GULF POWER COMPANY

TEN YEAR SITE PLAN

For Electrical Generating Facilities

And

Associated Transmission Lines

Submitted to the
State of Florida
Department of Community Affairs
Division of Local Resource Management
Bureau of Land and Water Management
Power Plant Siting Program

April 1, 1981

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CHAPTER I

DESCRIPTION OF EXISTING FACILITIES

UTILITY GULF POWER COMPANY

EXISTING GENERATING FACILITIES

(1) Plant	(2) Unit No.	(3) Location	(4) Type	(5) Fuel Pri	(6) Fuel Alt	(7) Com'l In-Service Mo/Yr	(8) Exptd Retrmnt Mo/Yr	(9) Gen Max Nameplate KW	(10) Net Capability Summer MW	(11) Net Capability Winter MW	(12) Fuel Transp Pri	(13) Fuel Transp Alt	(14) Alt Fuel Days Use
Crist		Pensacola 25/1N/30W						1,229,000	1048.7	1048.7			
	1		F	NG	HO	1/45	1990	28,125	21.9	21.9	PL	TK	—
	2		F	NG	HO	6/49	1990	28,125	21.0	21.0	PL	TK	—
	3		F	NG	HO	9/52	1990	37,500	37.8	37.8	PL	TK	—
	4		F	C	NG	7/59	1996	93,750	81.9	81.9	WA	PL	—
	5		F	C	NG	6/61	1996	93,750	83.4	83.4	WA	PL	—
	6		F	C	NG	5/70	2005	369,750	318.9	318.9	WA	—	—
	7		F	C	no	8/73	2008	578,000	483.8	483.8	WA	—	—
Lansing Smith		Panama City 36/2S/15W						381,850	378.3	381.8			
	1		F	C	no	6/65	2002	149,600	159.8	159.8	WA	—	—
	2		F	C	no	6/67	2004	190,400	187.2	187.2	WA	—	—
	A		CT	LO	no	5/71	1991	41,850	31.3	34.8	TK	—	—
Scholz		Sneads 12/3N/7W						98,000	93.6	93.6			
	1		F	C	no	3/53	1990	49,000	46.3	46.3	RR	—	—
	2		F	C	no	10/53	1990	49,000	47.3	47.3	RR	—	—
Total System as of December 31, 1980:									1520.6	1524.1			

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UTILITY Gulf Power Company

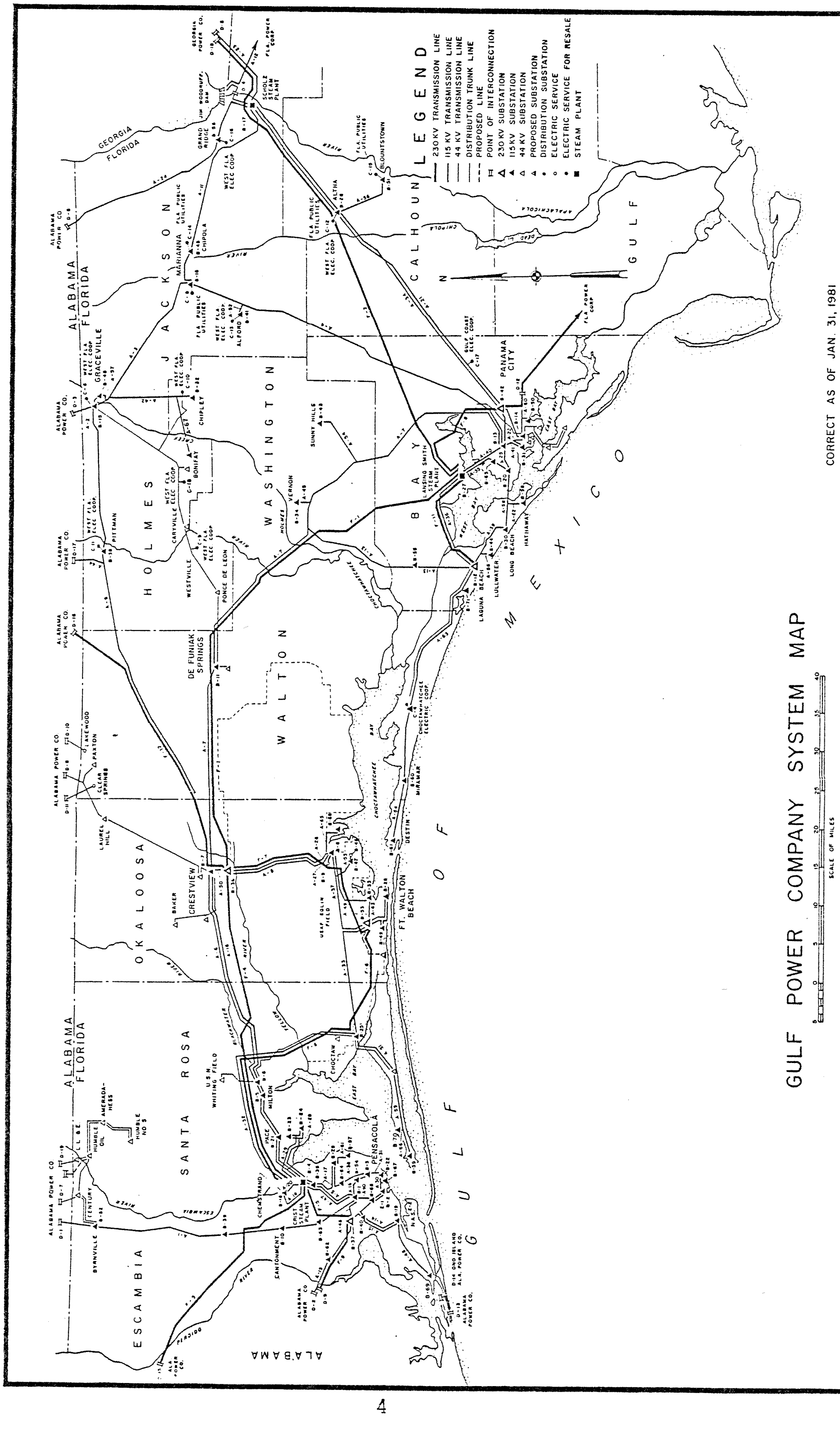
EXISTING GENERATING FACILITIES
LAND USE AND INVESTMENT

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Land Area		Plant Capital Investment (in $1,000)			
Plant Name	Total Acres	In Use Acres	Land	Site Improvements	Buildings & Equipment	Total
STEAM TOTAL			384	44,056	251,961	296,401
Crist	676.00	200	135	29,247	177,036	206,418
Lansing Smith	841.40	270	204	10,719	57,388	68,311
Scholz	293.15	168	45	4,090	17,537	21,672
COMBUSTION TURBINES - TOTAL				104	3,771	3,875
Lansing Smith CT				104	3,771	3,875

UTILITY Gulf Power Company

EXISTING GENERATING FACILITIES
ENVIRONMENTAL CONSIDERATIONS FOR STEAM GENERATING UNITS

(1) PLANT NAME	(2) UNIT	(3) FLUE GAS CLEANING PARTICULATE	(4) SO_x	(5) NO_x	(6) COOLING TYPE
Crist	1	no	no	no	WCTM
	2	no	no	no	WCTM
	3	no	no	no	WCTM
	4	EP	no	no	WCTM
	5	EP	no	no	WCTM
	6	EP	no	no	WCTM
	7	EP	no	no	WCTM
Lansing Smith	1	EP	no	no	OTS
	2	EP	no	no	OTS
Scholz	1	EP	no	no	OTF
	2	EP	no	no	OTF



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CHAPTER II

FORECAST OF ELECTRIC POWER DEMAND

UTILITY Gulf Power Company

HISTORY AND FORECAST OF ENERGY USE

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rural & Residential			Commercial		Industrial	
Year	GWH	Average No. of Customers	Average KWH Consumption Per Customer	GWH	Average No. of Customers	GWH	Average No. of Customers
1971	1,425	127,233	11,200	752	17,212	1,164	141
1972	1,602	135,437	11,828	860	18,088	1,308	149
1973	1,800	142,434	12,637	946	18,938	1,382	159
1974	1,835	150,257	12,212	969	19,589	1,325	159
1975	1,889	154,170	12,253	1,041	19,769	1,340	160
1976	2,046	158,492	12,913	1,128	20,364	1,435	154
1977	2,156	163,121	13,220	1,207	20,964	1,494	156
1978	2,243	168,156	13,342	1,254	21,567	1,530	160
1979	2,225	172,906	12,868	1,269	21,949	1,552	164
1980	2,335	180,166	12,959	1,293	22,459	1,494	166
1981	2,398	184,085	13,028	1,271	22,711	1,533	170
1982	2,475	189,494	13,060	1,285	23,280	1,554	172
1983	2,554	194,970	13,100	1,293	23,803	1,657	174
1984	2,630	200,370	13,124	1,305	24,349	1,716	176
1985	2,702	206,213	13,105	1,316	24,907	1,718	178
1986	2,799	216,797	12,911	1,366	25,976	1,781	185
1987	2,900	225,469	12,862	1,416	27,010	1,846	192
1988	3,006	234,488	12,819	1,467	28,085	1,913	200
1989	3,114	245,868	12,665	1,520	29,203	1,982	208
1990	3,227	253,622	12,724	1,575	30,365	2,054	217

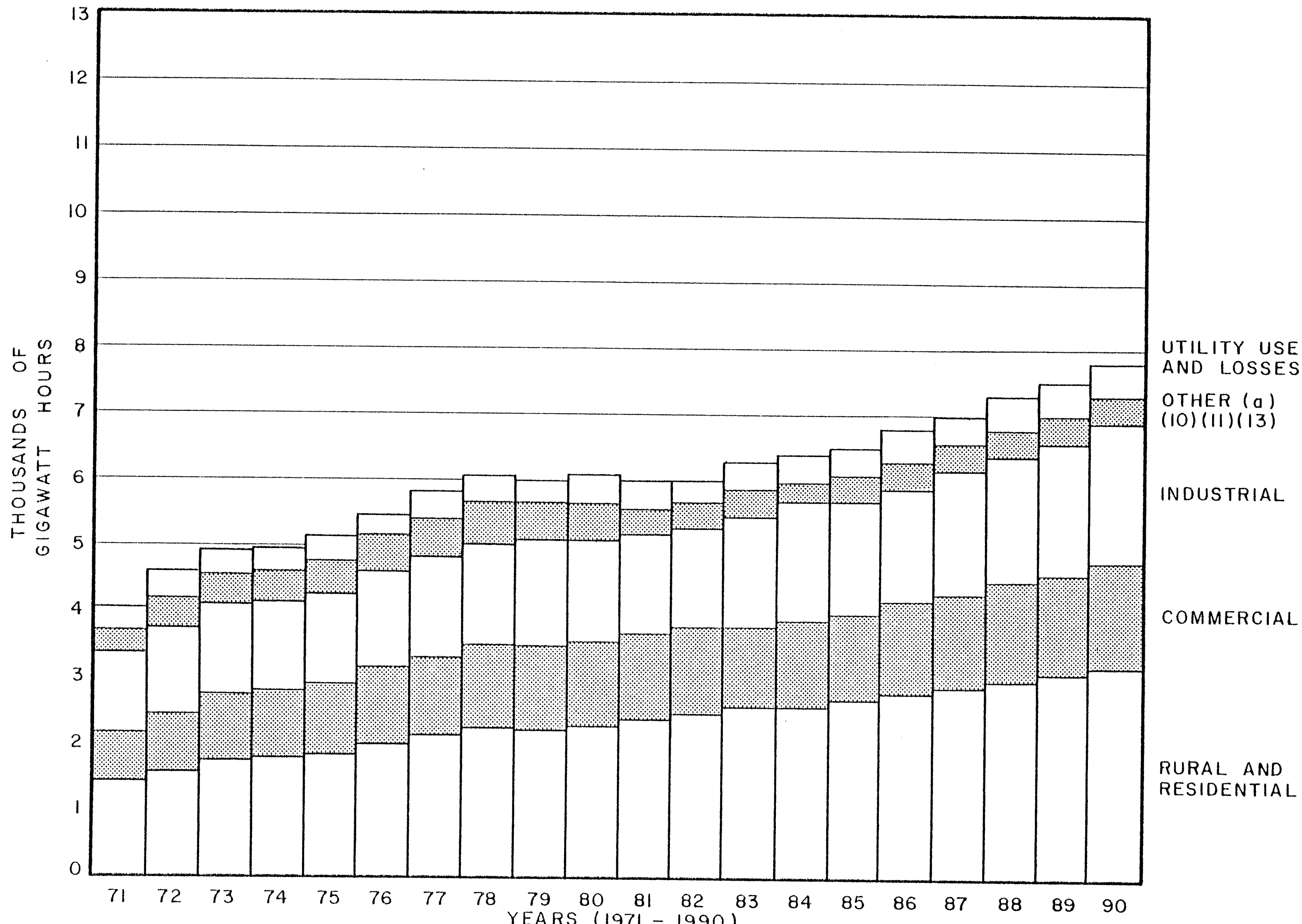
UTILITY Gulf Power Company

HISTORY AND FORECAST OF ENERGY USE

(9) Year	(10) Street & Highway Lighting GWH	(11) Other Sales to Ultimate Consumers GWH	(12) Total Sales to Ultimate Consumers GWH	(13) Sales For Resale GWH	(14) Utility Use & Losses GWH	(15) Net Energy For Load GWH
1971	13	0	3,354	384	334	4,072
1972	12	0	3,782	428	394	4,604
1973	9	0	4,137	448	393	4,978
1974	13	0	4,142	470	371	4,983
1975	13	0	4,283	505	360	5,148
1976	13	0	4,622	519	334	5,475
1977	14	0	4,871	551	401	5,823
1978	14	0	5,041	569	434	6,044
1979	14	0	5,060	558	412	6,030
1980	14	0	5,136	532	480	6,148
1981	15	0	5,217	372	391	5,980
1982	15	0	5,329	324	395	6,048
1983	16	0	5,520	331	411	6,262
1984	16	0	5,667	340	423	6,430
1985	17	0	5,762	349	436	6,538
1986	19	0	5,965	361	449	6,775
1987	20	0	6,182	374	464	7,020
1988	20	0	6,406	388	480	7,274
1989	21	0	6,637	402	498	7,537
1990	22	0	6,878	416	523	7,817

Note: Columns (13) and (15) include energy allocated to certain resale customers by Southeastern Power Administration (SEPA).

GRAPH I
HISTORY AND FORECAST OF ENERGY USE BY TYPE OF CUSTOMER



NOTE: (a) Includes energy allocated to certain resale customers by SEPA.

Utility Gulf Power Company

ENERGY SOURCES

	Energy Sources		Actual 1979	Actual 1980	1981	1982	1983	1984
(1)	Annual Energy Interchange	GWH	(603)	(2)	(1349)	(2209)	(2336)	(2661)
(2)	Nuclear	GWH	None	None	None	None	None	None
(3)	Coal	GWH	6000	5819	7307	8095	8439	8939
(4)	Residual - Total	GWH	2	1	None	None	None	None
(5)	Steam	GWH	2	1	None	None	None	None
(6)	CC	GWH	None	None	None	None	None	None
(7)	CT	GWH	None	None	None	None	None	None
(8)	Diesel	GWH	None	None	None	None	None	None
(9)	Distillate-Total	GWH	3	7	1	1	1	1
(10)	Steam	GWH	None	None	None	None	None	None
(11)	CC	GWH	None	None	None	None	None	None
(12)	CT	GWH	3	7	1	1	1	1
(13)	Diesel	GWH	None	None	None	None	None	None
(14)	Natural Gas - Total	GWH	628	324	21	161	158	151
(15)	Steam	GWH	628	324	21	161	158	151
(16)	CC	GWH	None	None	None	None	None	None
(17)	CT	GWH	None	None	None	None	None	None
(18)	Diesel	GWH	None	None	None	None	None	None
(19)	Other	GWH	None	None	None	None	None	None
(20)	Net Energy for Load	GWH	6030	6148	5980	6048	6262	6430

Note: Column (20) includes energy allocated to certain resale customers by Southeastern Power Administration (SEPA).

Utility Gulf Power Company

ENERGY SOURCES

	Energy Sources		1985	1986	1987	1988	1989	1990
(1)	Annual Energy Interchange	GWH	(2197)	(2090)	(1818)	(1478)	(1622)	(1396)
(2)	Nuclear	GWH	None	None	None	None	None	None
(3)	Coal	GWH	8614	8767	8745	8664	9078	9189
(4)	Residual - Total	GWH	None	97	92	87	80	23
(5)	Steam	GWH	None	97	92	87	80	23
(6)	CC	GWH	None	None	None	None	None	None
(7)	CT	GWH	None	None	None	None	None	None
(8)	Diesel	GWH	None	None	None	None	None	None
(9)	Distillate - Total	GWH	1	1	1	1	1	1
(10)	Steam	GWH	None	None	None	None	None	None
(11)	CC	GWH	None	None	None	None	None	None
(12)	CT	GWH	1	1	1	1	1	1
(13)	Diesel	GWH	None	None	None	None	None	None
(14)	Natural Gas - Total	GWH	120	None	None	None	None	None
(15)	Steam	GWH	120	None	None	None	None	None
(16)	CC	GWH	None	None	None	None	None	None
(17)	CT	GWH	None	None	None	None	None	None
(18)	Diesel	GWH	None	None	None	None	None	None
(19)	Other	GWH	None	None	None	None	None	None
(20)	Net Energy for Load	GWH	6538	6775	7020	7274	7537	7817

Note: Column (20) includes energy allocated to certain resale customers by Southeastern Power Administration (SEPA).

Utility Gulf Power Company

FUEL REQUIREMENTS

	Fuel Requirements		Actual 1979	Actual 1980	1981	1982	1983	1984
(1)	Nuclear	$BTUx10^{12}$	-	-	-	-	-	-
(2)	Coal	1000 Ton	2771	2645	3318	3632	3794	4018
(3)	Residual-Total	1000 BBL	3.6	1.3	-	-	-	-
(4)	Steam	1000 BBL	3.6	1.3	-	-	-	-
(5)	CC	1000 BBL	-	-	-	-	-	-
(6)	CT	1000 BBL	-	-	-	-	-	-
(7)	Diesel	1000 BBL	-	-	-	-	-	-
(8)	Distillate-Total	1000 BBL	29	39	43	55	55	55
(9)	Steam	1000 BBL	22	22	39	51	51	51
(10)	CC	1000 BBL	-	-	-	-	-	-
(11)	CT	1000 BBL	7	17	4	4	4	4
(12)	Diesel	1000 BBL	-	-	-	-	-	-
(13)	Natural Gas-Total	1000 BBL	7278	4128	2583	2297	2297	2236
(14)	Steam	1000 BBL	7278	4128	2583	2297	2297	2236
(15)	CC	1000 BBL	-	-	-	-	-	-
(16)	CT	1000 BBL	-	-	-	-	-	-
(17)	Diesel	1000 BBL	-	-	-	-	-	-
(18)	Other	$BTUx10^{6}$	-	-	-	-	-	-
(19)	Annual Avg. Fossil Net H.R.	BTU/KWH	10982	10913	10884	10751	10780	10777

Utility Gulf Power Company

FUEL REQUIREMENTS

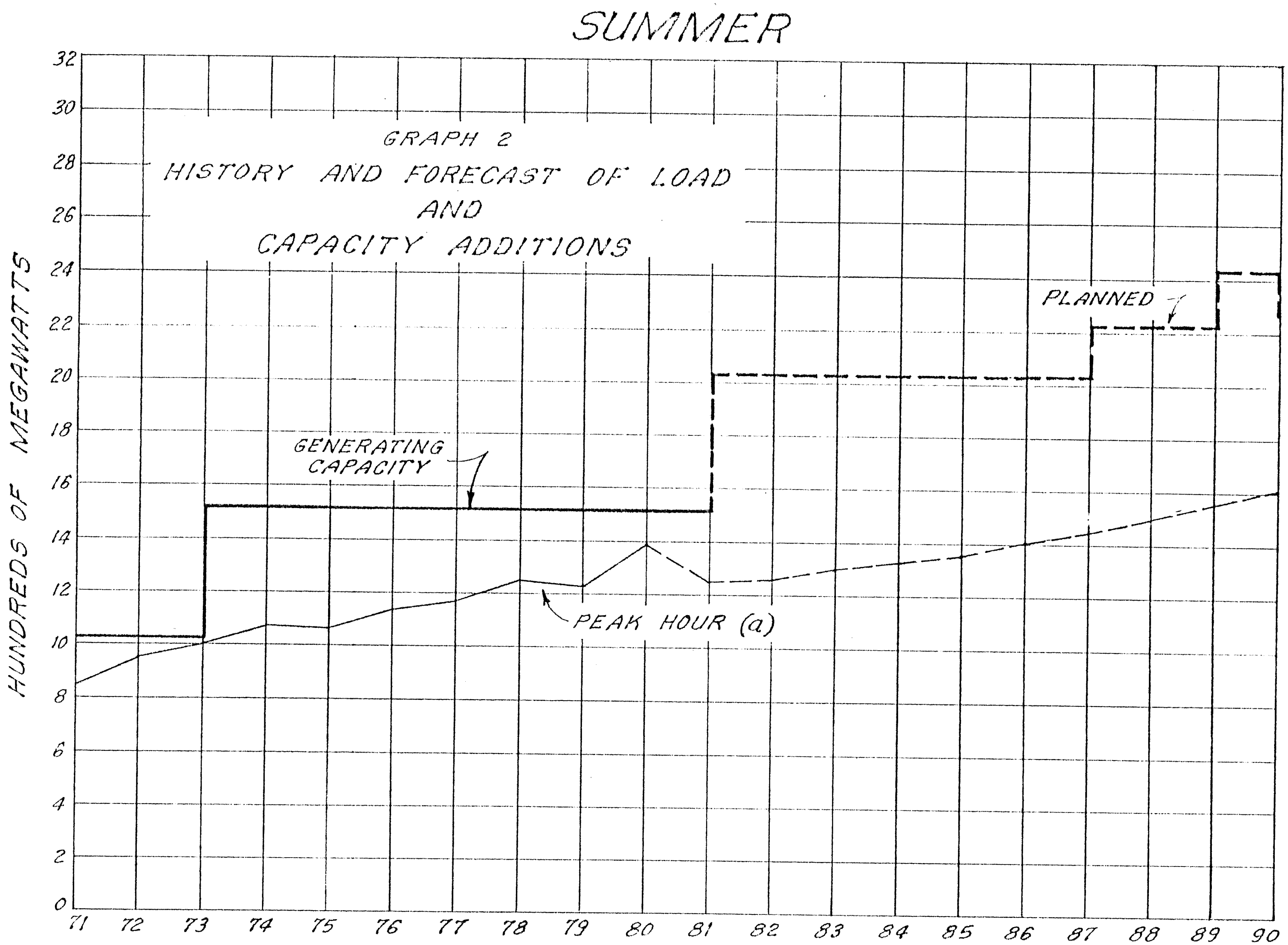
	Fuel Requirements		1985	1986	1987	1988	1989	1990
(1)	Nuclear	$BTU \times 10^{12}$	-	-	-	-	-	-
(2)	Coal	1000 TON	3862	3930	3921	3884	4070	4120
(3)	Residual-Total	1000 BBL	-	242	230	217	200	57
(4)	Steam	1000 BBL	-	242	230	217	200	57
(5)	CC	1000 BBL	-	-	-	-	-	-
(6)	CT	1000 BBL	-	-	-	-	-	-
(7)	Diesel	1000 BBL	-	-	-	-	-	-
(8)	Distillate-Total	1000 BBL	55	55	55	55	55	55
(9)	Steam	1000 BBL	51	51	51	51	51	51
(10)	CC	1000 BBL	-	-	-	-	-	-
(11)	CT	1000 BBL	4	4	4	4	4	4
(12)	Diesel	1000 BBL	-	-	-	-	-	-
(13)	Natural Gas-Total	1000 MCF	1756	-	-	-	-	-
(14)	Steam	1000 MCF	1756	-	-	-	-	-
(15)	CC	1000 MCF	-	-	-	-	-	-
(16)	CT	1000 MCF	-	-	-	-	-	-
(17)	Diesel	1000 MCF	-	-	-	-	-	-
(18)	Other	$BTU \times 10^{6}$	-	-	-	-	-	-
(19)	Annual Avg. Fossil Net H.R	BTU/KWH	10737	10810	10810	10806	10802	10773

UTILITY Gulf Power Company FCG Form 4

HISTORY AND FORECAST OF SEASONAL PEAK DEMAND AND ANNUAL NET ENERGY FOR LOAD

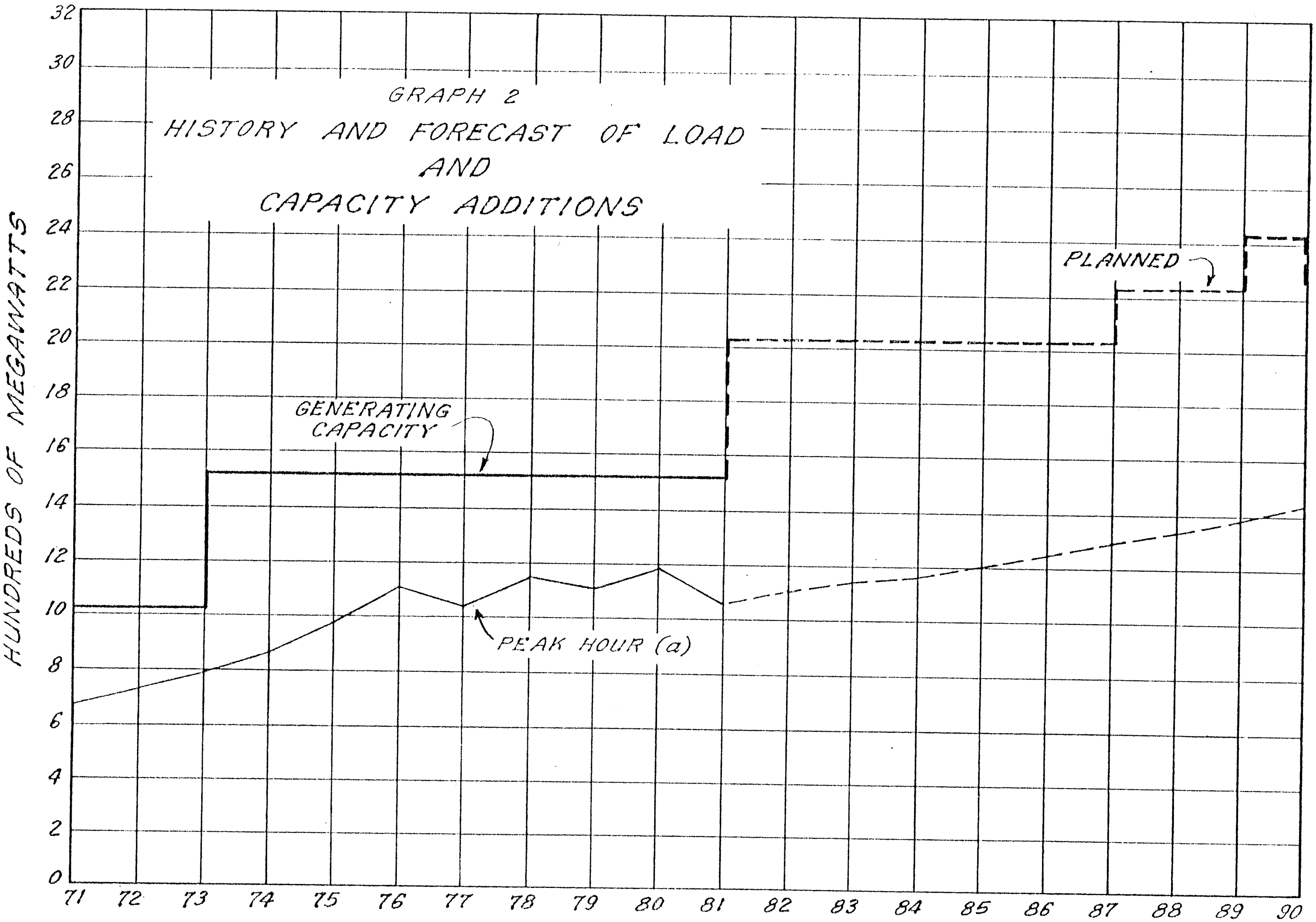
(1) Year	(2) Summer Peak Demand Net MW Interruptible	(3) Summer Peak Demand Net MW Total	(4) Net Energy For Load - GWH	(5) Load Factor %	(6) Year	(7) Winter Peak Demand Net MW Interruptible	(8) Winter Peak Demand Net MW Total
1971	NONE	842	4,072	55.24	1971-72	NONE	648
1972		956	4,604	54.81	1972-73		764
1973		1,014	4,978	56.02	1973-74		790
1974		1,081	4,983	52.60	1974-75		826
1975		1,078	5,148	54.52	1975-76		976
1976		1,140	5,475	54.65	1976-77		1,121
1977		1,180	5,823	56.33	1977-78		1,072
1978		1,257	6,044	54.89	1978-79		1,154
1979		1,232	6,030	55.87	1979-80		1,132
1980		1,392	6,148	50.28	1980-81		1,078
1981		1,248	5,980	54.70	1981-82		1,062
1982		1,259	6,048	54.83	1982-83		1,109
1983		1,299	6,262	55.03	1983-84		1,142
1984		1,330	6,430	55.19	1984-85		1,161
1985		1,352	6,538	55.21	1985-86		1,203
1986		1,403	6,775	55.12	1986-87		1,247
1987		1,448	7,020	55.34	1987-88		1,292
1988		1,500	7,274	55.36	1988-89		1,338
1989		1,553	7,537	55.40	1989-90		1,387
1990		1,607	7,817	55.53	1990-91		1,437

Note: Includes capacity and energy allocated to certain resale customers by Southeastern Power Administration (SEPA).



NOTE: (a) Includes capacity allocated to certain resale customers by SEPA.

WINTER



NOTE: (a) Includes capacity allocated to certain resale customers by SEPA.

UTILITY Gulf Power Company

PREVIOUS YEAR ACTUAL AND TWO-YEAR FORECAST OF PEAK DEMAND AND NET ENERGY FOR LOAD BY MONTH

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ACTUAL		FORECAST			
	1980		1981		1982	
MONTH	PEAK DEMAND MW	NEL GWH	PEAK DEMAND MW	NEL GWH	PEAK DEMAND MW	NEL GWH
JAN	984	460	1,078	519	1,062	509
FEB	1,089	481	999	437	978	429
MAR	1,132	432	817	395	826	398
APR	745	393	750	397	750	395
MAY	1,009	484	969	474	1,013	487
JUN	1,202	584	1,202	605	1,198	603
JUL	1,392	690	1,213	625	1,239	634
AUG	1,331	679	1,248	628	1,259	642
SEP	1,249	619	1,154	575	1,168	588
OCT	825	423	986	438	1,020	447
NOV	846	421	846	400	872	405
DEC	945	482	1,008	487	1,060	511
TOTAL		6,148		5,980		6,048

Note: Includes Capacity and Energy Allocated to Certain Resale Customers by Southeastern Power Administration (SEPA)

FORECASTING

I. Introduction

Gulf Power Company's forecasting efforts utilize two different methodologies as major inputs in the forecasting of future electric use. These differ in the inputs utilized and are termed (1) the in-house end-use forecast, and (2) the econometric end-use forecast. In the in-house end-use methodology, the principal driving forces are past trends in customers, and KWH sales per customer. In the econometric end-use methodology, the two principal driving forces are the values of socio-economic variables, unique to or significantly affecting the Gulf service area, and the expected conservation induced efficiency of structures and appliances in future time periods.

The outputs (projections) of these two methodologies are compared to each other based upon their underlying assumptions and the differences, if significant, are resolved. After consideration of these and other inputs, the official budget is derived.

Each month a complete review of actual KWH sales, customers and other relevant statistics are compared to official budget estimates and deviations resolved. Each quarter a major review is accomplished by comparing actual statistics to budget statistics and the underlying methodologies are examined for relevancy.

Gulf Power continues to recognize that a major problem facing any utility is the need to reduce uncertainty about the future. In recent times it has been apparent that the relatively stable conditions during the 1955-1975 period will not return to our nation for many years. Consequently, increased efforts must be made at every level to reduce the error of the estimate about the future economic environment in which the company will function. Gulf Power recognizes that additional expenditures to reduce uncertainty is one of the most cost effective means of providing effective service to its customers. This increasing effort is continuing to be made.

The following are summaries of the current methods used to project KWH sales:

(a) General Description of the In-House End-Use Methodology for KWH Sales

The in-house end-use methodology assumes a continuing trend of past usage rates. This assumption relies heavily upon the last 12 months' consumption, by class of customers, after correction for deviations of actual and expected weather. This trend is then further adjusted for expected conservation and expected changes in the number of customers in each class.

Though a more detailed description of the in-house end-use methodology is presented later, the basic assumption of the methodology is that expected sales can be based on the expected number of customers in a period (t) and the expected consumption per customer in a period (t). A simple multiplicative function is used to derive expected KWH sales in the period (t) for each rate class. Summation of the expected sales in the period (t) for each rate class (residential, commercial, industrial, wholesale and street lighting) then gives the expected total territorial sales for Gulf Power Company in the period (t).

(b) <u>General Description of the Econometric End-Use Methodology for KWH Sales</u>

The methodology in the econometric model implicitly assumes that different individual maximization problems are envisioned by each class of customers. These different classes of customers, given certain objective functions such as:

1. an assumed level of comfort for a residential customer,
2. some least cost production function for a commercial or industrial firm,

with assumed constraints such as:

1. Alternative prices of substitutable BTU for heating or cooling,
2. Given income (for the residential class)
3. Given total revenue (for commercial and industrial classes)

and that these individual units will make conservation decisions (economic least cost decisions) over time which will result in wealth, profit, or other maximizing decision, given sufficient information.

Though this methodology does not attempt to model these complex and unique individual unit functions, it is, none the less, based upon some higher general maximization function (problems) such as that presented above.

The econometric end-use model assumes that the principle driving force in KWH consumption (sales) is some usage of current appliances, given current prices, and expected revenues from sales of current production (commercial and industrial). Additionally, expected economic considerations will dictate future levels of KWH energy consumption by changing appliances, retrofitting old structures and changing designs of new structures based upon life cycle cost minimization function. Therefore, the principle drivers in the econometric end-use model, either explicitly or implicitly assumed, are expected: (1) efficiency ratings of new appliances and structures; (2) prices of electricity and substitutable fuels; (3) prices (cost) of conservation-retrofit; (4) real income for residential units or discounted total revenues to a firm; (5) values of other socio-economic variables significant to customers within the Gulf service area, and (6) the speed in which these new technologies (improved efficiency of appliances), retrofitted structures, and new design structures will penetrate the Gulf service area.

II. Short Term Estimation of Customers and KWH

(a) Customer Forecast

The results of both methodologies are highly dependent upon changes in the number of customers over time. Great effort is placed upon continuously generating the expected number of future customers by class, their expected consumption patterns, and the means of adequately capturing this dynamic and transitory evolution. This effort is initiated at the division level by customer representatives and marketing personnel. Detailed information is obtained on actual and projected new construction and expansion of existing projects by contacting architects, engineers, developers, community planning groups, government permitting agencies, local and state employment agencies, bankers, savings and loan firms, and other financial investment agencies, state and federal data collection agencies, and private information agencies. This data is then evaluated to ascertain the expected change in customers by rate class, the expected KWH consumption given the actual (or expected) technical design of the structures and the actual (or expected) efficiency of the electrical consuming units within the structure.

The degree of reliability of this information process varies by both the rate class and the length of time before the projected start of construction. The industrial customers are easiest to forecast due to their relative long planning horizons, necessitated by long term permitting requirements, financing requirements, and other decision making processes encountered by large corporations. Thus, changes in the number of customers, or more commonly changes in block loads (additions and deletions of KW and KWH) for existing customers, are very reliable due to contractual agreements and other long term commitments. The wholesale class is also relatively easy to forecast due to their long term contractual obligations with this corporation. Changes in the number of commercial and residential customers are significantly more difficult to predict and the reliability of those predictions less dependable over time. This is due primarily to the extreme sensitivity of these sectors of the economy to more rapid escalation of interest rates and in the relatively short time necessary to complete projects. Projected starts are more easily deferred or cancelled entirely in the short run due to local or national economic conditions. This is less true of large multifamily units (condominiums and high rise apartments) and large commercial development projects. These units approximate the industrial class of customers due to permitting and financial arrangements. However, the Gulf service area still has uncompleted projects started in the condominium speculation phase (1973-1975). Changes in the number of customers in the street lighting class are highly dependent upon the commercial and residential sectors, therefore, more difficult to forecast and of less reliability over time.

(b) KWH Forecast

Just as the expected number of customers by class is dependent upon both local and national economic conditions, the consumption of electrical energy by customer class is also dependent upon these same influences. The degree of reliability in projections of KWH sales by customer class is, however, different than the estimation of the number of customers. Industrial customers are much more sensitive to national and international economic conditions because their products are sold primarily outside of our service area, whereas commercial and residential customers are much more sensitive to local economic conditions. The large influence of the federal government, especially the Department of Defense components, impact all customer classes but to different degrees.

For instance, the decision by the Department of Defense to expand or contract a major military program in our service area affects the sale of electrical energy directly to the military base. Indirectly, the income change will ultimately be reflected in the usage of electricity in the commercial and residential markets and may even result in migration of people. Continuing with this example, the migration effect, if significant, can either create a surplus or shortage of residential units and, therefore, indirectly decrease or increase commercial activities and KWH sales in the local market far in excess of the initial effect of the program change in KWH sales.

The division customer representatives continuously monitor these local changes which impact estimated KWH consumption within each rate class. Their input starts the process of monthly comparisons of budgeted sales to actual sales.

The company employs significant resources to detect changes in consumption patterns by class and establish causal relationships for these occurrences. Load research projects and market research projects are conducted on a continuing basis to determine customer use patterns, quantities of and changes in the usage as well as indications of saturations of some appliances. This extensive data base is used for forecasting and it is also the primary source for investigation of the causability of deviations of actual forecast from budget forecast.

III. Detailed Discussion of Customer and KWH Forecast; In-House End-Use Methodology

As previously indicated, customer changes are forecast on a continuing basis by our divisional customer representatives for each customer class and is the starting point for our in-house end-use methodology. The following represents a more detailed description of this methodology.

(a) Industrial Class

The industrial class comprises less than 1/10 of 1 percent of Gulf's total customers but consumes approximately 1/4 of the energy. Within the industrial class, approximately 90 percent of the energy is consumed by the 34 largest customers, even though these 34 large customers comprise only 20 percent of the industrial class. Local office personnel contact each of the 34 industries and discuss their power needs and employment projections for the forecast period. Forecast data for energy is based on the long term planning of these 34 largest industrial customers with the remaining 10 percent of energy usage (80 percent of customer class) projected using a time trend. No additional industrial load was included in the 1981-1985 time frame unless an industry had made a definite commitment to locate in our service area. Starting in 1986, an increase in industrial load was forecast in expectation of the Ellyson Industrial Park Project.

(b) Commercial Class

The commercial class is the most heterogeneous grouping of our customers with specific similarities being the exception to the rule except for two general classifications. A small percentage of the customers consume a large proportion of the total sales and a large proportion of the customers consume small amounts of energy. In this general respect, these groups could be considered like a relatively small energy consuming industrial class.

Our customer representatives are highly involved with new additions of major commercial development projects which contribute large block loads additions to our energy sales. These large block loads, commercial developments, which are planned well in advance, account for approximately two-thirds of the energy growth in the commercial sector. The amount of energy consumption estimated for these additions is calculated only after extensive discussion with the developing firm and after explaining the economic advantages to the firm in using energy or demand conservation technology. The remaining growth comes from small businesses which are projected by historical relationship to residential income and population growth.

(c) Streetlighting and Wholesale Class

The forecasts for the street light and wholesale classes are the sum of the projections we received from the individual communities and wholesale customers. These projections are checked for reasonableness by comparing them to long term trends, contract capacities, and known changes which will occur.

(d) Residential Class

The residential customer forecast begins with all the job information obtained from the survey of the industrial and commercial sectors and the projections for growth in employment obtained from state employment agencies and other sources. After this job information is assembled at the local level and adjusted for the number of persons and wage earners per household, it is combined into our service area residential customer forecast. This is tested for reasonableness by comparing it to other agencies' information and forecasts for our ten county area, such as U.S. Department of Commerce, University of Florida, Florida Department of Commerce, local, state, and federal information sources, and finally, Gulf's econometric forecast.

The residential KWH forecast methodology deals with a hypothetical average residential customer as constructed using extensive load research information, appliance saturation surveys of customers, and anticipated changes in consumption patterns due to conservation measures over time. This detailed process begins by separating historical average KWH consumption per customer data into weather sensitive and non-weather sensitive components.

This is done by using historical appliance saturation information, typical usage patterns of non-weather sensitive appliances, and statistically estimating the weather sensitive and non-weather sensitive components. Implicitly, the usage of the non-weather sensitive appliances are assumed to remain relatively constant over each month of the year.

Once the weather sensitive component and the non-weather sensitive component have been separated, the latter is compared to the average KWH residential usage for the month of April, which is normally the least weather sensitive month for our system. After testing these two primary components for validity, each component can be projected.

In order to project the weather sensitive component, there are some factors that vary from year to year that must be eliminated. Just as customer growth can be eliminated from KWH growth by dividing KWH by the number of customers, the factors of weather and billing cycle length are eliminated, resulting in a monthly factor with the dimensions of KWH/ CUST/^{O}HR/DAY.

For the weather sensitive component, this leaves only two variables: (1) load growth (for heating and air conditioning), and (2) level of customer utilization.

With the customer utilization held constant at the last known level, all that remains is to forecast the growth of the heating or cooling load. This is done by determining from saturation surveys and load reporting system the accumulated connected heating and cooling loads and then projecting, based on load management programs, future heating/cooling load to be added, taking into consideration the following:

(1) Decrease in heating and cooling requirements caused by:

  A. Smaller dwelling size

    (1) Increased apartment, townhouses, and condominiums

    (2) Smaller single family residences

  B. More insulation

    (1) Good ¢ents Home Program

    (2) Insulation Surveys of Existing Homes

C. Improved equipment efficiency average from present 6.8 EER to 7.5 EER by 1985.

This forecast of space conditioning is used to project the monthly KWH/CUST/^{o}HR/DAY factor. When this monthly factor is multiplied by the average ^{o}HRs and the number of billing days for that month, the result is a weather normalized, weather sensitive KWH/customer component of consumption.

A similar projection is made for the non-weather sensitive component by making projections for the future saturation limits. Using typical appliance consumptions that were validated based on customers' historic usage and the number of days in the appropriate monthly billing period, the resulting figure is a future projection of the non-weather sensitive, or base load KWH/customer component.

Both the weather sensitive projection figure and the base load projection figure are then adjusted by year to incorporate the customers' expected reactions to future economic conditions (i.e., conservation).

The combined KWH/customer components for each month of the year are then multiplied by the total number of residential customers for each month, and the result is the annual distribution of KWH sales for the residential class based on normalized weather.

IV. Peak Hour Demand Forecast; In-House End-Use Methodology

In addition to the econometric end-use method of forecasting peak hour demand which will be discussed later, Gulf also utilizes an in-house end-use method which analyzes changes in numbers of customers and average use per customer, then converts KWH to demand through the use of class load factors.

This method begins with KWH projections by customer class which was discussed earlier. The next step is to utilize actual load data gathered from a random sampling of customers to determine annual class load factors.

The most recent development of class load shapes was for the five-day average peak week (summer) in 1979. The annual class load factors based on this five-day average coincident peak are as follows:

Residential	58.54%
Commercial	51.54%
Industrial	79.68%
Wholesale	55.08%

These annual load factors were assumed to remain constant throughout the forecast period with the exception of the commercial group which was projected to increase by two percentage points over the ten year period because of the potential for load management.

The annual system peak demand was then determined by applying the forecasted annual energy by class to the class load factors and summing the class contributions to system peak demand. This sum must be further expanded to account for the diversity inherent between the one-hour peak and a five-day average peak. The factor used for this was 1.17, which is consistent with historical relationships. This total must be further expanded by a factor of 1.02 to allow for expected variations from normal weather.

A sample of this process can be seen in Exhibit #MD-1, which shows the calculation for the summer peak in 1981.

The winter system peak was projected by utilizing the historical linear relationship between the one-hour winter system peak and the highest monthly territorial energy supply for the winter season.

V. Econometric End Use Model

(a) An econometric model is a mathmetical formulation which relates a dependent variable such as KWH sales to expected and reasonable casual socio-economic variables. Though exact relationships between KWH consumption and socio-economic variables will in all probability not be discovered due to continuously changing stimuli, close approximations of these relationships can be estimated and used to predict future consumption patterns under different socio-economic scenarios.

The model combines end-use appliances and residential modules given certain socio-economic information. The econometric technique is used to develop end-use equations for the formulation of residential units and the expected appliance saturation of these residences. The econometric model then determines the expected usage rates of this dynamic changing stock of end-use items for different socio-economic conditions over time.

The econometric models, which are continuously being revised and enhanced over time, were jointly developed by Data Resources Inc. (DRI), the Load Forecasting Section of Southern Company Services, Inc., and Gulf Power Company. Of major importance in any regional forecast is the expected National Economic Forecast, which begins the forecasting sequence through exogeneous inputs to the service area's regional economic model.

DRI's model of the U.S. economy is one of several nationally accepted models using quarterly equation systems that describe and endogenously produce measurable facets of the national economy. DRI's models produce both short and long term forecasts under several different groups of assumptions and their output (projections) by quarter are used by DRI's clients to test the impact of their own assumptions on the national economic outlook, and by DRI's clients, such as Gulf, as exogeneous inputs into their own regional systems.

The Gulf econometric end-use model begins with inputs from DRI's national forecast which drives the service area economic model to produce input into the energy modules, which in turn produces energy forecasts by customer class. The energy forecasts by class are used in the peak demand model to produce the peak demand forecast. An electric energy price projection, along with other socio-economic variables unique to the Gulf service area and a projection of losses from supply to sales is also incorporated in these models.

The major link between Gulf's service area economic model and the national economy is the employment sector. Factors such as tax rates, environmental regulations, transportation facilities, wage rates, etc., that influence an industry's decision to locate or expand in our service area as opposed to elsewhere are used to capture employment opportunities.. Other segments of the economy, such as population, income, prices, etc., interact with, and in turn are interacted by, the employment sector to produce a consistent economic scenario.

(b) Energy and Customers

Variables forecast within the economic modules are classified as to how they affect the customer classes: residential, commercial, industrial, wholesale, and street lighting.

The residential portion of the energy model contains sub-models which are driven by the forecast of customers, appliance saturation, and usage per customer to generate total residential KWH sales.

Customers are forecast as a function of population 21 years of age and older (the assumed household forming age group) and a two year weighted average of real per capita income. Real income is used as the proxy for the ability to form residential units and to purchase the stock of residential appliances.

Usage per customer is a function of the stock of appliances owned by the average customer, the price of electricity and other competitive fuels, and real income.

The commercial portion of the energy model is principally a function of population, commercial employment, price of electricity, competitive fuels and weather. Here commercial employment tracks the growth of commercial activity while price measures the incentives for conservation.

The industrial portion of the energy model is divided into four sub-models:

1. Chemicals
2. Paper
3. Other Manufacturing
4. Non-Manufacturing

Each of these energy sub-models is a function of local production, price of electricity and competitive fuels, and pollution control equipment.

The wholesale portion is a function of the sales of commercial and residential energy, since the REA Cooperatives do not currently have significant industrial loads.

(c) Peak Hour Demand

Three steps are required to develop this model. First, historical peaks are normalized for weather. Second, the normalized peaks are separated into the components of demand associated with each class of customer. Finally, equations are developed for each customer class.

The historical weather normalized peaks are determined by developing for each year an equation for hourly demand as a function of weather variation. Then, typical peak day weather conditions are used to compute the normalized peak.

These normalized peaks are separated into residential/commercial, industrial, and wholesale components by historical load development studies.

With the exception of the residential/commercial class, the demand contribution is a function of energy sales to that class only, i.e., a load factor model. Residential/commercial

CHAPTER III

FORECAST OF FACILITIES

REQUIREMENTS

FCG Form 6

UTILITY GULF POWER COMPANY

PLANNED AND PROSPECTIVE GENERATING FACILITY ADDITIONS AND CHANGES

(1) Plant Name	(2) Unit No.	(3) Location	(4) Type	(5) Fuel Pri	(6) Fuel Alt	(7) Const Start Mo/Yr	(8) Com'l In-Service Mo/Yr[1]	(9) Gen Max Nameplate KW	(10) Net Capability Summer KW	(11) Net Capability Winter MW	(12) Fuel Transp Pri	(13) Fuel Transp Alt	(14) Status
V. J. Daniel(1)		Jackson Co. Mississippi							507	507	RR	TK	V
							5/81		507(1)	507(1)	RR	TK	V
Robert W. Scherer(2)(3)		Monroe Co. Georgia							404	404	RR	—	U
							2/87		202(2)	202(2)	RR	—	U
							2/89		202(3)	202(3)	RR	—	U
		Total additions to system as of December 31, 1980							911.0	911.0			

(1) Gulf to acquire 50% of the total plant capacity in May, 1981.

(2) Gulf to acquire 202 MW, of the total plant capacity in 1987.

(3) Gulf to acquire an additional 202 MW of the total plant capacity in 1989.

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UTILITY GULF POWER COMPANY

FCG Form 7A

FORECAST OF CAPACITY, DEMAND, AND SCHEDULE MAINTENANCE AT TIME OF SUMMER PEAK(a)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year	Total Installed Capacity MW	Firm Capacity Import MW	Total Available Capacity MW	Peak Demand MW (b)	Margin Before Maintenance MW	Margin Before Maintenance % of PK.	Scheduled Maintenance MW	Margin After Maintenance MW	Margin After Maintenance % of PK.
1981	2027	47	2074	1248	826	66.2		826	66.2
1982	2027	47	2074	1259	815	64.7		815	64.7
1983	2027	(191)	1836	1299	537	41.3		537	41.3
1984	2027	(119)	1908	1330	578	43.5		578	43.5
1985	2027	(89)	1938	1352	586	43.3		586	43.3
1986	2027	(85)	1942	1403	539	38.4	NONE	539	38.4
1987	2229	(229)	2000	1448	552	38.1		552	38.1
1988	2229	(394)	1835	1500	335	22.3		335	22.3
1989	2431	(217)	2214	1553	661	42.6		661	42.6
1990	2257	(219)	2038	1607	431	26.8		431	26.8

Note: a. Capacity additions and changes must be made by May 31 to be considered in effect at the time of the Summer Peak. All values are Summer Net MW.

b. Includes capacity allocated to certain resale customers by Southeastern Power Administration (SEPA).

UTILITY GULF POWER COMPANY

FORECAST OF CAPACITY, DEMAND, AND SCHEDULED MAINTENANCE AT TIME OF WINTER PEAK[a]

(1) Year	(2) Total Installed Capacity MW	(3) Firm Capacity Import MW	(4) Total Available Capacity MW	(5) Peak Demand MW[b]	(6) Margin Before Maintenance MW	(7) Margin Before Maintenance % of PK.	(8) Scheduled Maintenance MW	(9) Margin After Maintenance MW	(10) Margin After Maintenance % of PK.
1981-82	2031	29	2060	1062	998	94.0	484	514	48.4
1982-83	2031	(309)	1722	1109	613	55.3	NOT AVAILABLE		
1983-84	2031	(169)	1862	1142	720	63.0			
1984-85	2031	(95)	1936	1161	775	66.8			
1985-86	2031	(81)	1950	1203	747	62.1			
1986-87	2031	(223)	1808	1247	561	45.0			
1987-88	2233	(380)	1853	1292	561	43.4			
1988-89	2233	(412)	1821	1338	483	36.1			
1989-90	2435	(217)	2218	1387	831	59.9			
1990-91	2261	(231)	2030	1437	593	41.3			

Note:
a. Capacity additions and changes must be made by November 30 to be considered in effect at the time of the Winter peak. All values are Winter Net MW.
b. Includes capacity allocated to certain resale customers by Southeastern Power Administration (SEPA).

AVAILABILITY OF PURCHASED POWER

Gulf Power Company coordinates its planning and operation with the other operating companies of the Southern electric system: Alabama Power Company, Georgia Power Company, and Mississippi Power Company. In any year an individual operating company may have a temporary surplus or deficit in generating capacity, depending on the relationship of its planned generating capacity to its load and reserve responsibility. Each company buys or sells its temporary deficit or surplus capacity from or to the pool. This is done through the mechanism of an Inter-company Interchange Contract among the companies which is reviewed and updated annually.

CHAPTER IV

SITE DESCRIPTION

AND

IMPACT ANALYSIS

UTILITY Gulf Power Company

STATUS REPORT
SPECIFICATIONS OF PROPOSED GENERATING FACILITIES

(1)	Plant Name & Unit	V. J. Daniel Electric Generating Unit 1
(2)	Status	This facility is not located in the state of Florida.
(3)	Anticipated Construction Timing	
(4)	Capacity	Summer 511.4 MW[1] Winter 511.4 MW
(5)	Type	
(6)	Primary and Alternate Fuel	
(7)	Air Pollution Control Strategy	
(8)	Cooling Method	
(9)	Total Site Area	
(10)	Anticipated Capital Investment	
(11)	Certification Status	
(12)	Status With Federal Agencies	

(1) Gulf to acquire 50% of total plant capacity May, 1981.

UTILITY Gulf Power Company

STATUS REPORT
SPECIFICATIONS OF PROPOSED GENERATING FACILITIES

(1)	Plant Name & Unit	V. J. Daniel Electric Generating Unit 2
(2)	Status	This facility is not located in the state of Florida.
(3)	Anticipated Construction Timing	
(4)	Capacity	Summer 503 MW[(1)] Winter 503 MW
(5)	Type	
(6)	Primary and Alternate Fuel	
(7)	Air Pollution Control Strategy	
(8)	Cooling Method	
(9)	Total Site Area	
(10)	Anticipated Capital Investment	
(11)	Certification Status	
(12)	Status With Federal Agencies	

(1) Gulf to acquire 50% of total plant capacity in May 1981.

UTILITY Gulf Power Company

STATUS REPORT
SPECIFICATIONS OF PROPOSED GENERATING FACILITIES

(1)	Plant Name & Unit	Robert W. Scherer Electric Generating Center
(2)	Status	This facility is not located in the State of Florida.
(3)	Anticipated Construction Timing	
(4)	Capacity	Summer 404 MW [1] Winter 404 MW
(5)	Type	
(6)	Primary and Alternate Fuel	
(7)	Air Pollution Control Strategy	
(8)	Cooling Method	
(9)	Total Site Area	
(10)	Anticipated Capital Investment	
(11)	Certification Status	
(12)	Status With Federal Agencies	

[1] Gulf to acquire 202 MW of Unit 3 in February, 1987, and 202 MW of Unit 4 in February, 1989, for a total of 404 MW.

UTILITY GULF POWER COMPANY

STATUS REPORT AND SPECIFICATIONS OF PROPOSED DIRECTLY-ASSOCIATED TRANSMISSION LINES

(1) Point of Origin and Termination

(2) Number of Lines

(3) Right-Of-Way

(4) Line Length

(5) Voltage

(6) Anticipated Construction Timing

(7) Anticipated Capital Investment

(8) Substations

(9) Participation

No new directly-associated transmission lines in Florida are required.