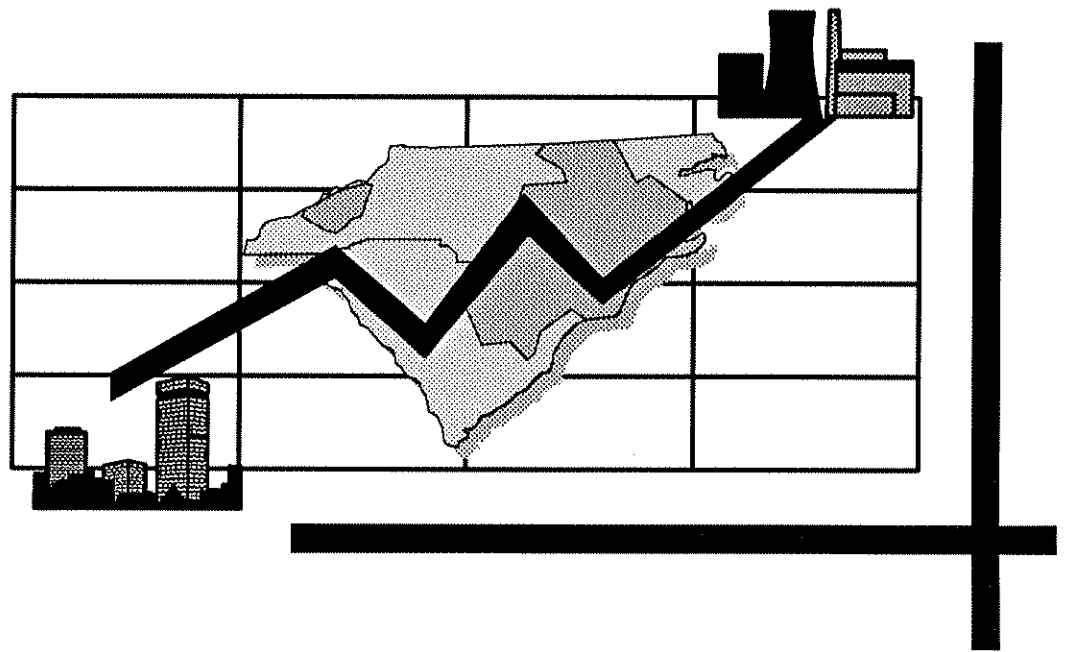


Annual Report of Updates to the Integrated Resource Plan and Short-Term Action Plan

CP&L



Carolina Power & Light Company
June 30, 1996

Annual Update And Short-Term Action Plan

This document presents updates to CP&L's Integrated Resource Plan (IRP) and the near-term actions that are necessary to implement the Integrated Resource Plan. The attached reports, "Annual Report of Updates to Integrated Resource Plan" and "Short-Term Action Plan" are filed in accordance with State Commission rules and provide information which updates prior forecasts and plans.

Executive Summary

Carolina Power & Light Company (CP&L) is an investor-owned electric utility which provides electric power to more than 1.09 million customers in central, eastern, and western North Carolina and central South Carolina. Headquartered in Raleigh, North Carolina, CP&L serves a 30,000-square-mile territory with a population of more than 3.8 million.

Changes from 1995 Resource Plan

Primary changes from the 1995 plan include the following:

Load and Energy Forecast

For the years 1996-2010, an additional 900 megawatts of peaking capacity is indicated. This increased capacity need is caused by an increase in the forecast rate of load growth. The new annual forecast growth rate of net internal demand is 2.3% compared to the prior growth rate of 2.2%.

Resource Plan

The December 1995 Resource Plan was developed using a 13% capacity margin target to schedule resource additions. This is a change from the 15% used last year. This new criterion is based on an assessment of capacity available in the spot market to provide assistance to CP&L and is expected to provide adequate reliability for the system. A 13% capacity margin criterion reduces required capacity resources by approximately 325 MW in the year 2000 as compared to the resources that would be required to maintain the 15% capacity margin target used in the previous plan. While a decrease in the capacity margin target reduces the need for new resources, the amount of capacity contained in the current resource plan is about the same as contained in the last resource plan. This is caused by the higher peak load forecast, which is up by approximately 120 MW in 1996 compared to last year's forecast and is growing at a faster rate.

The December 1995 Resource Plan is similar to last year's plan with respect to the type of capacity additions. Combustion turbines remain the most economical supply-side option because

Annual Update And Short-Term Action Plan

Executive Summary

Resource Plan (continued)

their relatively low capital cost and higher running cost integrates well with CP&L's existing mix of capacity which includes a substantial amount of nuclear and low-cost coal. The first baseload plant scheduled for 2008 in the 1994 plan has been delayed to 2010. Its place is filled with additional combustion turbine (CT) and combined cycle (CC) capacity. This change is primarily due to the improving economics of CT and CC technologies.

The plan includes planned capacity increases at the Brunswick nuclear units. Turbine modifications have been completed at Brunswick 1, and will be performed at Brunswick 2 in 1996. Thermal uprate modifications will be made to Brunswick 1 in 1996 and to Brunswick 2 in 1997. The work will be completed by the fall of 1997. The total uprate for all the projects at the plant will be 102 MW and is reflected in 1998.

Another change in the resource plan is the delay of the 200 MW Power Agency Peaking Project from 1998 to 2004. The delay in the Peaking Project was achieved through an agreement between CP&L and Power Agency in which the Power Agency will purchase approximately 216 MW of peaking capacity and associated energy from CP&L. Power Agency has retained the option to cancel this project as late as October 1, 2001.

**Annual Report Of Updates To Least Cost
Integrated Resource Plans**

Carolina Power & Light Company

June 30, 1996

Annual Report of Updates to Integrated Resource Plans

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Item (a)

- (a) A tabulation of summer and winter peak loads, annual energy forecast, generating capability, and reserve margins for each year.

Tables 1 and 2 provide projected load, resources, and reserves for the fifteen-year period beginning 1996 for summer and winter, respectively. Table 1 also provides system annual energy input (forecasted energy sales adjusted for losses and Company use).

Table 1

**CAROLINA POWER & LIGHT CO.
DECEMBER 1995 RESOURCE PLAN
PROJECTED SUMMER RESOURCES, LOAD, AND RESERVES**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
GENERATION ADDITIONS															
DARLINGTON CT ADDITION		240													
WAYNE COUNTY CT ADDITION			500												
UNDESIGNATED CT				700	300	300	300	300	200				300		
UNDESIGNATED CC										300	300	300		300	600
UNDESIGNATED COAL															500
INSTALLED GENERATION															
OIL/GAS	1046	1046	1286	1786	2486	2786	3086	3386	3686	3886	4186	4486	4786	5086	5386
HYDRO	218	218	218	218	218	218	218	218	218	218	218	218	218	218	218
COAL	5285	5285	5448	5448	5448	5448	5448	5448	5448	5448	5448	5448	5448	5448	5448
NUCLEAR	3064	3064	3166	3166	3166	3166	3166	3166	3166	3166	3166	3166	3166	3166	2483
PURCHASES & OTHER RESOURCES															
SEPA	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109
NON-UTILITY GENERATORS	465	472	312	312	312	312	312	312	312	312	312	312	312	312	312
FAYETTEVILLE GENERATION	283	283	283	283	283	283	283	283	283	283	283	283	283	283	283
AEP PURCHASE	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
NCEMPA/SCPSA PURCHASE	100	100	50												
DUKE PURCHASE	400	400	400												
NCEMPA PEAKING PROJECT									200	200	200	200	200	200	200
TOTAL SUPPLY RESOURCES	11220	11467	12022	12272	12572	12872	13172	13472	13872	14172	14472	14772	15072	15372	15539
TOTAL INTERNAL DEMAND (1)	10438	10768	11059	11327	11605	11893	12166	12435	12717	13009	13285	13534	13783	14022	14249
AIR CONDITIONER CONTROL	124	127	130	133	135	138	141	144	147	150	153	155	158	161	164
WATER HEATER CONTROL	29	29	29	30	30	30	30	31	31	31	32	32	32	33	33
LARGE LOAD CURTAILMENT	332	318	318	318	318	318	318	318	318	318	318	318	318	318	318
VOLTAGE REDUCTION	137	142	146	149	152	157	160	163	167	169	173	175	179	183	185
TOTAL DIRECT DSM	622	616	623	630	635	643	649	656	663	668	676	680	687	695	700
NET INTERNAL DEMAND (2)	9816	10152	10436	10697	10970	11250	11517	11779	12054	12341	12609	12854	13096	13327	13549
RESERVES (3)	1404	1315	1586	1575	1602	1622	1655	1693	1818	1831	1863	1918	1976	2045	1990
CAPACITY MARGIN (4)	12.5%	11.5%	13.2%	12.8%	12.7%	12.6%	12.6%	12.6%	13.1%	12.9%	12.9%	13.0%	13.1%	13.3%	12.8%
RESERVE MARGIN (5)	14.3%	13.0%	15.2%	14.7%	14.6%	14.4%	14.4%	14.4%	15.1%	14.8%	14.8%	14.9%	15.1%	15.3%	14.7%
ANNUAL ENERGY (GWH) (6)	52,822	54,595	56,095	57,431	58,828	60,261	61,636	62,984	64,393	65,860	67,246	68,511	69,755	70,942	72,116

NOTES: (1) INCLUDES THE IMPACT OF ALL DSM PROGRAMS EXCEPT DIRECT DSM PROGRAMS. INCLUDES FAYETTEVILLE REPLACEMENT INTERCHANGE DEMAND OF 230 MW. DOES NOT INCLUDE NCEMC SERVICE OBLIGATION.
(2) TOTAL INTERNAL DEMAND - TOTAL DIRECT DSM.
(3) TOTAL SUPPLY RESOURCES - NET INTERNAL DEMAND.
(4) RESERVES / TOTAL SUPPLY RESOURCES * 100.
(5) RESERVES / NET INTERNAL DEMAND * 100.
(6) INCLUDES THE IMPACT OF ALL DSM PROGRAMS. INCLUDES FAYETTEVILLE REPLACEMENT. DOES NOT INCLUDE NCEMC SERVICE OBLIGATION.

Table 2

**CAROLINA POWER & LIGHT CO.
DECEMBER 1995 RESOURCE PLAN
PROJECTED WINTER RESOURCES, LOAD, AND RESERVES**

	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10
GENERATION ADDITIONS															
DARLINGTON CT ADDITION			276												
WAYNE COUNTY CT ADDITION				575											
UNDESIGNATED CT					805	345	345	345	345	230				345	
UNDESIGNATED CC											345	345	345		
UNDESIGNATED COAL															345
INSTALLED GENERATION															
OIL/GAS	1298	1298	1298	1574	2149	2954	3299	3644	3989	4334	4564	4909	5254	5599	5944
HYDRO	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216
COAL	5369	5369	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532
NUCLEAR	3099	3099	3201	3201	3201	3201	3201	3201	3201	3201	3201	3201	3201	3201	3201
PURCHASES & OTHER RESOURCES															
SEPA	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109
NON-UTILITY GENERATORS	461	461	308	308	308	308	308	308	308	308	308	308	308	308	308
FAYETTEVILLE GENERATION	283	283	283	283	283	283	283	283	283	283	283	283	283	283	283
AEP PURCHASE	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
NCEMPA/SCPSA PURCHASE	100	100	50												
DUKE PURCHASE	400	400	400	400											
NCEMPA PEAKING PROJECT									200	200	200	200	200	200	200
TOTAL SUPPLY RESOURCES	11585	11585	11923	12448	12853	13198	13543	13888	14433	14663	15008	15353	15698	16043	16138
TOTAL INTERNAL DEMAND (1)															
	9713	10017	10271	10519	10776	11043	11295	11543	11803	12073	12327	12558	12788	13009	13218
WATER HEATER CONTROL	101	102	102	103	104	105	106	107	108	109	110	111	112	114	115
LARGE LOAD CURTAILMENT	346	332	318	318	318	318	318	318	318	318	318	318	318	318	318
VOLTAGE REDUCTION	137	142	146	149	152	157	160	163	167	169	173	175	179	183	185
TOTAL DIRECT DSM	584	576	566	570	574	580	584	588	593	596	601	604	609	615	618
NET INTERNAL DEMAND (2)	9129	9441	9705	9949	10202	10463	10711	10955	11210	11477	11726	11954	12179	12394	12600
RESERVES (3)	2456	2144	2218	2499	2651	2735	2832	2933	3223	3186	3282	3399	3519	3649	3538
CAPACITY MARGIN (4)	21.2%	18.5%	18.6%	20.1%	20.6%	20.7%	20.9%	21.1%	22.3%	21.7%	21.9%	22.1%	22.4%	22.7%	21.9%
RESERVE MARGIN (5)	26.9%	22.7%	22.9%	25.1%	26.0%	26.1%	26.4%	26.8%	28.8%	27.8%	28.0%	28.4%	28.9%	29.4%	28.1%

NOTES: (1) INCLUDES THE IMPACT OF ALL DSM PROGRAMS EXCEPT DIRECT DSM PROGRAMS. INCLUDES FAYETTEVILLE REPLACEMENT INTERCHANGE DEMAND. DOES NOT INCLUDE NCEMC SERVICE OBLIGATION.
(2) TOTAL INTERNAL DEMAND - TOTAL DIRECT DSM.
(3) TOTAL SUPPLY RESOURCES - NET INTERNAL DEMAND.
(4) RESERVES / TOTAL SUPPLY RESOURCES * 100.
(5) RESERVES / NET INTERNAL DEMAND * 100.

Item (b)

- (b) A list of the existing plants in service with capacity, location, and any technological innovations to be backfitted to improve environmental quality to the extent known.

Carolina Power & Light Company
Existing Plants In Service

<u>Name/Location</u>	<u>MDC Rating (MW)</u>	<u>Planned Environmental Protection Additions</u>
Brunswick S.E.P. Southport, N. C.	1,521	Installed support facilities sewage treatment plant Installed groundwater monitoring wells Coated circulating water pipes to reduce reliance on chlorine
H.B. Robinson Unit 2 Hartsville, S. C.	683	pH treatment facility completed in 1995 Installed groundwater monitoring wells Installed spill containment for sodium hypochlorite tank Improved spill containments for hazardous material receiving, unloading and storage
Shearon Harris N.P.P. New Hill, N. C.	860	New NPDES permit is pending. CP&L will identify any environmental modifications which may be appropriate Land farming of sewage sludge
Asheville S.E.P. Skyland, N. C.	392	pH adjustment modification for ash pond Installed continuous emissions monitoring systems (CEMS)

Item (b)

<u>Name/Location</u>	<u>MDC Rating (MW)</u>	<u>Planned Environmental Protection Additions</u>
Blewett H.P./C.T.G. Lilesville	74	Handicap access for fishing facility behind dam
Cape Fear S.E.P./C.T.G. Moncure, N. C.	400	Installed CEMS
Lee S.E.P./C.T.G. Goldsboro, N.C.	498	Installed CEMS
Mayo S.E.P. Roxboro, N. C.	745	Rerouted effluent to ash pond for tertiary treatment Installed CEMS Installed low NOx burners
Marshall H.P. Marshall, N. C.	5	None
Morehead City, C.T.G. Morehead City, N. C.	15	None
Robinson Unit 1/C.T.G. Hartsville, S. C.	189	Upgraded sewage treatment facility Installed CEMS
Roxboro S.E.P./C.T.G. Roxboro, N. C.	2,477	Rerouted effluent to ash pond for tertiary treatment Installed CEMS Installed low NOx burners
Tillery H.P. Mt. Gilead, N. C.	86	None
Walters H. P. Waterville, N. C.	105	None
Weatherspoon S.E.P./C.T.G. Lumberton, N. C.	314	Installed CEMS

Item (c)

- (c) A list of generating units under construction or planned at plant locations for which property has been acquired, for which certificates have been received, or for which applications have been filed with location, capacity, plant type, and proposed date of operation included.

<u>Location</u>	<u>Capacity</u>	<u>Plant Type</u>	<u>Proposed Date of Operation</u>
Darlington County South Carolina	Approx. 240 MW	Combustion Turbine	June 1, 1997
Wayne County North Carolina	Approx. 522 MW	Combustion Turbine	June 1, 1998

Items (d) and (e)

- (d) A list of proposed generating units at locations not known with general location, capacity, plant type, and date of operation included to the extent known.

Location	Capacity <u>(MW)</u>	Plant Type	Proposed Date <u>of Operation</u>
Undesignated	700	CT	1999
Undesignated	300	CT	2000
Undesignated	300	CT	2001
Undesignated	300	CT	2002
Undesignated	300	CT	2003
Undesignated	200	CT	2004
Undesignated	300	CC	2005
Undesignated	300	CC	2006
Undesignated	300	CC	2007
Undesignated	300	CT	2008
Undesignated	300	CC	2009
Undesignated	600	CC	2010
Undesignated	500	Coal	2010

- (e) A list of units to be retired from service with location, capacity and expected date of retirement from the system.

The fossil maintenance programs utilized by CP&L have allowed the Company to operate its units longer than their 30-40 years expected life. CP&L believes that continued maintenance will allow its fossil plants to operate indefinitely. Thus, no fossil generating units are currently scheduled to be retired during the period covered by the IRP.

There is one nuclear unit scheduled to be retired during the period covered by the IRP.

Name/Location	MDC Rating (MW)	Retirement Date
H. B. Robinson Unit 2 Hartsville, SC	683	July 31, 2010

Item (f)

- (f) A list of units which are being considered for life extension, refurbishment or upgrading. The reporting utility shall also provide the expected (or actual) date removed from service, general location, capacity rating upon return to service, expected return to service date, and a general description of work to be performed.

For many years CP&L has utilized its maintenance programs to keep its units in the most up-to-date and the best operating condition that is economically reasonable. These maintenance programs deal both with replacement of worn parts to restore equipment to its original condition and with replacements intended to upgrade the equipment to a more reliable and more efficient condition. Because of this type of program, CP&L has no plans for major comprehensive life extension projects.

One-year and five-year maintenance schedules are developed annually for our generating units. These schedules are periodically reviewed and adjusted as appropriate based on system conditions/needs, unit operating performance, etc.

The process of continually maintaining generating units, in conjunction with new test data and changing regulatory requirements, occasionally results in some uprating or derating of facilities. The Brunswick Plant is scheduled to undergo a capacity uprating which is reflected in the Resource Plan. Uprating will be due to turbine upgrades at both units. In addition, CP&L applied for and received a 5% thermal power license uprate. All work modifications are planned to occur during planned maintenance periods thus eliminating the need for removing the unit from service. These changes result in a 102 MW uprating in 1998.

Item (g)

- (g) A list of transmission lines and other associated facilities (200 KV or over) which are under construction or proposed including the capacity and voltage levels, location, and schedules for completion and operation.

CP&L TRANSMISSION LINE ADDITIONS AND MODIFICATIONS

YEAR	Location		CAPACITY _MVA_	VOLTAGE _KV_	COMMENTS
	FROM	TO			
1996	Roxboro Plant	(DPCo) East Durham Interconnection West	1083	230	Relocate & Extend
	Roxboro Plant	(DPCo) East Durham Interconnection East	797	230	Relocate & Extend
	Method	(DPCo) East Durham Interconnection	797	230	Relocate & Extend
	Durham Switching Station	(DPCo) East Durham Interconnection	797	230	Relocate & Extend
1998	Roxboro	(AEP) East Danville #1 Interconnection	825	230	Conversion
	Roxboro	(AEP) East Danville #2 Interconnection	825	230	Conversion
1999	Darlington County Plant	Robinson Plant	784	230	New

Item (g)

YEAR	Location		CAPACITY MVA	VOLTAGE KV	COMMENTS
	FROM	TO			
1999 cont'd	Robinson Plant	Laurinburg	637	230	Relocate from Darlington County Plant
	Darlington County Plant	Sumter East	534	230	Relocate from Robinson Plant
	Darlington County Plant	Darlington (SCPSA)	534	230	Relocate from Robinson Plant
	Lee 230 kV Substation	Clinton	308	115	Rebuild for 230 kV, Operate 115 kV
	Lee	Wommack South	1068	230	Relocate & Uprate
	New Bern	Wommack South	617	230	Relocate
2000	Brunswick Plant	Castle Hayne East	534	230	Relocate
	Lee	Selma North	1234	230	Relocate & Uprate
	Milburnie	Selma	1234	230	Relocate & Uprate
2001	Durham Switching Station	Falls	1234	230	New
2002	Rocky Mount	Wilson	617	230	Conversion
2003	Sutton Plant	Castle Hayne North	617	230	Conversion

CP&L SUBSTATION ADDITIONS AND MODIFICATIONS

<u>YEAR</u>	<u>SUBSTATION NAME</u>	<u>COUNTY</u>	<u>STATE</u>	<u>VOLTAGE (KV)</u>	<u>MVA</u>	<u>COMMENTS</u>
1998	Roxboro West	Person	NC	230/138	300	New

Items (h) and (i)

- (h) A list of any generation and associated transmission facilities under construction which have delays of over six months in the previously reported in-service dates and the major causes of such delays. Upon request from the Commission Staff, the reporting utility shall supply a statement of the economic impact of such delays.

None

- (i) A list of future probable sites giving general location and description, major advantages, and whether the site is wholly owned, partially owned or not owned by the utility.

As stated in item (d), CP&L has identified the need for additional capacity beginning in the mid-1990s. The first block of combustion turbine capacity is planned to be located at the existing Darlington County Electric Plant for 1997. Additional CT capacity is planned for 1998 at the proposed Wayne County Site adjacent to the existing Lee Steam Electric Plant. The remainder has not been sited.

**Annual Report Of Updates To
Short-Term Action Plan**

Carolina Power & Light Company

June 30, 1996

Short-Term Action Plan

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Short-Term Action Plan

Introduction

The Short-Term Action Plan summarizes those actions planned by CP&L over the 1996-1998 period to implement its Integrated Resource Plan (hereinafter the "Resource Plan or IRP"). Specifically, the Short Term Action Plan describes anticipated activities regarding the following electric system resources:

- Demand-Side Programs
- Capacity Additions
- Purchased Power from Non-Utility Generators

The Short-Term Action Plan is a snapshot in time of the Company's Corporate Planning Process as it relates to the implementation of the Company's Integrated Resource Plan (IRP). Each year the Company reviews its IRP in light of changing conditions and evaluates the impact these changes have had or may have on its resource plans, including purchases and other resource options.

Planning Overview

The Short-Term Action Plan is a product of the Integrated Resource Planning Process. It is developed based upon decisions and actions specifically relating to implementation of the Company's Integrated Resource Plan. CP&L's Short-Term Action Plan includes a summary of the resource options or programs contained in the current Integrated Resource Plan for which specific actions must be taken by CP&L within the next three years. For each resource option or program, the summary includes:

- (a) The objective of the resource option or program;
- (b) Criteria for measuring progress toward the objective;
- (c) The implementation schedule for the program over the next two to three years; and
- (d) Actual progress toward the objective to date.

Introduction

Planning Overview (continued)

CP&L continues to evaluate and analyze cost effective means of meeting the energy needs of its customers. One way of meeting these needs is through cost-effective demand-side resources.

CP&L's demand-side programs include: encouraging thermally efficient homes and buildings through the use of high efficiency heat pumps and greater insulation; interruptible service programs; time-of-use rates to encourage valley filling and load shifting; and audit services provided to commercial and industrial customers. The Company is also pursuing development of new programs such as its Common Sense Home Program-Comfort Choice Option. All of CP&L's demand-side programs are designed to impact the timing and magnitude of electric demands resulting in increased utilization of existing generating capacity, and reduced need for additional capacity.

Short-Term Action Plan

Elements of the Integrated Resource Plan

CP&L's strategy of maintaining a diversified mix of resources is apparent in its Integrated Resource Plan. The plan builds on a well-balanced mix of existing demand-side and supply-side resources that includes conservation and load management programs, coal, nuclear, oil/gas, and hydroelectric generation facilities, and purchases from non-utility generators and other utilities. The Company's planned resource additions continue to reflect a diverse portfolio of conservation and load management programs in addition to new supply resources.

Short-Term Action Plan

RESOURCE PLAN SUMMARY

	Annual Energy (GWH)	Peak Load (MW)	Cumulative Demand-Side Management (MW)	Supply-Side Resources Additions (MW)	Capacity Margin (%)
1996	52,822	9,816	1,237	15 NUG	12.5
1997	54,595	10,152	1,267	240 Darl. County CT 7 NUG	11.5
1998	56,095	10,436	1,314	500 Wayne County CT 102 Brunswick Uprate -50 PA/SCPSA	13.2
1999	57,431	10,697	1,363	700 CT* -400 Duke -50 PA/SCPSA	12.8
2000	58,828	10,970	1,408	300 CT*	12.7
2001	60,261	11,250	1,449	300 CT*	12.6
2002	61,636	11,517	1,488	300 CT*	12.6
2003	62,984	11,779	1,524	300 CT*	12.6
2004	64,393	12,054	1,558	200 CT* 200 PA CT	13.1
2005	65,860	12,341	1,590	300 CC*	12.9
2006	67,246	12,609	1,620	300 CC*	12.9
2007	68,511	12,854	1,649	300 CC*	13.0
2008	69,755	13,096	1,677	300 CT*	13.1
2009	70,942	13,327	1,704	300 CC*	13.3
2010	72,116	13,549	1,731	600 CC* 500 Coal* -683 Robinson 2	12.8

NUG - Non-Utility Generation

CC - Combined Cycle

CT - Combustion Turbine

PA CT - Power Agency CT's

PA/SCPSA - Power Agency purchases from the South Carolina Public Service Authority

* The Company has not committed to a particular design, unit size, location, or ownership for the capacity.

Negative numbers indicate the expiration of purchase contracts or plant operating license.

Demand-Side Management Resources

Summary of DSM Programs

Load Shape Objectives

The Company's demand-side management programs are a part of CP&L's combination of resources utilized to meet forecasted customer demand in a cost-effective manner. Such programs offer customers a broad portfolio of options that encourage them to use electricity economically and help the Company to achieve its load shape objectives. The load shape objectives considered by the Company are strategic conservation, load shifting, peak clipping, valley filling, and strategic load growth. Each of these objectives are described below:

- Strategic conservation reduces load in both peak and off-peak periods with larger reductions on peak. The objective is to reduce more load during peak times in order to reduce the need for future generation, transmission and distribution capacity ("new capacity") while minimizing reductions in off-peak sales.
- Load shifting moves existing load from peak to off-peak periods. This not only reduces peak demand and the need for new capacity but also improves the system load factor because total annual energy sales remain about the same.
- Peak clipping reduces system peak load on an as-needed basis. It is dispatched by the utility for a limited number of hours per year. The peak reduction minimizes the need for new capacity and improves the system load factor.
- Valley filling adds new load in off-peak periods such as nights and weekends. This has no effect on the system peak but improves the system load factor and utilization of existing capacity by increasing off-peak energy sales.
- Strategic load growth involves increasing customer usage in a manner that improves the system load factor, thus improving the cost effectiveness of CP&L's facilities and lowering CP&L's cost per kilowatt hour. This might involve increasing market share where competing fuels are available, economic development or improving industrial productivity with electrotechnologies.

Short-Term Action Plan

Summary of DSM Programs (continued)

Implementation Schedule of DSM Programs

During the period 1996-1998, the Company plans to increase the capability of its demand-side management programs by an additional 71 MW. The following table provides a listing of programs by customer class, the objective of each program, and forecasted incremental megawatt reductions at time of summer peak for the years 1996-1998. Additional information on the Company's programs can be found on the pages referenced in the table.

Short-Term Action Plan

Implementation Schedule of DSM Programs

Program	Objective	Page Number	Incremental MW 1996	Incremental MW 1997	Incremental MW 1998
Residential					
Common Sense Home	Strategic Conservation	13	3.3	3.2	3.1
Home Energy Loan/Conservation Discount	Strategic Conservation	17	2.7	2.9	1.0
EZ-\$64	Peak Clipping	19	-26.2	3.2	3.0
High Efficiency Heat Pump	Strategic Conservation, Strategic Load Growth	21	6.1	5.1	3.6
Time-Of-Use	Load Shifting	23	1.6	2.1	1.2
Commercial					
Thermal Energy Storage	Load Shifting	24	.0	.0	.2
Energy Efficient Design	Load Shifting, Strategic Conservation	25	1.4	4.3	6.9
Energy Analysis (Audit)/Time of Use	Load Shifting, Strategic Conservation	26	3.6	8.0	8.8
Industrial					
Audit/Energy Efficient Plants	Peak Clipping, Load Shifting, Strategic Conservation	28	7.5	9.1	13.1
Time-Of-Use	Load Shifting	29	7.3	6.2	6.0
Large Load Curtailment	Peak Clipping	30	-13.9	-13.9	0.0
GRAND TOTAL			-6.6	30.2	46.9

Short-Term Action Plan

Summary of Annual DSM Impacts

The following table presents a summary of projected annual DSM impacts by major rate class:

Year	Residential Subtotal (MW)	Commercial Subtotal (MW)	Industrial Subtotal (MW)	Grand Total (MW)
1996	-12.5	5.0	0.9	-6.6
1997	16.5	12.3	1.4	30.2
1998	11.9	15.9	19.1	46.9
1999	10.8	16.5	21.4	48.7
2000	9.9	15.1	20.1	45.1
2001	9.0	14.2	18.0	41.2
2002	8.5	13.8	16.7	39.0
2003	8.3	13.4	14.9	36.6
2004	8.1	13.0	12.6	33.7
2005	7.9	12.2	11.3	31.4
2006	7.8	11.5	11.0	30.3
2007	7.5	10.9	10.7	29.1
2008	8.0	10.2	10.2	28.4
2009	7.6	9.4	9.8	26.8
2010	7.7	9.2	10.0	26.9

Short-Term Action Plan

Implementation Costs

The following tables show actual 1995 and projected expenses directly allocated to programs included in the Short-Term Action Plan. Lost revenues are excluded.

Demand-Side Management Program Costs 1995 (Millions of Dollars)

Residential

Energy Conservation Discount	\$10.9
EZ-\$64	4.2
High Efficiency Heat Pump	10.4
Common Sense (Thermal Efficiency-New Homes)	4.8
Common Sense (Thermal Efficiency-Manufactured Homes)	0.8
Time-of-Use	0.5
Thermal Efficiency-Existing Homes (6% Energy Loan)	0.5
R&D/General/Miscellaneous	0.6

Commercial

Thermal Energy Storage/Time-of-Use	\$0.2
Energy Audit/Energy Efficient Design	0.1
R&D/General/Miscellaneous	0.1

Industrial

Large Load Curtailment	\$20.8
Audit/Energy Efficient Plants	0.1
Time-of-Use/Thermal Energy Storage	0.1
Miscellaneous	0.2

General

General DSM Planning/Evaluation/R&D Support	\$2.3
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<u>TOTAL</u>	\$56.6
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Short-Term Action Plan

Demand-Side Management Program Costs 1996-1998

Listed below are the projected demand-side management costs by customer class for the period 1996-1998. Lost revenues are not included.

	CUSTOMER SECTOR (Millions of Dollars)			TOTAL
	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1996-1998</u>
Residential	\$33.4	\$34.0	\$34.3	\$101.7
Commercial	\$0.4	\$0.4	\$0.4	\$1.2
Industrial	\$19.6	\$19.1	\$19.2	\$57.9
General	\$2.3	\$2.4	\$2.5	\$7.2
Total	\$55.7	\$55.9	\$56.4	\$168.0

Short-Term Action Plan

Implemented DSM Programs

The following pages provide an objective, program description, load shape objective, criteria for measuring progress, implementation schedule, and progress to date for each of the Company's implemented DSM programs as of the end of the year 1995. These programs are as follows:

Residential Sector

- Common Sense Home (Thermal Efficiency - New Homes)
- Common Sense Manufactured Home/Thermal Efficiency - New Homes
- Thermal Efficiency - Existing Homes
 - Homeowner's Energy Loan Program
- EZ - \$64
- Residential High Efficiency Heat Pump
- Residential Time-Of-Use

Commercial Sector

- Commercial Thermal Energy Storage
- Commercial Energy Efficient Design
- Commercial Energy Audit
- Commercial Time of Use

Industrial Sector

- Industrial Audit/Energy Efficient Plants
- Industrial Time-Of-Use
- Large Load Curtailment

Short-Term Action Plan

Common Sense Home Program (Thermal Efficiency - New Homes)

Objective

Improved thermal efficiency for new residential homes, apartments, and manufactured homes. This program provides greater comfort and energy savings for customers. The program also results in better utilization of CP&L facilities and improved load factor, as well as a reduction in summer peak load.

Description

The Common Sense Home Program encourages the construction of energy-efficient residences. Structures which meet the program's requirements for thermal integrity and equipment efficiency earn the Common Sense Home designation and qualify for CP&L's 5% Residential Energy Conservation Discount.

Current Common Sense Home requirements are: (1) minimum insulation levels of R-30 in ceilings, R-16 in walls, R-19 in floors, and R-5 in slabs; (2) window area limited to 15% of floor area; (3) insulated windows and doors; (4) an electric hot water heater with a minimum tank size of 40 gallons and minimum insulation value of R-12; and (5) an electric heat pump with a minimum 11 Seasonal Energy Efficiency Ratio (SEER) and a sealed duct system.

The Common Sense Program offers incentives to builders of new homes and apartments who meet program criteria which start at \$100/ton of installed heat pumps and increases in \$25 increments as the efficiency of the heat pump increases.

The Company has implemented a Common Sense Plus Home Pilot Program in the Raleigh area. This pilot program is an effort to further encourage CP&L's residential customers and builders to invest in even higher energy efficient standards. In addition to meeting all the criteria of the enhanced Common Sense Home Program, this pilot program requires quality installation standards for the equipment, prewiring for appliance control, and a larger electric water heater thus resulting in greater comfort and energy efficiency for the homeowner. Builders who build homes to these standards are eligible for an incentive similar to Common Sense, but starting at \$200/ton of installed heat pumps.

Load Shape Objectives

Strategic Conservation

Short-Term Action Plan

Common Sense Home Program (Thermal Efficiency - New Homes) (continued)

Criteria for Measuring Progress

The major criterion for measuring progress is cumulative megawatts of peak load reduction capability.

Thermal efficiency is verified by field representatives and reported by customer name, location and other identifiers through the Customer Information Management System.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	3.3	3.2	3.1
Incremental MWh:	16,800	16,700	16,100

Progress to Date

135.0 MW of peak load reduction through December 1995

Short-Term Action Plan

Common Sense Manufactured Home-Enhancement (Thermal Efficiency - New Homes)

Objective

Improved thermal efficiency for new manufactured homes. This program will provide greater comfort and energy savings for customers. The program will also result in better utilization of CP&L facilities and improved load factor as well as reduction in summer peak load.

Description

The Common Sense Manufactured Home Program encourages the construction of energy-efficient manufactured homes. Structures which meet the program's requirements for thermal integrity and equipment efficiency earn the Common Sense Home designation and qualify for CP&L's 5% Residential Energy Conservation Discount.

Current Common Sense Manufactured Home requirements are: (1) minimum insulation levels of R-30 in ceilings, R-11 in walls and R-19 in floors; (2) window area limited to 12% of floor area; (3) insulated windows and doors; (4) ventilation requirements; (5) an electric hot water heater with a minimum tank size of 40 gallons; and (6) an electric heat pump with a minimum 11 Seasonal Energy Efficiency Ratio (SEER) and a sealed duct system.

The Common Sense Manufactured Home Program offers incentives to manufacturers, retailers and salespersons of manufactured homes that meet program criteria .

Load Shape Objective

Strategic Conservation

Criteria for Measuring Progress

The major criterion for measuring progress is cumulative megawatts of peak load reduction capability.

Thermal efficiency is verified by field representatives and reported by customer name, location and other identifiers through the Customer Information Management System.

Implementation Schedule and Progress to Date

Included in values reported under Common Sense Home Program (Thermal Efficiency - New Homes).

Short-Term Action Plan

Thermal Efficiency - Existing Homes

Objective

Encourage customer options which conserve energy and reduce peak load to reduce the need for future generating capacity and improve customer satisfaction.

Description

Thermal efficiency is promoted for existing residential structures through the Homeowner's Energy Loan Program (HELP) used for insulation and high-efficiency heat pumps, energy audits, and customer education. In addition, an upgraded structure that meets CP&L's efficiency standards will also qualify for the 5% Residential Energy Conservation Discount which provides a reduction in energy usage costs.

Load Shape Objective

Strategic Conservation

Criteria for Measuring Progress

The major criterion for measuring progress is cumulative megawatts of peak load reduction capability.

Thermal efficiency is verified by field representatives and reported by customer name location and other identifiers through the Customer Information Management System.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	2.7	2.9	1.0
Incremental MWh:	12,300	12,600	4,700

Progress to Date

33.5 MW of peak load reduction through December 1995

Thermal Efficiency - Existing Homes (Homeowner's Energy Loan Program)

Objective

Provide customers with options that encourage energy conservation and peak load reduction which can reduce the need for future generation capacity and improve customer satisfaction.

Description

CP&L developed the Homeowner's Energy Loan Program in 1981 to promote conservation of energy and demand reduction by providing convenient and inexpensive financing of conservation measures for residential homeowners.

In 1990, the maximum loan amount was increased from \$600 to \$1500 and in 1993, again increased to \$3000. The Homeowner's Energy Loan Program was also enhanced to allow further conservation by residential customers. The Company recognized the need to add additional conservation measures to allow residential customers to have more control over their electricity usage.

Under the enhanced program, CP&L will loan a homeowner with approved credit up to \$3000 for the installation of cost-effective conservation measures for homes with electric heat or whole-house air conditioning at 6% simple interest. The homeowner will have up to five years to repay the loan conveniently via the monthly electric bill.

The approved measures are: ceiling insulation, wall insulation, floor insulation, duct insulation/modification, duct testing/sealing, storm or double glass windows, storm or insulated doors, programmable heat pump thermostats, and energy-efficient water heaters.

Load Shape Objective

Strategic Conservation

Criteria for Measuring Progress

This program is a component of Thermal Efficiency - Existing Homes. Peak load reductions are accounted for through Thermal Efficiency - Existing Homes.

**Thermal Efficiency - Existing Homes
(Homeowner's Energy Loan Program)
(continued)**

Implementation Schedule

Refer to Thermal Efficiency - Existing Homes

Progress to Date

Refer to Thermal Efficiency - Existing Homes

Short-Term Action Plan

EZ-\$64 Program

Objective

Reduce peak demand and defer the need for additional peaking capacity.

Description

The EZ-\$64 Program uses either radio or power-line carrier to interrupt residential customers' central air conditioners for up to four hours per day (maximum of 60 hours during cooling season) and/or electric water heaters for up to four hours per day throughout the year. Participants receive a credit of \$2 per month for water heater control and an additional \$10 per month (\$13 for multiple units) from June through September for air conditioner control with the water heater option. A standalone air conditioner option is also available during the summer months offering the customer a discount of \$8 per month (\$11 for multiple units).

A comprehensive evaluation of this program was completed in the last quarter of 1994.

Load Shape Objective

Peak Clipping

Criteria for Measuring Progress

The major criterion for measuring progress is cumulative megawatts of peak load reduction capability.

The Company tracks participation in the program by customer name, location and other identifiers, net of dropouts, through the Customer Information Management System.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	-26.2	3.2	3.0

The decline in 1996 of 26.2 MW reflects a reduction in the per unit impact of air conditioner control from 2.5 kw to 1.72 kw and for water heater control from 0.4 kw to 0.35 kw.

There is no projected impact on annual megawatt-hours. It is assumed that the reduction in megawatt hours occurring during controlled periods is offset by increased megawatt hours following the controlled periods.

Short-Term Action Plan

EZ-\$64 Program (continued)

Progress to Date

150.9 MW of peak load reduction through December 1995, 28.8 MW of peak load reduction achieved through the water heating control, and 122.1 MW of peak load reductions achieved through air conditioning control.

Short-Term Action Plan

Residential High-Efficiency Heat Pump Program

Objective

Encourage the use of high-efficiency equipment to reduce system peak and reduce the need for future generation capacity. This also helps to assure a balanced and optimized future system design.

Description

CP&L's High-Efficiency Heat Pump Program includes a Homeowner's Energy Loan Program which provides low cost financing for high efficiency heat pumps and approved conservation measures including performance testing and duct sealing. Also included are a Quality Heat Pump Dealer List, dealer incentives for high quality, high efficiency installations and advertising to inform residential customers regarding high-efficiency heat pumps.

The heat pump financing is tied to the SEER rating of the equipment purchased by the residential customer. To qualify for financing, heat pumps must have SEER rating of 11 or higher. Customers will receive a 9% financing rate for 11 - 11.99 SEER units and a 6% rate on units rated 12 SEER or higher. The finance rates apply to both split and package systems.

Dealers in the CP&L service area who satisfy CP&L's program guidelines and who demonstrate quality installation and service will be eligible to become part of the Company's Quality Heat Pump Dealer List. A list of these dealers is given to residential customers who ask for advice on heat pump installations and is promoted as containing those dealers who meet requirements that will help ensure quality installations.

Dealers included on the Quality Dealer List receive dollar credits for each high-efficiency heat pump. The dealers use the accumulated credits toward an equivalent amount of heat pump training and/or equipment for servicing heat pumps. A limited amount of credits may be used to fund advertising focused on high-efficiency heat pumps in order to educate residential customers about heat pump operation and to promote the benefits of high-efficiency heat pumps installed. As an incentive to improve installation quality, Quality Dealers who maintain high levels of customer satisfaction and inspection ratings will receive bonus dollar credits. To ensure customer comfort through performance testing and duct sealing, dealers may receive assistance for NCAEC Duct School training and low interest financing of performance testing equipment.

During 1995 CP&L made 5,139 heat pump loans.

Load Shape Objective

Strategic Conservation, Strategic Load Growth

Short-Term Action Plan

Residential High-Efficiency Heat Pump Program (continued)

Criteria for Measuring Progress

The main criterion for measuring progress is cumulative megawatts of peak load reduction capability. Field reports identify SEER levels and size of high efficiency heat pumps and central air conditioners by customer name, location and other identifiers.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	6.1	5.1	3.6
Incremental MWh:	5,900	4,800	3,400

Progress to Date

27.6 MW of peak load reduction through December 1995

Short-Term Action Plan

Residential Time-Of-Use

Objective

Shift demand and energy to the off-peak periods.

Description

The Company offers two residential time-of-use rates which use financial incentives through rate design to encourage customers to shift load and usage to off-peak periods. Participating customers may choose an all energy time-of-use rate or a time-of-use rate that contains both demand and energy components.

Load Shape Objective

Load Shifting

Criteria for Measuring Progress

The major criterion for measuring progress is cumulative megawatts of peak load reduction capability.

The Company tracks participation in the program by customer name, location and other identifiers, net of dropouts, through the Customer Information Management System.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	1.6	2.1	1.2

There is no impact on annual megawatt-hours because usage is shifted from the on-peak hours to the off-peak hours.

Progress to Date

21.4 MW of peak load reduction through December 1995

Short-Term Action Plan

Commercial Thermal Energy Storage Program

Objective

Promote the installation of Thermal Energy Storage (TES) with emphasis on the utilization of cool storage for off-peak air conditioning in order to shift peak summer load.

Description

The TES Program emphasis is placed on customer education and working closely with HVAC design professionals and other business associates to make them aware of the various CP&L off-peak rates that are available for Thermal Storage applications. The program encourages the customer, design professional or business associate to perform a payback calculation for the additional first cost expenses associated with a TES installation, which will be offset through savings on the electric bill via the appropriate time-of-use or thermal storage rate.

Load Shape Objective

Load Shifting

Criteria for Measuring Progress

The major criterion for measuring progress is cumulative megawatts of peak load reduction capability. Site-specific load reductions are identified and verified on a case-by-case basis.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	.0	.0	.2

Progress to Date

2.1 MW of peak load reduction through December 1995

Short-Term Action Plan

Commercial Energy-Efficient Design Program

Objective

Assist commercial customers with the design of energy-efficient new and renovated facilities.

Description

Recommendations and proposals are made by account representatives and/or power engineers to customers and design professionals early in the planning process with respect to increased energy efficiency. Specific measures recommended include: thermal integrity improvements, the use of energy-efficient lights, high-efficiency heating/air conditioning equipment, and proper control devices.

Load Shape Objective

Load Shifting, Strategic Conservation

Criteria for Measuring Progress

Megawatts of load reduction due to customer implementation of recommended measures.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	1.4	4.3	6.9
Incremental MWh:	3,100	10,200	16,000

Progress to Date

93.7 MW of peak load reduction through December 1995

Short-Term Action Plan

Commercial Energy Analysis (Audit) Program

Objective

Provide commercial customers with on-site energy recommendations and proposals to increase energy efficiency in end uses and site operations.

Description

The Commercial Energy Analysis Program was implemented in 1985 for large commercial customers (200 kW and above). The program was expanded in 1987 to include smaller commercial customers with the implementation of a Simplified Energy Analysis (walk-through audit). Recommendations and proposals are made to the customer by marketing representatives and/or power engineers with respect to increased energy efficiency in end uses such as HVAC, thermal envelope, and other end uses.

Load Shape Objective

Load Shifting, Strategic Conservation

Criteria for Measuring Progress

Megawatts of load reduction due to customer implementation of recommended measures.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW	3.6	8.0	8.8
Incremental MWh:	10,500	22,900	25,200

Progress to Date

53.2 MW of peak load reduction through December 1995

Short-Term Action Plan

Commercial Time-of-Use

Objective

Provide price signals which encourage customers to shift load and energy use to off-peak periods.

Description

The commercial time-of-use rate provides an incentive for customers to reduce on-peak load and shift usage to off-peak hours. Customers have found various ways to reduce on-peak load, including the use of timers, energy management systems, cool storage systems and changes in work schedules.

Load Shape Objective

Load Shifting

Criteria for Measuring Progress

Megawatts of load reduction due to customer shifting of load to off-peak periods.

Implementation Schedule

Refer to Commercial Energy Analysis (Audit) Program

Progress to Date

Commercial time-of-use is used as a tool in the Commercial Energy Analysis (Audit) Program, and peak load reduction is measured through the Audit Program.

Short-Term Action Plan

Industrial Audit/Energy-Efficient Plants Program

Objective:

Influence the specification and installation of state-of-the-art energy-efficient technologies to improve the Company's load shape and maximize the efficiency of the customer's facility and/or process.

Description

CP&L energy engineers and power engineers have been conducting detailed energy studies and "walk-through" audits for industrial customers system-wide since 1983. Applications addressed include energy-efficient lighting, motors and motor drives, HVAC design and optimization, and energy management systems. Actual on-site measurement supports engineering analyses and conclusions.

The same engineers work during the facility design phase as part of the Industrial Energy-Efficient Plants component of this program. Objectives from both components include reducing peak load, load shifting, and strategic conservation. The Power Quality component was a 1990 program enhancement. Power Quality is an area of major importance to all our customers, especially our industrial customers. The goal of this program is to provide technical expertise to enable the power engineers to better serve our customers.

Load Shape Objective

Peak Clipping, Strategic Conservation, Load Shifting

Criteria for Measuring Progress

Megawatts of load reduction due to customer implementation of recommended measures.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	7.5	9.1	13.1
Incremental MWh:	49,000	59,300	84,600

Progress to Date

239.3 MW of peak load reduction through December 1995.

Short-Term Action Plan

Industrial Time-Of-Use

Objective

Provide price signals which encourage customers to shift load and energy use to off-peak periods.

Description

Optional time-of-use rates are available to all industrial customers. Demand and energy charges are lower during specified off-peak hours. When feasible, time-of-use rates are used as tools by CP&L's energy engineers and power engineers in conjunction with the industrial Audit/Energy-Efficient Plants Program to reduce peak load and improve load factor and increase the economic efficiency of our customers.

Load Shape Objective

Load Shifting

Criteria for Measuring Progress

Megawatts of load reduction due to customer shifting of load to off-peak periods.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	7.3	6.2	6.0

There is no impact on annual megawatt-hours because usage is shifted from the on-peak hours to the off-peak hours.

Progress to Date

113.4 MW of peak load reduction through December 1995

Short-Term Action Plan

Large Load Curtailment Program

Objective

Reduce peak load at times when available generating capacity is low relative to system load or when capacity is available, but at a relatively high generation cost.

Description

Customers are provided an economic incentive based upon the avoided peaking capacity cost, to participate in the program. The customer receives a discount monthly for each kilowatt subject to curtailment. For capacity type curtailments, customers are expected to reduce load or "pay" back to the Company a significant portion of discounts previously received. If the curtailment is economic in nature, customers decide whether to curtail or continue to operate at their contract demand level and pay a cents-per-kWh premium. This program is popular with customers who have the ability to increase and decrease significant loads in a short period of time.

Load Shape Objective

Peak Clipping

Criteria for Measuring Progress

The criterion for measuring progress is the difference between the contractual firm demand during a curtailment and the average peak demand for summer and winter.

Implementation Schedule

Year:	1996	1997	1998
Incremental MW:	-13.9	-13.9	0.0

The amount of large load curtailment declines due to the fact that the program has been oversubscribed beyond its 300MW limit.

There is no impact on annual megawatt-hours because the reduction in megawatt hours occurring during curtailments is offset by increased megawatt hours during non-curtailed periods.

Progress to date

380.4 MW peak load reduction through December 1995.

Short-Term Action Plan

Potential DSM Programs

CP&L is considering an array of potential demand-side management programs. The table below provides a listing of the programs for which actions are planned over the next three years. The following pages provide an objective, description, and status of each program.

Residential

Heat Pump Water Heater
Home Comfort Analysis
Common Sense Home Program-Comfort Choice Option

Commercial/ Industrial

Non-Residential Energy-Efficient Heat Pump
Small Load Curtailment

Short-Term Action Plan

Potential DSM Programs

The following table provides a listing of potential DSM programs under consideration by CP&L. Additional information on potential DSM programs can be found on the pages referenced in the table.

Residential Page No.	Program	Load Shape Objective
33	Heat Pump Water Heater	Strategic Conservation
34	Home Comfort Analysis	Strategic Conservation
35	Common Sense Home Program- Comfort Choice Option	Strategic Conservation
Commercial/ Industrial		
36	Non - Residential Energy Efficient Heat Pump	Strategic Conservation
37	Small Load Curtailment (currently experimental)	Peak Clipping

Short-Term Action Plan

Heat Pump Water Heater

Objective

Increase energy-efficiency and reduce peak demand.

Description

A Heat Pump Water Heater study is underway to test the feasibility and customer acceptance of heat pump water heaters in CP&L's service area. The two-year study began in 1995. Initial activities consisted of testing equipment in a controlled laboratory environment to determine equipment performance and potential installation problems. Field installation followed. During the field test, energy, demand and hot water consumption is being monitored. Heat pump water heaters are expected to provide hot water at less cost and at a reduced kW demand when compared to conventional electric water heaters.

Load Shape Objective

Strategic Conservation

Status

Equipment is being tested in both a laboratory and field environment. As of March 1996, two heat pump water heaters have been installed in CP&L employees' homes. We are continuing to monitor the performance capabilities to determine the viability of an offering.

Short-Term Action Plan

Home Comfort Analysis

Objective

Strategic conservation and increased comfort for the customer.

Description

Develop a formal program utilizing CP&L's Quality Heat Pump dealers to address the areas of performance testing and duct system sealing for existing and new homes. The training would be provided by the North Carolina Alternative Energy Corporation or other equivalent agency. The Company currently encourages performance testing and duct sealing in conjunction with other programs.

Load Shape Objective

Strategic Conservation

Status

The Company is moving forward to train CP&L personnel on the use and benefits of performance testing and duct sealing. CP&L is allowing any Quality Heat Pump dealer who completes the North Carolina Alternative Energy Corporation duct diagnostic and repair training to utilize CP&L's Home Energy Loan Program to finance performance testing and duct sealing. Changes to the residential high efficiency heat pump program were approved in early 1996 and include provisions for improving installation quality through the availability of duct testing and sealing.

Short-Term Action Plan

Common Sense Home Program - Comfort Choice Option

Objective

The objective of this program is to encourage energy-efficiency and environmental awareness among our residential customers. The program will result in better utilization of CP&L facilities, improved load factor, reduction in summer peak load, and improved customer satisfaction.

Description

The proposed Common Sense Home Program with the Comfort Choice option will encourage builders to incorporate features which improve energy-efficiency and provide comfort. As with Common Sense, the homes incorporate features which increase thermal and equipment efficiencies. In addition, the Comfort Choice option includes indoor air quality, water quality, home waste management, high efficiency lighting, and safety features. This program is being promoted nationwide under the auspices of the Edison Electric Institute's (EEI) "E Seal" certification program.

Load Shape Objective

Strategic Conservation

Status

Program development is completed. CP&L's program design was approved by EEI in April 1994. CP&L is the fourth utility in the nation to qualify to use the "E Seal" certification. The program is being considered as a pilot to be initiated in 1996 in CP&L's Northern Region.

Short-Term Action Plan

Non-Residential Energy-Efficient Heat Pump

Objective

Encourage the installation of energy-efficient heat pumps in the new and replacement non-residential market.

Description

The Non-Residential Energy-Efficient Heat Pump Program has been developed to increase energy efficiency by providing technical support and education in the selection of state-of-the-art equipment options. The Non-Residential Energy-Efficient Heat Pump Program is under consideration to complement our existing efforts by encouraging the installation of energy-efficient heat pumps. Through these efforts, CP&L expects to help its customers achieve higher efficiency levels in the use of electricity.

Load Shape Objective

Strategic Conservation

Status

CP&L implemented the Non-Residential Heat Pump Pilot Program in South Carolina in September 1994. We are currently evaluating the results of that pilot program.

Small Load Curtailment

Objective

This is an experimental program that was developed to achieve the same peak load reduction objectives as the Large Load Curtailment Program. The experiment measures customer response, peak load reduction, and cost savings for curtailable loads characteristic of smaller commercial and industrial customers. An alternative incentive mechanism is also being evaluated.

Description

Customers are provided an economic incentive to reduce load during periods when available capacity is low relative to load. Administration of the program closely parallels that of the Large Load Curtailment Program. This experimental program includes a different incentive (discount) structure which may more appropriately address actual loads curtailed. More incentive is provided for available curtailable load when the Company is most likely to need it, such as the summer and winter peak seasons.

Load Shape Objective

Peak Clipping

Status

The program is currently available on an experimental basis.

Short-Term Action Plan

Other DSM Activities

Southeast Data Distribution Effort

Carolina Power & Light is participating in an Electric Power Research Institute (EPRI) sponsored project to facilitate the transfer of end-use load research data to utilities in the Southeast. Project management and technical support is being provided by EPRI's Center for Electric End-Use Data (CEED).

The load research data consists of end-use metered load data and customer characteristics for 200 residential and 300 commercial customers. The data was collected over an 18 month period in 1992 and 1993. The metered end-uses in the residential sector included water heating, HVAC, refrigerator, clothes dryer, television, microwave, dishwasher, and range. In the commercial sector, the end-uses included water heating, HVAC, lighting, refrigeration, and cooking.

The project will be conducted in two phases: In Phase One, which has been completed, the load and characteristics data set were verified, a data quality review was completed and the data was segmented into meaningful subgroups. End-use load data, characteristics data, and weather data were provided to participating utilities. Also monthly energy consumption profiles were developed and provided. In Phase Two, which is currently underway, the transferability of the data will be addressed and data transfer models and end-use load shapes will be developed for each project participant.

Geographically Targeted DSM

The purpose of this project is to investigate the potential for directing DSM programs toward geographic regions in a way that maximizes benefits over cost. The primary driving variable is the utilization/capacity of local distribution systems. Potential benefits from this project include increased potential for developing cost effective DSM programs because avoided distribution costs are a significant component in cost/benefit studies of DSM programs. Furthermore, distribution costs are believed to vary widely from region to region.

CP&L is currently participating in EPRI Project RP3337-9, Load Control for Transmission and Distribution Benefits. Work is being performed for EPRI by ACES, Inc. The project's objectives are:

1. Develop a method for estimating end-use load diversity at the distribution planning area level.
2. Estimate the potential effects of load control at the distribution planning area level. Load changes, value to the utility and effects on the customer are considered.

Short-Term Action Plan

Other DSM Activities (continued)

Area Costing

CP&L is also working with EPRI and selected contractors to investigate local area marginal costing techniques for transmission and distribution capacity and load control strategies. Local area costing capability can provide the basis for targeting of DSM or marketing programs to areas with higher or lower than average marginal costs.

The estimation of marginal transmission and distribution capacity costs on a local area basis is a relatively new development. Much of the work in this area has been funded by or sponsored by EPRI and member utilities. The results to date have begun to document the conceptual foundations, analytical methods and business applications of this new marginal costing approach.

A detailed project work plan has been developed which determined the feasibility of developing a local area costing capability. Current and future applications for local area costing as well as data availability, analysis requirements, and organizational requirements have been appraised. Efforts are now underway to target three particular areas in the CP&L service territory to demonstrate the local area costing capability.

Short-Term Action Plan

Supply-Side Resources

Summary of Supply-Side Additions

During the period 1996-1998, CP&L will continue to evaluate options for meeting the need for additional supply-side resources. The table below provides a listing of the supply-side resource additions included in the Company's Integrated Resource Plan and for which actions must be taken over the next three years. A summary discussion of each planned supply-side addition is included on the following pages.

Planned Supply-Side Resource Additions

<u>Peaking Resource Additions</u>	<u>Capacity</u>	<u>Year</u>
Darlington County Addition	240 MW	1997
Wayne County	522 MW	1998
Undesignated Combustion Turbine	700 MW	1999
Undesignated Combustion Turbine	300 MW	2000
Undesignated Combustion Turbine	300 MW	2001
<u>Non-Utility Generators</u>		
Carolina Energy	7 MW	1997

Short-Term Action Plan

Darlington County Electric Plant Combustion Turbine Addition

The Combustion Turbine Addition will be installed adjacent to eleven existing combustion turbine generating units and will supply approximately 240 megawatts of peaking generating capacity.

Objective

Provide the necessary generating capacity to insure reliable electric service to our customers while maintaining the flexibility to defer generation additions in order to accommodate and respond to future uncertainty.

Criteria for Measuring Progress

Achievement of milestones necessary to have the capacity on-line when needed.

Implementation Schedule

Figure 1 on a following page shows the schedule for placing the Combustion Turbine Addition in-service on June 1, 1997.

Progress To Date

On July 16, 1990, the Company announced plans to add combustion turbine generating units at the Darlington County Electric Plant near Hartsville, South Carolina. An application for a Certificate of Environmental Compatibility and Public Convenience and Necessity was filed with the South Carolina Public Service Commission (SCPSC) on November 30, 1990. The public hearing was held before the Commission on February 7, 1991. The Certificate was issued by order of the South Carolina Public Service Commission on July 16, 1991. The Air Permit Application was submitted to the South Carolina Department of Health and Environmental Control on February 7, 1991. The Air Permit was issued on September 25, 1991. The initial Air Permit was to expire on March 23, 1993. On January 15, 1993, CP&L applied for an extension of the Air Permit with a new expiration date of September 23, 1994, to accommodate the two-year delay of the in-service date to June 1, 1996. The Air Permit was extended on March 23, 1993. On June 6, 1994, CP&L applied for a revision to the Air Permit to allow use of a different CT model. A new revised Air Permit was issued on August 31, 1994 with an expiration date of February 28, 1996. In December 1994, CP&L revised the in-service date to June 1, 1997. On December 9, 1994 CP&L executed a purchase agreement with Westinghouse Electric Corporation to provide and install the combustion turbines for this project. Ground breaking was held on October 17, 1995.

Short-Term Action Plan

Darlington County Electric Plant Combustion Turbine Addition (continued)

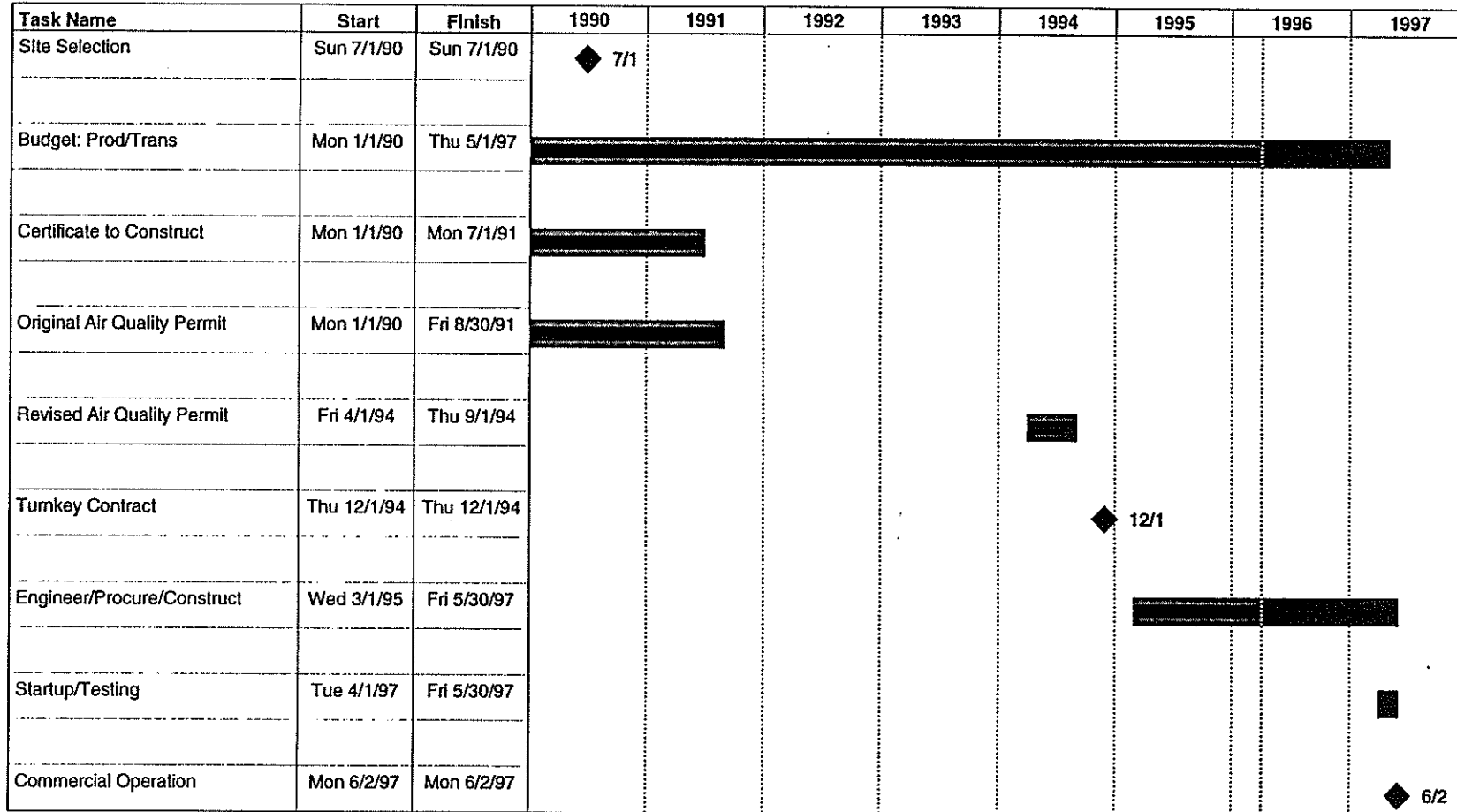
Implementation Costs

Transmission plant costs including AFUDC are estimated to be approximately \$4 million and generation plant costs including AFUDC are estimated to be approximately \$61 million.

Problems Incurred and Resolution

None.

**Figure No. 1
Darlington County Combustion Turbines
Project Milestone Schedule**



**Wayne County Electric Plant
Combustion Turbine Addition**

CP&L has announced plans to add approximately 522 MW (summer rating) of combustion turbine (CT) generating units at a site in Wayne County adjacent to the Lee Steam Electric Plant near Goldsboro, NC.

Objective

Provide the necessary generating capacity to insure reliable electric service to our customers while maintaining the flexibility to defer generation additions in order to accommodate and respond to future uncertainty.

Criteria for Measuring Progress

Achievement of milestones necessary to have the capacity on-line when needed.

Implementation Schedule

Figure 2 on a following page shows a preliminary schedule for placing 522 MW in-service on June 1, 1998.

Progress To Date

On December 14, 1994 the Company announced plans to add combustion turbine generating units at the Wayne County site adjacent to the Lee Steam Electric Plant near Goldsboro, NC. On December 19, 1994 the Company filed Preliminary Plans (R8-61 information) with the N.C. Utilities Commission, and the Air Permit Application was submitted to the N.C. Division of Environmental Management. In September 1995, CP&L applied for a Certificate of Public Convenience and Necessity; the Certificate was granted on March 21, 1996 by the North Carolina Utilities Commission. The expected in-service date of June 1, 1998 may be delayed if alternatives currently under investigation prove economical and reliable.

Implementation Costs

Assuming an in-service date of 1998, transmission plant costs including AFUDC are estimated to be approximately \$8 million and generation plant costs including AFUDC are estimated to be approximately \$123 million.

Problems Incurred and Resolution

None.

Short-Term Action Plan

Undesignated Peaking Capacity

CP&L's Integrated Resource Plan includes the addition of undesignated peaking capacity beginning in 1999 with additions each year thereafter through 2004. The Company's Integrated Resource Plan indicates that these peaking capacity resources will result in the best capacity mix and that combustion turbines are the best option for meeting the peaking capacity need. No commitments have been made for capacity.

On January 9, 1996 CP&L entered into a Stipulation with the Public Staff in which CP&L agreed to utilize a competitive bidding process for its next two blocks of capacity after the Wayne County addition, which are currently scheduled to be placed in service by the summer of 1999. Due to the time required to construct or obtain such capacity, CP&L must begin the competitive bidding solicitation in 1996.

Objective

The objective of these peaking capacity additions is to acquire the additional resources needed to serve our customers' demands with reliable, low cost and efficient sources of capacity while maintaining maximum flexibility to defer generation additions in order to deal with future uncertainty.

Criteria for Measuring Progress

Achievement of milestones necessary to maintain options.

Implementation Schedule

During the period 1996-1998, CP&L will continue to evaluate peak load growth and the need and timing for additional peaking resources. We plan to pursue those activities necessary to maintain the option to install new combustion turbines, including performing site assessments, securing contract options from vendors, and conducting bid solicitations. Should combustion turbines continue to be the best means of meeting the need for additional peaking resources in the late 1990s, firm decisions to proceed or other commitments could be required during the 1996-1998 time period.

Progress to Date

CP&L has an active competitive bidding process underway. CP&L continues to examine self-build alternatives also.

Short-Term Action Plan

Undesignated Peaking Capacity (continued)

Implementation Costs

Firm cost estimates will not be available until the Company has determined the best option or options to meet the need for additional peaking capacity in the late 1990s. An estimate of plant costs for simple cycle combustion turbines is approximately \$235/kW in 1995 dollars.

Problems Incurred and Resolution

None.

Short-Term Action Plan

Purchased Capacity from Non-Utility Generators

Non-Utility Generation Project - Carolina Energy, L.P. Energy

Carolina Energy, L.P. will construct a waste to energy facility on the property of The City of Wilson in Wilson, NC. The surrounding area will supply trash/garbage to a facility in which the waste would be prepared for fueling a boiler that will drive a 7.3 MW back pressure turbine generator. The facility is scheduled to be completed in July 1997.

Objective

NA

Criteria for Measuring Progress

NA

Implementation Schedule

On July 10, 1995, Carolina Energy and CP&L signed an Electric Power Purchase Agreement to sell up to 7.3 MW output to CP&L. The initial term of the agreement is 25 years.

Progress to Date

The facility is currently under construction.

Implementation Costs

The contract with Carolina Energy provides for a purchase of power at a negotiated rate.

Problems Incurred and Resolution

None.

