

**2005 Demand-Side  
Management Plan  
and  
Program Standards**

**Docket No. 040032-EG  
December 1, 2004**

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## **2005 Demand-Side Management Plan**

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### **Introduction**

In accordance with Rules 25-17.001-.005, Florida Administrative Code, the Florida Public Service Commission (FPSC) established numeric conservation goals for Gulf Power Company (Gulf) in Docket No. 040032-EG. In response to Order No. PSC-04-0764-PAA-EG, Gulf submits this Demand-Side Management (DSM) Plan, which includes Program Standards, to the FPSC for approval. The following report contains Gulf Power Company's 2005 Demand-Side Management Plan and is organized into four (4) sections:

Section 1 contains an Executive Summary of the programs Gulf Power Company proposes to meet the numerical demand and energy savings set by the FPSC in Order No. PSC-04-0764-PAA-EG. Tables are also included which summarize the demand and energy savings by year for the residential and commercial/industrial markets.

Section 2 contains the actual Demand-Side Management Plan and is arranged by market - residential and commercial/industrial. Each program proposed for numeric goal achievement contains a detailed description and program standards and, when appropriate, a cost-effectiveness analysis.

Section 3 contains the Renewable Energy Programs, which encompass a variety of voluntary renewable/green energy initiatives implemented and under development by Gulf Power Company.

Section 4 contains Gulf Power Company's conservation research and development efforts. The Conservation Demonstration and Development program pursues research to promote energy efficiency and conservation. This program enhances and complements the other demand-side management programs offered by the Company.

## 2005 Demand-Side Management Plan

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### Executive Summary

Gulf Power Company's 2005 Demand-Side Management Plan continues the Company's history of developing and providing programs that focus on delivering value to the customers who purchase energy from Gulf. Since 1976 with the implementation of the GoodCents Home Program, Gulf Power Company has been a leader in promoting and educating its customers on the benefits and rewards of energy efficiency. The GoodCents Home Program's historical success provides clear evidence that selling efficiency to consumers can be done successfully.

The 2005 Demand-Side Management Plan provides a portfolio of programs aimed at all segments of the market place. The proposed programs and related goals are aggressive and will employ all phases of the Company's operations. The programs will use all of the Company's customer contact mechanisms: personal communications, mailings, Internet, advertising, and civic involvement, to inform, educate, promote, and deliver several of the demand-side programs.

Gulf's resource planning is tightly coordinated with the Southern Electric System's (SES) Integrated Resource Planning (IRP) process. Gulf and the other SES operating companies, Alabama Power, Georgia Power, Mississippi Power, Savannah Electric and Power, and Southern Power individually provide a forecast of their customers' future load and energy needs that is used to formulate an overall capacity resource plan for the entire SES. The magnitude of Gulf's and the entire SES capacity resource needs are driven by the summer peak demand forecast and a reserve margin target of 13.5%-15%. Because the system is summer peaking, a broad range of supply-side and demand-side alternatives are examined during the planning process in order to produce an integrated expansion plan that meets the needs of the system's customers in a cost-effective and reliable manner.

## **2005 Demand-Side Management Plan**

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The 2005 Demand-Side Management Plan contains existing programs, enhancements to current offerings, and some new programs. In the residential market, GoodCents Select provides the majority of the Company's summer kW demand savings. The Geothermal Heat Pump program will continue to be offered. Residential energy surveys will be offered and provide Gulf Power Company's existing residential customers and individuals building new homes with energy conservation advice that encourages the implementation of efficiency measures resulting in energy savings for the customer. In conjunction with energy surveys, the Company continues energy education for low income and affordable housing builders and providers. Also being offered is the GoodCents Home Program, complemented with the Energy Star Home Program. As a complement to the GoodCents Home Program, Gulf Power Company signed an agreement with the Environmental Protection Agency (EPA) in April, 2004. This agreement provides Gulf Power Company the opportunity to offer the Energy Star Home Program to our builders and customers and correlates the performance of GoodCents homes to the nationally recognized Energy Star efficiency label.

In the commercial and industrial markets, the Energy Analysis program is a prime tool for the Company's Energy Specialists to personally introduce customers to conservation measures and tailor recommendations to their individual needs. The Energy Services program offers advanced energy services and energy efficient end-use equipment to customers and is customized to meet the individual needs of large customers. The Geothermal Heat Pump program will now be offered to commercial and industrial customers, with emphasis on educating consumers on geothermal technology and raising awareness about the availability, affordability, and improved customer satisfaction associated with these units. Real Time Pricing will continue providing the majority of summer demand savings in the commercial and industrial markets.

## **2005 Demand-Side Management Plan**

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The Company's Renewable Energy Program encompasses a variety of voluntary renewable/green energy initiatives implemented and under development. These voluntary options for customers will include, but not be limited to, the Photovoltaic Optional Rate Rider and Solar for Schools program.

The final section of Gulf Power Company's 2005 Demand-Side Management Plan provides a means for the Company to pursue new and leading edge technology in the areas of energy production, distribution, and consumption. The Conservation Demonstration and Development Program addresses a wide variety of energy applications.

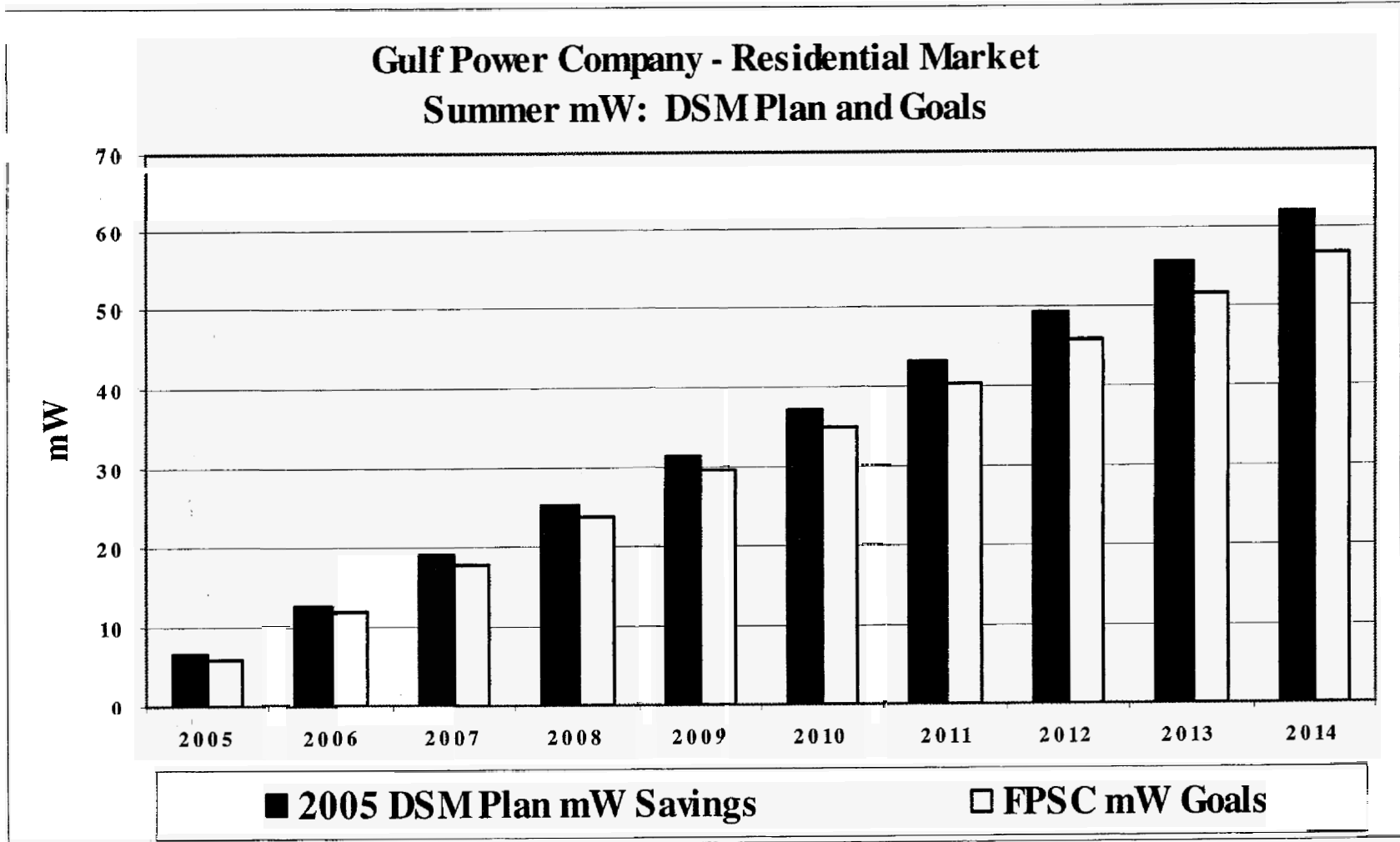
Gulf submits the programs described in the 2005 Demand-Side Management Plan for approval and for inclusion as cost recoverable Conservation and Energy Efficiency Programs under current FPSC-approved procedures pursuant to Rule 25-17.015, and requests permission to recover all costs associated with the development and administration of this DSM plan, unless otherwise specified in the program's cost-effectiveness section or benefits and costs section.

As a whole, Gulf Power Company's 2005 Demand-Side Management Plan has been designed to achieve the numeric goals set by the FPSC in Order No. PSC-04-0764-PAA-EG. A summary of the cumulative goals by market, residential and commercial/ industrial, is provided in the tables and graphs in Attachment A. The graphs reflect the Commission established numeric goals and Gulf Power Company's planned achievements, both shown at the meter, for the 10 year period of 2005 to 2014.

## Total Residential Programs

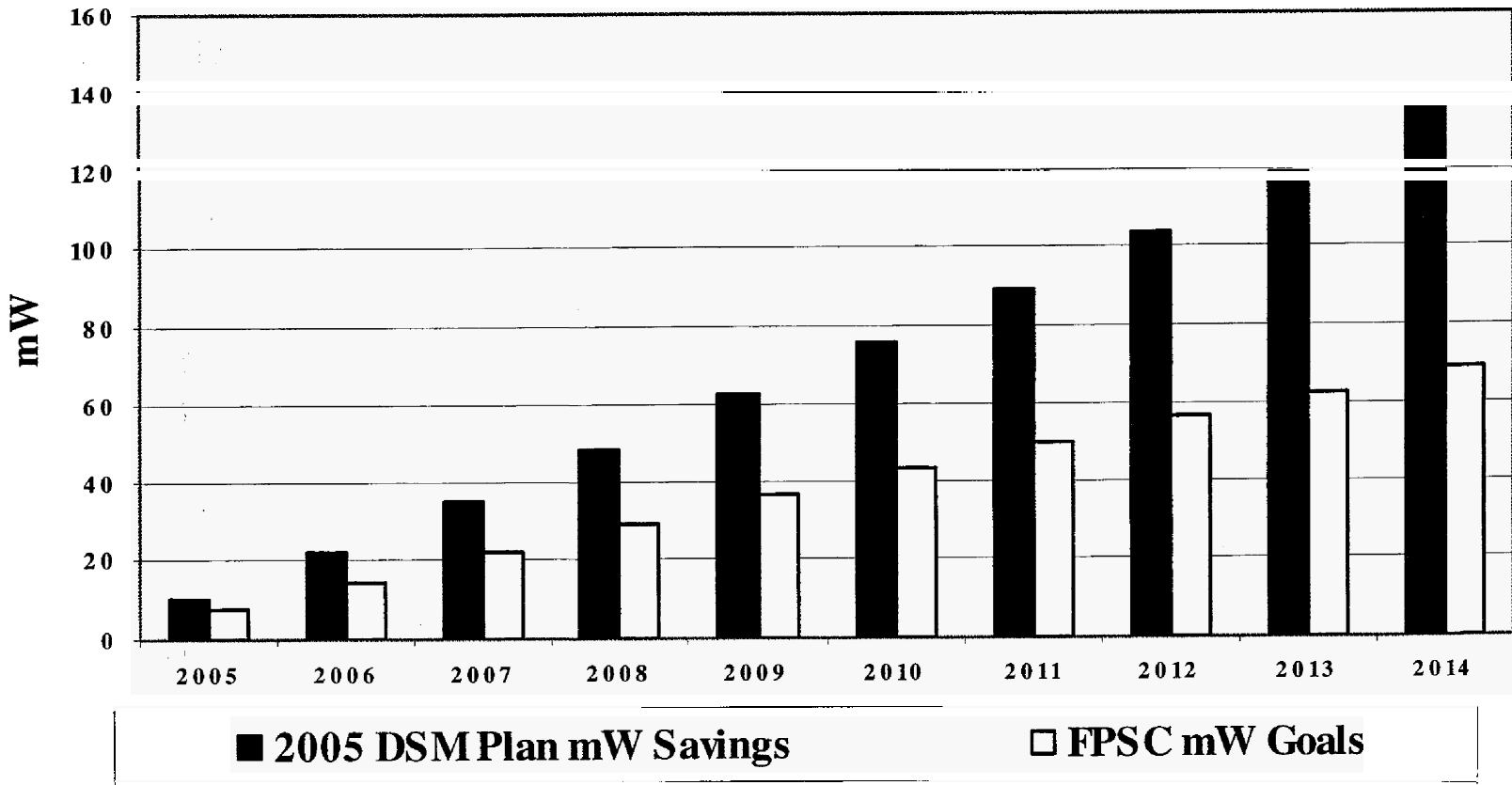
<b>At the Meter</b>						
<u>Year</u>	<u>Goals Docket gWh Reduction</u>	<u>DSM Plan gWh Reduction</u>	<u>Goals Docket Winter mW Reduction</u>	<u>DSM Plan Winter mW Reduction</u>	<u>Goals Docket Summer mW Reduction</u>	<u>DSM Plan Summer mW Reduction</u>
2005	3.1	6.4	7.2	10.4	5.9	6.5
2006	6.2	13.0	14.4	22.3	11.8	12.6
2007	9.2	20.0	21.7	34.7	17.7	18.7
2008	12.3	27.5	28.9	47.9	23.6	24.9
2009	15.4	35.7	36.1	62.0	29.5	31.2
2010	17.9	43.7	42.8	75.9	35.0	37.3
2011	20.4	51.5	49.4	89.6	40.5	43.3
2012	22.8	59.4	56.1	103.4	46.0	49.4
2013	25.3	68.5	62.7	118.9	51.4	55.6
2014	27.8	78.0	69.4	134.9	56.9	61.8

<b>At the Generator</b>						
<u>Year</u>	<u>Goals Docket gWh Reduction</u>	<u>DSM Plan gWh Reduction</u>	<u>Goals Docket Winter mW Reduction</u>	<u>DSM Plan Winter mW Reduction</u>	<u>Goals Docket Summer mW Reduction</u>	<u>DSM Plan Summer mW Reduction</u>
2005	3.4	6.9	9.5	13.6	7.8	8.6
2006	6.7	14.2	19.0	29.3	15.5	16.6
2007	10.1	21.8	28.5	45.6	23.3	24.6
2008	13.4	30.0	38.0	62.9	31.0	32.7
2009	16.8	38.9	47.4	81.4	38.8	41.0
2010	19.5	47.6	56.2	99.7	46.0	48.9
2011	22.2	56.2	64.9	117.7	53.2	56.9
2012	24.9	64.8	73.7	135.8	60.4	64.8
2013	27.6	74.7	82.4	156.2	67.5	73.0
2014	30.3	85.0	91.1	177.2	74.7	81.1

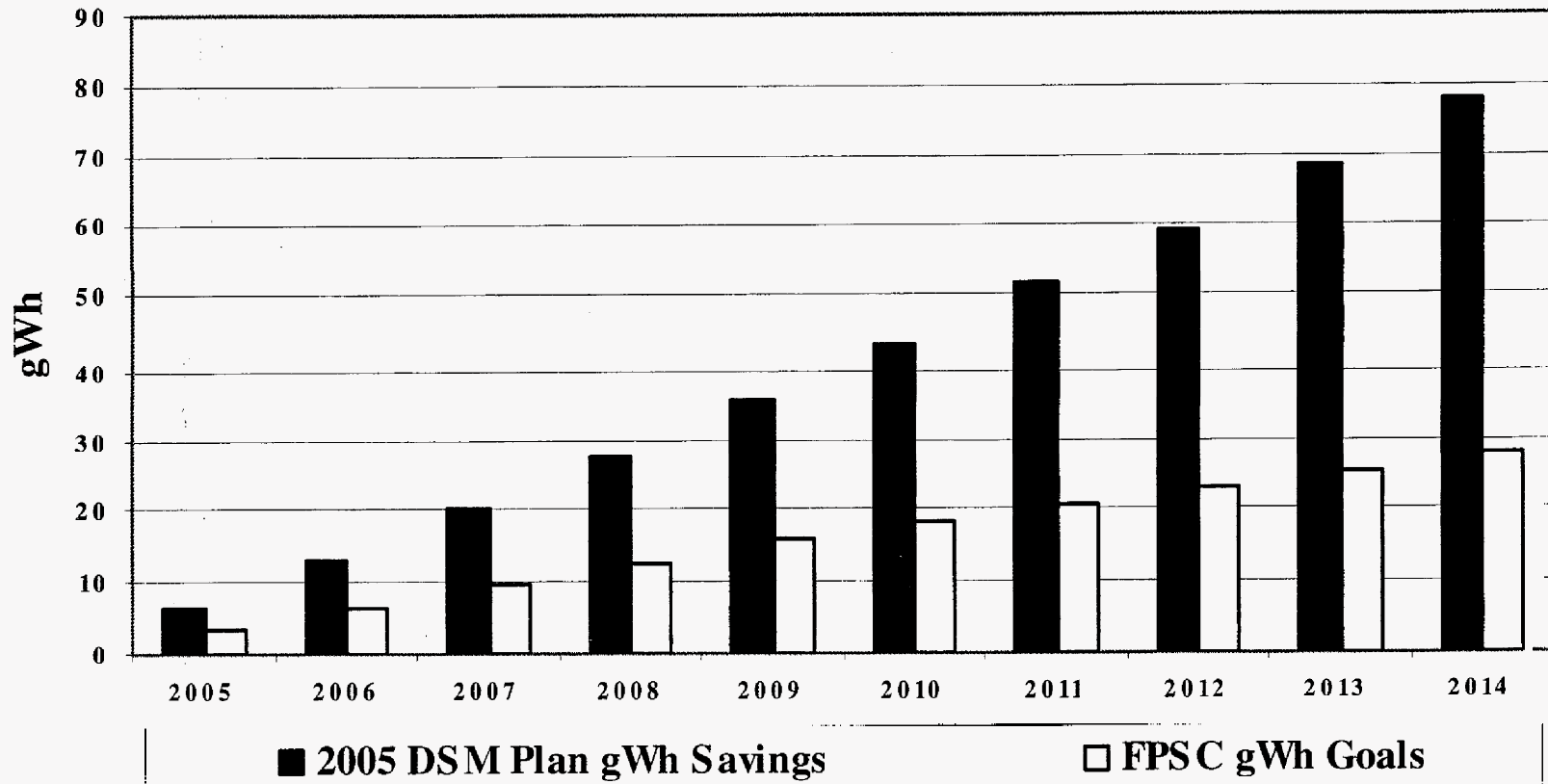




### Gulf Power Company - Residential Market Winter mW: DSM Plan and Goals



### Gulf Power Company - Residential Market Annual gWh: DSM Plan and Goals

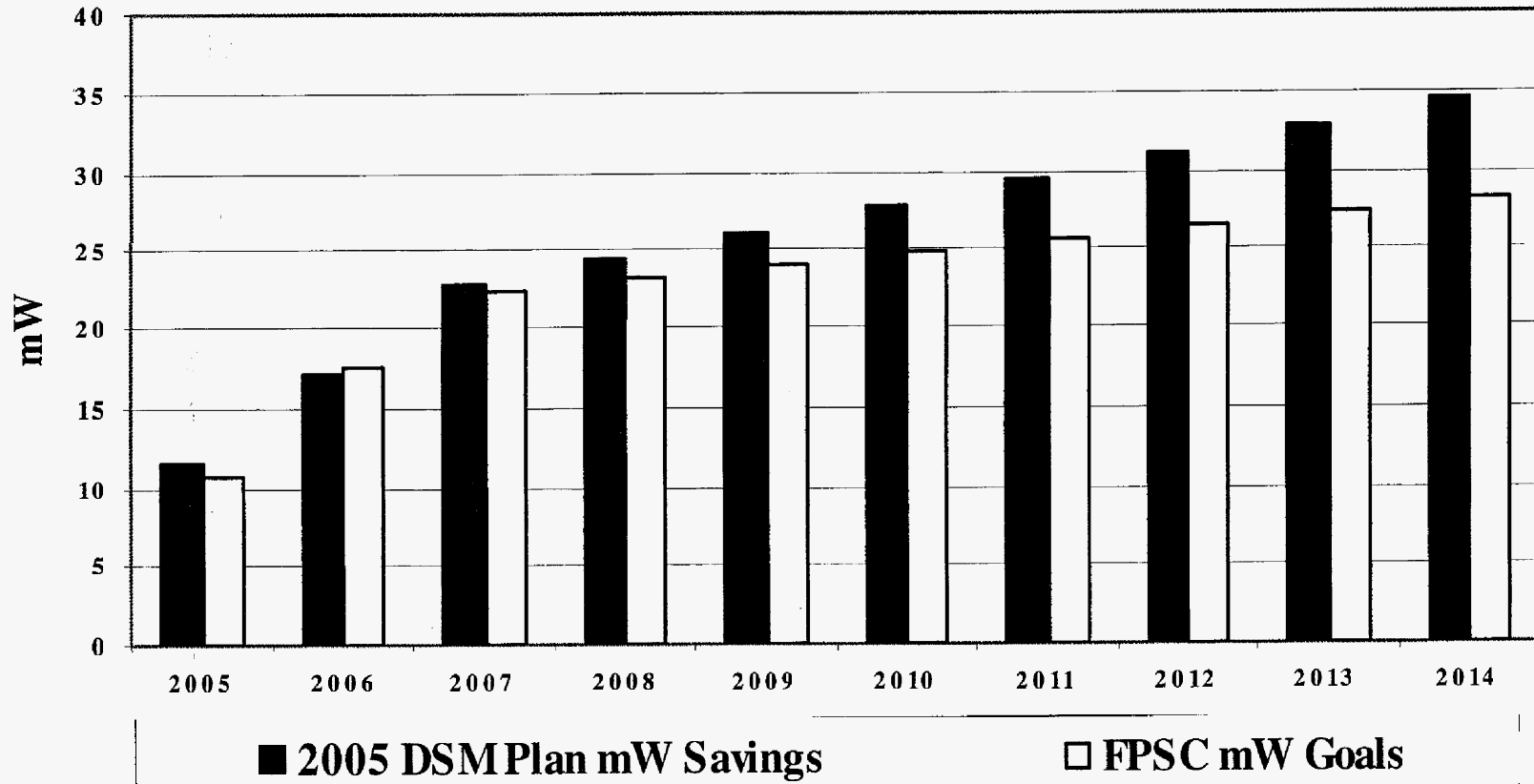


## Total Commercial/Industrial Programs

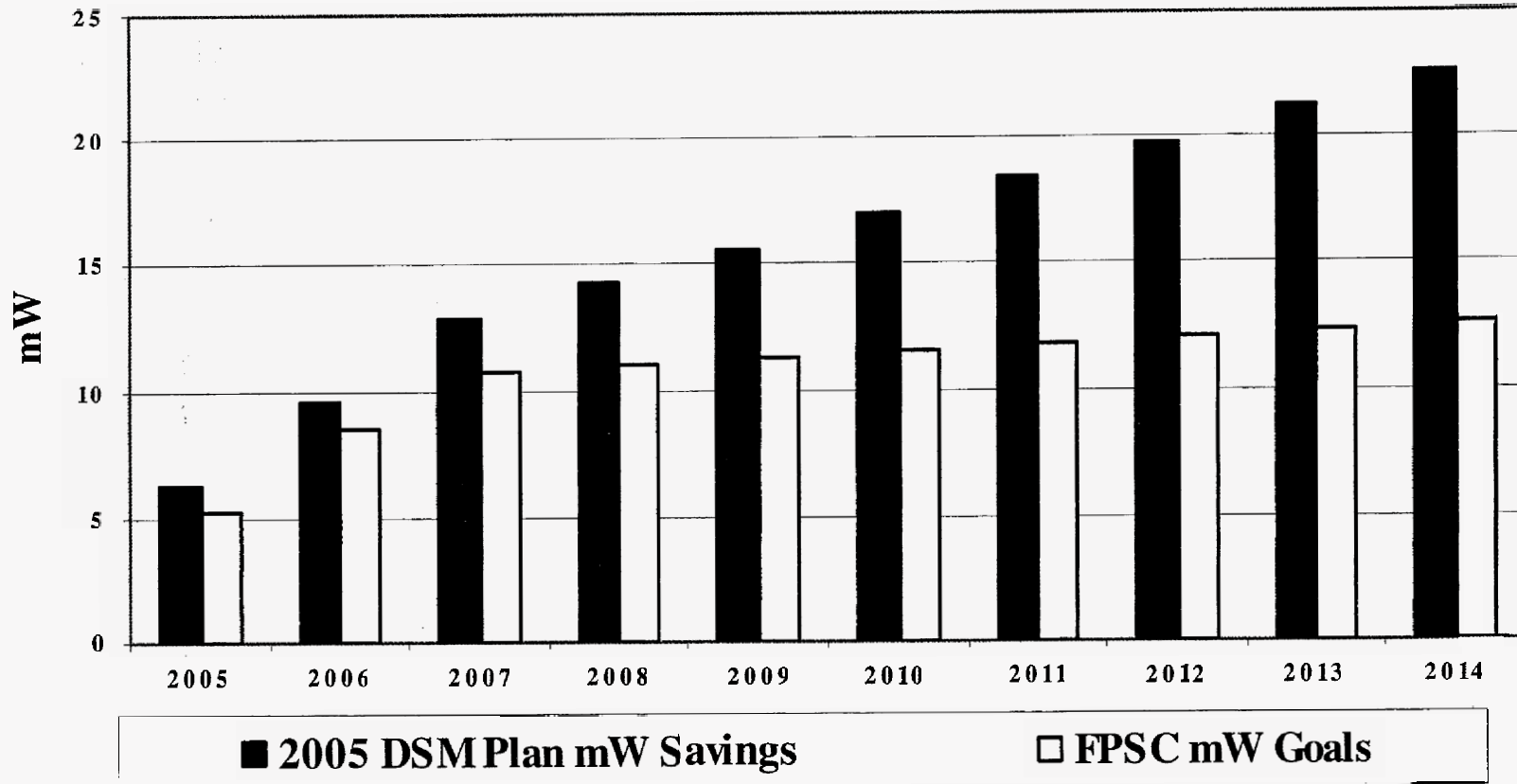
<b>At the Meter</b>						
<b>Year</b>	<b>Goals Docket gWh <u>Reduction</u></b>	<b>DSM Plan gWh <u>Reduction</u></b>	<b>Goals Docket Winter mW <u>Reduction</u></b>	<b>DSM Plan Winter mW <u>Reduction</u></b>	<b>Goals Docket Summer mW <u>Reduction</u></b>	<b>DSM Plan Summer mW <u>Reduction</u></b>
2005	2.1	5.0	5.2	6.2	10.7	11.5
2006	4.1	10.1	8.5	9.5	17.5	17.0
2007	6.5	15.5	10.7	12.8	22.3	22.6
2008	8.9	21.0	11.0	14.2	23.1	24.3
2009	11.3	26.6	11.3	15.6	24.0	26.0
2010	13.6	32.1	11.5	17.0	24.8	27.7
2011	16.0	37.6	11.8	18.4	25.7	29.4
2012	18.4	43.1	12.0	19.8	26.5	31.1
2013	20.8	48.6	12.3	21.2	27.3	32.8
2014	23.2	54.2	12.6	22.6	28.2	34.5

<b>At the Generator</b>						
<b>Year</b>	<b>Goals Docket gWh <u>Reduction</u></b>	<b>DSM Plan gWh <u>Reduction</u></b>	<b>Goals Docket Winter mW <u>Reduction</u></b>	<b>DSM Plan Winter mW <u>Reduction</u></b>	<b>Goals Docket Summer mW <u>Reduction</u></b>	<b>DSM Plan Summer mW <u>Reduction</u></b>
2005	2.3	5.4	6.9	8.2	14.1	15.1
2006	4.5	11.0	11.1	12.5	22.9	22.3
2007	7.1	16.9	14.1	16.9	29.3	29.7
2008	9.7	22.9	14.4	18.7	30.4	32.0
2009	12.3	28.9	14.8	20.5	31.5	34.2
2010	14.9	35.0	15.1	22.3	32.6	36.4
2011	17.5	41.0	15.5	24.2	33.7	38.6
2012	20.1	47.0	15.8	26.0	34.8	40.8
2013	22.7	53.0	16.2	27.8	35.9	43.1
2014	25.3	59.0	16.5	29.6	37.0	45.3

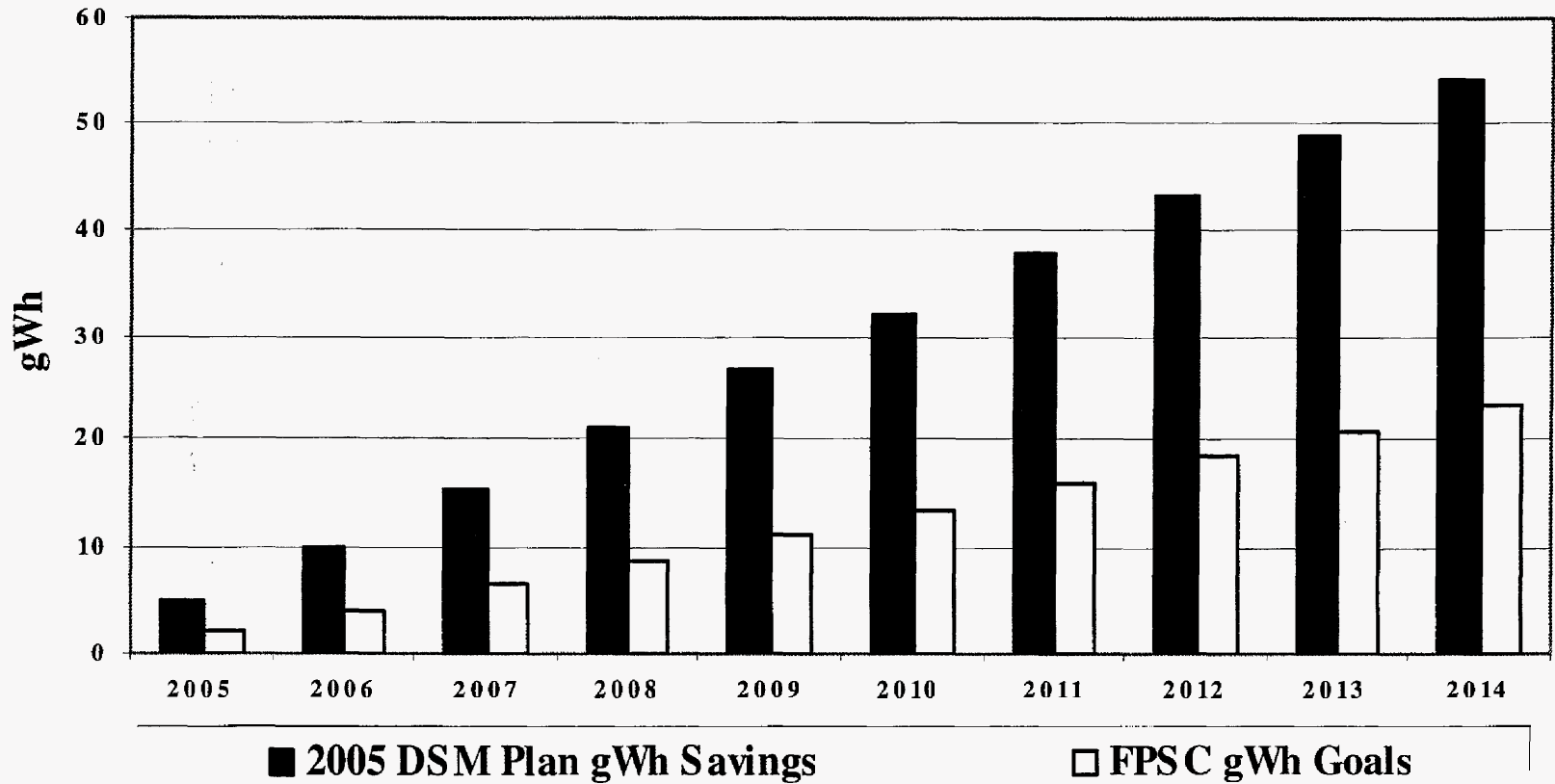
### Gulf Power Company - Commercial & Industrial Markets Summer mW: DSM Plan and Goals



### Gulf Power Company - Commercial & Industrial Markets Winter mW: DSM Plan and Goals



### Gulf Power Company - Commercial & Industrial Markets Annual gWh: DSM Plan and Goals

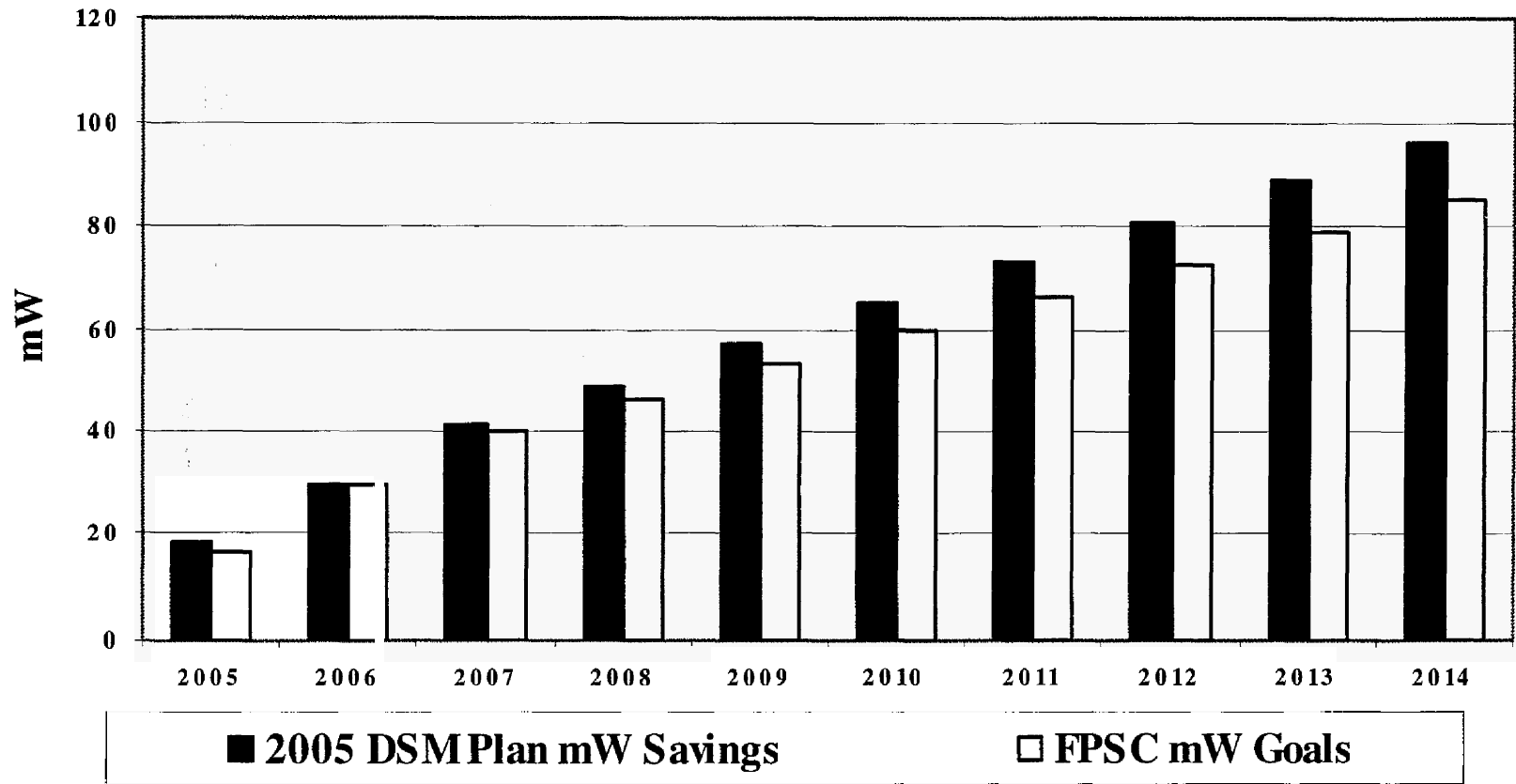


## Total Market

<b>At the Meter</b>						
<b>Year</b>	<b>Goals</b>	<b>DSM</b>	<b>Goals</b>	<b>DSM</b>	<b>Goals</b>	<b>DSM</b>
	<b>Docket</b>	<b>Plan</b>	<b>Docket</b>	<b>Plan</b>	<b>Docket</b>	<b>Plan</b>
	<b>gWh</b>	<b>gWh</b>	<b>Winter mW</b>	<b>Winter mW</b>	<b>Summer mW</b>	<b>Summer mW</b>
	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>
2005	5.1	11.4	12.5	16.6	16.6	18.0
2006	10.3	23.1	22.9	31.8	29.3	29.6
2007	15.7	35.5	32.4	47.6	40.0	41.4
2008	21.2	48.6	39.9	62.1	46.8	49.3
2009	26.7	62.3	47.4	77.6	53.5	57.2
2010	31.5	75.8	54.3	92.9	59.8	65.0
2011	36.4	89.1	61.2	108.0	66.1	72.7
2012	41.2	102.6	68.1	123.2	72.5	80.5
2013	46.1	117.2	75.0	140.1	78.8	88.3
2014	51.0	132.2	82.0	157.5	85.1	96.3

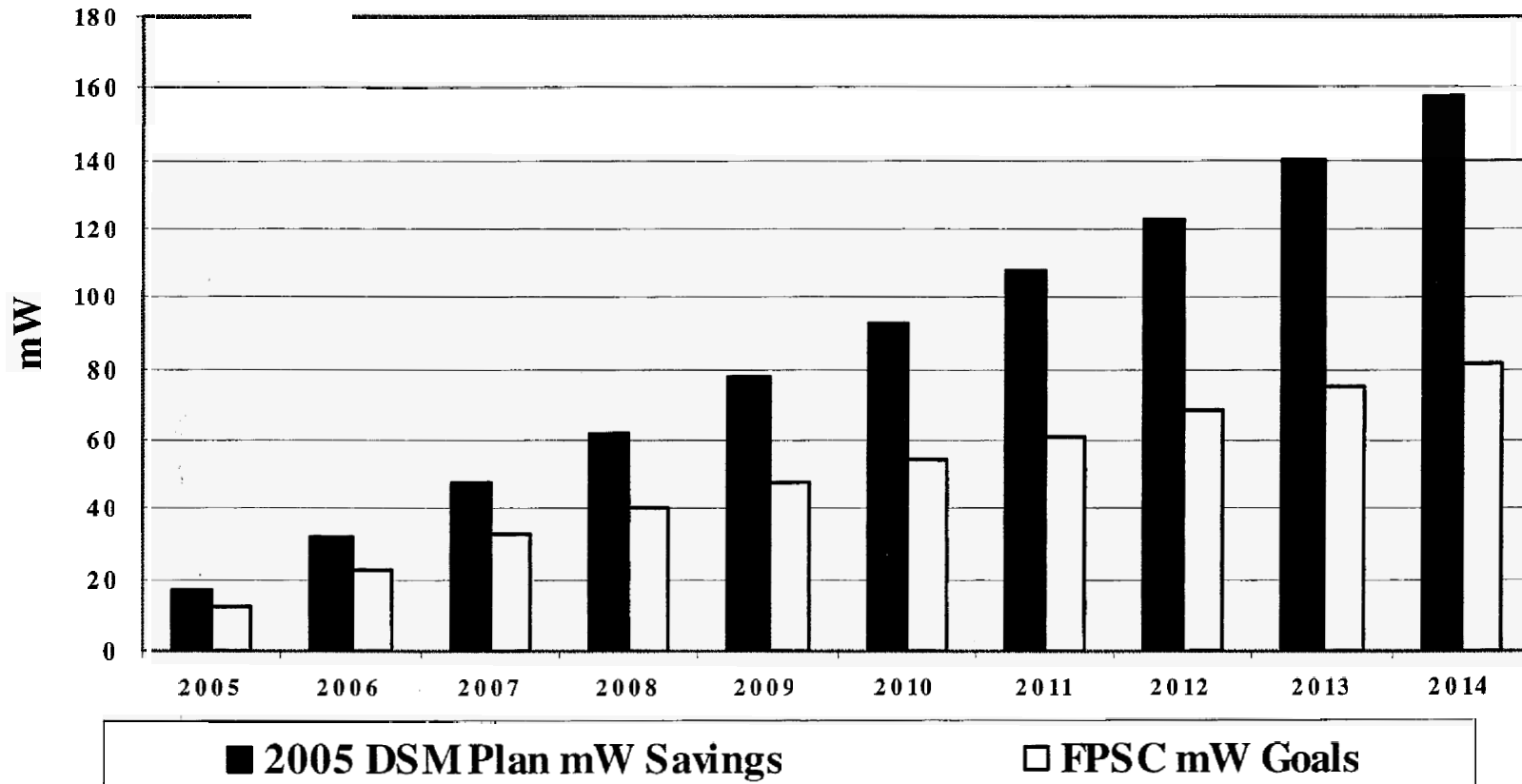
<b>At the Generator</b>						
<b>Year</b>	<b>Goals</b>	<b>DSM</b>	<b>Goals</b>	<b>DSM</b>	<b>Goals</b>	<b>DSM</b>
	<b>Docket</b>	<b>Plan</b>	<b>Docket</b>	<b>Plan</b>	<b>Docket</b>	<b>Plan</b>
	<b>gWh</b>	<b>gWh</b>	<b>Winter mW</b>	<b>Winter mW</b>	<b>Summer mW</b>	<b>Summer mW</b>
	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>	<b><u>Reduction</u></b>
2005	5.6	12.4	16.4	21.8	21.9	23.7
2006	11.2	25.1	30.1	41.8	38.5	38.9
2007	17.2	38.7	42.6	62.5	52.6	54.3
2008	23.1	52.9	52.4	81.6	61.4	64.7
2009	29.1	67.9	62.2	101.9	70.3	75.2
2010	34.4	82.6	71.3	122.0	78.6	85.3
2011	39.7	97.2	80.4	141.9	86.9	95.5
2012	45.0	111.8	89.5	161.8	95.2	105.7
2013	50.3	127.7	98.6	184.0	103.5	116.0
2014	55.6	144.0	107.6	206.8	111.8	126.4

### Gulf Power Company - Total All Markets Summer mW: DSM Plan and Goals

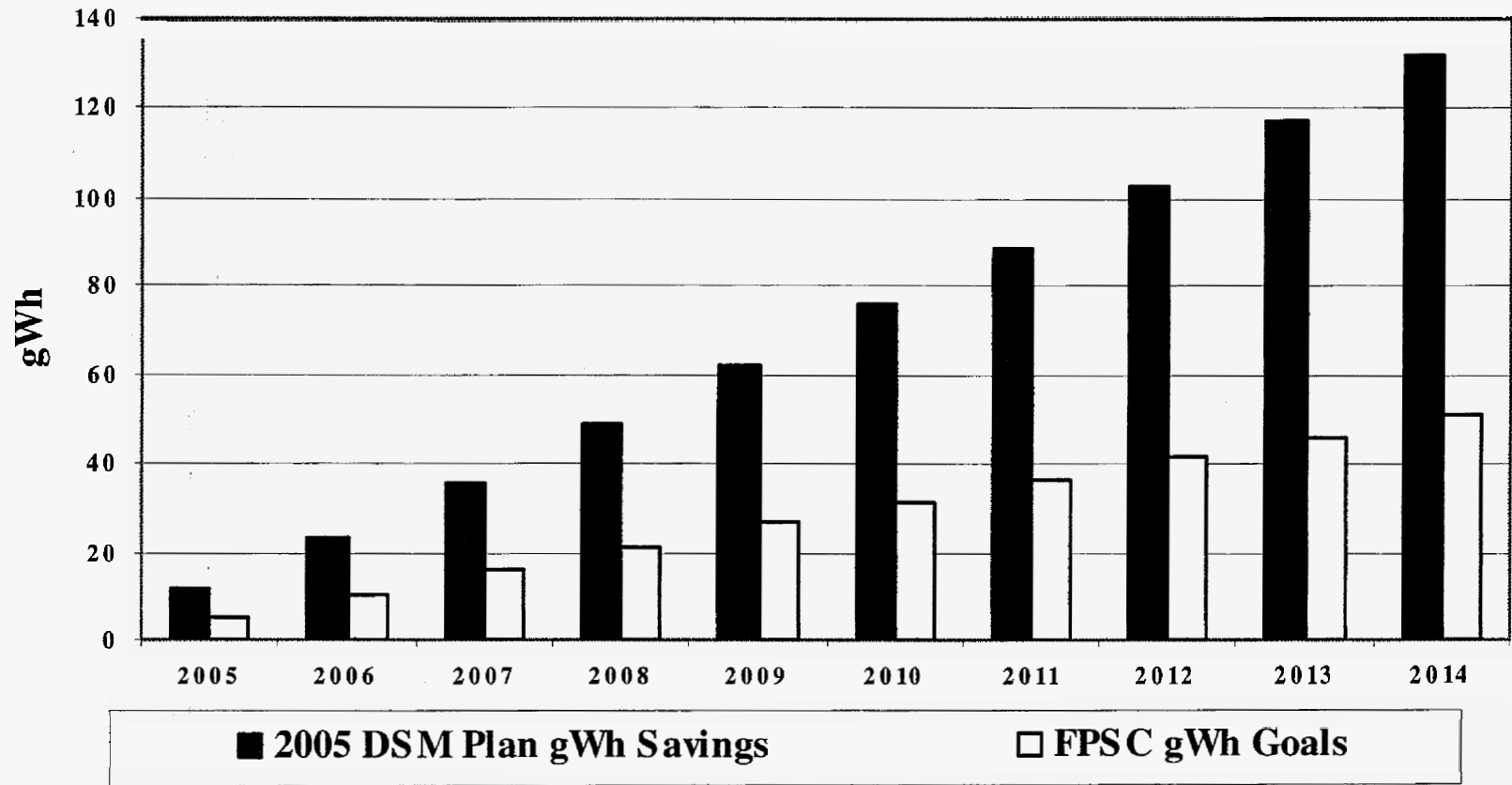




### Gulf Power Company - Total All Markets Winter mW: DSM Plan and Goals



### Gulf Power Company - Total All Markets Annual gWh: DSM Plan and Goals



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## Demand-Side Management Plan and Program Standards

### Residential Programs

#### GoodCents Select Program

- **Program Description**

Gulf Power Company, through its various conservation programs, is committed to increasing the efficiency of energy consumption on its system. As part of this long-term commitment, Gulf Power offers residential customers optional participation in the GoodCents Select Program, formerly known as the Advanced Energy Management (AEM) Program. The program is currently available only in the residential sector, which is the largest and most weather-sensitive class of customers on the Company's system.

The GoodCents Select program is an interactive energy management system designed to provide residential customers with a means of conveniently and automatically programming their central heating and cooling system, electric water heater and pool pump, if they have one, to automatically respond to varying prices of electricity depending upon the time of day, day of week and season, in relation to the Company's cost of producing or purchasing energy. Based on results gathered from research conducted in 2003 on the energy, revenue and demand impact of the program, GoodCents Select not only increases Gulf Power Company's load factor, but also reduces summer peak demand at the meter by approximately 1.73 kW per household.

GoodCents Select consists of three elements – a custom-designed programmable thermostat, a Residential Service Variable Pricing (RSVP) rate featuring four different prices for

## 2005 Demand-Side Management Plan

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electricity and a communications gateway, called the MainGate, that facilitates two-way communication between the utility and the customer's home.

Both the thermostat and the MainGate are innovative products designed specifically for the GoodCents Select system. The RSVP rate is also designed specifically for the GoodCents Select system.

The programmable thermostat allows the customer to customize operation of their home's major appliances in response to four different pricing periods.

The four prices of the GoodCents Select rate are based upon the time of day, day of week and season and reflect the actual cost of producing or purchasing electricity during those time periods. Two of the prices are lower than the standard residential rate. Therefore, customers can save money by programming the largest portion of their energy purchases to occur in the lower price periods. The two lower price periods (low and medium) account for 87 percent of the total number of hours in a year. The other two price periods (high and critical) are higher than the standard residential rate to reflect the increased cost of producing electricity during peak times. The critical price, while it can be called at any time during very critical peak periods, will never be in effect more than one percent of the total hours in a year.

The MainGate is the final element of the GoodCents Select system. Attached to the meter outside the customer's home, it facilitates communication between the other system components inside the home, records energy usage and communicates this information between the home and Gulf Power.

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GoodCents Select is designed to conserve energy during high demand periods, helping defer the cost of building new facilities to meet growing demand. As a result, Gulf Power can better invest its resources for the future and keep costs low. Customers who participate in GoodCents Select can buy electricity at prices that are lower than the standard rate 87 percent of the time. GoodCents Select is, therefore, mutually beneficial to both participating customers and the utility. Results also provide benefits to the general public and to the environment through lowering peak demand and energy consumption.

Although the equipment provides capability to emulate direct load control, primary emphasis is placed on price signals as a vehicle for effecting load shape changes. Variable pricing better reflects the cost of service and provides a basis for customers to trade off service levels with cost. Thus, there is a high degree of integration between the pricing and control components of the GoodCents Select Program.

- **Participation Standards**

The GoodCents Select program is available to all residential customers served by Gulf Power Company who meet certain equipment requirements. This program gives participating customers the information needed to respond to pricing signals generated by the utility. Each customer pays a monthly participation charge of \$4.95 per month. Full implementation of this program began in March, 2000.

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- **Benefits and Costs**

Seasonal peak demand and annual energy impacts, as well as customer bill savings, are based directly on the results of Gulf Power Company's latest research conducted in 2003 on the energy, revenue and demand analysis of GoodCents Select. Monthly program participation charges to the customer were originally derived from customer research performed at the conclusion of the original two-year pilot and have since been adjusted as a result of the 2002 rate increase approved by the FPSC. Results from the 2003 research show a summer peak demand reduction of 1.73 kW, winter demand reduction of 2.2 kW, and an annual energy reduction of 762 kWh, all measured at the meter.

- **Monitoring and Evaluation**

Gulf Power Company monitors and evaluates the GoodCents Select program to ensure energy savings and customer satisfaction. Specifically, comprehensive customer research has been conducted with customers who have had the system installed along with a control group of customers that have not had the system installed. The control group was used to determine GoodCents Select's effect on perceived value of electric service and to assess barriers to program participation. Customer billing and load research information were also monitored to determine actual customer savings.

- **Cost-Effectiveness**

This program is cost-effective using the FPSC's approved methodology (Rule 25-17.008). The cost-effectiveness analyses are included in Attachment B.

### GoodCents Select Program

<b>At the Meter</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	762	2.20	1.73	2,286,000	6,600	5,190
2006	762	2.20	1.73	2,286,000	6,600	5,190
2007	762	2.20	1.73	2,286,000	6,600	5,190
2008	762	2.20	1.73	2,286,000	6,600	5,190
2009	762	2.20	1.73	2,286,000	6,600	5,190
2010	762	2.20	1.73	2,286,000	6,600	5,190
2011	762	2.20	1.73	2,286,000	6,600	5,190
2012	762	2.20	1.73	2,286,000	6,600	5,190
2013	762	2.20	1.73	2,286,000	6,600	5,190
2014	762	2.20	1.73	2,286,000	6,600	5,190

<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Annual kWh Reduction</u>	<u>Annual Winter kW Reduction</u>	<u>Annual Summer kW Reduction</u>
2005	831	2.89	2.27	2,491,740	8,668	6,816
2006	831	2.89	2.27	2,491,740	8,668	6,816
2007	831	2.89	2.27	2,491,740	8,668	6,816
2008	831	2.89	2.27	2,491,740	8,668	6,816
2009	831	2.89	2.27	2,491,740	8,668	6,816
2010	831	2.89	2.27	2,491,740	8,668	6,816
2011	831	2.89	2.27	2,491,740	8,668	6,816
2012	831	2.89	2.27	2,491,740	8,668	6,816
2013	831	2.89	2.27	2,491,740	8,668	6,816
2014	831	2.89	2.27	2,491,740	8,668	6,816

<u>Year</u>	<u>Total Number of Customers</u>	<u>Number of Eligible Customers</u>	<u>Annual Number of Program Participants</u>	<u>Penetration Level %</u>	<u>Number of Program Participants</u>
2005	351,803	349,866	3,000	0.9%	3,000
2006	357,806	355,829	3,000	1.7%	6,000
2007	364,154	362,137	3,000	2.5%	9,000
2008	371,344	369,287	3,000	3.2%	12,000
2009	379,588	377,489	3,000	4.0%	15,000
2010	388,245	386,104	3,000	4.7%	18,000
2011	396,743	394,558	3,000	5.3%	21,000
2012	405,204	402,974	3,000	6.0%	24,000
2013	414,998	412,723	3,000	6.5%	27,000
2014	425,904	423,583	3,000	7.1%	30,000

INPUT DATA -- PART 1

Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code

I. Program Demand Impacts and Line Losses

(1) Change in Peak kW Customer at meter	-1.73	kW/Cus
(2) Change in Peak kW per Customer at generator	-2.27	kW Gen/Cus
(3) kWh Line Loss Percentage	14.21%	
(4) Change in kWh per Customer at generator	(831)	kWh/Cus/Yr
(5) kWh Line Loss Percentage	9.00%	
(6) Group Line Loss Multiplier	1.0007	
(7) Annual Change in Customer kWh at Meter	(762)	kWh/Cus/Yr
(8) Change in Winter kW per Cust at meter	-2.20	kW/Cus

II. Economic Life and K-Factors

(1) DSM Program Study Period	30	Years
(2) Economic Life of Incremental Generation	30	Years
(3) Economic Life of Incremental T&D	35	Years
(4) K-Factor for Generation	1.4939	
(5) K-Factor for T&D	1.5025	
(6) Switch: Rev Req (0) or Val-of-Def (1)	1	

III. Utility & Customer Costs

(1) Utility Nonrecurring Cost Per Customer	\$0.00	\$/Cus
(2) Utility Recurring Cost Per Customer	\$0.00	\$/Cus/Year
(3) Utility Cost Escalation Rate	0.00%	
(4) Customer Equipment Cost	\$0.00	\$/Cus
(5) Customer Equipment Cost Escalation Rate	1.81%	
(6) Customer O&M Cost	\$59.60	\$/Cus/Year
(7) Customer O&M Cost Escalation Rate	0.00%	
(8) Customer Tax Credit Per Installation	\$0.00	\$/Cus
(9) Customer Tax Credit Escalation Rate	1.81%	
(10) Change in Supply Costs	\$0.00	\$/Cus/Year
(11) Supply Costs Escalation Rate	1.81%	
(12) Utility Discount Rate	8.65%	
(13) Utility AFUDC Rate	7.48%	
(14) Utility Nonrecurring Rebate/Incentive	\$0.00	\$/Cus
(15) Utility Recurring Rebate/Incentive	\$0.00	\$/Cus/Year
(16) Utility Rebate/Incentive Escalation Rate	1.81%	

IV. Incremental Generation, Transmission, & Distribution Costs

(1) Base Year	2005	
(2) In-Service Year For Incremental Generation	2009 **	
(3) In-Service Year For Incremental T & D	2006	
(4) Base Year Incremental Generation Cost	\$403.18	\$/kW
(5) Base Year Incremental Transmission Cost	\$241.00	\$/kW
(6) Base Year Incremental Distribution Cost	\$63.29	\$/kW
(7) Gen, Tran, & Dist Cost Escalation Rate	1.81%	
(8) Generator Fixed O & M Cost	\$2.70	\$/kW/Yr
(9) Generator Fixed O&M Escalation Rate	1.81%	
(10) Transmission Fixed O & M Cost	\$3.01	\$/kW/Yr
(11) Distribution Fixed O & M Cost	\$1.58	\$/kW/Yr
(12) T&D Fixed O&M Escalation Rate	1.81%	
(13) Incremental Gen Variable O & M Costs	\$0.442	\$/kW/Yr
(14) Incre Gen Variable O&M Cost Esc Rate	1.56%	
(15) Incremental Gen Capacity Factor	0.17%	
(16) Incremental Generating Unit Fuel Cost	\$0.0635	\$/kWh
(17) Incremental Gen Unit Fuel Esc Rate	1.98%	
(18) Incremental Purchased Capacity Cost	\$43.08	\$/KW/YR
(19) Incremental Capacity Cost Esc Rate	1.81%	

Stop Revenue Loss at In-Service Year? (Y=1, N=0) 0

V. (1) Non-Fuel Cost In Customer Bill (Base Year)

(1) Non-Fuel Cost In Customer Bill (Base Year)	\$0.0393	\$/kWh
(2) Non-Fuel Escalation Rate	Per Table	
(3) Customer Demand Charge Per kW (Base Year)	\$0.0000	\$/kW/Mo
(4) Demand Charge Escalation Rate	Per Table	
(5) Average Annual Change in Monthly Billing kW	0	kW/Mo.

Summary Results for This Analysis

	RIM	Participants <sup>1</sup>
NPV Benefits(\$000s)	\$66,685	\$43,965
NPV Costs (\$000s)	\$65,277	\$14,830
NPV Net Benefits (\$000s)	\$1,408	\$29,134
Benefit:Cost Ratio	1.022	2.965

\* Supplemental information.

\*\* The relevant avoidable generation unit is a combustion turbine peaking unit.

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**Total Resource Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12	13
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Participants' Program Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$1,789	\$179	\$0	\$0	\$0	\$0	(\$79)	\$1,968	\$79	(\$1,889)	(\$1,889)
2006	\$0	\$1,633	\$358	\$0	\$0	\$0	(\$547)	(\$149)	\$1,990	\$696	(\$1,294)	(\$3,080)
2007	\$0	\$1,759	\$536	\$0	\$0	\$0	(\$835)	(\$217)	\$2,295	\$1,052	(\$1,243)	(\$4,133)
2008	\$0	\$1,922	\$715	\$0	\$0	\$0	(\$1,134)	(\$288)	\$2,637	\$1,422	(\$1,215)	(\$5,080)
2009	\$0	\$2,065	\$894	\$0	\$0	(\$1,714)	(\$1,443)	(\$367)	\$2,959	\$3,523	\$565	(\$4,675)
2010	\$0	\$2,137	\$1,073	\$0	\$0	(\$2,093)	(\$1,763)	(\$460)	\$3,210	\$4,316	\$1,106	(\$3,944)
2011	\$0	\$2,189	\$1,252	\$0	\$0	(\$2,486)	(\$2,094)	(\$537)	\$3,441	\$5,116	\$1,675	(\$2,926)
2012	\$0	\$2,221	\$1,430	\$0	\$0	(\$2,892)	(\$2,436)	(\$661)	\$3,651	\$5,989	\$2,338	(\$1,618)
2013	\$0	\$2,232	\$1,609	\$0	\$0	(\$3,313)	(\$2,790)	(\$784)	\$3,841	\$6,887	\$3,045	(\$50)
2014	\$0	\$2,223	\$1,788	\$0	\$0	(\$3,747)	(\$3,156)	(\$915)	\$4,011	\$7,818	\$3,807	\$1,754
2015	\$0	\$2,119	\$1,967	\$0	\$0	(\$4,196)	(\$3,535)	(\$1,033)	\$4,086	\$8,764	\$4,678	\$3,794
2016	\$0	\$1,342	\$1,967	\$0	\$0	(\$4,272)	(\$3,599)	(\$1,084)	\$3,308	\$8,955	\$5,646	\$6,061
2017	\$0	\$1,250	\$1,967	\$0	\$0	(\$4,348)	(\$3,664)	(\$1,103)	\$3,217	\$9,115	\$5,898	\$8,240
2018	\$0	\$1,159	\$1,967	\$0	\$0	(\$4,427)	(\$3,730)	(\$1,150)	\$3,126	\$9,307	\$6,181	\$10,342
2019	\$0	\$1,068	\$1,967	\$0	\$0	(\$4,507)	(\$3,798)	(\$1,161)	\$3,035	\$9,466	\$6,431	\$12,354
2020	\$0	\$976	\$1,967	\$0	\$0	(\$4,589)	(\$3,866)	(\$1,247)	\$2,943	\$9,702	\$6,759	\$14,301
2021	\$0	\$885	\$1,967	\$0	\$0	(\$4,671)	(\$3,936)	(\$1,288)	\$2,852	\$9,895	\$7,044	\$16,169
2022	\$0	\$794	\$1,967	\$0	\$0	(\$4,754)	(\$4,008)	(\$1,300)	\$2,761	\$10,062	\$7,301	\$17,950
2023	\$0	\$703	\$1,967	\$0	\$0	(\$4,840)	(\$4,080)	(\$1,350)	\$2,669	\$10,270	\$7,601	\$19,657
2024	\$0	\$611	\$1,967	\$0	\$0	(\$4,928)	(\$4,154)	(\$1,398)	\$2,578	\$10,480	\$7,901	\$21,290
2025	\$0	\$520	\$1,967	\$0	\$0	(\$5,017)	(\$4,229)	(\$1,443)	\$2,487	\$10,689	\$8,203	\$22,850
2026	\$0	\$429	\$1,967	\$0	\$0	(\$5,108)	(\$4,306)	(\$1,490)	\$2,395	\$10,904	\$8,508	\$24,340
2027	\$0	\$337	\$1,967	\$0	\$0	(\$5,200)	(\$4,384)	(\$1,538)	\$2,304	\$11,122	\$8,818	\$25,761
2028	\$0	\$246	\$1,967	\$0	\$0	(\$5,295)	(\$4,463)	(\$1,587)	\$2,213	\$11,345	\$9,132	\$27,115
2029	\$0	\$155	\$1,967	\$0	\$0	(\$5,391)	(\$4,544)	(\$1,637)	\$2,122	\$11,572	\$9,450	\$28,405
2030	\$0	\$64	\$1,967	\$0	\$0	(\$5,488)	(\$4,626)	(\$1,689)	\$2,030	\$11,803	\$9,773	\$29,632
2031	\$0	(\$28)	\$1,967	\$0	\$0	(\$5,588)	(\$4,710)	(\$1,742)	\$1,967	\$12,067	\$10,100	\$30,800
2032	\$0	(\$119)	\$1,967	\$0	\$0	(\$5,689)	(\$4,795)	(\$1,796)	\$1,967	\$12,399	\$10,432	\$31,910
2033	\$0	(\$210)	\$1,967	\$0	\$0	(\$5,792)	(\$4,882)	(\$1,852)	\$1,967	\$12,736	\$10,769	\$32,965
2034	\$0	(\$302)	\$1,967	\$0	\$0	(\$5,897)	(\$4,970)	(\$1,909)	\$1,967	\$13,078	\$11,111	\$33,967
<b>Nominal</b>		\$32,166	\$49,170			(\$116,239)	(\$100,477)	(\$33,253)	\$81,995	\$250,628	\$168,633	
<b>NPV</b>		\$17,825	\$14,830	\$0	\$0	(\$30,361)	(\$27,677)	(\$8,583)	\$32,718	\$66,685	\$33,967	
<b>Discount Rate =</b>		8.65%										
<b>Benefit/Cost Ratio =</b>		2.04										

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**Participants' Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12
Year	Customer Equip Costs (\$000s)	Customer O&M Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Change in Participants' Electric Bills (\$000s)	Tax Credits (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$179	\$0	\$0	(\$511)	\$0	\$0	\$179	\$511	\$333	\$333
2006	\$0	\$358	\$0	\$0	(\$1,016)	\$0	\$0	\$358	\$1,016	\$658	\$938
2007	\$0	\$536	\$0	\$0	(\$1,521)	\$0	\$0	\$536	\$1,521	\$984	\$1,772
2008	\$0	\$715	\$0	\$0	(\$2,018)	\$0	\$0	\$715	\$2,018	\$1,303	\$2,788
2009	\$0	\$894	\$0	\$0	(\$2,529)	\$0	\$0	\$894	\$2,529	\$1,635	\$3,961
2010	\$0	\$1,073	\$0	\$0	(\$3,041)	\$0	\$0	\$1,073	\$3,041	\$1,968	\$5,261
2011	\$0	\$1,252	\$0	\$0	(\$3,598)	\$0	\$0	\$1,252	\$3,598	\$2,346	\$6,687
2012	\$0	\$1,430	\$0	\$0	(\$4,126)	\$0	\$0	\$1,430	\$4,126	\$2,696	\$8,195
2013	\$0	\$1,609	\$0	\$0	(\$4,646)	\$0	\$0	\$1,609	\$4,646	\$3,037	\$9,759
2014	\$0	\$1,788	\$0	\$0	(\$5,194)	\$0	\$0	\$1,788	\$5,194	\$3,406	\$11,373
2015	\$0	\$1,967	\$0	\$0	(\$5,743)	\$0	\$0	\$1,967	\$5,743	\$3,776	\$13,020
2016	\$0	\$1,967	\$0	\$0	(\$5,775)	\$0	\$0	\$1,967	\$5,775	\$3,808	\$14,549
2017	\$0	\$1,967	\$0	\$0	(\$5,806)	\$0	\$0	\$1,967	\$5,806	\$3,839	\$15,967
2018	\$0	\$1,967	\$0	\$0	(\$5,849)	\$0	\$0	\$1,967	\$5,849	\$3,882	\$17,287
2019	\$0	\$1,967	\$0	\$0	(\$5,880)	\$0	\$0	\$1,967	\$5,880	\$3,913	\$18,512
2020	\$0	\$1,967	\$0	\$0	(\$5,909)	\$0	\$0	\$1,967	\$5,909	\$3,943	\$19,647
2021	\$0	\$1,967	\$0	\$0	(\$5,951)	\$0	\$0	\$1,967	\$5,951	\$3,984	\$20,703
2022	\$0	\$1,967	\$0	\$0	(\$5,999)	\$0	\$0	\$1,967	\$5,999	\$4,032	\$21,687
2023	\$0	\$1,967	\$0	\$0	(\$6,036)	\$0	\$0	\$1,967	\$6,036	\$4,069	\$22,601
2024	\$0	\$1,967	\$0	\$0	(\$6,060)	\$0	\$0	\$1,967	\$6,060	\$4,094	\$23,447
2025	\$0	\$1,967	\$0	\$0	(\$6,085)	\$0	\$0	\$1,967	\$6,085	\$4,118	\$24,230
2026	\$0	\$1,967	\$0	\$0	(\$6,111)	\$0	\$0	\$1,967	\$6,111	\$4,144	\$24,956
2027	\$0	\$1,967	\$0	\$0	(\$6,137)	\$0	\$0	\$1,967	\$6,137	\$4,170	\$25,628
2028	\$0	\$1,967	\$0	\$0	(\$6,164)	\$0	\$0	\$1,967	\$6,164	\$4,197	\$26,250
2029	\$0	\$1,967	\$0	\$0	(\$6,191)	\$0	\$0	\$1,967	\$6,191	\$4,224	\$26,827
2030	\$0	\$1,967	\$0	\$0	(\$6,219)	\$0	\$0	\$1,967	\$6,219	\$4,253	\$27,361
2031	\$0	\$1,967	\$0	\$0	(\$6,248)	\$0	\$0	\$1,967	\$6,248	\$4,282	\$27,856
2032	\$0	\$1,967	\$0	\$0	(\$6,278)	\$0	\$0	\$1,967	\$6,278	\$4,311	\$28,315
2033	\$0	\$1,967	\$0	\$0	(\$6,309)	\$0	\$0	\$1,967	\$6,309	\$4,342	\$28,740
2034	\$0	\$1,967	\$0	\$0	(\$6,340)	\$0	\$0	\$1,967	\$6,340	\$4,373	\$29,134
<b>Nominal</b>		\$49,170			(\$149,291)			\$49,170	\$149,291	\$100,121	
<b>NPV</b>		\$14,830	\$0	\$0	(\$43,965)	\$0	\$0	\$14,830	\$43,965	\$29,134	
<b>Discount Rate =</b>		8.65%									
<b>Benefit/Cost Ratio =</b>		2.96									

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**Ratepayers' Impact Cost-Effectiveness Measure  
Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Change in Electric Revenues (\$000)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits to All Customers (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$1,789	\$0	(\$553)	\$0	\$0	(\$79)	\$0	\$0	\$2,342	\$79	(\$2,262)	(\$2,262)
2006	\$0	\$1,633	\$0	(\$1,098)	\$0	(\$547)	(\$149)	\$0	\$0	\$2,731	\$696	(\$2,035)	(\$4,135)
2007	\$0	\$1,759	\$0	(\$1,644)	\$0	(\$835)	(\$217)	\$0	\$0	\$3,403	\$1,052	(\$2,351)	(\$6,127)
2008	\$0	\$1,922	\$0	(\$2,183)	\$0	(\$1,134)	(\$288)	\$0	\$0	\$4,105	\$1,422	(\$2,683)	(\$8,219)
2009	\$0	\$2,065	\$0	(\$2,735)	(\$1,714)	(\$1,443)	(\$367)	\$0	\$0	\$4,800	\$3,523	(\$1,276)	(\$9,134)
2010	\$0	\$2,137	\$0	(\$3,289)	(\$2,093)	(\$1,763)	(\$460)	\$0	\$0	\$5,426	\$4,316	(\$1,110)	(\$9,868)
2011	\$0	\$2,189	\$0	(\$3,887)	(\$2,486)	(\$2,094)	(\$537)	\$0	\$0	\$6,076	\$5,116	(\$960)	(\$10,451)
2012	\$0	\$2,221	\$0	(\$4,457)	(\$2,892)	(\$2,436)	(\$661)	\$0	\$0	\$6,677	\$5,989	(\$689)	(\$10,836)
2013	\$0	\$2,232	\$0	(\$5,018)	(\$3,313)	(\$2,790)	(\$784)	\$0	\$0	\$7,250	\$6,887	(\$363)	(\$11,023)
2014	\$0	\$2,223	\$0	(\$5,607)	(\$3,747)	(\$3,156)	(\$915)	\$0	\$0	\$7,830	\$7,818	(\$12)	(\$11,029)
2015	\$0	\$2,119	\$0	(\$6,197)	(\$4,196)	(\$3,535)	(\$1,033)	\$0	\$0	\$8,316	\$8,764	\$448	(\$10,834)
2016	\$0	\$1,342	\$0	(\$6,229)	(\$4,272)	(\$3,599)	(\$1,084)	\$0	\$0	\$7,571	\$8,955	\$1,384	(\$10,278)
2017	\$0	\$1,250	\$0	(\$6,260)	(\$4,348)	(\$3,664)	(\$1,103)	\$0	\$0	\$7,510	\$9,115	\$1,605	(\$9,685)
2018	\$0	\$1,159	\$0	(\$6,303)	(\$4,427)	(\$3,730)	(\$1,150)	\$0	\$0	\$7,462	\$9,307	\$1,845	(\$9,058)
2019	\$0	\$1,068	\$0	(\$6,334)	(\$4,507)	(\$3,798)	(\$1,161)	\$0	\$0	\$7,401	\$9,466	\$2,064	(\$8,412)
2020	\$0	\$976	\$0	(\$6,364)	(\$4,589)	(\$3,866)	(\$1,247)	\$0	\$0	\$7,340	\$9,702	\$2,362	(\$7,731)
2021	\$0	\$885	\$0	(\$6,405)	(\$4,671)	(\$3,936)	(\$1,288)	\$0	\$0	\$7,290	\$9,895	\$2,605	(\$7,040)
2022	\$0	\$794	\$0	(\$6,453)	(\$4,754)	(\$4,008)	(\$1,300)	\$0	\$0	\$7,247	\$10,062	\$2,815	(\$6,354)
2023	\$0	\$703	\$0	(\$6,490)	(\$4,840)	(\$4,080)	(\$1,350)	\$0	\$0	\$7,193	\$10,270	\$3,077	(\$5,663)
2024	\$0	\$611	\$0	(\$6,514)	(\$4,928)	(\$4,154)	(\$1,398)	\$0	\$0	\$7,126	\$10,480	\$3,354	(\$4,969)
2025	\$0	\$520	\$0	(\$6,539)	(\$5,017)	(\$4,229)	(\$1,443)	\$0	\$0	\$7,059	\$10,689	\$3,630	(\$4,279)
2026	\$0	\$429	\$0	(\$6,565)	(\$5,108)	(\$4,306)	(\$1,490)	\$0	\$0	\$6,993	\$10,904	\$3,910	(\$3,594)
2027	\$0	\$337	\$0	(\$6,591)	(\$5,200)	(\$4,384)	(\$1,538)	\$0	\$0	\$6,928	\$11,122	\$4,194	(\$2,919)
2028	\$0	\$246	\$0	(\$6,618)	(\$5,295)	(\$4,463)	(\$1,587)	\$0	\$0	\$6,864	\$11,345	\$4,481	(\$2,254)
2029	\$0	\$155	\$0	(\$6,645)	(\$5,391)	(\$4,544)	(\$1,637)	\$0	\$0	\$6,800	\$11,572	\$4,772	(\$1,603)
2030	\$0	\$64	\$0	(\$6,673)	(\$5,488)	(\$4,626)	(\$1,689)	\$0	\$0	\$6,737	\$11,803	\$5,066	(\$966)
2031	\$0	(\$28)	\$0	(\$6,702)	(\$5,588)	(\$4,710)	(\$1,742)	\$0	\$0	\$6,702	\$12,067	\$5,365	(\$346)
2032	\$0	(\$119)	\$0	(\$6,732)	(\$5,689)	(\$4,795)	(\$1,796)	\$0	\$0	\$6,732	\$12,399	\$5,667	\$257
2033	\$0	(\$210)	\$0	(\$6,763)	(\$5,792)	(\$4,882)	(\$1,852)	\$0	\$0	\$6,763	\$12,736	\$5,974	\$842
2034	\$0	(\$302)	\$0	(\$6,794)	(\$5,897)	(\$4,970)	(\$1,909)	\$0	\$0	\$6,794	\$13,078	\$6,284	\$1,408
<b>Nominal NPV</b>		\$32,166	\$0	(\$160,643)	(\$116,239)	(\$100,477)	(\$33,253)	\$0	\$0	\$193,468	\$250,628	\$57,160	
<b>Discount Rate =</b>		8.65%		(\$47,388)	(\$30,361)	(\$27,677)	(\$8,583)			\$65,277	\$66,685	\$1,408	
<b>Benefit/Cost Ratio =</b>		1.02											

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## 2005 Demand-Side Management Plan

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### GoodCents Home/Energy Star Program

- **Program Description**

The GoodCents Home Program has long been the standard for energy efficient construction in Northwest Florida and throughout other parts of the country. For Gulf Power Company and our customers, GoodCents homes have been providing benefits of reduced demand and energy usage since 1976. During this time, more than 62,000 homes served by Gulf Power have been built to the GoodCents standards.

To complement the GoodCents Home Program, Gulf Power Company signed an agreement with the Environmental Protection Agency (EPA) in April 2004 to participate in its Energy Star Program as an Energy Efficiency Program Sponsor. This agreement provides Gulf Power Company the opportunity to offer the Energy Star Home Program to our builders and customers and correlates the performance of GoodCents homes to the nationally recognized Energy Star efficiency label. In most cases, a standard GoodCents home will also qualify as an Energy Star home. The GoodCents Home standards continue to exceed the minimum efficiency standards for new construction as set forth by the Florida Model Energy Code. As shown in this filing, the GoodCents HVAC equipment efficiency requirement is ratcheted up beginning in 2006 to exceed government mandated increases in minimum HVAC efficiencies.

- **Participation Standards**

The GoodCents Home/Energy Star Program is available to individuals or entities constructing new residential buildings in Gulf Power Company's service area.

## 2005 Demand-Side Management Plan

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- **Benefits and Costs**

Through Gulf Power Company's GoodCents Home/Energy Star Program, participating customers will experience lower utility bills, increased comfort, and the eligibility to utilize energy efficient home mortgage products. Gulf Power Company's benefits include kWh energy reduction, kW demand savings, and increased customer satisfaction. Regardless of its designation as GoodCents or GoodCents and Energy Star, the average GoodCents home constructed in Northwest Florida in 2005 will achieve a 0.2 kW demand reduction in the summer, 0.2 kW demand reduction in the winter and 486 kWh annual energy reduction. Following government mandated increases in minimum HVAC efficiency in 2006, the average GoodCents home constructed in Northwest Florida will achieve a 0.1 kW demand reduction in the summer, .4 kW demand reduction in the winter and 506 kWh annual energy reduction. The energy and demand savings were determined through engineering analysis using Wrightsoft's "Manual J" calculation and energy analysis software to compare an 1,800 square foot GoodCents/Energy Star Home to a base home constructed as outlined below (pre- and post-2006 HVAC minimum efficiency increase):

**2005 Demand-Side Management Plan**

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**2005**

	<b><u>Base Home</u></b>	<b><u>GoodCents/Energy Star Home</u></b>
Wall Insulation	R-13 Wall Insulation	R-13 Wall Insulation
Attic Insulation	R-30 Attic Insulation	R-38 Attic Insulation
Windows	Double Pane Windows	Double Pane Windows
Doors	Wood Doors	Insulated Doors
Heating	3.1 COP/.78 AFUE	3.25 COP/.90 AFUE
Cooling	10.0 SEER	11.00 SEER

**2006 - 2009**

	<b><u>Base Home</u></b>	<b><u>GoodCents/Energy Star Home</u></b>
Wall Insulation	R-13 Wall Insulation	R-13 Wall Insulation
Attic Insulation	R-30 Attic Insulation	R-38 Attic Insulation
Windows	Double Pane Windows	Double Pane Windows
Doors	Wood Doors	Insulated Doors
Heating	3.3 COP/.78 AFUE	3.4 COP/.90 AFUE
Cooling	13.0 SEER	14.00 SEER

- **Monitoring and Evaluation**

Gulf Power Company will monitor this program through its existing Gulf Account Reporting System (GARS) in order to determine and report program participation.

- **Cost-Effectiveness**

Gulf Power Company will not recover any expenses related to this program through the Energy Conservation Cost Recovery (ECCR) mechanism.

**GoodCents Home/Energy Star Program**

<b>At the Meter</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	486	0.20	0.20	1,199,837	494	494
2006	506	0.40	0.10	538,101	425	106
2007	506	0.40	0.10	633,755	501	125
2008	506	0.40	0.10	761,226	602	150
2009	506	0.40	0.10	874,874	692	173
2010	506	0.40	0.10	876,999	693	173
2011	506	0.40	0.10	850,384	672	168
2012	506	0.40	0.10	859,694	680	170
2013	506	0.40	0.10	1,064,017	841	210
2014	506	0.40	0.10	1,125,648	890	222

<b>At the Generator</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	530	0.26	0.26	1,307,822	648	648
2006	552	0.53	0.13	586,530	559	140
2007	552	0.53	0.13	690,793	658	164
2008	552	0.53	0.13	829,737	790	198
2009	552	0.53	0.13	953,613	908	227
2010	552	0.53	0.13	955,929	910	228
2011	552	0.53	0.13	926,918	883	221
2012	552	0.53	0.13	937,066	893	223
2013	552	0.53	0.13	1,159,778	1,105	276
2014	552	0.53	0.13	1,226,956	1,169	292

<b>Customers and Participation Rates</b>					
<u>Year</u>	<u>Total Number of Customers</u>	<u>Total Number of Eligible Customers</u>	<u>Annual Number of Program Participants</u>	<u>Cumulative Penetration Level %</u>	<u>Cumulative Number of Program Participants</u>
2005	351,803	6,172	2,469	40.0%	2,469
2006	357,806	5,908	1,063	29.2%	3,532
2007	364,154	6,592	1,252	25.6%	4,785
2008	371,344	7,522	1,504	24.0%	6,289
2009	379,588	8,645	1,729	23.0%	8,018
2010	388,245	8,666	1,733	22.4%	9,751
2011	396,743	8,403	1,681	22.0%	11,432
2012	405,204	8,495	1,699	21.7%	13,131
2013	414,998	10,514	2,103	21.5%	15,234
2014	425,904	11,123	2,225	21.3%	17,458

## 2005 Demand-Side Management Plan

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### Residential Geothermal Heat Pump Program

- **Program Description**

The objective of the Residential Geothermal Heat Pump Program is to reduce the demand and energy requirements of new and existing residential customers through the promotion and installation of advanced and emerging geothermal systems. Due to the long life of space conditioning equipment, the choices that are made over the next decade regarding space conditioning equipment will have important economic and environmental ramifications lasting well into the future. Geothermal heat pumps provide significant benefits to participating customers in the form of reduced operating costs and increased comfort levels, and are superior to other available heating and cooling technologies with respect to source efficiency and environmental impacts. Gulf Power Company's Geothermal Heat Pump Program is designed to overcome existing market barriers, specifically, lack of consumer awareness, knowledge and acceptance of this technology. This program will promote efficiency levels well above current market conditions, specifically those units with an Energy Efficiency Ratio (EER) of 13.0 or higher.

According to the Department of Energy (DOE), geothermal technology is the most energy-efficient and environmentally clean space-conditioning system available today. Additionally, a recent DOE study indicates that geothermal systems have the lowest life-cycle cost of any HVAC system available today.

In addition, the Environmental Protection Agency (EPA) in a 1993 report titled "Space Conditioning: The Next Frontier" stated that advanced residential space conditioning equipment can save consumers money, significantly reduce emissions and can be highly cost-



## 2005 Demand-Side Management Plan

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effective for utility conservation programs. In this report, EPA explored advanced alternative space conditioning technologies and the opportunities each provides for cost-effective energy savings and pollution prevention. EPA compared the performance and cost of emerging high-efficiency space conditioning equipment with equipment already on the market (i.e. high efficiency air source heat pump, emerging ground source heat pump, emerging gas-fired heat pump, advanced gas furnace/high efficient AC, etc.). All comparisons were based on source energy performance, taking into account losses associated with all stages of energy use, i.e. energy production, transmission, and distribution.

A summary of the major findings included:

- **The emerging ground source heat pump** had the highest source heating season performance factor (HSPF) in all locations.
- The emerging ground source heat pump also had the highest cooling EER's in all locations, followed by the advanced ground source heat pump.
- The emerging and advanced ground source heat pump systems were highly cost-effective as replacement units when compared to all other systems.

Gulf Power Company intends to continue this program over a sustained period of time, currently expected to be about five years, in order to educate consumers on geothermal technology and raise awareness about the availability, affordability, and improved customer satisfaction associated with these units. This commitment is necessary to foster a stable market for this promising technology. Not only will this increase customer and trade ally confidence, it will serve to encourage competition within this technology market and reduce the higher initial cost generally associated with new technology.

## 2005 Demand-Side Management Plan

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- **Participation Standards**

The Residential Geothermal Heat Pump Program will provide Gulf Power Company's residential customers an incentive to install advanced residential geothermal technologies; specifically, geothermal HVAC systems. Gulf Power Company will promote these systems by providing: \$150/ton incentive for single-family or multi-family projects; financing availability for qualified geothermal installations in existing homes; economic analyses and comparisons; and Gulf Power Company will participate in field days and demonstration projects. Multi-family geothermal systems with total tonnage above 50 tons are subject to having their incentive offer based upon a cost effectiveness analysis performed by the Company. Single-family geothermal systems with total tonnage above 10 tons are subject to having their incentive offer based upon a company cost effectiveness analysis.

- All Gulf Power Company served single-family and multi-family dwellings in new or existing structures are eligible for the program. Single-family is defined as a unit occupied by one family or household which includes single-family detached or duplex. Multi-family is defined as three or more units attached within a single structure.
- All participants must be willing to have an existing home energy survey or new home plan review completed to address proper HVAC sizing, proper installation and other conservation measures.
- To qualify for the \$150/ton incentive the geothermal heat pump must meet the minimum efficiency of 13.0 EER at 86° entering water temperature (ARI / ISO 13256-1 Performance Data) and water flow of 3.0 gallons per minute per ton.
- The incentive will be paid for the installed tonnage of geothermal equipment associated with each dwelling unit.

## 2005 Demand-Side Management Plan

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- All participants will be paid \$150/ton in one single payment after verification and inspection by a Gulf Power Company Energy Consultant.

To qualify for the \$150/ton incentive the closed loop geothermal installation must meet specific requirements. A copy of the Residential Geothermal Heat Pump Program limitations, Inspection Outline, and Installation Guidelines is provided in Attachment A. A Gulf Power Company Energy Consultant will perform a final inspection to ensure that all installation guidelines are met.

- **Benefits and Costs**

All simulated kW and kWh consumption was compared to the anticipated 2006 minimum code base unit of 13.0 SEER. The minimum summer kW reduction projected was .1 ranging to 1.2, dependent on new home or existing home construction, respectively. The weighted average summer kW reduction was 1.04 for all homes. The annual kWh reductions range from 681 for new home construction to 1,183 for existing homes with a weighted average annual net reduction of 1,107 kWh. The kW and kWh savings are measured at the meter.

The energy and demand savings were determined through engineering analysis using Wrightsoft's "Manual J" calculation and energy analysis software to compare an 1,800 square foot home with air source equipment and geothermal equipment. Weighted average inputs are based on Gulf's 2001 through 2003 new home and existing home geothermal installations. The computations include only the effect of equipment efficiency alterations, not BTUH capacity or thermal package changes. Greater savings in kW and kWh will be realized when thermal packages are also improved.

## 2005 Demand-Side Management Plan

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- **Monitoring and Evaluation**

Gulf Power Company will utilize its Gulf Account Reporting System (GARS) to track all geothermal installations. The Company will further validate engineering analysis of energy and demand savings with billing data. In order to assess levels and reasons for program non-participation, interviews may be conducted with program participants, dealers and customers that chose not to participate. Dependent upon the level of participation, surveys may also be conducted among customers with the geothermal heat pump and those that have other systems to establish levels of customer satisfaction with the technology.

- **Cost-Effectiveness**

This program is cost-effective using the FPSC's approved methodology (Rule 25-17.008). The cost-effectiveness analyses are included in Attachment C.

Customer cost figures are derived from contractor estimates for the installed measures. A significant amount of research and development is taking place with regard to reducing first cost of geothermal installations. Research by the Department of Energy, the Electric Power Research Institute, the Geothermal Heat Pump Consortium, the International Ground Source Heat Pump Association, and other groups is expected to result in significant reductions in installation costs in the future.

## **Residential Geothermal Heat Pump Program**

### **Limitations**

Gulf Power Company shall not be liable for any incidental or consequential damages resulting from the installation of the geothermal system. The Homeowner recognizes and agrees that Gulf Power Company is not a seller, distributor, manufacturer or installer of the equipment described herein, and that the Company makes no warranties, express or implied, including warranties of merchantability or fitness for purpose. Homeowner agrees that Gulf Power will not be liable for any direct, indirect or consequential damages suffered by the homeowner or third party caused by the heating and cooling system, its use, installation, manufacture, or performance or lack of performance.

### **Inspections**

Gulf Power Company shall have the right to verify the installations by conducting an inspection of the homeowner's dwelling. The Company shall have the right to enter the homeowner's dwelling and to make an inspection at a reasonable time by giving to the homeowner a notice of intention to inspect at least 48 hours prior to such inspection. Customer shall not withhold consent to Gulf Power Company to conduct an inspection and agrees to be present at the dwelling at the time of the inspection.

## Residential Geothermal Heat Pump

### Installation Guidelines

Job specifications and installation guidelines are as follows:

- Must be closed loop geothermal heat pump.
- The geothermal heat pump must meet the minimum efficiency of 13.0 EER at 86° entering water temperature (ARI / ISO 13256-1 Performance Data) and water flow of 3.0 gallons per minute per ton.
- Pressure and temperature (P/T) ports shall be installed on all loop systems.
- All piping for loop shall be PE 3408 polyethylene pipe with heat fused joints.
- Exposed polyethylene pipe shall be insulated with minimum 3/8 inch armafex or equivalent to prevent condensation and potential moisture damage to surrounding materials.
- All loop piping is to be pressure tested above ground prior to placing in bore holes or trench.
- All vertical bore holes are to be grouted/sealed at surface penetrations or in accordance with standard water management requirements.
- Equipment shall be sized according to Manual J or equivalent load calculation procedure.
- Loop contractor guarantees that loop temperature will not exceed design condition of 100 degree entering water temperature during normal cooling operations.
- Unit should be set on sound deadening/vibration isolation pad.
- Equipment contractor should provide manufacturer letter of certification to install ground source closed loop heat pumps.
- Loop contractor should provide manufacturer letter of certification in heat fusion, design (sizing), and installation of ground source closed loop systems.
- Ducts should be visually inspected for leakage. Any visible problem areas or leakage points should be repaired or sealed.

## Residential Geothermal Heat Pump Program

<b>At the Meter</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	1,107	0.77	1.04	221,400	154	208
2006	1,107	0.77	1.04	221,400	154	208
2007	1,107	0.77	1.04	221,400	154	208
2008	1,107	0.77	1.04	221,400	154	208
2009	1,107	0.77	1.04	221,400	154	208
2010	1,107	0.77	1.04	0	0	0
2011	1,107	0.77	1.04	0	0	0
2012	1,107	0.77	1.04	0	0	0
2013	1,107	0.77	1.04	0	0	0
2014	1,107	0.77	1.04	0	0	0

<b>At the Generator</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	1,207	1.01	1.37	241,326	202	273
2006	1,207	1.01	1.37	241,326	202	273
2007	1,207	1.01	1.37	241,326	202	273
2008	1,207	1.01	1.37	241,326	202	273
2009	1,207	1.01	1.37	241,326	202	273
2010	1,207	1.01	1.37	0	0	0
2011	1,207	1.01	1.37	0	0	0
2012	1,207	1.01	1.37	0	0	0
2013	1,207	1.01	1.37	0	0	0
2014	1,207	1.01	1.37	0	0	0

<b>Customers and Participation Rates</b>					
<u>Year</u>	<u>Total Number of Customers</u>	<u>Total Number of Eligible Customers</u>	<u>Annual Number of Program Participants</u>	<u>Cumulative Penetration Level %</u>	<u>Cumulative Number of Program Participants</u>
2005	351,803	349,866	200	0.1%	200
2006	357,806	355,829	200	0.1%	400
2007	364,154	362,137	200	0.2%	600
2008	371,344	369,287	200	0.2%	800
2009	379,588	377,489	200	0.3%	1,000
2010	388,245	386,104	0	0.3%	1,000
2011	396,743	394,558	0	0.3%	1,000
2012	405,204	402,974	0	0.2%	1,000
2013	414,998	412,723	0	0.2%	1,000
2014	425,904	423,583	0	0.2%	1,000

**INPUT DATA -- PART 1**

**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

**I. Program Demand Impacts and Line Losses**

(1) Change in Peak kW Customer at meter	-1.04	kW/Cus
(2) Change in Peak kW per Customer at generator	-1.37	kW Gen/Cus
(3) kW Line Loss Percentage	14.21%	
(4) Change in KWh per Customer at generator	(1,207)	kWh/Cus/Yr
(5) kWh Line Loss Percentage	9.00%	
(6) Group Line Loss Multiplier	1.0007	
(7) Annual Change in Customer kWh at Meter	(1,107)	kWh/Cus/Yr
(8) Change in Winter kW per Cust at meter	-0.77	kW/Cus

**II. Economic Life and K-Factors**

(1) DSM Program Study Period	30	Years
(2) Economic Life of Incremental Generation	30	Years
(3) Economic Life of Incremental T&D	35	Years
(4) K-Factor for Generation	1.4939	
(5) K-Factor for T&D	1.5025	
(6) Switch: Rev Req (0) or Val-of-Def (1)	1	

**III. Utility & Customer Costs**

(1) Utility Nonrecurring Cost Per Customer	\$700.00	\$/Cus
(2) Utility Recurring Cost Per Customer	\$0.00	\$/Cus/Year
(3) Utility Cost Escalation Rate	1.81%	
(4) Customer Equipment Cost	\$1,970.00	\$/Cus
(5) Customer Equipment Cost Escalation Rate	1.81%	
(6) Customer O&M Cost	(\$97.00)	\$/Cus/Year
(7) Customer O&M Cost Escalation Rate	1.81%	
(8) Customer Tax Credit Per Installation	\$0.00	\$/Cus
(9) Customer Tax Credit Escalation Rate	1.81%	
(10) Change in Supply Costs	\$0.00	\$/Cus/Year
(11) Supply Costs Escalation Rate	1.81%	
(12) Utility Discount Rate	8.65%	
(13) Utility AFUDC Rate	7.48%	
(14) Utility Nonrecurring Rebate/Incentive	\$375.00	\$/Cus
(15) Utility Recurring Rebate/Incentive	\$0.00	\$/Cus/Year
(16) Utility Rebate/Incentive Escalation Rate	1.81%	

**IV. Incremental Generation, Transmission, & Distribution Costs**

(1) Base Year	2005	
In-Service Year For Incremental Generation	2009 **	
(3)		\$/kW
(5) Base		\$/kW
(7)		\$/kW
(8)		\$/kW/Yr
(10)		\$/kW/Yr
(12)		\$/kW/Yr
(14) Incre Gen Variable O&M Cost Esc Rate	1.56%	
(15) Incremental Gen Capacity Factor	0.17%	
(16) Incremental Generating Unit Fuel Cost	\$0.0635	\$/kWh
(17) Incremental Gen Unit Fuel Esc Rate	1.98%	
(18) Incremental Purchased Capacity Cost	\$43.08	\$/KW/YR
(19) Incremental Capacity Cost Esc Rate	1.81%	

Stop Revenue Loss at In-Service Year? (Y=1, N=0) 0

**V. (1) Non-Fuel Cost In Customer Bill (Base Year)**

(1) Non-Fuel Cost In Customer Bill (Base Year)	\$0.0393	\$/kWh
(2) Non-Fuel Escalation Rate	Per Table	
(3) Customer Demand Charge Per kW (Base Year)	\$0.0000	\$/kW/Mo
(4) Demand Charge Escalation Rate	Per Table	
(5) Average Annual Change in Monthly Billing kW	0	kW/Mo.

**Summary Results for This Analysis**

		Participants'
NPV Benefits(\$000s)	\$1,715	\$2.21
NPV Costs (\$000s)	\$1,688	\$1.73
NPV Net Benefits (\$000s)	\$28	\$47
Benefit:Cost Ratio	1.016	1.27

\* Supplemental information.

\*\* The relevant avoidable generation unit is a combustion turbine peaking unit.



**Total Resource Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12	13
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Participants' Program Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$140	\$375	\$0	\$0	\$0	\$0	(\$8)	\$515	\$8	(\$507)	(\$507)
2006	\$0	\$143	\$362	\$0	\$0	\$0	(\$22)	(\$14)	\$504	\$36	(\$468)	(\$937)
2007	\$0	\$145	\$348	\$0	\$0	\$0	(\$33)	(\$21)	\$493	\$54	(\$439)	(\$1,309)
2008	\$0	\$148	\$334	\$0	\$0	\$0	(\$45)	(\$28)	\$482	\$73	(\$408)	(\$1,627)
2009	\$0	\$150	\$319	\$0	\$0	(\$69)	(\$58)	(\$36)	\$470	\$162	(\$307)	(\$1,848)
2010	\$0	\$0	(\$106)	\$0	\$0	(\$70)	(\$59)	(\$37)	\$0	\$272	\$272	(\$1,668)
2011	\$0	\$0	(\$108)	\$0	\$0	(\$71)	(\$60)	(\$37)	\$0	\$276	\$276	(\$1,500)
2012	\$0	\$0	(\$110)	\$0	\$0	(\$72)	(\$61)	(\$40)	\$0	\$283	\$283	(\$1,342)
2013	\$0	\$0	(\$112)	\$0	\$0	(\$74)	(\$62)	(\$42)	\$0	\$290	\$290	(\$1,193)
2014	\$0	\$0	(\$114)	\$0	\$0	(\$75)	(\$63)	(\$44)	\$0	\$297	\$297	(\$1,052)
2015	\$0	\$0	(\$116)	\$0	\$0	(\$76)	(\$64)	(\$45)	\$0	\$302	\$302	(\$920)
2016	\$0	\$0	(\$118)	\$0	\$0	(\$78)	(\$66)	(\$48)	\$0	\$309	\$309	(\$796)
2017	\$0	\$0	(\$120)	\$0	\$0	(\$79)	(\$67)	(\$49)	\$0	\$315	\$315	(\$680)
2018	\$0	\$0	(\$122)	\$0	\$0	(\$81)	(\$68)	(\$51)	\$0	\$322	\$322	(\$570)
2019	\$0	\$0	(\$125)	\$0	\$0	(\$82)	(\$69)	(\$51)	\$0	\$327	\$327	(\$468)
2020	\$0	\$0	(\$127)	\$0	\$0	(\$84)	(\$70)	(\$55)	\$0	\$336	\$336	(\$371)
2021	\$0	\$0	(\$129)	\$0	\$0	(\$85)	(\$72)	(\$57)	\$0	\$343	\$343	(\$280)
2022	\$0	\$0	(\$132)	\$0	\$0	(\$87)	(\$73)	(\$57)	\$0	\$348	\$348	(\$195)
2023	\$0	\$0	(\$134)	\$0	\$0	(\$88)	(\$74)	(\$59)	\$0	\$356	\$356	(\$115)
2024	\$0	\$0	(\$136)	\$0	\$0	(\$90)	(\$76)	(\$62)	\$0	\$363	\$363	(\$40)
2025	\$0	\$0	(\$139)	\$0	\$0	(\$91)	(\$77)	(\$64)	\$0	\$371	\$371	\$30
2026	\$0	\$0	(\$141)	\$0	\$0	(\$93)	(\$78)	(\$66)	\$0	\$378	\$378	\$96
2027	\$0	\$0	(\$144)	\$0	\$0	(\$95)	(\$80)	(\$68)	\$0	\$386	\$386	\$159
2028	\$0	\$0	(\$147)	\$0	\$0	(\$96)	(\$81)	(\$70)	\$0	\$394	\$394	\$217
2029	\$0	\$0	(\$149)	\$0	\$0	(\$98)	(\$83)	(\$72)	\$0	\$402	\$402	\$272
2030	\$0	\$0	(\$152)	\$0	\$0	(\$100)	(\$84)	(\$74)	\$0	\$410	\$410	\$324
2031	\$0	\$0	(\$155)	\$0	\$0	(\$102)	(\$86)	(\$77)	\$0	\$419	\$419	\$372
2032	\$0	\$0	(\$157)	\$0	\$0	(\$104)	(\$87)	(\$79)	\$0	\$427	\$427	\$418
2033	\$0	\$0	(\$160)	\$0	\$0	(\$106)	(\$89)	(\$82)	\$0	\$436	\$436	\$460
2034	\$0	\$0	(\$163)	\$0	\$0	(\$107)	(\$91)	(\$84)	\$0	\$445	\$445	\$500
<b>Nominal NPV</b>		\$726	(\$1,580)	\$0	\$0	(\$2,253)	(\$1,999)	(\$1,575)	\$2,463	\$9,144	\$6,681	
		\$617	\$598	\$0	\$0	(\$638)	(\$621)	(\$456)	\$2,109	\$2,609	\$500	
		Discount Rate = 8.65%										
		Benefit/Cost Ratio = 1.24										

2-23

**Participants' Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12
Year	Customer Equip Costs (\$000s)	Customer O&M Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Change in Participants' Electric Bills (\$000s)	Tax Credits (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$394	(\$19)	\$0	\$0	(\$14)	\$0	\$75	\$394	\$108	(\$286)	(\$286)
2006	\$401	(\$40)	\$0	\$0	(\$27)	\$0	\$76	\$401	\$143	(\$258)	(\$523)
2007	\$408	(\$60)	\$0	\$0	(\$41)	\$0	\$78	\$408	\$179	(\$230)	(\$718)
2008	\$416	(\$82)	\$0	\$0	(\$53)	\$0	\$79	\$416	\$214	(\$202)	(\$875)
2009	\$423	(\$104)	\$0	\$0	(\$67)	\$0	\$81	\$423	\$252	(\$172)	(\$998)
2010	\$0	(\$106)	\$0	\$0	(\$68)	\$0	\$0	\$0	\$174	\$174	(\$883)
2011	\$0	(\$108)	\$0	\$0	(\$71)	\$0	\$0	\$0	\$179	\$179	(\$775)
2012	\$0	(\$110)	\$0	\$0	(\$72)	\$0	\$0	\$0	\$182	\$182	(\$673)
2013	\$0	(\$112)	\$0	\$0	(\$72)	\$0	\$0	\$0	\$184	\$184	(\$578)
2014	\$0	(\$114)	\$0	\$0	(\$74)	\$0	\$0	\$0	\$188	\$188	(\$489)
2015	\$0	(\$116)	\$0	\$0	(\$75)	\$0	\$0	\$0	\$191	\$191	(\$406)
2016	\$0	(\$118)	\$0	\$0	(\$76)	\$0	\$0	\$0	\$194	\$194	(\$328)
2017	\$0	(\$120)	\$0	\$0	(\$78)	\$0	\$0	\$0	\$198	\$198	(\$255)
2018	\$0	(\$122)	\$0	\$0	(\$80)	\$0	\$0	\$0	\$202	\$202	(\$186)
2019	\$0	(\$125)	\$0	\$0	(\$81)	\$0	\$0	\$0	\$206	\$206	(\$122)
2020	\$0	(\$127)	\$0	\$0	(\$82)	\$0	\$0	\$0	\$209	\$209	(\$61)
2021	\$0	(\$129)	\$0	\$0	(\$84)	\$0	\$0	\$0	\$213	\$213	(\$5)
2022	\$0	(\$132)	\$0	\$0	(\$86)	\$0	\$0	\$0	\$218	\$218	\$48
2023	\$0	(\$134)	\$0	\$0	(\$88)	\$0	\$0	\$0	\$222	\$222	\$98
2024	\$0	(\$136)	\$0	\$0	(\$89)	\$0	\$0	\$0	\$225	\$225	\$145
2025	\$0	(\$139)	\$0	\$0	(\$90)	\$0	\$0	\$0	\$229	\$229	\$188
2026	\$0	(\$141)	\$0	\$0	(\$91)	\$0	\$0	\$0	\$232	\$232	\$229
2027	\$0	(\$144)	\$0	\$0	(\$92)	\$0	\$0	\$0	\$236	\$236	\$267
2028	\$0	(\$147)	\$0	\$0	(\$93)	\$0	\$0	\$0	\$240	\$240	\$303
2029	\$0	(\$149)	\$0	\$0	(\$95)	\$0	\$0	\$0	\$244	\$244	\$336
2030	\$0	(\$152)	\$0	\$0	(\$96)	\$0	\$0	\$0	\$248	\$248	\$367
2031	\$0	(\$155)	\$0	\$0	(\$97)	\$0	\$0	\$0	\$252	\$252	\$396
2032	\$0	(\$157)	\$0	\$0	(\$98)	\$0	\$0	\$0	\$256	\$256	\$423
2033	\$0	(\$160)	\$0	\$0	(\$100)	\$0	\$0	\$0	\$260	\$260	\$449
2034	\$0	(\$163)	\$0	\$0	(\$101)	\$0	\$0	\$0	\$264	\$264	\$473
<b>Nominal</b>	\$2,043	(\$3,623)	\$0	\$0	(\$740)	\$0	\$389	\$2,043	\$6,342	\$4,299	
<b>NPV</b>	\$1,599	(\$1,139)	\$0	\$0	(\$740)	\$0	\$331	\$1,737	\$2,210	\$473	
		8.65%									

2-24

**Ratepayers' Impact Cost-Effectiveness Measure  
 Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Change in Electric Revenues (\$000)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits to All Customers (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$140	\$75	(\$14)	\$0	\$0	(\$8)	\$0	\$0	\$229	\$8	(\$221)	(\$221)
2006	\$0	\$143	\$76	(\$27)	\$0	(\$22)	(\$14)	\$0	\$0	\$246	\$36	(\$210)	(\$414)
2007	\$0	\$145	\$78	(\$41)	\$0	(\$33)	(\$21)	\$0	\$0	\$263	\$54	(\$209)	(\$591)
2008	\$0	\$148	\$79	(\$53)	\$0	(\$45)	(\$28)	\$0	\$0	\$280	\$73	(\$207)	(\$752)
2009	\$0	\$150	\$81	(\$67)	(\$69)	(\$58)	(\$36)	\$0	\$0	\$298	\$162	(\$136)	(\$850)
2010	\$0	\$0	\$0	(\$68)	(\$70)	(\$59)	(\$37)	\$0	\$0	\$68	\$166	\$98	(\$785)
2011	\$0	\$0	\$0	(\$71)	(\$71)	(\$60)	(\$37)	\$0	\$0	\$71	\$168	\$97	(\$726)
2012	\$0	\$0	\$0	(\$72)	(\$72)	(\$61)	(\$40)	\$0	\$0	\$72	\$173	\$102	(\$669)
2013	\$0	\$0	\$0	(\$72)	(\$74)	(\$62)	(\$42)	\$0	\$0	\$72	\$178	\$106	(\$614)
2014	\$0	\$0	\$0	(\$74)	(\$75)	(\$63)	(\$44)	\$0	\$0	\$74	\$183	\$109	(\$563)
2015	\$0	\$0	\$0	(\$75)	(\$76)	(\$64)	(\$45)	\$0	\$0	\$75	\$186	\$111	(\$514)
2016	\$0	\$0	\$0	(\$76)	(\$78)	(\$66)	(\$48)	\$0	\$0	\$76	\$191	\$115	(\$468)
2017	\$0	\$0	\$0	(\$78)	(\$79)	(\$67)	(\$49)	\$0	\$0	\$78	\$195	\$117	(\$425)
2018	\$0	\$0	\$0	(\$80)	(\$81)	(\$68)	(\$51)	\$0	\$0	\$80	\$199	\$120	(\$384)
2019	\$0	\$0	\$0	(\$81)	(\$82)	(\$69)	(\$51)	\$0	\$0	\$81	\$202	\$121	(\$346)
2020	\$0	\$0	\$0	(\$82)	(\$84)	(\$70)	(\$55)	\$0	\$0	\$82	\$209	\$127	(\$310)
2021	\$0	\$0	\$0	(\$84)	(\$85)	(\$72)	(\$57)	\$0	\$0	\$84	\$214	\$129	(\$276)
2022	\$0	\$0	\$0	(\$86)	(\$87)	(\$73)	(\$57)	\$0	\$0	\$86	\$217	\$131	(\$244)
2023	\$0	\$0	\$0	(\$88)	(\$88)	(\$74)	(\$59)	\$0	\$0	\$88	\$222	\$134	(\$214)
2024	\$0	\$0	\$0	(\$89)	(\$90)	(\$76)	(\$62)	\$0	\$0	\$89	\$227	\$138	(\$185)
2025	\$0	\$0	\$0	(\$90)	(\$91)	(\$77)	(\$64)	\$0	\$0	\$90	\$232	\$142	(\$158)
2026	\$0	\$0	\$0	(\$91)	(\$93)	(\$78)	(\$66)	\$0	\$0	\$91	\$237	\$146	(\$132)
2027	\$0	\$0	\$0	(\$92)	(\$95)	(\$80)	(\$68)	\$0	\$0	\$92	\$242	\$150	(\$108)
2028	\$0	\$0	\$0	(\$93)	(\$96)	(\$81)	(\$70)	\$0	\$0	\$93	\$248	\$154	(\$85)
2029	\$0	\$0	\$0	(\$95)	(\$98)	(\$83)	(\$72)	\$0	\$0	\$95	\$253	\$158	(\$64)
2030	\$0	\$0	\$0	(\$96)	(\$100)	(\$84)	(\$74)	\$0	\$0	\$96	\$259	\$163	(\$43)
2031	\$0	\$0	\$0	(\$97)	(\$102)	(\$86)	(\$77)	\$0	\$0	\$97	\$264	\$167	(\$24)
2032	\$0	\$0	\$0	(\$98)	(\$104)	(\$87)	(\$79)	\$0	\$0	\$98	\$270	\$172	(\$6)
2033	\$0	\$0	\$0	(\$100)	(\$106)	(\$89)	(\$82)	\$0	\$0	\$100	\$276	\$176	\$12
2034	\$0	\$0	\$0	(\$101)	(\$107)	(\$91)	(\$84)	\$0	\$0	\$101	\$282	\$181	\$28
<b>Nominal</b>		\$726	\$389	(\$2,331)	(\$2,253)	(\$1,999)	(\$1,575)			\$3,445	\$5,827	\$2,382	
<b>NPV</b>		\$617	\$331	(\$740)	(\$638)	(\$621)	(\$456)	\$0	\$0	\$1,688	\$1,715	\$28	
<b>Discount Rate =</b>		8.65%											

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## Residential Energy Survey Program

- **Program Description**

The objective of the Residential Energy Survey Program is to provide Gulf Power Company's existing residential customers and individuals building new homes with energy conservation advice that encourages the implementation of efficiency measures resulting in energy savings for the customer. These measures, once implemented, also lower Gulf Power Company's energy requirements, as well as improve operating efficiencies. In addition to encouraging the installation of high efficiency HVAC equipment and appliances, Gulf Power Company views this program as a vehicle to promote energy efficient new home construction techniques and thermal envelope upgrades to existing homes. Owners of existing homes may choose to have a Gulf Power representative conduct an on-site survey of their home, or they may opt to participate in either a mail-in or on-line, interactive version of the survey known as the "Energy Check Up." As part of both the new and existing home audit processes, the customer is provided with specific whole-house recommendations. As a result of these recommendations being implemented, the increase in operating efficiencies provides for a reduction in weather-sensitive peak demand, as well as reduction in energy consumption.

- **Participation Standards**

The Residential Energy Survey Program is available to all existing customers as well as individuals and contractors constructing new homes within Gulf Power Company's service territory. The program provides participants with the information needed to determine which energy saving measures are best suited to their individual needs and requirements. Customers are notified of this no-cost service every six months as specified in Rule 25-17.003 of the Florida Administrative Code. Individuals and contractors building new homes are also

## 2005 Demand-Side Management Plan

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notified of this service if, and at the time, they bring new home construction plans in to one of Gulf Power Company's local offices for preparation of EnergyGauge Form 600A permitting documents.

- **Benefits and Costs**

Wrightsoft's "Manual J" calculation software was used to estimate energy consumption impacts. Based on the energy savings analysis for typical new and existing homes in Northwest Florida, it is estimated that the Residential Energy Survey Program yields an approximate reduction in summer peak demand of .1 kW per home for both new and existing homes; and an energy reduction of 992 kWh per new home or 211 kWh per existing home on an annual basis. The estimated cost to Gulf Power for the new home pre-construction audit is \$60 per audit, while the average cost of existing home audits is \$140 per audit.

- **Monitoring and Evaluation**

Each participating customer is presented with building envelope and HVAC equipment upgrade recommendations. In order to properly size and maximize the efficiency of the home's HVAC system, each customer participating in the new home pre-construction audit is also provided with a whole-house heat gain and heat loss calculation in accordance with the Air Conditioning Contractors of America's "Manual J" procedures. Assistance with locating qualified contractors and the proper installation of recommended audit features is provided.

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Data regarding the installation of audit recommendations is accumulated to reflect the impact of the Residential Energy Survey Program. This data is collected through Gulf Power Company's Account Reporting System (GARS) which enables the tracking of participating customers.

- **Cost-Effectiveness**

Not applicable.

## Residential Energy Survey

<b>At the Meter</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	613	0.72	0.147	2,667,950	3,113	638
2006	642	0.85	0.103	3,575,083	4,758	575
2007	659	0.89	0.103	3,862,525	5,193	604
2008	680	0.93	0.103	4,258,412	5,792	644
2009	706	0.97	0.103	4,815,420	6,634	700
2010	706	0.97	0.103	4,825,836	6,650	701
2011	701	0.96	0.103	4,695,388	6,452	688
2012	703	0.97	0.103	4,741,020	6,521	692
2013	740	1.04	0.102	5,742,444	8,036	793
2014	750	1.05	0.102	6,044,508	8,492	824

<b>At the Generator</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	668	0.939	0.192	2,908,065	4,088	838
2006	699	1.121	0.135	3,896,840	6,249	755
2007	718	1.163	0.135	4,210,152	6,820	793
2008	741	1.215	0.135	4,641,669	7,606	845
2009	769	1.277	0.135	5,248,808	8,712	919
2010	770	1.278	0.135	5,260,161	8,733	920
2011	764	1.264	0.135	5,117,973	8,474	903
2012	766	1.269	0.135	5,167,712	8,564	909
2013	807	1.360	0.134	6,259,264	10,553	1,042
2014	817	1.383	0.134	6,588,514	11,153	1,082

<b>Customers and Participation Rates</b>					
<u>Year</u>	<u>Total Number of Customers</u>	<u>Total Number of Eligible Customers</u>	<u>Annual Number of Program Participants</u>	<u>Cumulative Penetration Level %</u>	<u>Cumulative Number of Program Participants</u>
2005	351,803	349,866	4,352	1.2%	4,352
2006	357,806	355,829	5,572	2.8%	9,924
2007	364,154	362,137	5,862	4.4%	15,786
2008	371,344	369,287	6,261	6.0%	22,047
2009	379,588	377,489	6,823	7.6%	28,869
2010	388,245	386,104	6,833	9.2%	35,702
2011	396,743	394,558	6,702	10.7%	42,404
2012	405,204	402,974	6,748	12.2%	49,151
2013	414,998	412,723	7,757	13.8%	56,908
2014	425,904	423,583	8,062	15.3%	64,970

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### **Low Income Energy Education Program**

Gulf Power Company presently has energy education programs that identify low or no-cost energy conservation measures. In order to better assist low-income customers in managing their energy purchases, the presentation and format of these energy education programs are tailored to the audience. These programs provide basic energy education, as well as inform the customers of other specific services, such as free energy surveys, that Gulf Power Company currently offers.



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### **Affordable Housing Builders and Providers Program**

Gulf Power Company will identify the affordable housing builders within the service area and will encourage them to attend education seminars and workshops related to energy efficient construction, retrofit programs, financing programs, etc., and to participate in the GoodCents Home program. Gulf Power Company will work with the Florida Energy Extension Service and other seminar sponsors to offer seminars and/or workshops. Gulf Power Company will work with all sponsors to reduce or eliminate attendance fees for affordable housing providers.

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## Commercial/Industrial Programs

### GoodCents Commercial Buildings

- **Program Description**

The commercial/industrial market is comprised of a wide range of diverse businesses with variable size and operational characteristics. The success of the GoodCents Building program lies in its ability to address this diversity by focusing on the mutual characteristics of commercial buildings. The most common critical areas in commercial buildings that affect summer peak kW demand are the thermal efficiency of the building and HVAC equipment efficiency. The GoodCents Building program provides requirements for these areas that, if adhered to, will help reduce peak kW demand and energy consumption.

The promotion of the GoodCents Building program through the years has featured a positive relationship with trade allies, the public and local commercial/industrial customers. The program's design continues to be sufficiently flexible to allow an architect or designer to use initiative and ingenuity to achieve results that are meaningful to both the customer and Gulf Power Company.

The GoodCents Building program is designed to ensure that buildings are constructed with energy efficiency levels above the Florida Model Energy code standards. These standards include both HVAC efficiency and thermal envelope requirements. As shown in this filing, the GoodCents HVAC equipment efficiency requirement is ratcheted up beginning in 2006 to exceed government mandated increases in minimum HVAC efficiencies.

## 2005 Demand-Side Management Plan

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To provide an accurate quantitative analysis of the kW and kWh savings due to the GoodCents Building Program, the GoodCents standards for average commercial buildings are compared to the Florida Model Energy Code. The features used to prepare the customer's analysis include: wall and ceiling R-values; glass area; description of glass; and equipment used in determining the kW and kWh differences for the two types of structures. The Energy Simulation Computer Program (EnerSim) is used to calculate the kW and kWh differences. Use of the EnerSim program is further described in the Benefits and Costs section.

### **Prescriptive Envelope Option:**

The Prescriptive Envelope Option provides architects/designers and building owners a menu of items available for a GoodCents Building certification. Many features in this option are structural in nature. The minimum requirements listed are those for insulation levels and window (glass) shading. As described in the Participation Standards section on the following pages, the minimum window requirement consists of two choices. The first choice of 100 percent externally shaded at 3:00 p.m. indicates the need for overhangs. Windows (glass) that would be naturally shaded by the building itself at 3:00 p.m. would not need external overhangs installed (i.e. N, NE, E, SE). The second choice considers the shading coefficient of the glass itself. The shading coefficient of .65 (35 percent solar reduction) does not allow for internal shading (blinds, curtains, etc.).

The Additional Requirements section of the Prescriptive Option allows the customer a choice of three of the seven requirements listed. These choices include increased insulation levels

## 2005 Demand-Side Management Plan

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above the minimum requirements, exterior door improvements, increased glass performance, high efficiency water heating, and geothermal heat pump HVAC system. One option is an Energy Management System which has more to do with behavior than with structural or mechanical efficiency.

### **Thermal Performance Option:**

A building may meet GoodCents standards through its thermal performance. This option requires a building to use the entire exterior thermal envelope by calculating both solar and transmission heat gains into the performance formula. The resulting BTUH heat gain is then divided by the total envelope square footage (total exterior shell of the conditioned space including walls, windows, roof/ceiling, and floors if off-grade) to obtain a BTUH/Sq. Ft. ratio. Depending upon the conditioned floor square footage of the building, this ratio must meet the requirements of the applicable building size described in the program. By using this calculation, the performance of the entire envelope of the building is evaluated.

### **HVAC Efficiency Requirements:**

The HVAC requirements are applicable to both the Prescriptive and Thermal Performance Options. Gulf Power Company's continuing efforts to influence the market toward high efficiency equipment and quality construction standards are the foundation of the GoodCents Building program.

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- **Participation Standards**

To qualify for the GoodCents Commercial certification, customers must meet the HVAC requirements and meet or exceed the standards in either the Prescriptive or Performance options.

### **Air Source HVAC Efficiency Requirements (A/C or Heat Pump):**

#### *Systems with cooling capacity < 65,000 BTU/h*

##### Unitary split systems

All

Min. 11.0 SEER until 01/01/06

Min. 14.0 SEER after 01/01/06 (*Pending EPAC Standard Increase*)

##### Unitary package systems

Min. 11.0 SEER

##### Packaged Terminal A/C or Heat Pump (PTAC or PTHP)

<12,000

Min. 11.0 EER

>12,001

Min. 10.0 EER

#### *Systems with cooling capacity > 65,001 and < 135,000 BTU/h*

##### Unitary split systems

Min. 10.5 EER

##### Unitary package systems

Min. 10.5 EER

#### *Systems with cooling capacity > 135,001 BTU/h*

##### Unitary split systems

Min. 10.0 EER

##### Unitary package systems

Min. 10.0 EER

### **Prescriptive Envelope Option:**

#### *Minimum Insulation Requirements:*

R-25 Roof/Ceiling structure

R-11 Exterior Walls

#### Minimum Window (including glass doors) Requirements:

All glass is 100% externally shaded at 3:00 p.m.

or

All glass has a shading coefficient (without any internal shading) of .65 or lower as rated by the manufacturer.

#### Additional Requirements

In addition to the above requirements, the building must also meet at least three of the seven requirements listed below.

1. Increase exterior wall insulation to R-13.
2. Increase roof/ceiling insulation to R-30.
3. Total glass area is less than 12% of gross exterior wall area.

## 2005 Demand-Side Management Plan

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4. Metal insulated or double pane glass exterior doors.
5. Install programmable thermostats or Energy Management Systems on all HVAC systems.
6. Geothermal Heat Pump HVAC system.
7. Heat Pump Water Heating or Pool Heating Heat Pump

### Thermal Performance Option:

The solar and transmission heat gain designed at 93° outside and 78° inside shall not exceed the following levels of heat gain per square foot of the above grade exterior envelope.

Conditioned Floor Square Footage	BTU/h/Sq. Ft. of Exterior Envelope
0 to 5,000	5.5
5,001 to 15,000	5.0
Over 15,000	4.5

The benefits that accrue by the construction of a new GoodCents Building or the retrofit of an existing building are:

- Customer
  1. Lower life cycle costs.
  2. Lower operating costs.
  3. Lower risks.
  4. Improved comfort.
- Architects / Engineers
  1. Lower design risks.
  2. Increased client satisfaction.
  3. Innovation and differentiation.
- Gulf Power Company
  1. Improved load factor (peak clipping/valley filling).
  2. Improved demand-side management.
  3. Strategic conservation.
  4. Improved productivity and effectiveness.

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- **Benefits and Costs**

With regard to the customer equipment cost, generally, there will be an increased cost to improve the building's thermal requirements, but this cost will be partially offset by the reduced size of the HVAC equipment. The kW, kWh and cost figures used in the cost-effectiveness determination were weighted between the new and improved buildings with an estimate of 95 percent new and 5 percent improved. The Energy Simulation Computer Program (EnerSim) was used to calculate the kW and kWh savings.

The EnerSim computer program for evaluation of alternative HVAC systems is designed to calculate the total energy use and demands of a building (including the variations that normally occur in the number of people occupying the building and the variations in building equipment use). Using building specific information, energy requirements are calculated in hourly intervals. Designated equipment and controls are operated by the program to maintain specified temperature and humidity conditions. Total building energy, demands, and individual equipment energy and demands are metered and displayed in a wide variety of report formats. The user provides data in a logical flow:

1. general information, construction data, and building use information
2. interior and exterior building loads (people and equipment)
3. profiles of occupancy and equipment use
4. building zones specifications (orientation, glass, wall, floor, and ceiling areas; percent of base loads in the zone; number of people; etc.)
5. thermal system types, cooling primary system types, and heating primary system types for each building zone
6. controls (temperature, humidity, time clocks, etc.)

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EnerSim performs up to 8,760 hourly calculations for each zone using hourly weather data. As the hourly zone energy requirements are determined, the program operates all HVAC components (fans, pumps, compressors, burners, economizers, storage systems, etc.) and calculates each component's energy use in BTU's. BTU's are converted to fuel units as specified by the user (electricity at 3,413 BTU/kWh). Output data is specified by the user and may be as short as annual summaries or may be reports for every hour of the year.

A utility cost of \$2,064 per customer is based on 2003 data for actual costs. Customer costs were estimated to be \$964. This is considered to be the per customer cost-differential necessary to bring the building standards up to what is required for this program.

- **Monitoring and Evaluation**

Gulf Power Company's representatives are made aware of the possible construction or renovation of a building either through official notification as reported in the Dodge Reports published weekly, architect/engineers' request for assistance, or a request for temporary service made by the construction firm or owner.

Gulf's representative contacts the architect/engineer, if not previously contacted, to begin assisting in the design phase of the building in order to incorporate the conservation measures necessary to qualify for the GoodCents Building program. The assistance provided consists of load calculations, lighting designs both interior and exterior, equipment recommendations, recommendations of energy storage systems, heat recovery systems, geothermal, demand control equipment, and specialized equipment recommendations.



## 2005 Demand-Side Management Plan

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During the construction phase, the representative visually inspects for the installation of the GoodCents features and equipment. At the end of the construction phase, the representative assists in acquiring electrical service to meet the customer's needs.

- **Cost-Effectiveness**

This program is cost-effective using the FPSC's approved methodology (Rule 25-17.008).

The cost effectiveness analyses are included in Attachment B.

### GoodCents Commercial Buildings Program

<b>At the Meter</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	12,755	1.27	4.46	1,977,025	197	691
2006	12,755	1.27	4.46	1,977,025	197	691
2007	12,755	1.27	4.46	2,295,900	229	803
2008	12,755	1.27	4.46	2,295,900	229	803
2009	12,755	1.27	4.46	2,295,900	229	803
2010	12,755	1.27	4.46	2,295,900	229	803
2011	12,755	1.27	4.46	2,295,900	229	803
2012	12,755	1.27	4.46	2,295,900	229	803
2013	12,755	1.27	4.46	2,295,900	229	803
2014	12,755	1.27	4.46	2,295,900	229	803

<b>At the Generator</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	13,903	1.67	5.86	2,154,957	259	908
2006	13,903	1.67	5.86	2,154,957	259	908
2007	13,903	1.67	5.86	2,502,531	300	1,054
2008	13,903	1.67	5.86	2,502,531	300	1,054
2009	13,903	1.67	5.86	2,502,531	300	1,054
2010	13,903	1.67	5.86	2,502,531	300	1,054
2011	13,903	1.67	5.86	2,502,531	300	1,054
2012	13,903	1.67	5.86	2,502,531	300	1,054
2013	13,903	1.67	5.86	2,502,531	300	1,054
2014	13,903	1.67	5.86	2,502,531	300	1,054

<u>Year</u>	<u>Total Number of Customers</u>	<u>Number of Eligible Customers</u>	<u>Annual Number of Program Participants</u>	<u>Penetration Level %</u>	<u>Number of Program Participants</u>
2005	53,201	46,070	155	0.3%	155
2006	54,246	46,926	155	0.7%	310
2007	55,343	47,833	180	1.0%	490
2008	56,575	48,869	180	1.4%	670
2009	57,977	50,058	180	1.7%	850
2010	59,448	51,305	180	2.0%	1,030
2011	60,894	52,528	180	2.3%	1,210
2012	62,331	53,743	180	2.6%	1,390
2013	63,983	55,148	180	2.8%	1,570
2014	65,635	56,553	180	3.1%	1,750

INPUT DATA -- PART 1

Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code

I. Program Demand Impacts and Line Losses

(1) Change in Peak kW Customer at meter	-4.46	kW/Cus
(2) Change in Peak kW per Customer at generator	-5.86	kW Gen/Cus
(3) kW Line Loss Percentage	14.21%	
(4) Change in KWh per Customer at generator	(13,903)	kWh/Cus/Yr
(5) kWh Line Loss Percentage	9.00%	
(6) Group Line Loss Multiplier	1.0007	
(7) Annual Change in Customer kWh at Meter	(12,755)	kWh/Cus/Yr
* (8) Change in Winter kW per Cust at meter	-1.27	kW/Cus

II. Economic Life and K-Factors

(1) DSM Program Study Period	30	Years
(2) Economic Life of Incremental Generation	30	Years
(3) Economic Life of Incremental T&D	35	Years
(4) K-Factor for Generation	1.4939	
(5) K-Factor for T&D	1.5025	
* (6) Switch: Rev Req (0) or Val-of-Def (1)	1	

III. Utility & Customer Costs

(1) Utility Nonrecurring Cost Per Customer	\$2,064.00	\$/Cus
(2) Utility Recurring Cost Per Customer	\$0.00	\$/Cus/Year
(3) Utility Cost Escalation Rate	1.81%	
(4) Customer Equipment Cost	\$964.00	\$/Cus
(5) Customer Equipment Cost Escalation Rate	1.81%	
(6) Customer O&M Cost	\$0.00	\$/Cus/Year
(7) Customer O&M Cost Escalation Rate	1.81%	
* (8) Customer Tax Credit Per Installation	\$0.00	\$/Cus
* (9) Customer Tax Credit Escalation Rate	1.81%	
* (10) Change in Supply Costs	\$0.00	\$/Cus/Year
* (11) Supply Costs Escalation Rate	1.81%	
* (12) Utility Discount Rate	8.65%	
* (13) Utility AFUDC Rate	7.48%	
* (14) Utility Nonrecurring Rebate/Incentive	\$0.00	\$/Cus
* (15) Utility Recurring Rebate/Incentive	\$0.00	\$/Cus/Year
* (16) Utility Rebate/Incentive Escalation Rate	1.81%	

IV. Incremental Generation, Transmission, & Distribution Costs

(1) Base Year	2005	
(2) In-Service Year For Incremental Generation	2009	**
(3) In-Service Year For Incremental T & D	2006	
(4) Base Year Incremental Generation Cost	\$403.18	\$/kW
(5) Base Year Incremental Transmission Cost	\$241.00	\$/kW
(6) Base Year Incremental Distribution Cost	\$63.29	\$/kW
(7) Gen, Tran, & Dist Cost Escalation Rate	1.81%	
(8) Generator Fixed O & M Cost	\$2.70	\$/kW/Yr
(9) Generator Fixed O&M Escalation Rate	1.81%	
(10) Transmission Fixed O & M Cost	\$3.01	\$/kW/Yr
(11) Distribution Fixed O & M Cost	\$1.58	\$/kW/Yr
(12) T&D Fixed O&M Escalation Rate	1.81%	
(13) Incremental Gen Variable O & M Costs	\$0.442	\$/kW/Yr
(14) Incre Gen Variable O&M Cost Esc Rate	1.56%	
Incremental Gen Capacity Factor	0.17%	
Incremental Generating Unit Fuel Cost	\$0.0635	\$/kWh
(17) Incremental Gen Unit Fuel Esc Rate	1.98%	
(18) Incremental Purchased Capacity Cost	\$43.08	\$/KW/YR
(19) Incremental Capacity Cost Esc Rate	1.81%	

Stop Revenue Loss at In-Service Year? (Y=1, N=0) 0

V. (1) Non-Fuel Cost In Customer Bill (Base Year)

Non-Fuel Cost In Customer Bill (Base Year)	\$0.0140	\$/kWh
(2) Non-Fuel Escalation Rate	Per Table	
(3) Customer Demand Charge Per kW (Base Year)	\$5.4200	\$/kW/Mo
(4) Demand Charge Escalation Rate	Per Table	
* (5) Average Annual Change in Monthly Billing kW	-4	kW/Mo.

Summary Results for This Analysis

	RIM	Participants'
NPV Benefits(\$000s)	\$15,942	\$11,389
NPV Costs (\$000s)	\$14,110	\$1,271
NPV Net Benefits (\$000s)	\$1,832	\$10,118
Benefit:Cost Ratio	1.130	8.961

\* Supplemental information.

\*\* The relevant avoidable generation unit is a combustion turbine peaking unit.

Total Resource Cost-Effectiveness Measure  
 Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code

1	2	3	4	5	6	7	8	9	10	11	12	13
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Participants' Program Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$320	\$149	\$0	\$0	\$0	\$0	(\$69)	\$469	\$69	(\$401)	(\$401)
2006	\$0	\$326	\$152	\$0	\$0	\$0	(\$73)	(\$129)	\$478	\$202	(\$276)	(\$655)
2007	\$0	\$385	\$180	\$0	\$0	\$0	(\$117)	(\$198)	\$565	\$315	(\$250)	(\$867)
2008	\$0	\$392	\$183	\$0	\$0	\$0	(\$163)	(\$269)	\$575	\$433	(\$142)	(\$978)
2009	\$0	\$406	\$190	\$0	\$0	(\$250)	(\$211)	(\$348)	\$586	\$809	\$224	(\$817)
2010	\$0	\$414	\$193	\$0	\$0	(\$309)	(\$260)	(\$441)	\$596	\$1,009	\$413	(\$544)
2011	\$0	\$421	\$197	\$0	\$0	(\$369)	(\$311)	(\$518)	\$607	\$1,198	\$591	(\$185)
2012	\$0	\$429	\$200	\$0	\$0	(\$432)	(\$364)	(\$640)	\$618	\$1,436	\$818	\$273
2013	\$0	\$437	\$204	\$0	\$0	(\$497)	(\$418)	(\$763)	\$629	\$1,678	\$1,048	\$812
2014	\$0	\$0	\$0	\$0	\$0	(\$563)	(\$475)	(\$893)	\$641	\$1,932	\$1,291	\$1,424
2015	\$0	\$0	\$0	\$0	\$0	(\$574)	(\$483)	(\$917)	\$0	\$1,974	\$1,974	\$2,285
2016	\$0	\$0	\$0	\$0	\$0	(\$584)	(\$492)	(\$962)	\$0	\$2,038	\$2,038	\$3,103
2017	\$0	\$0	\$0	\$0	\$0	(\$594)	(\$501)	(\$979)	\$0	\$2,074	\$2,074	\$3,870
2018	\$0	\$0	\$0	\$0	\$0	(\$605)	(\$510)	(\$1,021)	\$0	\$2,136	\$2,136	\$4,596
2019	\$0	\$0	\$0	\$0	\$0	(\$616)	(\$519)	(\$1,030)	\$0	\$2,166	\$2,166	\$5,274
2020	\$0	\$0	\$0	\$0	\$0	(\$627)	(\$529)	(\$1,107)	\$0	\$2,263	\$2,263	\$5,926
2021	\$0	\$0	\$0	\$0	\$0	(\$639)	(\$538)	(\$1,144)	\$0	\$2,320	\$2,320	\$6,541
2022	\$0	\$0	\$0	\$0	\$0	(\$650)	(\$548)	(\$1,154)	\$0	\$2,352	\$2,352	\$7,114
2023	\$0	\$0	\$0	\$0	\$0	(\$662)	(\$558)	(\$1,198)	\$0	\$2,418	\$2,418	\$7,657
2024	\$0	\$0	\$0	\$0	\$0	(\$674)	(\$568)	(\$1,241)	\$0	\$2,482	\$2,482	\$8,170
2025	\$0	\$0	\$0	\$0	\$0	(\$686)	(\$578)	(\$1,281)	\$0	\$2,545	\$2,545	\$8,655
2026	\$0	\$0	\$0	\$0	\$0	(\$698)	(\$589)	(\$1,323)	\$0	\$2,610	\$2,610	\$9,112
2027	\$0	\$0	\$0	\$0	\$0	(\$711)	(\$599)	(\$1,365)	\$0	\$2,675	\$2,675	\$9,543
2028	\$0	\$0	\$0	\$0	\$0	(\$724)	(\$610)	(\$1,409)	\$0	\$2,743	\$2,743	\$9,949
2029	\$0	\$0	\$0	\$0	\$0	(\$737)	(\$621)	(\$1,453)	\$0	\$2,811	\$2,811	\$10,333
2030	\$0	\$0	\$0	\$0	\$0	(\$750)	(\$632)	(\$1,499)	\$0	\$2,882	\$2,882	\$10,695
2031	\$0	\$0	\$0	\$0	\$0	(\$764)	(\$644)	(\$1,546)	\$0	\$2,954	\$2,954	\$11,037
2032	\$0	\$0	\$0	\$0	\$0	(\$778)	(\$656)	(\$1,594)	\$0	\$3,028	\$3,028	\$11,359
2033	\$0	\$0	\$0	\$0	\$0	(\$792)	(\$667)	(\$1,644)	\$0	\$3,103	\$3,103	\$11,663
2034	\$0	\$0	\$0	\$0	\$0	(\$806)	(\$680)	(\$1,695)	\$0	\$3,180	\$3,180	\$11,949
Nominal NPV		\$3,929	\$1,835	\$0	\$0	(\$16,091)	(\$13,914)	(\$29,830)	\$5,764	\$59,834	\$54,071	
Discount Rate =		8.65%				(\$4,262)	(\$3,885)	(\$7,794)	\$3,992	\$15,942	\$11,949	
Benefit/Cost Ratio =		3.99										

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**Participants' Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12
Year	Customer Equip Costs (\$000s)	Customer O&M Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Change in Participants' Electric Bills (\$000s)	Tax Credits (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$149	\$0	\$0	\$0	(\$115)	\$0	\$0	\$149	\$115	(\$35)	(\$35)
2006	\$152	\$0	\$0	\$0	(\$223)	\$0	\$0	\$152	\$223	\$71	\$31
2007	\$180	\$0	\$0	\$0	(\$350)	\$0	\$0	\$180	\$350	\$171	\$175
2008	\$183	\$0	\$0	\$0	(\$471)	\$0	\$0	\$183	\$471	\$288	\$399
2009	\$186	\$0	\$0	\$0	(\$602)	\$0	\$0	\$186	\$602	\$416	\$698
2010	\$190	\$0	\$0	\$0	(\$737)	\$0	\$0	\$190	\$737	\$547	\$1,059
2011	\$193	\$0	\$0	\$0	(\$908)	\$0	\$0	\$193	\$908	\$715	\$1,494
2012	\$197	\$0	\$0	\$0	(\$1,058)	\$0	\$0	\$197	\$1,058	\$861	\$1,975
2013	\$200	\$0	\$0	\$0	(\$1,199)	\$0	\$0	\$200	\$1,199	\$998	\$2,490
2014	\$204	\$0	\$0	\$0	(\$1,367)	\$0	\$0	\$204	\$1,367	\$1,163	\$3,041
2015	\$0	\$0	\$0	\$0	(\$1,393)	\$0	\$0	\$0	\$1,393	\$1,393	\$3,648
2016	\$0	\$0	\$0	\$0	(\$1,422)	\$0	\$0	\$0	\$1,422	\$1,422	\$4,219
2017	\$0	\$0	\$0	\$0	(\$1,449)	\$0	\$0	\$0	\$1,449	\$1,449	\$4,754
2018	\$0	\$0	\$0	\$0	(\$1,487)	\$0	\$0	\$0	\$1,487	\$1,487	\$5,260
2019	\$0	\$0	\$0	\$0	(\$1,514)	\$0	\$0	\$0	\$1,514	\$1,514	\$5,734
2020	\$0	\$0	\$0	\$0	(\$1,541)	\$0	\$0	\$0	\$1,541	\$1,541	\$6,177
2021	\$0	\$0	\$0	\$0	(\$1,578)	\$0	\$0	\$0	\$1,578	\$1,578	\$6,596
2022	\$0	\$0	\$0	\$0	(\$1,620)	\$0	\$0	\$0	\$1,620	\$1,620	\$6,991
2023	\$0	\$0	\$0	\$0	(\$1,653)	\$0	\$0	\$0	\$1,653	\$1,653	\$7,362
2024	\$0	\$0	\$0	\$0	(\$1,675)	\$0	\$0	\$0	\$1,675	\$1,675	\$7,708
2025	\$0	\$0	\$0	\$0	(\$1,697)	\$0	\$0	\$0	\$1,697	\$1,697	\$8,031
2026	\$0	\$0	\$0	\$0	(\$1,719)	\$0	\$0	\$0	\$1,719	\$1,719	\$8,332
2027	\$0	\$0	\$0	\$0	(\$1,743)	\$0	\$0	\$0	\$1,743	\$1,743	\$8,613
2028	\$0	\$0	\$0	\$0	(\$1,766)	\$0	\$0	\$0	\$1,766	\$1,766	\$8,875
2029	\$0	\$0	\$0	\$0	(\$1,791)	\$0	\$0	\$0	\$1,791	\$1,791	\$9,119
2030	\$0	\$0	\$0	\$0	(\$1,816)	\$0	\$0	\$0	\$1,816	\$1,816	\$9,347
2031	\$0	\$0	\$0	\$0	(\$1,842)	\$0	\$0	\$0	\$1,842	\$1,842	\$9,560
2032	\$0	\$0	\$0	\$0	(\$1,868)	\$0	\$0	\$0	\$1,868	\$1,868	\$9,759
2033	\$0	\$0	\$0	\$0	(\$1,895)	\$0	\$0	\$0	\$1,895	\$1,895	\$9,945
2034	\$0	\$0	\$0	\$0	(\$1,923)	\$0	\$0	\$0	\$1,923	\$1,923	\$10,118
<b>Nominal</b>	\$1,835				(\$40,419)			\$1,835	\$40,419	\$38,585	
<b>NPV</b>	\$1,170	\$0	\$0	\$0	(\$11,389)	\$0	\$0	\$1,271	\$11,389	\$10,118	
<b>Discount Rate =</b>		8.65%									
<b>Benefit/Cost Ratio =</b>		8.96									

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**Ratepayers' Impact Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Change in Electric Revenues (\$000)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits to All Customers (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$320	\$0	(\$115)	\$0	\$0	(\$69)	\$0	\$0	\$435	\$69	(\$366)	(\$366)
2006	\$0	\$326	\$0	(\$223)	\$0	(\$73)	(\$129)	\$0	\$0	\$549	\$202	(\$347)	(\$686)
2007	\$0	\$385	\$0	(\$350)	\$0	(\$117)	(\$198)	\$0	\$0	\$736	\$315	(\$421)	(\$1,042)
2008	\$0	\$392	\$0	(\$471)	\$0	(\$163)	(\$269)	\$0	\$0	\$863	\$433	(\$430)	(\$1,377)
2009	\$0	\$399	\$0	(\$602)	(\$250)	(\$211)	(\$348)	\$0	\$0	\$1,002	\$809	(\$192)	(\$1,515)
2010	\$0	\$406	\$0	(\$737)	(\$309)	(\$260)	(\$441)	\$0	\$0	\$1,143	\$1,009	(\$134)	(\$1,603)
2011	\$0	\$414	\$0	(\$908)	(\$369)	(\$311)	(\$518)	\$0	\$0	\$1,322	\$1,198	(\$124)	(\$1,679)
2012	\$0	\$421	\$0	(\$1,058)	(\$432)	(\$364)	(\$640)	\$0	\$0	\$1,479	\$1,436	(\$43)	(\$1,703)
2013	\$0	\$429	\$0	(\$1,199)	(\$497)	(\$418)	(\$763)	\$0	\$0	\$1,628	\$1,678	\$50	(\$1,677)
2014	\$0	\$437	\$0	(\$1,367)	(\$563)	(\$475)	(\$893)	\$0	\$0	\$1,804	\$1,932	\$128	(\$1,617)
2015	\$0	\$0	\$0	(\$1,393)	(\$574)	(\$483)	(\$917)	\$0	\$0	\$1,393	\$1,974	\$581	(\$1,363)
2016	\$0	\$0	\$0	(\$1,422)	(\$584)	(\$492)	(\$962)	\$0	\$0	\$1,422	\$2,038	\$617	(\$1,116)
2017	\$0	\$0	\$0	(\$1,449)	(\$594)	(\$501)	(\$979)	\$0	\$0	\$1,449	\$2,074	\$626	(\$885)
2018	\$0	\$0	\$0	(\$1,487)	(\$605)	(\$510)	(\$1,021)	\$0	\$0	\$1,487	\$2,136	\$649	(\$664)
2019	\$0	\$0	\$0	(\$1,514)	(\$616)	(\$519)	(\$1,030)	\$0	\$0	\$1,514	\$2,166	\$652	(\$460)
2020	\$0	\$0	\$0	(\$1,541)	(\$627)	(\$529)	(\$1,107)	\$0	\$0	\$1,541	\$2,263	\$722	(\$252)
2021	\$0	\$0	\$0	(\$1,578)	(\$639)	(\$538)	(\$1,144)	\$0	\$0	\$1,578	\$2,320	\$743	(\$55)
2022	\$0	\$0	\$0	(\$1,620)	(\$650)	(\$548)	(\$1,154)	\$0	\$0	\$1,620	\$2,352	\$731	\$124
2023	\$0	\$0	\$0	(\$1,653)	(\$662)	(\$558)	(\$1,198)	\$0	\$0	\$1,653	\$2,418	\$765	\$295
2024	\$0	\$0	\$0	(\$1,675)	(\$674)	(\$568)	(\$1,241)	\$0	\$0	\$1,675	\$2,482	\$808	\$462
2025	\$0	\$0	\$0	(\$1,697)	(\$686)	(\$578)	(\$1,281)	\$0	\$0	\$1,697	\$2,545	\$849	\$624
2026	\$0	\$0	\$0	(\$1,719)	(\$698)	(\$589)	(\$1,323)	\$0	\$0	\$1,719	\$2,610	\$890	\$780
2027	\$0	\$0	\$0	(\$1,743)	(\$711)	(\$599)	(\$1,365)	\$0	\$0	\$1,743	\$2,675	\$933	\$930
2028	\$0	\$0	\$0	(\$1,766)	(\$724)	(\$610)	(\$1,409)	\$0	\$0	\$1,766	\$2,743	\$976	\$1,075
2029	\$0	\$0	\$0	(\$1,791)	(\$737)	(\$621)	(\$1,453)	\$0	\$0	\$1,791	\$2,811	\$1,021	\$1,214
2030	\$0	\$0	\$0	(\$1,816)	(\$750)	(\$632)	(\$1,499)	\$0	\$0	\$1,816	\$2,882	\$1,066	\$1,348
2031	\$0	\$0	\$0	(\$1,842)	(\$764)	(\$644)	(\$1,546)	\$0	\$0	\$1,842	\$2,954	\$1,112	\$1,476
2032	\$0	\$0	\$0	(\$1,868)	(\$778)	(\$656)	(\$1,594)	\$0	\$0	\$1,868	\$3,028	\$1,160	\$1,600
2033	\$0	\$0	\$0	(\$1,895)	(\$792)	(\$667)	(\$1,644)	\$0	\$0	\$1,895	\$3,103	\$1,208	\$1,718
2034	\$0	\$0	\$0	(\$1,923)	(\$806)	(\$680)	(\$1,695)	\$0	\$0	\$1,923	\$3,180	\$1,258	\$1,832
<b>Nominal NPV</b>		\$3,929		(\$40,419)	(\$16,091)	(\$13,914)	(\$29,830)			\$44,348	\$59,834	\$15,486	
<b>Discount Rate =</b>		6.65%		(\$11,389)	(\$4,262)	(\$3,885)	(\$7,794)	\$0	\$0	\$14,110	\$15,942	\$1,832	
<b>Benefit/Cost Ratio =</b>		1.13											

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## 2005 Demand-Side Management Plan

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### Commercial Geothermal Heat Pump Program

- **Program Description**

The objective of the Commercial Geothermal Heat Pump Program is to reduce the demand and energy requirements of new and existing Commercial/Industrial customers through the promotion and installation of advanced and emerging geothermal systems. Due to the long life of space conditioning equipment, the choices that are made over the next decade regarding space conditioning equipment will have important economic and environmental ramifications lasting well into the future. Geothermal heat pumps provide significant benefits to participating customers in the form of reduced operating costs and increased comfort levels, and are superior to other available heating and cooling technologies with respect to source efficiency and environmental impacts. Gulf Power Company's Geothermal Heat Pump program is designed to overcome existing market barriers, specifically, lack of consumer awareness, knowledge and acceptance of this technology. This program will promote efficiency levels well above current market conditions, specifically those units with an Energy Efficiency Ratio (EER) of 13.0 or higher.

Both full geothermal closed loop ground systems and hybrid system technology are included in this Commercial Geothermal Heat Pump Program. Hybrid systems, for the purpose of this program, are closed geothermal ground heat exchange loops of sufficient size to be adequate for a system's heating requirement, and utilize a fluid cooler to reject excess loop heat during the cooling season.

According to the Department of Energy (DOE) geothermal technology is the most energy-efficient and environmentally clean space-conditioning system available today. Additionally,

## 2005 Demand-Side Management Plan

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a recent DOE study indicates that geothermal systems have the lowest life-cycle cost of any HVAC system today.

Major findings from a 1993 EPA report titled "Space Conditioning: The Next Frontier," include:

- The emerging ground source heat pump had the highest source heating season performance factor (HSPF) in all locations.
- The emerging ground source heat pump also had the highest cooling EER in all locations, followed by the advanced ground source heat pump.
- The emerging and advanced ground source heat pump systems were highly cost-effective as replacement units when compared to all other systems.

Gulf Power Company intends to continue this program over a sustained period of time, currently expected to be about five years, in order to educate Commercial consumers on geothermal technology and raise awareness about the availability, affordability, and improved customer satisfaction associated with these units. This commitment is necessary to foster a stable market for this promising technology. Not only will this increase customer and trade ally confidence, it will serve to encourage competition within this technology market and reduce the higher initial cost generally associated with new technology.

- **Participation Standards**

- The Commercial Geothermal Heat Pump Program will provide Gulf Power Company's commercial customers an incentive to install advanced commercial space conditioning technologies; specifically, geothermal HVAC systems. Gulf Power Company will promote these systems by providing: estimates of heating and cooling operating costs to commercial customers installing geothermal heat pumps in commercial facilities;



## 2005 Demand-Side Management Plan

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\$150/ton incentive for commercial, full closed loop projects or \$75/ton for hybrid closed loop projects. These incentive amounts for both full and hybrid geothermal systems are for up to 50 ton system totals. Geothermal systems with total tonnage above 50 tons will be evaluated on a case by case basis for cost-effectiveness and their incentive offering will be included in the DSM Energy Services program.

- All Gulf Power Company served Commercial/Industrial facilities in new or existing structures are eligible for the program.
- All participants must be willing to have an existing facility energy audit or new facility plan review completed to address proper HVAC sizing, proper installation and other conservation measures.
- To qualify for the Commercial geothermal incentive, the geothermal heat pump units (separately or averaged) must meet the minimum efficiency of 13.0 EER at 86° (ARI/ISO-13256-1 application) entering water temperature and a nominal water flow of 3.0 gallons per minute per ton.
- The incentive will be issued for the installed tonnage of geothermal units in the facility.
- All participants will be paid per facility in one single payment after verification and inspection by a Gulf Power Company Energy Consultant.

A copy of the Commercial Geothermal Heat Pump Program Limitations, Inspection Outline, and Installation Guidelines is provided in Attachment A.

## 2005 Demand-Side Management Plan

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- **Benefits and Costs**

The kW and kWh reductions available from the application of commercial geothermal heat pumps are compared to a minimum code air source heat pump base unit of 8.9 EER. The summer kW reduction projected is 6.59 kW, for the standard commercial building in Gulf Power's service area, which is 4,444 square feet average in size. Winter kW reduction for this same average commercial building is 8.52 kW. Annual kWh reduction is 14,167 kWh. All kW and kWh reductions are measured at the meter.

Calculations for kW and kWh savings are derived from the Commercial Energy Simulation Program (EnerSim) computer energy modeling simulation. Inputs are based upon the average sized commercial building square footage of total building stock. The energy model variations include only the effect of heat pump equipment efficiency alteration, not equipment capacity or thermal package and internal load changes.

- **Monitoring and Evaluation**

Gulf Power Company will utilize its Gulf Account Reporting System (GARS) to track all geothermal installations. Gulf Power Company will further validate engineering analysis of energy and demand savings with billing data and metering of customer equipment. In order to assess levels and reasons for program non-participation, interviews will be conducted with program participants, dealers and customers that choose not to participate. Dependent upon the level of participation, surveys may be conducted among customers with the geothermal heat pump and those that have other systems to establish levels of customer satisfaction with the technology.

## 2005 Demand-Side Management Plan

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- **Cost-Effectiveness**

This program is cost-effective using the FPSC's approved methodology (Rule 25-17.008).

The cost-effectiveness analyses are included in Attachment C.

Customer cost figures are derived from contractor estimates for the installed measures. A significant amount of research and development is taking place with regard to reducing first cost of geothermal installations. Research by the Department of Energy, the Electric Power Research Institute, the Geothermal Heat Pump Consortium, the International Ground Source Heat Pump Association, and other groups is expected to result in significant reductions in installation costs in the future.

## **Commercial Geothermal Heat Pump Program**

### **LIMITATIONS**

The owner recognizes and agrees that Gulf Power Company is not a seller, distributor, manufacturer or installer of the equipment described herein, and that Gulf Power Company makes no warranties, express or implied, including warranties of merchantability or fitness for purpose. Owner agrees that Gulf Power Company will not be liable for any direct, indirect or consequential damages suffered by the owner or third party caused by the heating and cooling system, its use, installation, manufacture, or performance or lack of performance.

### **INSPECTIONS**

Gulf Power Company shall have the right to verify installation guideline conformance by conducting an inspection of the Owner's facility. Gulf Power Company shall have the right to enter the owner's facility and to make an inspection at a reasonable time by giving to the owner a notice of intention to inspect at least 48 hours prior to such inspection. The owner or his representative shall not withhold consent to Gulf Power Company to conduct an installation inspection.

## Commercial Geothermal Heat Pump

### Installation Guidelines

Job specifications and installation guidelines are as follows:

- Must be closed loop geothermal heat pump, or hybrid closed loop geothermal heat pump systems.
- The geothermal heat pump must meet the minimum efficiency of 13.0 EER at 86° entering water temperature and a nominal water flow of 3.0 gallons per minute per ton.
- Pressure and temperature (P/T) ports shall be installed on all loop systems.
- All piping for loop shall be PE 3408 polyethylene pipe with heat fused joints.
- Exposed polyethylene pipe shall be insulated with minimum 3/8 inch armafex or equivalent to prevent condensation and potential moisture damage to surrounding materials.
- All loop piping is to be pressure tested above ground prior to placing in bore holes or trench.
- All vertical bore holes are to be grouted/sealed at surface penetrations or in accordance with standard water management requirements.
- Unit should be set on sound deadening/vibration isolation pad.
- Equipment shall be sized according to Manual "N" or equivalent load calculation procedure.
- Equipment contractor should provide manufacturer letter of certification to install ground source closed loop heat pumps.
- Loop contractor should provide manufacturer letter of certification in heat fusion, design (sizing), and installation of ground source closed loop systems.
- Loop contractor guarantees that loop temperature will not exceed design condition of 100 degree entering water temperature during normal cooling operations.
- Ducts should be visually inspected for leakage. Any visible problem areas or leakage points should be repaired or sealed.

## Commercial Geothermal Heat Pump Program

<b>At the Meter</b>						
	Per Customer kWh	Per Customer Winter kW	Per Customer Summer kW	Total Annual kWh	Total Annual Winter kW	Total Annual Summer kW
<u>Year</u>	<u>Reduction</u>	<u>Reduction</u>	<u>Reduction</u>	<u>Reduction</u>	<u>Reduction</u>	<u>Reduction</u>
2005	14,167	8.52	6.59	70,835	43	33
2006	14,167	8.52	6.59	141,670	85	66
2007	14,167	8.52	6.59	212,505	128	99
2008	14,167	8.52	6.59	283,340	170	132
2009	14,167	8.52	6.59	283,340	170	132
2010	14,167	8.52	6.59	283,340	170	132
2011	14,167	8.52	6.59	283,340	170	132
2012	14,167	8.52	6.59	283,340	170	132
2013	14,167	8.52	6.59	283,340	170	132
2014	14,167	8.52	6.59	283,340	170	132

	Per Customer kWh	Customer Winter kW	Per Customer Summer kW	Annual kWh	Annual Winter kW	Annual Summer kW
<u>Year</u>	<u>Reduction</u>	<u>Reduction</u>	<u>Reduction</u>	<u>Reduction</u>	<u>Reduction</u>	<u>Reduction</u>
2005	15,442	11.19	8.65	77,210	56	43
2006	15,442	11.19	8.65	154,420	112	87
2007	15,442	11.19	8.65	231,630	168	130
2008	15,442	11.19	8.65	308,841	224	173
2009	15,442	11.19	8.65	308,841	224	173
2010	15,442	11.19	8.65	308,841	224	173
2011	15,442	11.19	8.65	308,841	224	173
2012	15,442	11.19	8.65	308,841	224	173
2013	15,442	11.19	8.65	308,841	224	173
2014	15,442	11.19	8.65	308,841	224	173

<b>Customers and Participation Rates</b>					
	Total Number of Customers	Total Number of Eligible Customers	Annual Number of Program Participants	Cumulative Penetration Level %	Cumulative Number of Program Participants
<u>Year</u>	<u>Customers</u>	<u>Customers</u>	<u>Participants</u>	<u>%</u>	<u>Participants</u>
2005	53,201	46,070	5	0.0%	5
2006	54,246	46,926	10	0.0%	15
2007	55,343	47,833	15	0.1%	30
2008	56,575	48,869	20	0.1%	50
2009	57,977	50,058	20	0.1%	70
2010	59,448	51,305	20	0.2%	90
2011	60,894	52,528	20	0.2%	110
2012	62,331	53,743	20	0.2%	130
2013	63,983	55,148	20	0.3%	150
2014	65,635	56,553	20	0.3%	170

INPUT DATA -- PART 1

Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code

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I. Program Demand Impacts and Line Losses

(1) Change in Peak kW Customer at meter	-6.59	kW/Cus
(2) Change in Peak kW per Customer at generator	-8.66	kW Gen/Cus
(3) kW Line Loss Percentage	14.21%	
(4) Change in KWh per Customer at generator	(15,442)	kWh/Cus/Yr
(5) kWh Line Loss Percentage	9.00%	
(6) Group Line Loss Multiplier	1.0007	
(7) Annual Change in Customer kWh at Meter	(14,167)	kWh/Cus/Yr
* (8) Change in Winter kW per Cust at meter	-8.52	kW/Cus

II. Economic Life and K-Factors

(1) DSM Program Study Period	30	Years
(2) Economic Life of Incremental Generation	30	Years
(3) Economic Life of Incremental T&D	35	Years
(4) K-Factor for Generation	1.4939	
(5) K-Factor for T&D	1.5025	
* (6) Switch: Rev Req (0) or Val-of-Def (1)	1	

III. Utility & Customer Costs

(1) Utility Nonrecurring Cost Per Customer	\$30.00	\$/Cus
(2) Utility Recurring Cost Per Customer	\$0.00	\$/Cus/Year
(3) Utility Cost Escalation Rate	1.81%	
(4) Customer Equipment Cost	\$11,000.00	\$/Cus
(5) Customer Equipment Cost Escalation Rate	1.81%	
(6) Customer O&M Cost	(\$385.00)	\$/Cus/Year
(7) Customer O&M Cost Escalation Rate	1.81%	
* (8) Customer Tax Credit Per Installation	\$0.00	\$/Cus
* (9) Customer Tax Credit Escalation Rate	1.81%	
* (10) Change in Supply Costs	\$0.00	\$/Cus/Year
* (11) Supply Costs Escalation Rate	1.81%	
* (12) Utility Discount Rate	8.65%	
* (13) Utility AFUDC Rate	7.48%	
* (14) Utility Nonrecurring Rebate/Incentive	\$1,650.00	\$/Cus
* (15) Utility Recurring Rebate/Incentive	\$0.00	\$/Cus/Year
* (16) Utility Rebate/Incentive Escalation Rate	1.81%	

IV. Incremental Generation, Transmission, & Distribution Costs

(1) Base Year	2005	
(2) In-Service Year For Incremental Generation	2009	**
(3) In-Service Year For Incremental T & D	2006	
(4) Base Year Incremental Generation Cost	\$403.18	\$/kW
(5) Base Year Incremental Transmission Cost	\$241.00	\$/kW
(6) Base Year Incremental Distribution Cost	\$63.29	\$/kW
(7) Gen, Tran, & Dist Cost Escalation Rate	1.81%	
(8) Generator Fixed O & M Cost	\$2.70	\$/kW/Yr
(9) Generator Fixed O&M Escalation Rate	1.81%	
(10) Transmission Fixed O & M Cost	\$3.01	\$/kW/Yr
(11) Distribution Fixed O & M Cost	\$1.58	\$/kW/Yr
(12) T&D Fixed O&M Escalation Rate	1.81%	
(13) Incremental Gen Variable O & M Costs	\$0.442	\$/kW/Yr
(14) Incre Gen Variable O&M Cost Esc Rate	1.56%	
(15) Incremental Gen Capacity Factor	0.17%	
(16) Incremental Generating Unit Fuel Cost	\$0.0635	\$/kW
(17) Incremental Gen Unit Fuel Esc Rate	1.98%	
(18) Incremental Purchased Capacity Cost	\$43.08	\$/KW/YR
(19) Incremental Capacity Cost Esc Rate	1.81%	

Stop Revenue Loss at In-Service Year? (Y=1, N=0) 0

V. (1) Non-Fuel Cost In Customer Bill (Base Year)

(1) Non-Fuel Cost In Customer Bill (Base Year)	\$0.0140	\$/kWh
(2) Non-Fuel Escalation Rate	Per Table	
(3) Customer Demand Charge Per kW (Base Year)	\$5.4200	\$/kW/Mo
(4) Demand Charge Escalation Rate	Per Table	
* (5) Average Annual Change in Monthly Billing kW	-4.167	kW/Mo.

Summary Results for This Analysis

	RIM	Participants'
NPV Benefits(\$000s)	\$1,941	\$1,953
NPV Costs (\$000s)	\$1,352	\$1,354
NPV Net Benefits (\$000s)	\$589	\$599
Benefit:Cost Ratio	1.436	1.442

\* Supplemental information.

\*\* The relevant avoidable generation unit is a combustion turbine peaking unit.

**Total Resource Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12	13
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Participants' Program Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$0	\$53	\$0	\$0	\$0	\$0	(\$2)	\$53	\$2	(\$51)	(\$51)
2006	\$0	\$0	\$106	\$0	\$0	\$0	(\$5)	(\$7)	\$106	\$12	(\$94)	(\$138)
2007	\$0	\$0	\$159	\$0	\$0	\$0	(\$11)	(\$13)	\$160	\$24	(\$135)	(\$252)
2008	\$0	\$1	\$212	\$0	\$0	\$0	(\$18)	(\$22)	\$212	\$40	(\$172)	(\$387)
2009	\$0	\$1	\$207	\$0	\$0	(\$30)	(\$26)	(\$32)	\$208	\$88	(\$120)	(\$473)
2010	\$0	\$1	\$203	\$0	\$0	(\$40)	(\$34)	(\$43)	\$203	\$116	(\$87)	(\$530)
2011	\$0	\$1	\$198	\$0	\$0	(\$50)	(\$42)	(\$52)	\$199	\$144	(\$55)	(\$564)
2012	\$0	\$1	\$193	\$0	\$0	(\$60)	(\$50)	(\$67)	\$193	\$176	(\$17)	(\$573)
2013	\$0	\$1	\$187	\$0	\$0	(\$70)	(\$59)	(\$81)	\$188	\$210	\$22	(\$562)
2014	\$0	\$1	\$182	\$0	\$0	(\$81)	(\$68)	(\$96)	\$182	\$245	\$63	(\$532)
2015	\$0	\$0	(\$78)	\$0	\$0	(\$82)	(\$69)	(\$99)	\$0	\$329	\$329	(\$388)
2016	\$0	\$0	(\$80)	\$0	\$0	(\$84)	(\$71)	(\$104)	\$0	\$338	\$338	(\$253)
2017	\$0	\$0	(\$81)	\$0	\$0	(\$85)	(\$72)	(\$106)	\$0	\$344	\$344	(\$126)
2018	\$0	\$0	(\$83)	\$0	\$0	(\$87)	(\$73)	(\$110)	\$0	\$353	\$353	(\$6)
2019	\$0	\$0	(\$84)	\$0	\$0	(\$88)	(\$75)	(\$111)	\$0	\$358	\$358	\$107
2020	\$0	\$0	(\$86)	\$0	\$0	(\$90)	(\$76)	(\$119)	\$0	\$371	\$371	\$213
2021	\$0	\$0	(\$87)	\$0	\$0	(\$92)	(\$77)	(\$123)	\$0	\$379	\$379	\$314
2022	\$0	\$0	(\$89)	\$0	\$0	(\$93)	(\$79)	(\$124)	\$0	\$385	\$385	\$408
2023	\$0	\$0	(\$90)	\$0	\$0	(\$95)	(\$80)	(\$129)	\$0	\$395	\$395	\$497
2024	\$0	\$0	(\$92)	\$0	\$0	(\$97)	(\$82)	(\$134)	\$0	\$404	\$404	\$580
2025	\$0	\$0	(\$94)	\$0	\$0	(\$98)	(\$83)	(\$138)	\$0	\$413	\$413	\$659
2026	\$0	\$0	(\$95)	\$0	\$0	(\$100)	(\$84)	(\$143)	\$0	\$423	\$423	\$733
2027	\$0	\$0	(\$97)	\$0	\$0	(\$102)	(\$86)	(\$147)	\$0	\$432	\$432	\$803
2028	\$0	\$0	(\$99)	\$0	\$0	(\$104)	(\$88)	(\$152)	\$0	\$442	\$442	\$868
2029	\$0	\$0	(\$101)	\$0	\$0	(\$106)	(\$89)	(\$157)	\$0	\$452	\$452	\$930
2030	\$0	\$0	(\$102)	\$0	\$0	(\$108)	(\$91)	(\$162)	\$0	\$463	\$463	\$988
2031	\$0	\$0	(\$104)	\$0	\$0	(\$110)	(\$92)	(\$167)	\$0	\$473	\$473	\$1,043
2032	\$0	\$0	(\$106)	\$0	\$0	(\$112)	(\$94)	(\$172)	\$0	\$484	\$484	\$1,094
2033	\$0	\$0	(\$108)	\$0	\$0	(\$114)	(\$96)	(\$177)	\$0	\$495	\$495	\$1,143
2034	\$0	\$0	(\$110)	\$0	\$0	(\$116)	(\$98)	(\$183)	\$0	\$506	\$506	\$1,188
<b>Nominal NPV</b>		\$6	(\$167)	\$0	\$0	(\$2,293)	(\$1,966)	(\$3,174)	\$1,705	\$9,300	\$7,595	
<b>Discount Rate =</b>		8.65%										
<b>Benefit/Cost Ratio =</b>		2.04										

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**Participants' Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12
Year	Customer Equip Costs (\$000s)	Customer O&M Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Change in Participants' Electric Bills (\$000s)	Tax Credits (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$55	(\$2)	\$0	\$0	(\$4)	\$0	\$8	\$55	\$14	(\$41)	(\$41)
2006	\$112	(\$6)	\$0	\$0	(\$12)	\$0	\$17	\$112	\$34	(\$78)	(\$112)
2007	\$171	(\$12)	\$0	\$0	(\$23)	\$0	\$26	\$171	\$61	(\$110)	(\$205)
2008	\$232	(\$20)	\$0	\$0	(\$38)	\$0	\$35	\$232	\$93	(\$139)	(\$314)
2009	\$236	(\$29)	\$0	\$0	(\$54)	\$0	\$35	\$236	\$118	(\$118)	(\$399)
2010	\$241	(\$38)	\$0	\$0	(\$70)	\$0	\$36	\$241	\$144	(\$97)	(\$462)
2011	\$245	(\$47)	\$0	\$0	(\$90)	\$0	\$37	\$245	\$174	(\$71)	(\$506)
2012	\$249	(\$57)	\$0	\$0	(\$107)	\$0	\$37	\$249	\$202	(\$48)	(\$533)
2013	\$254	(\$67)	\$0	\$0	(\$124)	\$0	\$38	\$254	\$229	(\$25)	(\$545)
2014	\$259	(\$77)	\$0	\$0	(\$144)	\$0	\$39	\$259	\$260	\$1	(\$545)
2015	\$0	(\$78)	\$0	\$0	(\$147)	\$0	\$0	\$0	\$225	\$225	(\$447)
2016	\$0	(\$80)	\$0	\$0	(\$150)	\$0	\$0	\$0	\$230	\$230	(\$354)
2017	\$0	(\$81)	\$0	\$0	(\$153)	\$0	\$0	\$0	\$234	\$234	(\$268)
2018	\$0	(\$83)	\$0	\$0	(\$157)	\$0	\$0	\$0	\$240	\$240	(\$186)
2019	\$0	(\$84)	\$0	\$0	(\$160)	\$0	\$0	\$0	\$244	\$244	(\$110)
2020	\$0	(\$86)	\$0	\$0	(\$163)	\$0	\$0	\$0	\$249	\$249	(\$38)
2021	\$0	(\$87)	\$0	\$0	(\$167)	\$0	\$0	\$0	\$254	\$254	\$29
2022	\$0	(\$89)	\$0	\$0	(\$172)	\$0	\$0	\$0	\$260	\$260	\$93
2023	\$0	(\$90)	\$0	\$0	(\$175)	\$0	\$0	\$0	\$266	\$266	\$152
2024	\$0	(\$92)	\$0	\$0	(\$177)	\$0	\$0	\$0	\$269	\$269	\$208
2025	\$0	(\$94)	\$0	\$0	(\$180)	\$0	\$0	\$0	\$274	\$274	\$260
2026	\$0	(\$95)	\$0	\$0	(\$182)	\$0	\$0	\$0	\$278	\$278	\$309
2027	\$0	(\$97)	\$0	\$0	(\$185)	\$0	\$0	\$0	\$282	\$282	\$354
2028	\$0	(\$99)	\$0	\$0	(\$187)	\$0	\$0	\$0	\$286	\$286	\$397
2029	\$0	(\$101)	\$0	\$0	(\$190)	\$0	\$0	\$0	\$291	\$291	\$436
2030	\$0	(\$102)	\$0	\$0	(\$193)	\$0	\$0	\$0	\$295	\$295	\$473
2031	\$0	(\$104)	\$0	\$0	(\$195)	\$0	\$0	\$0	\$300	\$300	\$508
2032	\$0	(\$106)	\$0	\$0	(\$198)	\$0	\$0	\$0	\$305	\$305	\$540
2033	\$0	(\$108)	\$0	\$0	(\$201)	\$0	\$0	\$0	\$309	\$309	\$571
2034	\$0	(\$110)	\$0	\$0	(\$204)	\$0	\$0	\$0	\$314	\$314	\$599
<b>Nominal</b>	\$2,054	(\$2,222)			(\$4,204)		\$308	\$2,054	\$6,734	\$4,680	
<b>NPV</b>	\$1,246	(\$605)	\$0	\$0	(\$1,145)	\$0	\$203	\$1,354	\$1,953	\$599	
<b>Discount Rate =</b>		8.65%									
<b>Benefit/Cost Ratio =</b>											

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Ratepayers' Impact Cost-Effectiveness Measure  
 Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Change in Electric Revenues (\$000)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits to All Customers (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$0	\$8	(\$4)	\$0	\$0	(\$2)	\$0	\$0	\$12	\$2	(\$10)	(\$10)
2006	\$0	\$0	\$17	(\$12)	\$0	(\$5)	(\$7)	\$0	\$0	\$29	\$12	(\$17)	(\$25)
2007	\$0	\$0	\$26	(\$23)	\$0	(\$11)	(\$13)	\$0	\$0	\$49	\$24	(\$25)	(\$47)
2008	\$0	\$1	\$35	(\$38)	\$0	(\$18)	(\$22)	\$0	\$0	\$74	\$40	(\$33)	(\$73)
2009	\$0	\$1	\$35	(\$54)	(\$30)	(\$26)	(\$32)	\$0	\$0	\$90	\$88	\$2	(\$74)
2010	\$0	\$1	\$36	(\$70)	(\$40)	(\$34)	(\$43)	\$0	\$0	\$107	\$116	\$10	(\$68)
2011	\$0	\$1	\$37	(\$90)	(\$50)	(\$42)	(\$52)	\$0	\$0	\$127	\$144	\$17	(\$58)
2012	\$0	\$1	\$37	(\$107)	(\$60)	(\$50)	(\$67)	\$0	\$0	\$145	\$176	\$31	(\$40)
2013	\$0	\$1	\$38	(\$124)	(\$70)	(\$59)	(\$81)	\$0	\$0	\$163	\$210	\$47	(\$16)
2014	\$0	\$1	\$39	(\$144)	(\$81)	(\$68)	(\$96)	\$0	\$0	\$184	\$245	\$62	\$13
2015	\$0	\$0	\$0	(\$147)	(\$82)	(\$69)	(\$99)	\$0	\$0	\$147	\$251	\$104	\$58
2016	\$0	\$0	\$0	(\$150)	(\$84)	(\$71)	(\$104)	\$0	\$0	\$150	\$258	\$108	\$102
2017	\$0	\$0	\$0	(\$153)	(\$85)	(\$72)	(\$106)	\$0	\$0	\$153	\$263	\$110	\$142
2018	\$0	\$0	\$0	(\$157)	(\$87)	(\$73)	(\$110)	\$0	\$0	\$157	\$270	\$113	\$181
2019	\$0	\$0	\$0	(\$160)	(\$88)	(\$75)	(\$111)	\$0	\$0	\$160	\$274	\$114	\$216
2020	\$0	\$0	\$0	(\$163)	(\$90)	(\$76)	(\$119)	\$0	\$0	\$163	\$285	\$122	\$252
2021	\$0	\$0	\$0	(\$167)	(\$92)	(\$77)	(\$123)	\$0	\$0	\$167	\$292	\$125	\$285
2022	\$0	\$0	\$0	(\$172)	(\$93)	(\$79)	(\$124)	\$0	\$0	\$172	\$296	\$125	\$315
2023	\$0	\$0	\$0	(\$175)	(\$95)	(\$80)	(\$129)	\$0	\$0	\$175	\$304	\$129	\$344
2024	\$0	\$0	\$0	(\$177)	(\$97)	(\$82)	(\$134)	\$0	\$0	\$177	\$312	\$135	\$372
2025	\$0	\$0	\$0	(\$180)	(\$98)	(\$83)	(\$138)	\$0	\$0	\$180	\$320	\$140	\$399
2026	\$0	\$0	\$0	(\$182)	(\$100)	(\$84)	(\$143)	\$0	\$0	\$182	\$327	\$145	\$424
2027	\$0	\$0	\$0	(\$185)	(\$102)	(\$86)	(\$147)	\$0	\$0	\$185	\$335	\$151	\$448
2028	\$0	\$0	\$0	(\$187)	(\$104)	(\$88)	(\$152)	\$0	\$0	\$187	\$343	\$156	\$472
2029	\$0	\$0	\$0	(\$190)	(\$106)	(\$89)	(\$157)	\$0	\$0	\$187	\$352	\$162	\$494
2030	\$0	\$0	\$0	(\$193)	(\$108)	(\$91)	(\$162)	\$0	\$0	\$190	\$360	\$168	\$515
2031	\$0	\$0	\$0	(\$195)	(\$110)	(\$92)	(\$167)	\$0	\$0	\$195	\$369	\$173	\$535
2032	\$0	\$0	\$0	(\$198)	(\$112)	(\$94)	(\$172)	\$0	\$0	\$198	\$378	\$179	\$554
2033	\$0	\$0	\$0	(\$201)	(\$114)	(\$96)	(\$177)	\$0	\$0	\$201	\$387	\$186	\$572
2034	\$0	\$0	\$0	(\$204)	(\$116)	(\$98)	(\$183)	\$0	\$0	\$204	\$396	\$192	\$589
<b>Nominal NPV</b>		\$6	\$308	(\$4,204)	(\$2,293)	(\$1,966)	(\$3,174)			\$4,518	\$7,433	\$2,915	
<b>Discount Rate =</b>		8.65%						\$0	\$0	\$1,352	\$1,941	\$589	
<b>Benefit/Cost Ratio =</b>		1.44											

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## 2005 Demand-Side Management Plan

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### Commercial/Industrial Energy Analysis Program

- **Program Description**

The Commercial/Industrial (C/I) Energy Analysis Program is an interactive program that provides C/I customers assistance in identifying energy conservation opportunities. This program is a prime tool for the Gulf Power Company C/I Energy Specialist to personally introduce customers to conservation measures including low or no-cost improvements or new electro-technologies to replace old or inefficient equipment. Further, this program facilitates the load factor improvement process necessary to increase performance for both the customer and Gulf Power Company.

The C/I Energy Analysis Program allows the customer three primary ways to participate. A basic Energy Analysis Audit (EAA) is provided through either an on-site survey or a direct mail survey analysis. Additionally, a more comprehensive analysis can be provided by conducting a Technical Assistance Audit (TAA). These three methods are described below.

### Energy Analysis Audit Program

- **Program Description**

The EAA process consists of an on-site review of the customer's facility operation, equipment, and energy usage pattern by the C/I Energy Specialist. The specialist identifies all areas of potential reduction in kW demand and kWh consumption. Information is provided which includes an energy use summary and energy management options. This evaluation presents opportunities for reducing electrical operating costs that were revealed by the on-site evaluation.

## 2005 Demand-Side Management Plan

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Gulf Power Company also offers a direct mail energy analysis tool. C/I customers are sent an introductory letter along with a basic questionnaire. The letter explains how the program works and the benefits the customer will receive by participating. The customer completes the questionnaire and returns it to Gulf Power Company. The customer is then mailed a comprehensive energy analysis that includes billing history data and energy evaluation recommendations based on the information provided. Recommendations are primarily standardized and encourage the customer to implement measures that, if cost-effective, move the customer beyond the efficiency level typically installed in the marketplace.

- **Participation Standards**

The EAA Program is available to all C/I customers served by Gulf Power Company. The program is designed to involve the business owner, management, or person responsible for energy related decisions for the business operations. Customers are notified of this no-cost service every six months as specified in Rule 25-17.003 of the Florida Administrative Code.

- **Benefits and Costs**

Benefits for Gulf Power Company's C/I customers are achieved through the customer's participation in the program. The customer analysis is specific to each customer's business operations. The analysis makes customer specific recommendations for improving profitability by lowering energy cost. After reviewing the customer's energy use, the analysis provides the customer with energy management strategies to enhance their overall business operations. New technologies and other ideas are provided to help individual businesses

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control energy costs. Gulf Power Company expects a summer and winter peak reduction of 1.6 kW per analysis and an annual 5,886 kWh savings.

### Technical Assistance Audit Program

- **Program Description**

The TAA Program is an interactive program that provides C/I customers assistance in identifying advanced energy conservation opportunities. It is customized to meet the individual needs of large customers as required; therefore, it is an evolving program. The TAA process consists of an on-site review by the C/I Energy Specialist of the customer's facility operation, equipment, and energy usage pattern. The specialist identifies all areas of potential reduction in kW demand and kWh consumption as well as identifying end-use technology opportunities. A technical evaluation is then performed which often includes providing an in-house energy simulation program model (EnerSim), in order to ascertain an economic payback or life cycle cost analysis for various improvements to the facility. When necessary, Gulf Power Company will subcontract the evaluation process to an independent engineering firm and/or contracting consultant.

- **Participation Standards**

The TAA Program is available to all C/I customers with a minimum annual peak demand of 20 kW, as a follow-up to the EAA process. Customers are notified of this no-cost service every six months as specified in Rule 25-17.003 of the Florida Administrative Code.

- **Benefits and Costs**

The TAA provides specific recommendations on energy conservation opportunities for the customer. The cost to the customer will be based on the recommendations regarding

## 2005 Demand-Side Management Plan

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equipment, operational options, or other suggestions. The age of the existing stock of appliances and building structure envelope are key determinants in the cost of implementation to the customer. Because the program provides specific and unique options to the customer, gross or average cost estimates are not computed. The benefits to Gulf Power Company are energy conservation as well as improved customer satisfaction. In recent research of C/I customers, consistent response for areas of improvement from this class of customer include this type of individualized attention and service in helping them improve their cost of operation and efficiency.

- **Monitoring and Evaluation**

The on-site review portion of the EAA Program will track participating customers via Gulf Power Company's Account Reporting System (GARS). The direct mail survey portion of the EAA program is evaluated annually by the number of analyses performed and the cost per analysis. A computerized database is used to track and record each analysis and method of request for the analysis. Each year, a representative customer sample will be drawn to compare customer demand and energy usage before and after the audits were performed to analyze the effectiveness of the program. Monitoring and evaluation of the TAA will be administered on a case by case basis. Energy efficiency levels resulting in lower operating costs, improved customer perception, and kW and kWh reductions will be monitored in determining the effectiveness of this program. Gulf Power Company will also monitor this program through its existing GARS.

- **Cost-Effectiveness**

Not applicable.

### Commercial/Industrial Energy Analysis Program

<b>At the Meter</b>						
<b>Year</b>	<b>Per Customer kWh Reduction</b>	<b>Per Customer Winter kW Reduction</b>	<b>Per Customer Summer kW Reduction</b>	<b>Total Annual kWh Reduction</b>	<b>Total Annual Winter kW Reduction</b>	<b>Total Annual Summer kW Reduction</b>
2005	5,886	1.60	1.60	1,765,800	480	480
2006	5,886	1.60	1.60	1,765,800	480	480
2007	5,886	1.60	1.60	1,765,800	480	480
2008	5,886	1.60	1.60	1,765,800	480	480
2009	5,886	1.60	1.60	1,765,800	480	480
2010	5,886	1.60	1.60	1,765,800	480	480
2011	5,886	1.60	1.60	1,765,800	480	480
2012	5,886	1.60	1.60	1,765,800	480	480
2013	5,886	1.60	1.60	1,765,800	480	480
2014	5,886	1.60	1.60	1,765,800	480	480

<b>At the Generator</b>						
<b>Year</b>	<b>Per Customer kWh Reduction</b>	<b>Per Customer Winter kW Reduction</b>	<b>Per Customer Summer kW Reduction</b>	<b>Total Annual kWh Reduction</b>	<b>Total Annual Winter kW Reduction</b>	<b>Total Annual Summer kW Reduction</b>
2005	6,416	2.10	2.10	1,924,722	630	630
2006	6,416	2.10	2.10	1,924,722	630	630
2007	6,416	2.10	2.10	1,924,722	630	630
2008	6,416	2.10	2.10	1,924,722	630	630
2009	6,416	2.10	2.10	1,924,722	630	630
2010	6,416	2.10	2.10	1,924,722	630	630
2011	6,416	2.10	2.10	1,924,722	630	630
2012	6,416	2.10	2.10	1,924,722	630	630
2013	6,416	2.10	2.10	1,924,722	630	630
2014	6,416	2.10	2.10	1,924,722	630	630

<b>Customers and Participation Rates</b>					
<b>Year</b>	<b>Total Number of Customers</b>	<b>Total Number of Eligible Customers</b>	<b>Annual Number of Program Participants</b>	<b>Cumulative Penetration Level %</b>	<b>Cumulative Number of Program Participants</b>
2005	53,201	46,070	300	0.7%	300
2006	54,246	46,926	300	1.3%	600
2007	55,343	47,833	300	1.9%	900
2008	56,575	48,869	300	2.5%	1,200
2009	57,977	50,058	300	3.0%	1,500
2010	59,448	51,305	300	3.5%	1,800
2011	60,894	52,528	300	4.0%	2,100
2012	62,331	53,743	300	4.5%	2,400
2013	63,983	55,148	300	4.9%	2,700
2014	65,635	56,553	300	5.3%	3,000

## 2005 Demand-Side Management Plan

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### Real Time Pricing Program

- **Program Description**

On February 7, 1995, the FPSC approved Gulf Power Company's proposed Real Time Pricing (RTP) rate schedule as a pilot program. The rate was made available 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 initially limited to twelve (12) customers. The first group of six customers volunteered for the pilot in February and March 1995. The pilot program was modified in December 1996 to allow up to a maximum of twenty-four (24) customers to participate in the pilot. Increasing the number of potential participants allowed the Company to broaden the base and gain information on different customer segments' response to alternative price offerings. After granting an extension of the pilot in the summer of 1999, the FPSC approved RTP as a regular (non-pilot) rate effective September 1, 1999.

- **Program Objective**

As a condition of the pilot program, Gulf Power Company was required to file with the FPSC a final report evaluating the effectiveness of the program. Two of the sections of that report dealt with customer response and conservation. An independent research firm conducted a statistical analysis of the customer response to hourly price signals over the period of January 1997 through September 1998. The analytical work consisted of twenty (20) customers divided into five market segments: industrial, government, health care, other commercial, and other commercial with on-site generation.

The industrial segment showed the most responsiveness to hourly prices. This is largely because this segment has access to on-site or co-generation facilities, processes that allow



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shifting of production, or other energy management control systems or procedures. The maximum hourly response to hourly prices was estimated to be 24.5 mW with industrial contributing 17.5 mW and the remaining segments contributing 7.0 mW.

Real time pricing has proven to conserve peak demand resources and was well received by customers participating in the pilot program.

- **Participation Standards**

Participation under the regular real time pricing schedule is limited to customers with an annual peak demand of not less than 2,000 kW served by Gulf Power Company. For customers who did not participate in the pilot program, a five-year contract was required. In the last rate proceeding before the FPSC, the contract period was changed from a five-year contract to a one-year contract. That change, effective in June 2002, for all program participants enrolling thereafter, has proved important in increasing the number of participants by ten (10) between June 2002 and October 2004.

- **Cost-Effectiveness**

The RTP program is cost-effective using the FPSC's approved methodology (Rule 25-17.008). The cost effectiveness analyses are included in Attachment B. The cost-effectiveness analysis used the most recent planning data available. Gulf Power had eight

## 2005 Demand-Side Management Plan

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customers on the RTP rate during 2003. To estimate the demand savings, Gulf analyzed the billing and metering data for these customers which indicate an average program savings of 2,000 kW summer demand and 1,000 kW winter demand per customer. The cost-effectiveness test also used known program costs for administration and recurring costs related to this program. Seventeen (17) customers are presently on the RTP schedule (as of October 31, 2004).

Because the RTP rate is voluntary, the cost-effectiveness can change based on the number and type of customers participating in the program. Gulf Power Company believes the current customers constitute the best core of candidates to participate and remain on the rate. The pilot study also provided an indication of when other customers would be willing to participate. These customers indicated RTP provides the most benefits when they are able to respond.

Gulf Power Company believes new customers or returning participants will choose RTP after they have invested in energy management systems or other load shedding technologies to respond to hourly prices. The cost-effectiveness would not be expected to diminish below 1.0 over time with additional customer participation. Gulf Power expects an additional nine participants to be added to the RTP program during the plan period.

### Real Time Pricing Program

<b>At the Meter</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	...	1,000	2,000	...	5,000	10,000
2006	...	1,000	2,000	...	2,000	4,000
2007	...	1,000	2,000	...	2,000	4,000
2008	...	1,000	2,000	...	0	0
2009	...	1,000	2,000	...	0	0
2010	...	1,000	2,000	...	0	0
2011	...	1,000	2,000	...	0	0
2012	...	1,000	2,000	...	0	0
2013	...	1,000	2,000	...	0	0
2014	...	1,000	2,000	...	0	0

<b>At the Generator</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	...	1,313	2,627	...	6,567	13,133
2006	...	1,313	2,627	...	2,627	5,253
2007	...	1,313	2,627	...	2,627	5,253
2008	...	1,313	2,627	...	0	0
2009	...	1,313	2,627	...	0	0
2010	...	1,313	2,627	...	0	0
2011	...	1,313	2,627	...	0	0
2012	...	1,313	2,627	...	0	0
2013	...	1,313	2,627	...	0	0
2014	...	1,313	2,627	...	0	0

<b>Customers and Participation Rates</b>					
<u>Year</u>	<u>Total Number of Customers</u>	<u>Total Number of Eligible Customers</u>	<u>Annual Number of Program Participants</u>	<u>Cumulative Penetration Level %</u>	<u>Cumulative Number of Program Participants</u>
2005	53,522	46	5	10.9%	5
2006	54,570	46	2	15.2%	7
2007	55,670	46	2	19.6%	9
2008	56,905	46	0	19.6%	9
2009	58,310	46	0	19.6%	9
2010	59,784	46	0	19.6%	9
2011	61,233	46	0	19.6%	9
2012	62,673	46	0	19.6%	9
2013	64,328	46	0	19.6%	9
2014	65,983	46	0	19.6%	9

INPUT DATA -- PART 1

Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code

I. Program Demand Impacts and Line Losses

(1) Change in Peak kW Customer at meter	-2000.00	kW/Cus
(2) Change in Peak kW per Customer at generator	-2626.90	kW Gen/Cus
(3) kW Line Loss Percentage	14.21%	
(4) Change in kWh per Customer at generator	1,522,299	kWh/Cus/Yr
(5) kWh Line Loss Percentage	9.00%	
(6) Group Line Loss Multiplier	1.0007	
(7) Annual Change in Customer kWh at Meter	1,396,605	kWh/Cus/Yr
(8) Change in Winter kW per Cust at meter	-1000.00	kW/Cus

II. Economic Life and K-Factors

(1) DSM Program Study Period	30	Years
(2) Economic Life of Incremental Generation	30	Years
(3) Economic Life of Incremental T&D	35	Years
(4) K-Factor for Generation	1.4939	
(5) K-Factor for T&D	1.5025	
(6) Switch: Rev Req (0) or Val-of-Def (1)	1	

III. Utility & Customer Costs

(1) Utility Nonrecurring Cost Per Customer	\$5,000.00	\$/Cus
(2) Utility Recurring Cost Per Customer	\$0.00	\$/Cus/Year
(3) Utility Cost Escalation Rate	1.81%	
(4) Customer Equipment Cost	\$0.00	\$/Cus
(5) Customer Equipment Cost Escalation Rate	1.81%	
(6) Customer O&M Cost	\$0.00	\$/Cus/Year
(7) Customer O&M Cost Escalation Rate	1.81%	
(8) Customer Tax Credit Per Installation	\$0.00	\$/Cus
(9) Customer Tax Credit Escalation Rate	1.81%	
(10) Change in Supply Costs	\$0.00	\$/Cus/Year
(11) Supply Costs Escalation Rate	1.81%	
(12) Utility Discount Rate	8.65%	
(13) Utility AFUDC Rate	7.48%	
(14) Utility Nonrecurring Rebate/Incentive	\$0.00	\$/Cus
(15) Utility Recurring Rebate/Incentive	\$128,415.00	\$/Cus/Year
(16) Utility Rebate/Incentive Escalation Rate	1.81%	

IV. Incremental Generation, Transmission, & Distribution Costs

(1) Base Year	2005	
(2) In-Service Year For Incremental Generation	2009 **	
(3) In-Service Year For Incremental T & D	2006	
(4) Base Year Incremental Generation Cost	\$403.18	\$/kW
(5) Base Year Incremental Transmission Cost	\$241.00	\$/kW
(6) Base Year Incremental Distribution Cost	\$63.29	\$/kW
(7) Gen, Tran, & Dist Cost Escalation Rate	1.81%	
(8) Generator Fixed O & M Cost	\$2.70	\$/kW/Yr
(9) Generator Fixed O&M Escalation Rate	1.81%	
(10) Transmission Fixed O & M Cost	\$3.01	\$/kW/Yr
(11) Distribution Fixed O & M Cost	\$1.58	\$/kW/Yr
(12) T&D Fixed O&M Escalation Rate	1.81%	
(13) Incremental Gen Variable O & M Costs	\$0.442	\$/kW/Yr
(14) Incre Gen Variable O&M Cost Esc Rate	1.56%	
(15) Incremental Gen Capacity Factor	0.17%	
(16) Incremental Generating Unit Fuel Cost	\$0.0635	\$/kWh
(17) Incremental Gen Unit Fuel Esc Rate	1.98%	
(18) Incremental Purchased Capacity Cost	\$43.08	\$/kW/YR
(19) Incremental Capacity Cost Esc Rate	1.81%	

Stop Revenue Loss at In-Service Year? (Y=1, N=0) 0

V. (1) Non-Fuel Cost In Customer Bill (Base Year)

(1) Non-Fuel Cost In Customer Bill (Base Year)	\$0.0168	\$/kWh
(2) Non-Fuel Escalation Rate	Per Table	
(3) Customer Demand Charge Per kW (Base Year)	\$0.0000	\$/kW/Mo
(4) Demand Charge Escalation Rate	Per Table	
(5) Average Annual Change in Monthly Billing kW	0	kW/Mo.

Summary Results for This Analysis

	RIM	Participants'
NPV Benefits(\$000s)	\$28,733	\$14,991
NPV Costs (\$000s)	\$20,707	\$6,128
NPV Net Benefits (\$000s)	\$8,026	\$8,863
Benefit:Cost Ratio	1.388	2.446

\* Supplemental information.

\*\* The relevant avoidable generation unit is a combustion turbine peaking unit. Since the kilowatt savings occur at the time of the system peak, this is the appropriate unit against which to measure cost savings.

Total Resource Cost-Effectiveness Measure  
 Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code

1	2	3	4	5	6	7	8	9	10	11	12	13
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Participants' Program Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Incremental Generation Cap Costs (\$000s)	Incremental T&D Cap Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$25	\$0	\$0	\$0	\$0	\$0	\$242	\$267	\$0	(\$267)	(\$267)
2006	\$0	\$10	\$0	\$0	\$0	\$0	(\$738)	\$319	\$329	\$738	\$409	\$109
2007	\$0	\$10	\$0	\$0	\$0	\$0	(\$965)	\$398	\$408	\$965	\$557	\$581
2008	\$0	\$0	\$0	\$0	\$0	\$0	(\$983)	\$396	\$396	\$983	\$587	\$1,038
2009	\$0	\$0	\$0	\$0	\$0	(\$1,189)	(\$1,001)	\$404	\$404	\$2,189	\$1,786	\$2,320
2010	\$0	\$0	\$0	\$0	\$0	(\$1,210)	(\$1,019)	\$421	\$421	\$2,229	\$1,807	\$3,513
2011	\$0	\$0	\$0	\$0	\$0	(\$1,231)	(\$1,037)	\$422	\$422	\$2,269	\$1,847	\$4,636
2012	\$0	\$0	\$0	\$0	\$0	(\$1,254)	(\$1,056)	\$454	\$454	\$2,310	\$1,856	\$5,674
2013	\$0	\$0	\$0	\$0	\$0	(\$1,277)	(\$1,075)	\$479	\$479	\$2,352	\$1,873	\$6,639
2014	\$0	\$0	\$0	\$0	\$0	(\$1,299)	(\$1,095)	\$503	\$503	\$2,394	\$1,891	\$7,535
2015	\$0	\$0	\$0	\$0	\$0	(\$1,323)	(\$1,114)	\$516	\$516	\$2,437	\$1,921	\$8,373
2016	\$0	\$0	\$0	\$0	\$0	(\$1,347)	(\$1,135)	\$542	\$542	\$2,481	\$1,939	\$9,151
2017	\$0	\$0	\$0	\$0	\$0	(\$1,371)	(\$1,155)	\$551	\$551	\$2,526	\$1,975	\$9,881
2018	\$0	\$0	\$0	\$0	\$0	(\$1,396)	(\$1,176)	\$575	\$575	\$2,572	\$1,997	\$10,560
2019	\$0	\$0	\$0	\$0	\$0	(\$1,421)	(\$1,197)	\$580	\$580	\$2,618	\$2,038	\$11,198
2020	\$0	\$0	\$0	\$0	\$0	(\$1,447)	(\$1,219)	\$623	\$623	\$2,666	\$2,042	\$11,786
2021	\$0	\$0	\$0	\$0	\$0	(\$1,473)	(\$1,241)	\$644	\$644	\$2,714	\$2,070	\$12,335
2022	\$0	\$0	\$0	\$0	\$0	(\$1,499)	(\$1,284)	\$650	\$650	\$2,763	\$2,113	\$12,850
2023	\$0	\$0	\$0	\$0	\$0	(\$1,526)	(\$1,286)	\$675	\$675	\$2,812	\$2,138	\$13,330
2024	\$0	\$0	\$0	\$0	\$0	(\$1,554)	(\$1,310)	\$699	\$699	\$2,863	\$2,165	\$13,778
2025	\$0	\$0	\$0	\$0	\$0	(\$1,582)	(\$1,333)	\$721	\$721	\$2,915	\$2,194	\$14,195
2026	\$0	\$0	\$0	\$0	\$0	(\$1,610)	(\$1,358)	\$745	\$745	\$2,968	\$2,223	\$14,584
2027	\$0	\$0	\$0	\$0	\$0	(\$1,640)	(\$1,382)	\$769	\$769	\$3,022	\$2,253	\$14,947
2028	\$0	\$0	\$0	\$0	\$0	(\$1,669)	(\$1,407)	\$793	\$793	\$3,077	\$2,283	\$15,286
2029	\$0	\$0	\$0	\$0	\$0	(\$1,700)	(\$1,433)	\$818	\$818	\$3,132	\$2,314	\$15,602
2030	\$0	\$0	\$0	\$0	\$0	(\$1,730)	(\$1,459)	\$844	\$844	\$3,189	\$2,345	\$15,896
2031	\$0	\$0	\$0	\$0	\$0	(\$1,762)	(\$1,485)	\$871	\$871	\$3,247	\$2,376	\$16,171
2032	\$0	\$0	\$0	\$0	\$0	(\$1,794)	(\$1,512)	\$898	\$898	\$3,306	\$2,408	\$16,427
2033	\$0	\$0	\$0	\$0	\$0	(\$1,826)	(\$1,539)	\$926	\$926	\$3,365	\$2,440	\$16,666
2034	\$0	\$0	\$0	\$0	\$0	(\$1,859)	(\$1,567)	\$954	\$954	\$3,426	\$2,472	\$16,889
Nominal		\$46				(\$38,987)	(\$35,542)	\$18,432	\$18,478	\$74,529	\$56,051	
NPV		\$43	\$0	\$0	\$0	(\$11,040)	(\$11,565)	\$5,673	\$5,716	\$22,605	\$16,889	
Discount Rate =		8.65%										
Benefit/Cost Ratio =		3.95										

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**Participants' Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12
Year	Customer Equip Costs (\$000s)	Customer O&M Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Change in Participants' Electric Bills (\$000s)	Tax Credits (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$0	\$0	\$0	\$283	\$0	\$642	\$283	\$642	\$359	\$359
2006	\$0	\$0	\$0	\$0	\$380	\$0	\$915	\$380	\$915	\$535	\$852
2007	\$0	\$0	\$0	\$0	\$484	\$0	\$1,198	\$484	\$1,198	\$714	\$1,456
2008	\$0	\$0	\$0	\$0	\$472	\$0	\$1,220	\$472	\$1,220	\$748	\$2,039
2009	\$0	\$0	\$0	\$0	\$478	\$0	\$1,242	\$478	\$1,242	\$764	\$2,588
2010	\$0	\$0	\$0	\$0	\$484	\$0	\$1,264	\$484	\$1,264	\$780	\$3,103
2011	\$0	\$0	\$0	\$0	\$504	\$0	\$1,287	\$504	\$1,287	\$783	\$3,578
2012	\$0	\$0	\$0	\$0	\$515	\$0	\$1,310	\$515	\$1,310	\$796	\$4,024
2013	\$0	\$0	\$0	\$0	\$517	\$0	\$1,334	\$517	\$1,334	\$817	\$4,444
2014	\$0	\$0	\$0	\$0	\$534	\$0	\$1,358	\$534	\$1,358	\$824	\$4,835
2015	\$0	\$0	\$0	\$0	\$549	\$0	\$1,383	\$549	\$1,383	\$834	\$5,198
2016	\$0	\$0	\$0	\$0	\$565	\$0	\$1,408	\$565	\$1,408	\$843	\$5,537
2017	\$0	\$0	\$0	\$0	\$581	\$0	\$1,433	\$581	\$1,433	\$853	\$5,852
2018	\$0	\$0	\$0	\$0	\$602	\$0	\$1,459	\$602	\$1,459	\$857	\$6,143
2019	\$0	\$0	\$0	\$0	\$617	\$0	\$1,486	\$617	\$1,486	\$868	\$6,415
2020	\$0	\$0	\$0	\$0	\$632	\$0	\$1,513	\$632	\$1,513	\$880	\$6,669
2021	\$0	\$0	\$0	\$0	\$653	\$0	\$1,540	\$653	\$1,540	\$887	\$6,904
2022	\$0	\$0	\$0	\$0	\$677	\$0	\$1,568	\$677	\$1,568	\$891	\$7,121
2023	\$0	\$0	\$0	\$0	\$696	\$0	\$1,596	\$696	\$1,596	\$901	\$7,323
2024	\$0	\$0	\$0	\$0	\$708	\$0	\$1,625	\$708	\$1,625	\$917	\$7,513
2025	\$0	\$0	\$0	\$0	\$720	\$0	\$1,655	\$720	\$1,655	\$934	\$7,691
2026	\$0	\$0	\$0	\$0	\$733	\$0	\$1,684	\$733	\$1,684	\$952	\$7,857
2027	\$0	\$0	\$0	\$0	\$746	\$0	\$1,715	\$746	\$1,715	\$969	\$8,013
2028	\$0	\$0	\$0	\$0	\$759	\$0	\$1,746	\$759	\$1,746	\$987	\$8,160
2029	\$0	\$0	\$0	\$0	\$773	\$0	\$1,778	\$773	\$1,778	\$1,005	\$8,297
2030	\$0	\$0	\$0	\$0	\$787	\$0	\$1,810	\$787	\$1,810	\$1,023	\$8,425
2031	\$0	\$0	\$0	\$0	\$802	\$0	\$1,843	\$802	\$1,843	\$1,041	\$8,546
2032	\$0	\$0	\$0	\$0	\$817	\$0	\$1,876	\$817	\$1,876	\$1,059	\$8,658
2033	\$0	\$0	\$0	\$0	\$832	\$0	\$1,910	\$832	\$1,910	\$1,078	\$8,764
2034	\$0	\$0	\$0	\$0	\$847	\$0	\$1,944	\$847	\$1,944	\$1,097	\$8,863
<b>Nominal NPV</b>	\$0	\$0	\$0	\$0	\$18,746	\$0	\$44,741	\$18,746	\$44,741	\$25,995	\$8,863
<b>Discount Rate =</b>	8.65%										
<b>Benefit/Cost Ratio =</b>	2.45										

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**Ratepayers' Impact Cost-Effectiveness Measure**  
**Cost-Effectiveness Analysis per Rule 25-17.008 Florida Administrative Code**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year	Change in Electric Supply Costs (\$000s)	Utility's Program Costs (\$000s)	Utility Paid Rebates & Incentives (\$000s)	Change in Electric Revenues (\$000)	Incremental Generation Costs (\$000s)	Incremental T&D Costs (\$000s)	Incremental Prog Induced Fuel Costs (\$000s)	Other Costs (\$000s)	Other Benefits (\$000s)	Total Costs (\$000s)	Total Benefits (\$000s)	Total Net Benefits to All Customers (\$000s)	Cumulative Discounted Net Benefits (\$000s)
2005	\$0	\$25	\$642	\$283	\$0	\$0	\$242	\$0	\$0	\$909	\$283	(\$627)	(\$627)
2006	\$0	\$10	\$915	\$380	\$0	(\$738)	\$319	\$0	\$0	\$1,244	\$1,118	(\$126)	(\$743)
2007	\$0	\$10	\$1,198	\$484	\$0	(\$965)	\$398	\$0	\$0	\$1,606	\$1,450	(\$156)	(\$875)
2008	\$0	\$0	\$1,220	\$472	\$0	(\$983)	\$396	\$0	\$0	\$1,616	\$1,455	(\$162)	(\$1,001)
2009	\$0	\$0	\$1,242	\$478	(\$1,189)	(\$1,001)	\$404	\$0	\$0	\$1,645	\$2,667	\$1,022	(\$268)
2010	\$0	\$0	\$1,264	\$484	(\$1,210)	(\$1,019)	\$421	\$0	\$0	\$1,686	\$2,713	\$1,027	\$410
2011	\$0	\$0	\$1,287	\$504	(\$1,231)	(\$1,037)	\$422	\$0	\$0	\$1,709	\$2,773	\$1,065	\$1,057
2012	\$0	\$0	\$1,310	\$515	(\$1,254)	(\$1,056)	\$454	\$0	\$0	\$1,764	\$2,824	\$1,060	\$1,650
2013	\$0	\$0	\$1,334	\$517	(\$1,277)	(\$1,075)	\$479	\$0	\$0	\$1,813	\$2,869	\$1,056	\$2,194
2014	\$0	\$0	\$1,358	\$534	(\$1,299)	(\$1,095)	\$503	\$0	\$0	\$1,861	\$2,929	\$1,067	\$2,700
2015	\$0	\$0	\$1,383	\$549	(\$1,323)	(\$1,114)	\$516	\$0	\$0	\$1,899	\$2,987	\$1,087	\$3,174
2016	\$0	\$0	\$1,408	\$565	(\$1,347)	(\$1,135)	\$542	\$0	\$0	\$1,950	\$3,047	\$1,097	\$3,614
2017	\$0	\$0	\$1,433	\$581	(\$1,371)	(\$1,155)	\$551	\$0	\$0	\$1,985	\$3,107	\$1,122	\$4,029
2018	\$0	\$0	\$1,459	\$602	(\$1,396)	(\$1,176)	\$575	\$0	\$0	\$2,034	\$3,174	\$1,140	\$4,417
2019	\$0	\$0	\$1,486	\$617	(\$1,421)	(\$1,197)	\$580	\$0	\$0	\$2,086	\$3,236	\$1,170	\$4,783
2020	\$0	\$0	\$1,513	\$632	(\$1,447)	(\$1,219)	\$623	\$0	\$0	\$2,136	\$3,298	\$1,162	\$5,117
2021	\$0	\$0	\$1,540	\$653	(\$1,473)	(\$1,241)	\$644	\$0	\$0	\$2,184	\$3,367	\$1,183	\$5,431
2022	\$0	\$0	\$1,568	\$677	(\$1,499)	(\$1,264)	\$650	\$0	\$0	\$2,218	\$3,440	\$1,222	\$5,729
2023	\$0	\$0	\$1,596	\$696	(\$1,526)	(\$1,286)	\$675	\$0	\$0	\$2,271	\$3,508	\$1,237	\$6,007
2024	\$0	\$0	\$1,625	\$708	(\$1,554)	(\$1,310)	\$699	\$0	\$0	\$2,324	\$3,571	\$1,247	\$6,265
2025	\$0	\$0	\$1,655	\$720	(\$1,582)	(\$1,333)	\$721	\$0	\$0	\$2,376	\$3,635	\$1,259	\$6,504
2026	\$0	\$0	\$1,684	\$733	(\$1,610)	(\$1,358)	\$745	\$0	\$0	\$2,429	\$3,701	\$1,272	\$6,727
2027	\$0	\$0	\$1,715	\$746	(\$1,640)	(\$1,382)	\$769	\$0	\$0	\$2,484	\$3,768	\$1,284	\$6,934
2028	\$0	\$0	\$1,746	\$759	(\$1,669)	(\$1,407)	\$793	\$0	\$0	\$2,539	\$3,836	\$1,297	\$7,126
2029	\$0	\$0	\$1,778	\$773	(\$1,700)	(\$1,433)	\$818	\$0	\$0	\$2,596	\$3,905	\$1,309	\$7,305
2030	\$0	\$0	\$1,810	\$787	(\$1,730)	(\$1,459)	\$844	\$0	\$0	\$2,654	\$3,976	\$1,322	\$7,471
2031	\$0	\$0	\$1,843	\$802	(\$1,762)	(\$1,485)	\$871	\$0	\$0	\$2,713	\$4,048	\$1,335	\$7,625
2032	\$0	\$0	\$1,876	\$817	(\$1,794)	(\$1,512)	\$898	\$0	\$0	\$2,774	\$4,122	\$1,348	\$7,769
2033	\$0	\$0	\$1,910	\$832	(\$1,826)	(\$1,539)	\$926	\$0	\$0	\$2,835	\$4,197	\$1,362	\$7,902
2034	\$0	\$0	\$1,944	\$847	(\$1,859)	(\$1,567)	\$954	\$0	\$0	\$2,899	\$4,274	\$1,375	\$8,026
<b>Nominal</b>		\$46	\$44,741	\$18,746	(\$38,987)	(\$35,542)	\$18,432			\$63,218	\$93,275	\$30,057	
<b>NPV</b>		\$43	\$14,991	\$6,128	(\$11,040)	(\$11,565)	\$5,673	\$0	\$0	\$20,707	\$28,733	\$8,026	
<b>Discount Rate =</b>			8.65%										
<b>Benefit/Cost Ratio =</b>			1.39										

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### Energy Services Program

- **Program Description**

The Energy Services program is designed to establish the capability and process to offer advanced energy services and energy efficient end-use equipment to customers. It is customized to meet the individual needs of large customers as required; therefore, it is an evolving program. These energy services include comprehensive audits, design, and construction of energy conservation projects. Specifically, the types of projects covered under this program would be demand reduction or efficiency improvement retrofits, such as lighting (fluorescent and incandescent), motor replacements, HVAC retrofit (including geothermal applications), and new electro technologies. The program will be administered in three phases: (1) the energy audit; (2) the proposal; and (3) design/construction. The energy audit will be conducted under the existing FPSC approved audit program. Gulf Power Company currently has full cost recovery of expenses associated with evaluating energy efficiency opportunities in commercial and industrial facilities. Once the customer accepts audit recommendations, Gulf Power will develop a scope and price proposal for the project.

The Technical Assistance Audit (TAA) identifies customer opportunities for efficiency, demand reduction, and/or end-use technology opportunities. In cases where the economic payback is less than two years, the customer has the proper economic incentive to make the proposed changes outlined in the TAAs. Gulf Power will provide follow-up monitoring to identify customer conservation efforts from the audit.

When conservation projects identified in the TAA are promising and cost effective but exceed an acceptable customer payback period (greater than two years), Gulf Power Company will offer a cost-effective incentive to the customer. The incentive would be



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developed on a project specific basis and used to reduce the payback period for the customer. Any proposed incentive to implement kW and/or kWh reduction project will be driven by a minimum Rate Impact Measure (RIM) analysis which results in a 1.0 RIM value or greater after the incentive inclusion. The RIM analysis will be done on a case by case basis.

- **Participation Standards**

This program will be limited to commercial and industrial customers with a minimum annual peak demand of 20 kW served by Gulf Power. Any of these customers may receive a TAA along with simple payback or life cycle cost analysis.

For those participants with kW and/or kWh reduction potential, who fail to meet a minimum simple payback of two years, the conservation reduction incentive may be made available. Applicability would be based upon a RIM analysis equal to or exceeding 1.01 after the incentive has been applied.

- **Benefits and Costs**

The TAA provides specific recommendations on energy conservation opportunities for the customer. The cost to customer will be based on the recommendations regarding equipment, operational options, or other suggestions. The age of the existing stock of appliances and building structure envelope are key determinates in the cost of implementation to the customer. Because the program provides specific and unique options to the customer, gross or average cost estimates are not computed.

The benefits to Gulf Power Company are energy conservation as well as improved customer satisfaction. In recent research of commercial/industrial customers, consistent response for

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areas of improvement from this class of customer include this type of individualized attention and service in helping them improve their cost of operation and efficiency.

- **Monitoring and Evaluation**

Monitoring and evaluation of the Energy Services Program will be administered on a case by case basis. Energy efficiency levels resulting in lower operating costs, improved customer perception, and kW and kWh reductions will be monitored in determining the effectiveness of this program. Gulf Power will also monitor this program through its existing Gulf Account Reporting System (GARS) which enables the tracking of participating customers.

- **Cost-Effectiveness**

The TAAs are provided at no cost to commercial and industrial customers. As an audit program, the TAA portion of the program does not need to meet a cost-effectiveness test. Conservation recommendations implemented as a result of the TAA which have a simple payback period of two years or less will not be recovered by Gulf Power Company through the Energy Conservation Cost Recovery clause.

Projects potentially qualifying for a conservation incentive would be required to pass a cost – effectiveness test with a RIM value of 1.0 or greater including the incentive. The cost-effectiveness analyses will be performed on a case by case basis and be made available at the time of cost recovery for each project.

## Energy Services Program

<b>At the Meter</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	...	...	...	1,178,470	510	275
2006	...	...	...	1,178,470	510	275
2007	...	...	...	1,178,470	510	275
2008	...	...	...	1,178,470	510	275
2009	...	...	...	1,178,470	510	275
2010	...	...	...	1,178,470	510	275
2011	...	...	...	1,178,470	510	275
2012	...	...	...	1,178,470	510	275
2013	...	...	...	1,178,470	510	275
2014	...	...	...	1,178,470	510	275

<b>At the Generator</b>						
<u>Year</u>	<u>Per Customer kWh Reduction</u>	<u>Per Customer Winter kW Reduction</u>	<u>Per Customer Summer kW Reduction</u>	<u>Total Annual kWh Reduction</u>	<u>Total Annual Winter kW Reduction</u>	<u>Total Annual Summer kW Reduction</u>
2005	...	...	...	1,284,532	670	361
2006	...	...	...	1,284,532	670	361
2007	...	...	...	1,284,532	670	361
2008	...	...	...	1,284,532	670	361
2009	...	...	...	1,284,532	670	361
2010	...	...	...	1,284,532	670	361
2011	...	...	...	1,284,532	670	361
2012	...	...	...	1,284,532	670	361
2013	...	...	...	1,284,532	670	361
2014	...	...	...	1,284,532	670	361

<b>Customers and Participation Rates</b>					
<u>Year</u>	<u>Total Number of Customers</u>	<u>Total Number of Eligible Customers</u>	<u>Annual Number of Program Participants</u>	<u>Cumulative Penetration Level %</u>	<u>Cumulative Number of Program Participants</u>
2005	53,522	46,382	...	...	...
2006	54,570	47,240	...	...	...
2007	55,670	48,151	...	...	...
2008	56,905	49,189	...	...	...
2009	58,310	50,382	...	...	...
2010	59,784	51,632	...	...	...
2011	61,233	52,858	...	...	...
2012	62,673	54,076	...	...	...
2013	64,328	55,484	...	...	...
2014	65,983	56,892	...	...	...

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## **Renewable Energy Program**

The Renewable Energy Program encompasses a variety of voluntary renewable/green energy initiatives implemented and under development by Gulf Power Company. These voluntary options for customers will include, but not be limited to, the Photovoltaic Optional Rate Rider and the Solar for Schools program. The Renewable Energy Program also will include research and administrative costs to study additional renewable/green energy offerings utilizing various renewable/green energy sources.

The Renewable Energy Program will be available to all customers served by Gulf Power. Customers will be able to select one or more of the voluntary options from the Renewable Energy Programs.

### **Solar for Schools**

- **Program Description**

The principle objective of the Solar for Schools program is to implement cost-effective solar education and demonstration projects at local educational facilities by means of voluntary contributions. The program also seeks to increase renewable energy and energy awareness among students, parents, and contributors.

Solar for Schools is a program that uses voluntary contributions to fund materials for energy education, permanent demonstration displays, rewards for science contests, and teacher education. Voluntary contributions are solicited from customers interested in renewable

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energy and/or helping to improve the educational offerings of schools in the Gulf Power Company service area. Funds are collected through a “check-off” mechanism on the utility bill or through a direct contribution and accumulated in an interest bearing account. When contributions reach an adequate level, they are directed to an educational facility for implementation of various solar educational programs and for the installation of solar equipment. Contributions are not used for administrative costs, program research or for program promotion costs.

- **Participation Standards**

All schools, museums, and other non-profit educational facilities served by Gulf Power are eligible to participate in the Solar for Schools program. Candidate facilities must adhere to the guidelines specified in the Photovoltaic Solar Panel Array Agreement. Upon notification of the availability of funds, the candidate school may elect to become a participant and implement one of the programs as described in the previous section.

- **Benefits and Costs**

The educational aspects of the Solar for Schools program encourages students and teachers to learn about solar and other renewable energy sources and how they interact and impact the environment. Through participation in educational seminars, teachers are motivated to bring lessons back to the classroom and share ideas, projects, and experiences with other teachers and students. Students are encouraged to demonstrate these lessons by entering competitive science projects in science fairs. Gulf Power Company benefits by having a forum to educate students and teachers on solar and other renewable energy sources.

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The direct program cost will continue to be funded by voluntary contributions. Funds are collected through a “check-off “ mechanism on the utility bill or through a direct contribution and accumulated in an interest bearing account. The cost to fund materials for energy education, permanent demonstration displays, rewards for science contests, teacher education, etc. is borne by these voluntary contributions. Any administrative, research and promotional costs will be recovered through ECCR.

- **Monitoring and Evaluation**

The Solar for Schools Program will be analyzed for participant school interest, public interest, actual contribution levels achieved, and operating and administrative costs. The program results will be reported each calendar year.

- **Cost-Effectiveness**

Not applicable.

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### **Photovoltaic Optional Rate Rider (PV)**

- **Program Description**

The PV Rate Rider is an optional rate for Gulf Power Company customers. Customers may purchase photovoltaic energy in 100-watt blocks. Multiple blocks may be purchased. Power purchased or produced from photovoltaic facilities may not be specifically delivered to the customer, but will displace power that would have otherwise been produced from traditional generating facilities.

The construction of the photovoltaic facility or power purchased from photovoltaic facilities will begin upon the attainment of sufficient commitments from all participants across the Southern Company electric system where the option is available and, as necessary, after obtaining FPSC approval. Customer billing will begin the second month following the date in which power is purchased from photovoltaic generating facilities or in which a photovoltaic generating facility of the Southern Company begins commercial operation.

- **Participation Standards**

The PV Rate Rider is available to all customers served by Gulf Power Company.

- **Benefits and Costs**

The benefit of this program is to provide all customers the opportunity to fund the building of a solar-powered generation facility. The monthly rate is \$6.00 per 100-watt block. The service shall be for a five-year term and may be terminated by either party following two years written notice. The \$6.00 monthly rate is designed to recover capital related and

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operation and maintenance cost of the facility. Any administrative, research and promotional costs associated with the PV Rate Rider will be recovered through ECCR.

- **Monitoring and Evaluation**

Participation in the PV Rate Rider will be tracked through the Company's Customer Service System (CSS). Additional customer research may be performed if sufficient participation levels are not reached.

### **Other Renewable Energy Programs**

- **Program Description**

Gulf Power Company will continue to investigate customer interest in and the economic viability of additional renewable/green energy options. The objective will be to determine customer acceptance, technology development and alternatives, and economic viability of additional offerings. In addition, this research will help increase the knowledge of Gulf Power as it relates to renewable/green energy.

Gulf Power will also continue to be involved in community education as opportunities present themselves. For example, Gulf has participated in the annual Bay Day which brings together area sixth grade students for a day of hands-on learning revolving around science and environmental initiatives.

- **Benefits and Costs**

If Gulf Power Company determines an initiative to be feasible, the Company will design and offer the initiative within the Renewable Energy Programs umbrella. New offerings will be



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in addition to the programs already described in the Renewable Energy Programs section above. Any administrative, research and promotional costs associated with new renewable/green energy program offerings will be recovered through ECCR.

- **Monitoring and Evaluation**

Gulf Power Company will evaluate each potential program for cost effectiveness and feasibility on a case by case basis. Research will help Gulf Power determine customer attitudes, perceptions, and acceptance regarding renewable/green energy program offerings.

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## Conservation Demonstration and Development

- **Program Description**

The primary purpose of the Conservation Demonstration and Development (CDD) program is to pursue research, development, and demonstration projects designed to promote energy efficiency and conservation. This program enhances and complements the successful residential, commercial, and industrial conservation programs currently implemented at Gulf Power Company.

The CDD program is designed to serve as an umbrella program for the identification, evaluation, demonstration, data collection and development of new or emerging end-use technologies. Unlike most of Gulf Power Company's conservation programs, which focus on specific end-uses, the CDD program addresses a wide variety of energy applications.

- **Participation Standards**

Programs investigated under this program cover a wide array of activities and are subject to specific screening criteria prior to study implementation. Such screening criteria include potential for energy and demand reduction, high technology maturity, and broad customer acceptability.

These activities can include short term, low cost literature searches, engineering and financial analyses of promising technologies, data collection to provide baseline information, or field testing programs with actual customers to verify operation and energy performance. Field-testing would be limited to demonstration of emerging end-use technologies that meet

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guidelines described in the program description. Funding for field tests would be bound by the proposed expenditure limitations. If any field test or pilot project requires warranted funding beyond the scope of the CDD program, Gulf Power Company will petition the FPSC for approval to conduct the project as an ECCR program.

Gulf Power Company proposes to limit expenditures to an annual maximum of \$250,000 for all projects. Additionally, Gulf Power Company proposes to notify the FPSC of any project that exceeds \$25,000. Funding for research and development meeting the minimum program criteria will be charged to conservation cost recovery.

Since technologies investigated under this program are test projects, and the level of benefits that might be anticipated are unknown, Gulf Power Company will be limited in its ability to pre-quantify the demand or energy reductions that might result from these programs.

- **Monitoring and Evaluations**

A technology investigated under this program will be subject to comprehensive monitoring and evaluation. Prior to implementation, justification of projects funded through this program will be clearly documented. This includes project concept or description, research and design considerations, project potential, contributions to program goals, and anticipated costs. Any expenditure resulting from this program will also be properly accounted for and reported.

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Any projects not requiring field test will be fully documented with all methodology, modeling, or engineering estimates provided to justify all conclusions.

Specific deliverables provided, as a result of a technology investigation under this program will include project description, conservation achieved and projected, technical evaluation, economic considerations and customer acceptability. These findings will be reported and filed with the FPSC staff for consideration.

- **Benefits and Costs**

The program will allow Gulf Power Company to “pursue research, development and demonstration projects designed to promote energy efficiency and conservation” as stated in Order No. 22176 issued November 14, 1989, Docket No. 890737-PU, and is consistent with meeting the goals in Rule 25-17.001, Florida Administrative Code.

This program allows for actual data to be derived from field tests, thus validating engineering estimates and modeling techniques. Cost benefit analysis from these emerging technology projects will be more reliable and allow for better assessment of the future impact of these demand and energy conservation measures.

Additionally, customer acceptance and satisfaction can be gauged by a better understanding of implementation barriers and potential disadvantages. This is important in that customer response will ultimately be the determining factor in any new idea or product regardless of the demand or energy conservation.