kWh),
- Average on-peak TOU price for summer (5.55 cents/kWh), and
- Average off-peak TOU price for summer (3.10 cents/kWh).

The difference between the two sets of simulated values provided an estimate of the impact of RTP prices in each hour relative to an alternative of TOU average prices by season and period. Formally,

$$IMPACT_{d,h} = SIMULATEDLOADS_{d,h} - PREDICTEDLOADS_{d,h}$$

where simulated and predicted loads had the following general forms:

$$\begin{aligned} SIMULATEDLOADS_{d,h} = {} & \hat{B}_0 + \hat{B}_1 DayofWeekVars_d + \hat{B}_2 SeasonVars_d + \hat{B}_3 HolidayVars_d \\ & + \hat{B}_4 TemperatureVars_d + \hat{B}_5 TemperatureVars_d \times WeekEndBinary_d \\ & + \hat{B}_6 AverageOnPeakTOUPrice_d + \hat{B}_7 AverageOffPeakTOUPrice_d \\ & + \hat{B}_8 AverageOnPeakTOUPrice_d \times WeekEndBinary_d \\ & + \hat{B}_9 AverageOffPeakTOUPrice_d \times WeekEndBinary_d \end{aligned}$$

$$PREDICTEDLOADS_{d,h} = \hat{B}_0 + \hat{B}_1 DayofWeekVars_d + \hat{B}_2 SeasonVars_d + \hat{B}_3 HolidayVars_d$$
$$+ \hat{B}_4 TemperatureVars_d + \hat{B}_5 TemperatureVars_d \times WeekEndBinary_d$$
$$+ \hat{B}_6 AverageOnPeakPrice_d + \hat{B}_7 AverageOffPeakPrice_d$$
$$+ \hat{B}_8 AverageOnPeakPrice_d \times WeekEndBinary_d$$
$$+ \hat{B}_9 AverageOffPeakPrice_d \times WeekEndBinary_d$$

Here, the $\hat{B}_j$ are estimated parameter values derived in Step 1.

Load Impact Estimates

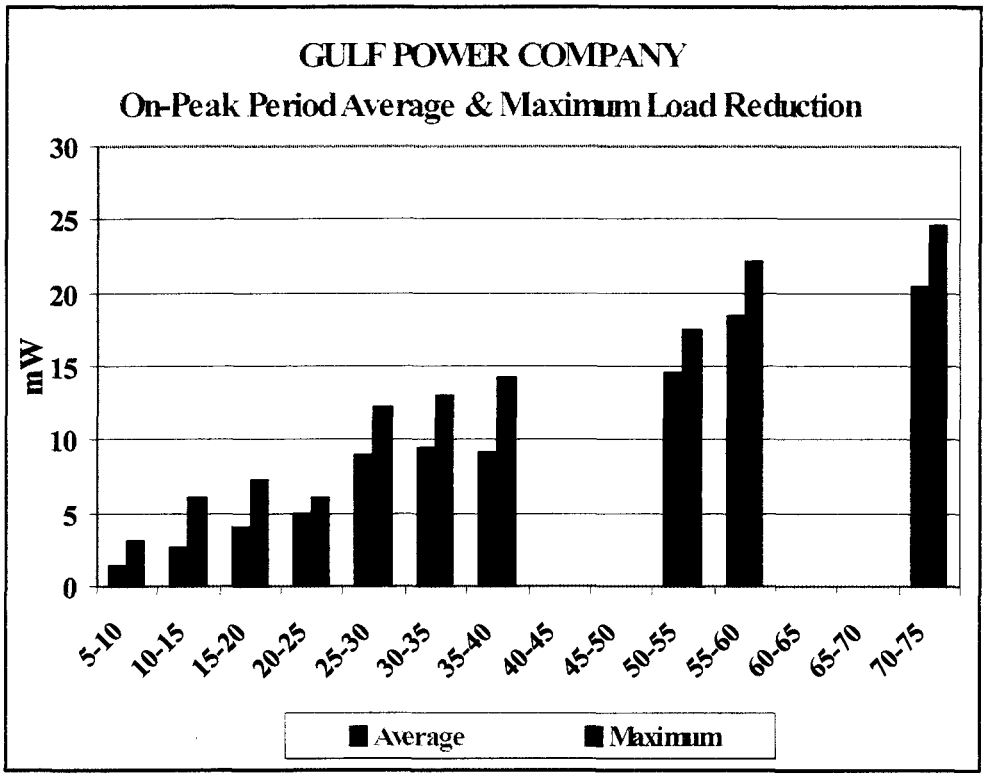
Estimates of load impacts are summarized below. Conclusions are as follows:

- Estimated maximum impact was approximately 23 mW at 70 cents/kWh.
- Most of the impact (18 mW) came from the industrial segment.
- Impacts for the health care segment were small (less than 1 mW).
- Impacts for the governmental agencies segment were also small (about 2 mW).
- Impacts for the other commercial segment (3 mW) mostly came from sites with on-site generation.
- Impacts were estimated to be smaller at lower prices.

The low impact estimates for the health care and governmental segments may not be indicative of their potential for load reduction. The majority of these customers had joined the rate after the summer of 1997. Thus, these customers experienced only one summer of high price signals and may not have had time to put in place a process for responding to the price signals.

Maximum On-Peak Period Reduction

The following graph shows the average and maximum on-peak load reduction by price category. The data underlying this graph are presented in the table immediately following the graph. The maximum load reduction of 24.5 mW occurred at a price over 70 cents/kWh. This impact was computed as the sum across the maximum impacts for each segment. The average impact at 70 cents/kWh was estimated to be 20.4 mW.



Within On-Peak Period Maximum Load Reduction by Price Category (mW)

Cents/kWh	Total	Industrial	Gov't	Health Care	Other Comm.
5-10	3.09	2.02	0.72	0.00	0.34
10-15	6.00	4.04	1.21	0.00	0.74
15-20	7.30	5.03	1.28	0.00	0.98
20-25	5.97	4.37	0.07	0.02	1.50
25-30	12.22	8.59	1.62	0.01	2.00
30-35	12.97	9.14	1.73	0.01	2.08
35-40	14.24	9.93	1.61	0.06	2.65
40-45					
45-50					
50-55	17.48	12.44	2.10	-0.05	2.98
55-60	22.16	15.83	2.46	-0.05	3.92
60-65					
65-70					
70-75	24.54	17.53	2.73	-0.06	4.34

Within On-Peak Period Average. Load Reduction by Price Category (mW)

Cents/kWh	Total	Industrial	Gov't	Health Care	Other Comm.
5-10	1.37	1.07	0.27	-0.02	0.04
10-15	2.65	2.07	0.26	-0.02	0.34
15-20	4.01	3.13	0.32	-0.02	0.58
20-25	4.93	3.84	-0.11	0.02	1.18
25-30	8.99	7.02	0.82	-0.05	1.19
30-35	9.40	7.34	0.69	-0.04	1.41
35-40	9.07	7.07	0.11	0.01	1.88
40-45					
45-50					
50-55	14.53	11.36	1.27	-0.07	1.98
55-60	18.44	14.41	1.46	-0.08	2.66
60-65					
65-70					
70-75	20.42	15.95	1.62	-0.09	2.94

The difference between the maximum and average impacts reflects the fact that the hour at which the biggest load reduction occurs varies across the market segments. Reviewing the load impacts presented in the following table, the impact of this can be seen. At the day of the maximum summer peak price, the biggest load reduction occurs at 7:00 p.m. for the industrial (18.6 mW), 1:00 p.m. for the governmental facilities segment (2.7 mW), and 6:00 p.m. for the other commercial sector (4.3 mW) and the health care market (-0.06 mW). These values are taken from the peak period noon to 6:00 p.m.

Load Impacts by Market Segment at Peak Price (MW)

Hour	Total	Industrial	Gov't	Health Care	Other Comm.
1:00 AM	-0.29	3.38	-4.14	0.26	0.21
2:00 AM	0.09	3.71	-4.21	0.18	0.41
3:00 AM	0.36	4.17	-4.45	0.16	0.49
4:00 AM	0.32	3.47	-3.96	0.22	0.59
5:00 AM	0.79	2.81	-2.93	0.04	0.87
6:00 AM	4.75	4.48	-1.10	-0.12	1.48
7:00 AM	7.59	5.03	-0.54	-0.04	3.14
8:00 AM	2.21	2.32	-1.19	0.01	1.07
9:00 AM	2.65	4.07	-1.09	-0.03	-0.30
10:00 AM	3.60	3.54	0.04	-0.15	0.16
11:00 AM	7.54	7.10	0.10	-0.02	0.36
12:00 PM	11.45	8.48	1.49	-0.04	1.52
1:00 PM	23.27	17.53	2.73	-0.11	3.13
2:00 PM	21.16	16.26	2.21	-0.10	2.79
3:00 PM	19.61	16.18	0.75	-0.15	2.84
4:00 PM	17.62	14.07	1.03	-0.07	2.59
5:00 PM	18.78	15.26	1.60	-0.06	1.97
6:00 PM	22.08	16.43	1.37	-0.06	4.34
7:00 PM	23.33	18.59	1.88	0.08	2.79
8:00 PM	17.86	13.35	2.38	0.11	2.02
9:00 PM	7.78	6.41	0.67	0.04	0.67
10:00 PM	1.28	2.64	-0.99	0.10	-0.46
11:00 PM	6.09	7.19	-1.16	0.29	-0.23
12:00 AM	2.96	3.96	-1.63	0.38	0.25

Arc Price Elasticities

Arc price elasticities are presented in the next table. Price elasticities provide a measure of how sensitive loads are to changes in prices. The elasticities were computed as follows:

$$Elasticity = \frac{ChangeinLoad}{ChangeinPrice} \times \frac{\left(P_{TOU} + P_{RTP}/2\right)}{\left(Load_{TOU} + Load_{RTP}/2\right)}$$

Here, the change in load was computed as the difference between average on-peak load under the time-of-use price and the average on-peak load under the RTP price. The change in price was the difference between the time-of-use price and the RTP price. These values are referred to as Arc elasticities because the statistic is measured at the average of the prices and loads.

Implied Arc Price Elasticities

Cents/kWh	Arc Elasticity
5-10	-0.03
10-15	-0.02
15-20	-0.03
20-25	-0.03
25-30	-0.04
30-35	-0.04
35-40	-0.04
40-45	
45-50	
50-55	-0.06
55-60	-0.08
60-65	
65-70	
70-75	-0.08

The Arc elasticities can be interpreted as follows: as RTP signals increase to between 5 and 25 cents, the average load response or load reduction would be approximated 3 percent of the load on line at that time. As prices continued to increase the response or load reduction on averages increased as well. From 25 to 40 cents, load could be expected to drop by roughly four percent. At the maximum price during the summer of 1998, the price response was estimated to be a eight percent reduction in load.

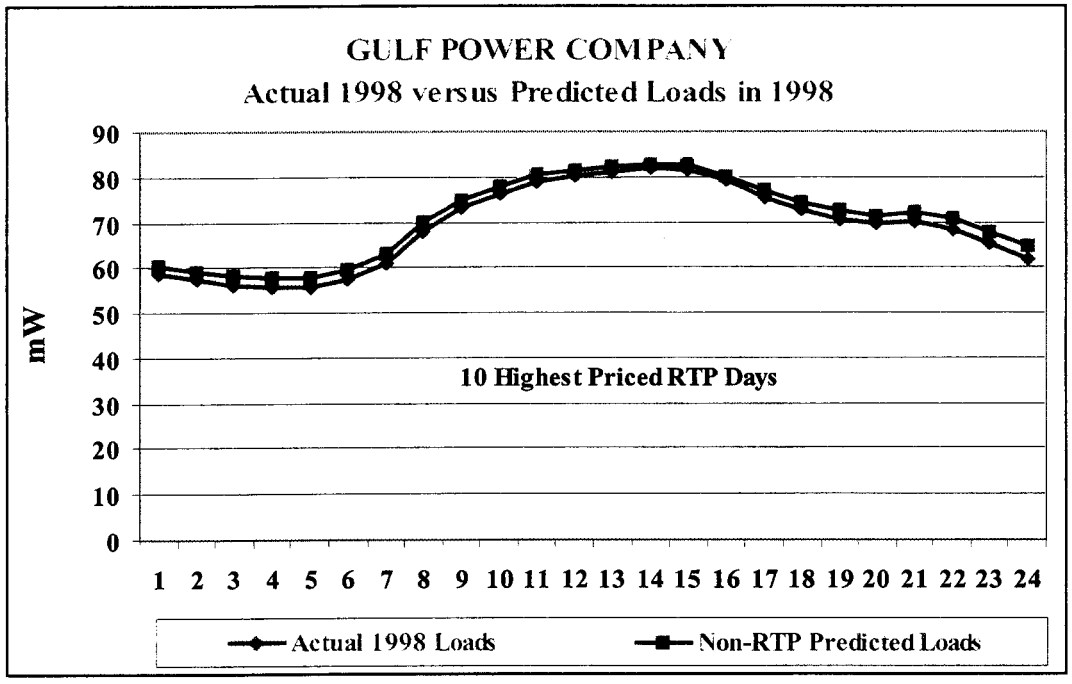
Statistical Panel

For eight of the customers, data were available from 1997, when they were not on the RTP rate, and for 1998, when they were on the rate. These sites were a mix of health care, governmental agencies, and industrial sites without on-site generation. These customers provided a panel that was used to analyze RTP effects. The analysis took the following steps:

- Estimated load models using 1997 data, before joining the RTP program.
- Applied models using actual weather and calendar data for 1998.
- Compared results from Step 2 to the actual 1998 loads.

The model predictions from the second step gave an estimate of what customer loads would be in 1998 under weather conditions that occurred in 1998, but with the rate levels from the 1997 period. The average result for the 10 highest priced days in 1998 is presented in following graph. The loads derived from Step 2 above are represented by the curve labeled *Non-RTP Predicted Loads*.

The results did not indicate a significant impact for this group of customers, with the average impact for the 10 high price days estimated to be about 2 MW. This was consistent with the governmental and health care segment impacts developed using the multivariate analysis presented earlier. The low impact estimated for this group of customers may not be indicative of their potential for load reduction. Since these customers joined the rate after the summer of 1997, they had experienced only one summer of high price signals. This may not have given them sufficient experience with this rate to put in place a process for responding to the price signals.



CUSTOMER SATISFACTION

Overview and Objectives

Gulf Power commissioned Epley Marketing Services in the fall of 1998 to gain a better understanding of the customer's perspective of the effectiveness and satisfaction with the utility's RTP pilot program. In addition to gaining more insight on the above issues, Gulf Power Company wanted to:

- Learn whether customers were satisfied with the current real time pricing offer, or how customers wanted the rate to be modified.
- Evaluate how comfortable customers were with assuming additional financial risks that stem from RTP and associated price volatility.
- Assess customers' knowledge of RTP options and various price alternatives.
- Gauge what customers would be willing to pay for more advanced price forecasting.
- Learn how customers alter their operations in response to RTP price signals.
- Measure the success of its RTP-related marketing and customer service efforts.

From November 23, 1998 to January 14, 1999 Epley Marketing Services conducted interviews with representatives of twenty-one (21) Gulf Power Company real time pricing customers. Nearly every participant was directly responsible for utility management at the facility serviced by Gulf Power Company. In four instances, an additional interview was conducted with the customer's national energy manager, for a total of twenty-five (25) interviews.

The statistical analysis in the preceding section was one method of assessing response to the RTP signals. The statistical analysis could only record or measure the quantitative responses after the fact with no real time information on what was actually transpiring. What was missing in this analysis was any qualitative information of what the customers were trying to accomplish or doing upon receiving the RTP signals. Coupling the statistical method with the qualitative interviews provided a more complete picture for Gulf Power Company from the customer's perspective.

Several major considerations drove the decision to have a third party conduct the customer satisfaction and effectiveness interviews. The first was to ensure the customer of complete confidentiality and provide an atmosphere for candid discussion. Having a third party conduct the interviews assured the evaluations would divorce any impression of the RTP pilot from other marketing efforts or personnel of Gulf Power Company.

Interview Methodology

The Epley methodology was designed to facilitate a dialogue with customers regarding specific issues. These qualitative interviews provided a forum for listening to Gulf Power Company customers on key issues. At the onset of each dialogue, the interviewer briefly confirmed that participants were directly involved with utility management at their organization. Then, the interviewer thoroughly led the participant through their experiences with real time pricing, from the participant's point of view.

In their comments, participants described their experiences with real time pricing in relation to their expectations. More specifically, participants provided an account of the impact real time pricing had on their organization's operation and utility budgets. The interviews illustrated how customers responded to the RTP pilot program, satisfaction with RTP, and in many cases revealed the customers' future intentions with regard to continued RTP service.

Existing Knowledge Base

In all but a handful of cases, participants were unfamiliar with real time pricing before their participation in Gulf Power Company's Real Time Pricing pilot program. Eighty percent of the participants claim to have never heard of RTP prior to overtures from Gulf Power Company.

Initial Impression of Real Time Pricing

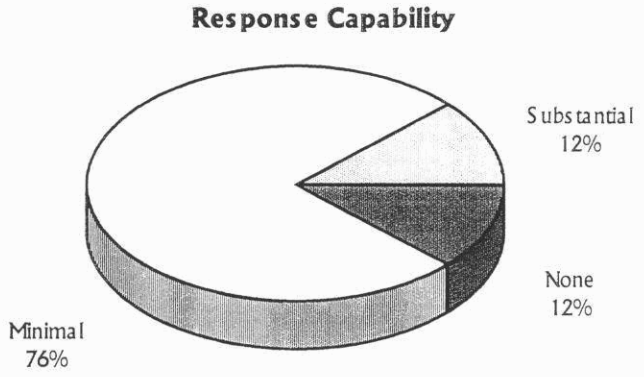
Despite the novelty of the program, participants were quite receptive to Gulf Power's offer for pilot program participation, primarily because they recognized that RTP could result in substantial savings for their organization.

Initial customer reactions to RTP were overwhelmingly positive; however, some participants recall that they experienced some hesitation about switching to a real time pricing rate structure. They now attribute their initial reservation to insecurity related to managing real time pricing.

Response to Real Time Pricing

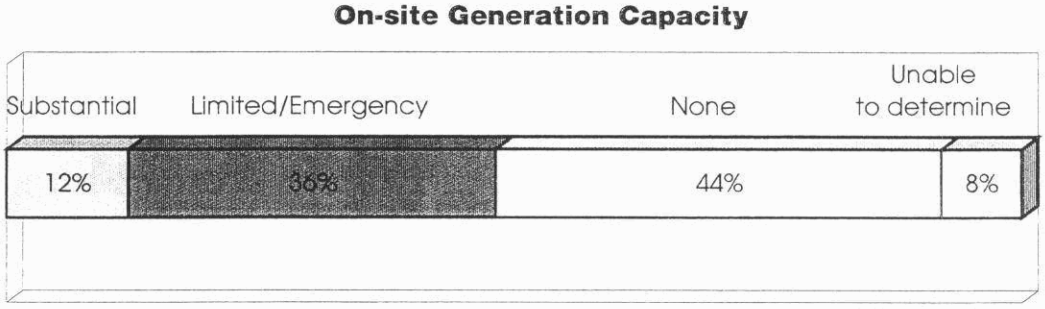
Current Response Capability

Few participants believed their operation was capable of more than what they viewed as a minimal response to real time price signals. Customers that can mount a substantive reaction to RTP signals were typically manufacturing or industrial organizations that turned to lower-cost local generation when real time prices became relatively high.



On-site Generation Capacity

Participants tended to view on-site generation as the key to best utilizing real time pricing. However, only a small minority of customers could produce enough electricity locally to maintain practical production levels or to avoid considerable disruption in their operation caused by "getting off the grid." Consequently, most participants tended to view their operations as rather inflexible. These customers recognized that presently it was possible for their organization to achieve only a portion of the savings RTP could yield for customers that boast more malleable operations.



Response Measures

When customers were able to respond to RTP signals, usually they did so with equipment modifications or subtle changes in how equipment was used. In some instances, customers could alter how staff was scheduled, and in a very few instances customers could alter their production in response to changing electricity prices.

RESPONSE MEASURE	TOTAL
Equipment adjustment	68%
Scheduling modification	36%
Production alteration	8%
None mentioned	20%

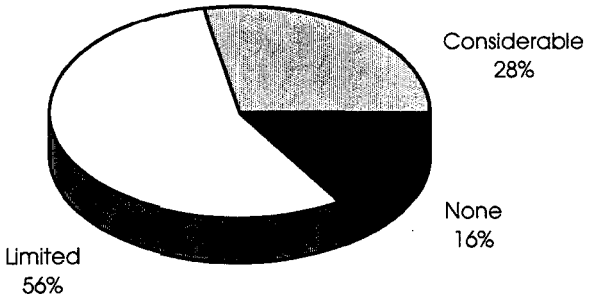
RTP-Related Conservation Measures

Relatively few customers had conservation programs to complement real time pricing. Participants most frequently made adjustments in climate control, 24 percent, or in various pieces of non-essential equipment, 20 percent, in an attempt to shed load when prices rose. Participants claimed these efforts were sporadic because typically it was difficult to generate momentum for conservation initiatives within their organization. In most cases this is due to management pressure to achieve immediate payback for capital investments or a result of apathy among staff members.

Importance of Day-Ahead Forecasting

Customers' generally limited response capability was reflected in how participants characterized the importance of Gulf Power Company's forecasts. Most participants believed the price signals played a relatively small role in their energy management decisions. The purpose of the forecasts was obvious, yet participants struggled to find meaningful ways to implement the information that Gulf Power Company provided. For slightly over a quarter of the participants, the RTP signal had considerable impact on electricity management.

Influence of Price Signals on Energy Management



Use of RTP Price Signals

Considerable variation was evident in how often participants monitored Gulf Power Company's real time price forecasts. Typically, the information was used daily if the customer was able to tailor its operation to fluid electricity prices. However, as customers' response capability dwindled, so did participants' use of Gulf Power Company's daily RTP forecasts.

This pattern was consistent except during periods of extreme price volatility. During summer months, for instance, even unresponsive customers checked the price forecasts frequently, primarily in an effort to prepare their organization for perceived unusually high bills.

FREQUENCY OF USE	TOTAL
Daily/Regularly	44%
Seasonal	20%
Occasional/Variable	8%
Rarely used	8%
Not applicable	20%

Perceived Reliability of Price Signals

Participants were generally confident that RTP forecasts would arrive without incident. One-third, 32 percent, reported occasional problems related to price transmission or downloading; however, these customers stressed that these difficulties were temporary and that Gulf Power Company was quite successful in its efforts to resolve their problems quickly.

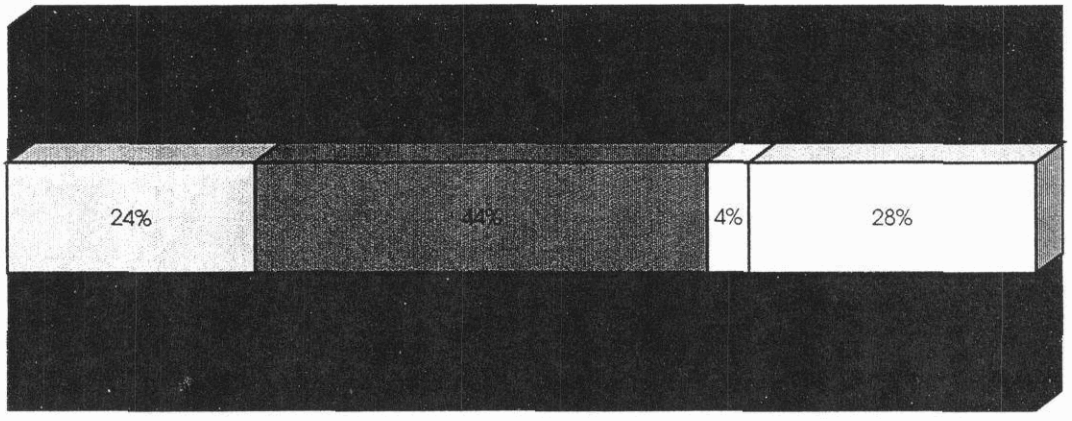
Perceived Accuracy of Price Signals

Gulf Power Company was overwhelmingly praised for the consistent precision of its real time price forecasts. A few, 16 percent, participants noticed regular discrepancies between forecast and actual prices only when prices were most volatile, usually during summer months. These apparent discrepancies were for price forecasts not for the next day but for two to five days later. Gulf Power Company provided the participants with forecasted price beyond the immediate 24 hours required for planning purposes. These short-term forecasts were not guaranteed and were always subject to change.

Overall Effect of RTP on Electricity Costs

Despite many customers' limited ability to respond to changing prices, real time pricing typically resulted in at least a small degree of savings. Some participants were pleasantly surprised by how much RTP lowered their energy costs. This opinion was restricted to customers on RTP for more than the summer of 1998. Others were unaware of the influence RTP had on utility expenses and hesitated to speculate on the matter. More

Overall Effect of RTP on Electricity Costs



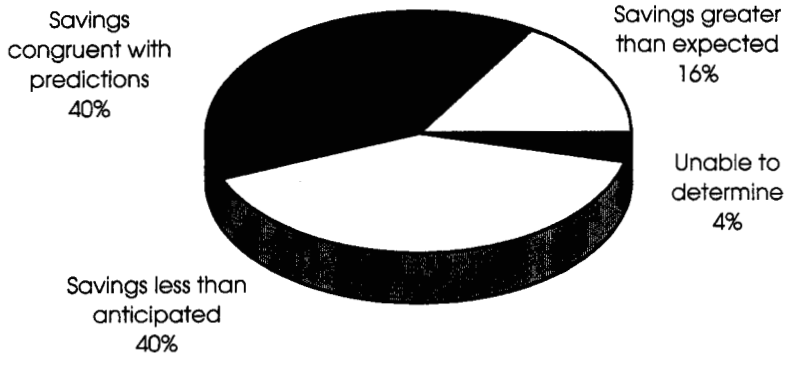
than two-thirds of the customers expressed a belief that the electricity savings were positive. The above chart summarizes the participants' views on the overall impact of RTP on electricity costs.

Expectations versus Outcomes

The majority of participants reported that RTP reduced their electricity costs as they anticipated. A few customers enjoyed even greater savings than expected. However, a substantial proportion of the participants were openly dissatisfied with the amount they had saved in relation to what they initially anticipated.

Many among this group recalled that, prior to participating in the pilot program, Gulf Power Company provided detailed estimates on the effect RTP would likely have on their organization's electricity expenditures. Particularly in light of the extreme price volatility customers endured during the summer of 1998, some of these customers' expectations regarding price and savings have changed substantially. For over half the customers, 56 percent, the savings or overall price levels were within the range of expectations. The following chart summarizes the customers' opinions on expectations versus actual outcomes.

Influence of Price Signals on Energy Management

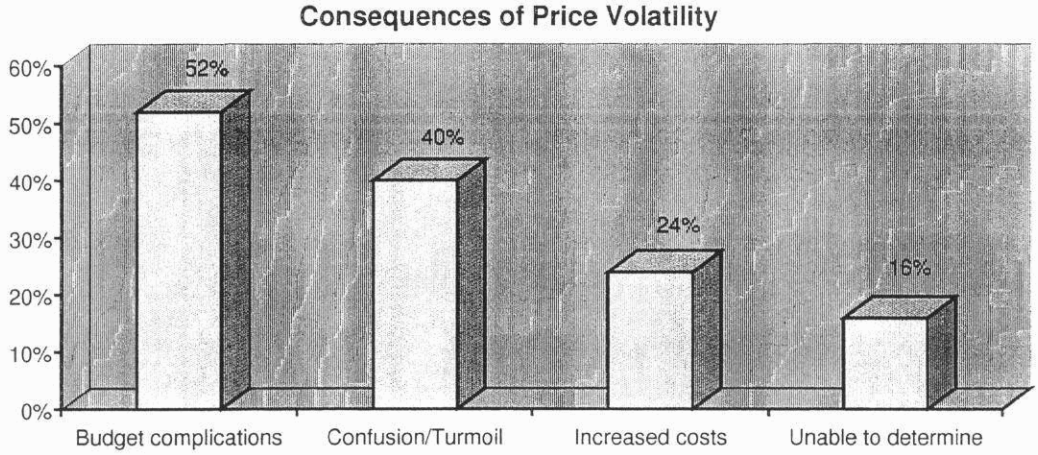


Barriers to Acceptance

Managing Real Time Pricing

A substantial proportion of participants, 32 percent, acknowledged that RTP requires more of their time and could be difficult to manage, but they found the effort to be an acceptable consequence of RTP. They viewed their investment in time as balanced not only by reduced costs, but also by more complete and accurate consumption information, 40 percent. Others, 28 percent, perceived no difference in the difficulty of their work, usually because their organization was unable to make substantive adjustments to real time prices.

Effects of Price Volatility



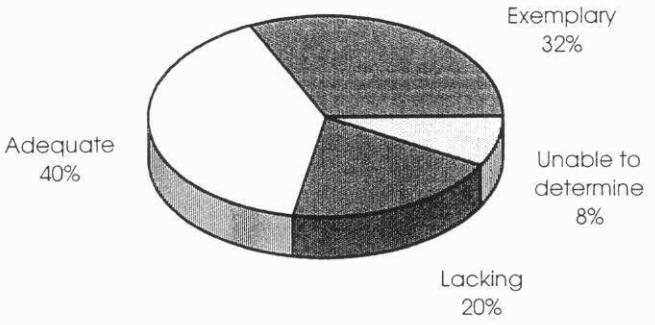
Many customers, even those with considerable time on RTP, appeared to be unprepared for large variations in monthly electricity bills. Although participants indicated that they understood RTP volatility, others within their organization that were unfamiliar with RTP expressed concerned over unusual bills. Other participants noted that during periods of relatively high RTP volatility manufacturing costs went up and therefore short-term profitability went down. These participants generally recognized that over time real time pricing balances itself and the customer's bottom line was ultimately not compromised. The major areas of consideration during periods of RTP volatility were budget constraints/concerns – 52 percent, internal confusion – 40 percent, and increased production costs – 24 percent.

RTP Marketing and Customer Support

Participants had mixed opinions on how Gulf Power Company initially advertised its RTP pilot program to their organization. Some individuals complimented the utility for presenting a balanced, fair description of RTP. Others were more critical and claimed that Gulf Power should have done more to warn customers of potential price volatility and exposure they would face while being serviced under real time pricing.

However, even participants that criticized Gulf Power Company's initial marketing efforts tended to report that the utility distinguished itself in its efforts to support RTP customers and provided necessary information and explanations for unusually high prices.

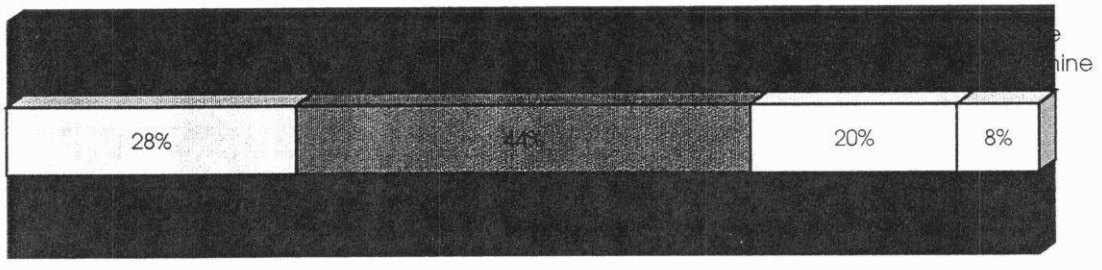
Quality of RTP Marketing & Customer Support



Customers' Assessment of Risk

Most participants recognized that real time pricing included at least some degree of financial risk because of the volatile nature of electricity prices. Despite unusually high prices during the summer of 1998, a few participants did not associate any risk with RTP. Others perceived some degree of financial uncertainty, but the cost savings and freedom of choice RTP ultimately yielded overshadowed their concerns, 44 percent. Over one-fourth perceived no financial risk, and 20 percent felt the risk might be higher than any reward.

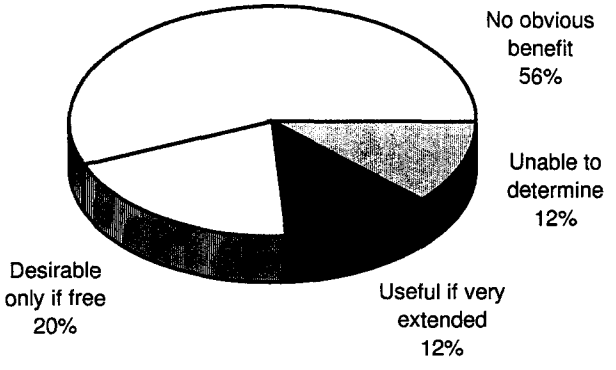
Customers' Assessment of Risk



Views on Advanced Forecasting

Relatively few participants believed that firm price forecasts beyond 24 hours would appreciably improve their responsiveness to RTP. Participants that recognized advantages from extended forecasts typically desired very advanced firm price guarantees. Most of these individuals/customers were not willing to accept increased rates in exchange for guaranteed real time prices. More than one-half, 56 percent, perceived no value from advance RTP signals beyond the current 24-hour period. These customers are highly correlated with the same customers who are presently not able to fully are respond to real time prices.

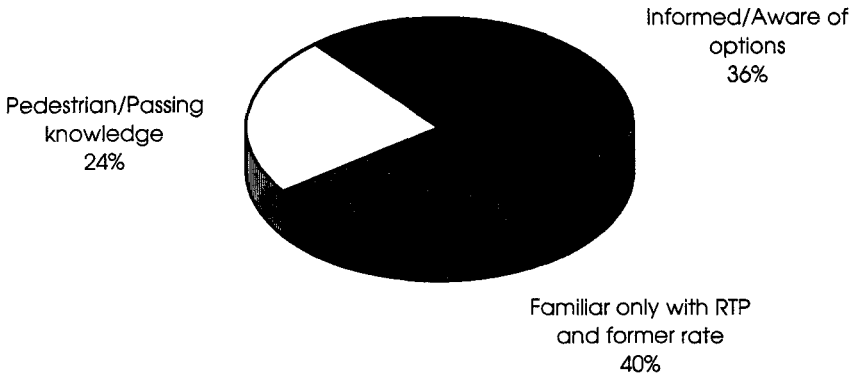
Views on Advanced Price Forecasts



Experience with Alternatives

Participants varied greatly in their knowledge and understanding of various rate structures. Few have ever had reason to investigate alternatives, and others displayed only a passing interest in learning any more than was absolutely necessary in order to discharge their present responsibilities. More than one-third of participants appeared to be informed utility consumers that do not depend solely on Gulf Power Company for most of the information they acquire on alternative electricity rates.

Understanding of Alternate Rate Structures

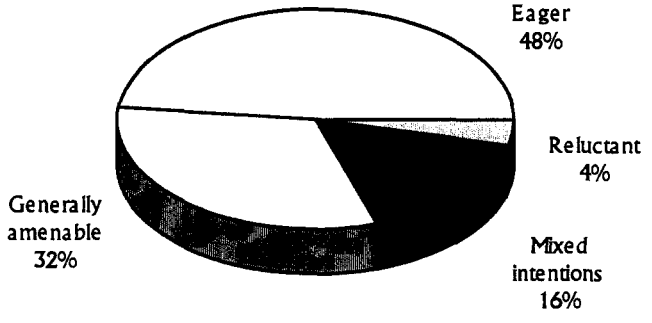


Future Strategies

Present Views on Real Time Pricing

The overwhelming majority of participants expressed interest in continued RTP service. In fact, nearly one-half – 48 percent were eager to continue, with another 32 percent generally amenable to continued participation. Only 4 percent of pilot participants expressed reluctance to continue.

Willingness to Continue RTP Service



Benefits of Real Time Pricing

Nearly every participant (92%) cited the potential for cost savings as the main benefit of real time pricing. In addition, some participants believed RTP was superior to their former rate structure because it provides:

- detailed consumption information (24%)
- advanced knowledge of prices (20%)
- greater operational flexibility (8%)
- insight into electricity pricing (8%)

Suggested Changes to RTP

Most participants were satisfied with the current design of Gulf Power's real time pricing rate. However, there were strong comments among slightly less than half, 44 percent, of the participants regarding how Gulf Power can improve its RTP offering.

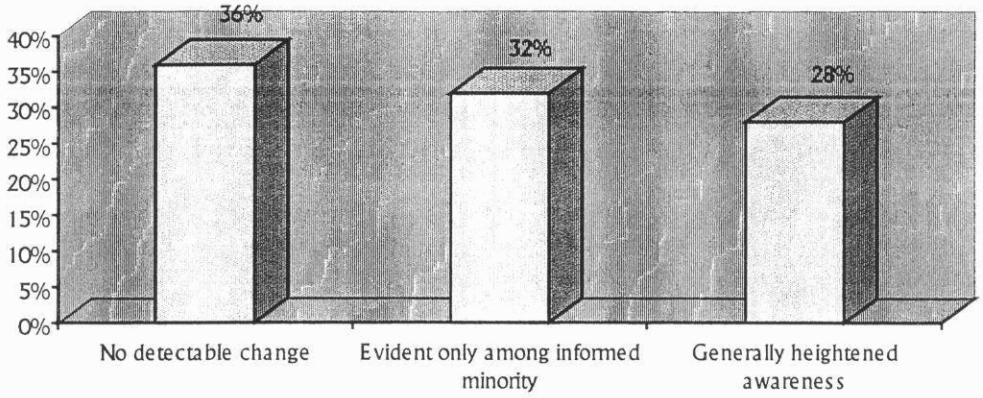
- **Financial Protection from Volatility (28%).** The suggestion most often voiced by participants was for Gulf Power Company to provide RTP customers with some form of protection from extreme real time price volatility. The exact form these options would take was unclear to participants, but several were aware of RTP caps and other similar financial hedging instruments offered by other utilities.

- **Other Suggestions (16%).** There was limited call for Gulf Power to provide customers with additional comparative rate information. Also, there was mention of a need for greater latitude in determining what existing load qualifies for RTP, as well as mention of lower rates for more responsive RTP customers.

Attitude toward Energy Efficiency

In most cases, real time pricing has not altered customers' views on energy consumption. However, participants indicated that in some instances RTP exerted a profound influence on others within their organization. Among these customers, because electricity prices received unusual attention as a result of RTP, more individuals within the organization became conscious of conservation issues and attempted to be more careful users of energy.

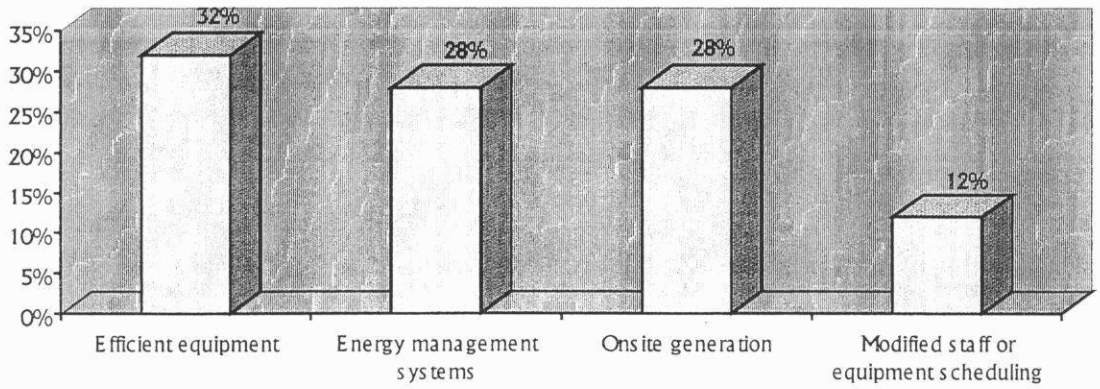
Impact of RTP on Energy Awareness



Potential Operational Alterations

Despite its limited impact across entire organizations, RTP convinced several decision-makers to investigate—and in some cases invest in—changes in their operations that would better enable the organization to benefit from RTP. The four most often mentioned potential operational alterations were: energy efficient equipment – 32 percent, energy management systems – 28 percent, on-site generation – 28 percent, modify staff or equipment scheduling – 12.

Potential Operational Alterations

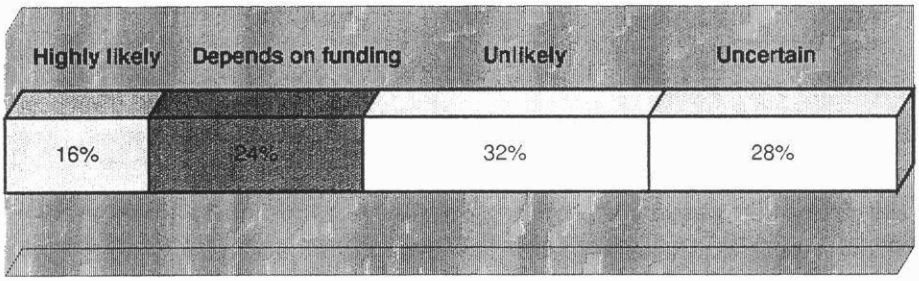


Likelihood of Increased Responsiveness

Many participants recognized that real time pricing could lower their electricity costs much more if their organization became better able to modify its operation in response to price signals. However, the majority of participants found it difficult to speculate on how their organization would evolve in the immediate future.

Based on their comments in total, some participants appeared to be more likely than others to promote initiatives within their organization to make it more capable of effecting a response to RTP signals.

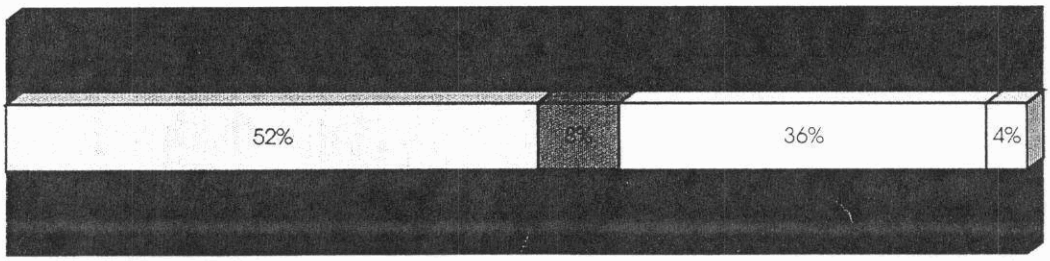
Likelihood of Increased Responsiveness



Influence on Relations with Gulf Power

To a great degree, Gulf Power's real time pricing pilot program exerted a positive influence on relationships between the utility and its customers. Many participants viewed the program as an honest effort on the part of Gulf Power Company to offer customers something of real benefit. Some participants viewed the RTP pilot and Gulf Power Company's subsequent customer service efforts as the element that bolstered an otherwise narrow relationship. These participants continued to view Gulf Power favorably.

Influence of RTP on Relations with Gulf Power



SUMMARY CONCLUSIONS

There were several messages in the interview results. At the most basic level, the results indicated that Gulf Power Company customers like real time pricing because of what it did for the benefit of their organization and because of the effect it had on their working relationship with Gulf Power Company. In nearly every instance, customers hoped to see real time pricing available—at least in some form—in the future. Other findings:

(1) Not All Customers Are Equipped to Benefit from Real Time Pricing

Some participants viewed their organization as one that could not adequately respond to real time price signals per the pilot's stated objective of peak demand reduction. A majority of participants believed their organization was capable of only minimal or marginal responses to volatile electricity prices in the short term. Some customers were pleased by the fact that their electricity costs declined somewhat because of RTP. There was also an apparent sense of frustration among some participants. This stemmed from their inability to maximize the savings potential that real time pricing clearly presented to these customers.

(2) RTP is More Attractive than Fixed Rates, but Not Ideal

When viewed in the context of customers' experiences with their former fixed rates, real time pricing appeared to be an acceptable risk to assume. It was clear to participants that overall real time prices could be less expensive than the fixed rate structure they were formerly serviced under. This strategy paid dividends until customers experienced extended periods of unusually high prices during the summer of 1998.

It was clear that too much involuntary exposure to price volatility tarnished to some degree customers' impression of real time pricing. The very real financial consequences of a volatile electricity market may prove too much to bear for some customers. Most susceptible were those customers who were unable to adjust their operations and were forced to absorb seasonally high costs before RTP ultimately balanced itself over time.

(3) Customers are Empowered by RTP

There was a recurring theme in the study findings related to what real time pricing did for customers. Real time pricing clearly moved the relationship with the Gulf Power Company customer to a new arena where customers, in their words, feel "in control."

RTP held the most appeal for customers that possessed the capability to respond. These were typically energy-intensive manufacturing organizations that possessed a great deal of operational flexibility. RTP was a better product for well-managed companies. These organizations maximized the benefits of RTP because they had the necessary tools: an

awareness of usage patterns, flexible staff or processes, on-site generation capability, and a willingness to become intimately involved with the cost-savings equation. This control over energy costs resulted in a heightened sensitivity to energy use that permeated entire organizations in some instances.

This sense of empowerment was not limited to the most responsive RTP customers, however. Even organizations that struggled to find meaningful ways to respond to price signals believed that, at a minimum, RTP generated opportunities for them to proactively influence their power usage and resulting expenses not just for electricity but for all energy sources. The very fact that Gulf Power Company gave customers an opportunity to participate in the RTP pilot program left customers with the impression that Gulf Power Company was presenting its customers with a chance to take greater control of their electricity use.

(4) Customer Relationships Benefit from Real Time Pricing

Real time pricing was almost uniformly perceived by customers as an extension of an already strong relationship with Gulf Power Company. Significantly, in some cases RTP served as an element that drastically improved weak or damaged relationships with customers, thereby altering the course of the dissatisfied customer.

RTP accomplished this by producing win–win relationships. Gulf Power Company and its customers were presented with a problem they could work on jointly to solve, and it was seen as benefiting both the utility and the customer. The fact of there being a mutual interest that required frequent contact and interaction between Gulf Power Company and customers, and the fact that the program provided real, tangible benefits were critical components to achieving the outcome of improved relations between Gulf Power Company and its customers.

Some customers believed that the utility's newfound focus on the needs of its customers manifested itself in programs such as the RTP pilot program and subsequent accompanying customer service efforts. In general, real time pricing seemed to facilitate a favorable environment for successful relationships with customers. This change in customers' perceptions of Gulf Power Company was attributed to increased contact with customers and customers' perceptions that Gulf Power wished to help or partner with customers.

(5) Gulf Power Markets RTP Successfully

Gulf Power was generally commended for its fair, honest description of the advantages and disadvantages of real time pricing during its introductory meetings with customers. Participants had a clear understanding of most aspects of the RTP program, and there were few surprises other than the unusual prices witnessed during the summer of 1998. Moreover, Gulf Power Company provided excellent customer service and support.

EXHIBIT "B"