

Carolina Power & Light Company Legal Department/CPB 13A2 PO Box 1551 Raleigh NC 27602-1551

June 30, 1999

The Honorable Gary E. Walsh Acting Executive Director South Carolina Public Service Commission Post Office Drawer 11649 Columbia, South Carolina 29211



Re: Carolina Power & Light Company's 1998 Short-Term Action Plan Docket No. 98-434-E

Dear Mr. Walsh:

Pursuant to the Public Service Commission's Order No. 98-502 issued in Docket No. 87-223-E, Carolina Power & Light Company hereby submits for filing an original and ten copies of its 1999 Short-Term Action Plan. We are also enclosing one extra copy to be stamped and returned.

Sincerely,

Mitchell Illian~

B. Mitchell Williams Manager, Regulatory Affairs

BMW

Enclosures

c: William F. Austin, Esq. Serena D. Burch, Esq. Elliott F. Elam, Jr., Esq. Mr. Mitchell M. Perkins William Larry Porter, Esq. Garrett A. Stone, Esq.

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# **Short-Term Action Plan**





South Carolina Public Service Commission Docket No. 98-434-E June 30, 1999

# Introduction

Carolina Power & Light Company provides electric power to approximately 1.15 million customers in a 30,000 square mile area having a total population of about 3.9 million people. The service area covers much of eastern and central North Carolina, the Asheville area in western North Carolina, and the northeast quadrant of South Carolina.

To provide a reliable, safe and economic supply of electricity for those customers, CP&L annually develops long-term forecasts of system energy sales and peak loads, and reviews and revises capacity addition plans. Further, the states of North Carolina and South Carolina each have in place rules requiring the filing of specific information regarding CP&L's resource plans. This report presents CP&L's current least-cost Short-Term Action Plan and contains the information required in the North Carolina and South Carolina resource plan filings.

## **Energy and Peak Load Forecast**

CP&L's forecasting processes have utilized econometric and statistical methods since the mid-70s. During this time enhancements have been made to the methodology as data and software have become more available and accessible. Enhancements have also been undertaken over time to meet the changing data needs of internal and external customers. In response to these changing planning needs, CP&L's forecast processes have most recently been expanded to include energy forecasts at the end-use level. Econometric and end-use energy forecast results for the residential, commercial, and industrial classes are now combined to produce the system energy forecast.

The System Peak Load Forecast is developed from the System Energy Forecast using a load factor approach. This load forecast method couples the two forecasts directly, assuring consistency of assumptions and data. Class peak loads are developed from the class energy using individual class load factors. Peak load for the residential, commercial, and industrial classes are then adjusted for projected load management impacts. The individual loads for the retail classes, wholesale customers, and NCEMPA, and Company Use are then totalized and adjusted for losses between generation and the customer meter to determine System Peak Load. Fayetteville Public Works Commission Replacement Interchange Contract is then added to the System Peak Load to determine Net Internal Load.

Forecast sales and peak loads are reduced for demand-side management programs, and voltage reduction programs. Wholesale sales and demands include a portion that will be provided by the Southeastern Power Administration (SEPA). NCEMPA sales and demands include power which will be provided under the joint ownership agreement with them. Also included in the forecast is a replacement interchange contract of approximately 230 MW with the Fayetteville Public Works Commission (FPWC) instituted in July 1994. On January 1, 1996, NCEMC began receiving service for 200 MW of load from another supplier. This portion of NCEMC load is not included in the forecast.

Summaries of the 1998 Energy and Peak Load Forecast are provided in the following table. Peak load and energy data presented in the table is at generation level. The table provides both CP&L's

System Forecast and Net Internal Forecast. CP&L's System Forecast does not include power provided under the Company's replacement interchange contract with the Fayetteville Public Works Commission (FPWC). CP&L's Net Internal Forecast does include the FPWC replacement interchange contract. CP&L System and CP&L Net Internal peak load forecasts assume the use of all load management capability at the time of system peak.

#### **DECEMBER 1998 ENERGY AND PEAK LOAD FORECAST**

Annual Peak Load and Energy At Expected Peaking Temperatures

	CP&L	Fayetteville	CP&L Net	CP&L System	Fayetteville	CP&L Net
	System	Replacement	Internal	Energy	Replacement	Internal
	Peak Load	Interchange	Load	Input	Interchange	Energy
	MW	MW	MW	MWH	MWH	MWH
Year	at generation level					
1999	10,492	230	10,722	57,034,142	589,992	57,624,134
2000	10,782	230	11,012	58,449,343	597,886	59,047,229
2001	11,261	230	11,491	60,228,468	609,753	60,838,221
2002	11,613	230	11,843	62,090,188	625,259	62,715,447
2003	11,951	230	12,181	63,926,340	638,350	64,564,690
2004	12,290	230	12,520	65,814,335	654,653	66,468,988
2005	12,613	230	12,843	67,546,031	663,509	68,209,540
2006	12,923	230	13,153	69,314,235	669,721	69,983,956
2007	13,250	230	13,480	71,111,839	673,472	71,785,311
2008	13,569	230	13,799	72,923,782	679,090	73,602,872
2009	13,881	230	14,111	74,657,115	686,971	75,344,086
2010	14,192	230	14,422	76,416,638	689,503	77,106,141
2011	14,492	230	14,722	78,130,225	693,358	78,823,583
2012	14,807	230	15,037	79,912,794	697,040	80,609,834
2013	15,115	230	15,345	81,596,400	698,566	82,294,966
2014	15,423	230	15,653	83,367,613	712,537	84,080,150
2015	15,733	230	15,963	85,124,528	726,788	85,851,316
2016	16,021	230	16,251	86,781,404	733,665	87,515,069
2017	16,332	230	16,562	88,548,485	742,024	89,290,509

note: All values reduced for load management program impacts

### **Forecast Assumptions**

Generally, growth in the standard of living as reflected in personal income and Gross Domestic Product (GDP) per capita is expected to slow modestly relative to that enjoyed today. The labor force can be predicted with some reliability because the working population for the early 21<sup>st</sup> century has already been born. Real dollar prices are used to enhance model reliability during periods of varying inflation. The forecast assumes that our customers will tend toward continuing energy efficiency in the future. More efficient electrical equipment, continued cost-effective conservation measures, and specific load management programs are expected to result in slower energy growth when compared with the 1970s and 1980s.

The forecast of system energy usage and peak load does not explicitly incorporate periodic expansions and contractions of business cycles, which are likely to occur from time to time during any long-range forecast period. While long-run economic trends exhibit considerable stability, short-run economic activity is subject to substantial variation. The exact nature, timing and magnitude of such short-term variations are unknown years in advance of their occurrence. The forecast, while it is a trended projection, nonetheless reflects the general long-run outcome of business cycles because actual historical data, which contain expansions and contractions, are used to develop the general relationships between economic activity and energy use. Normalized temperatures are assumed for the year as a whole and at the time of the system peak.

CP&L currently has specific retail customers on self-generation deferral rates and wholesale customers on long-term contracts. These rates and contracts have been structured to avoid uneconomic bypass. Retaining customers at rates which recover a portion of the utility's fixed costs keeps rates lower for all customers than would be the case if the utility lost the customer entirely. It is the Company's policy to avoid uneconomic bypass now and in the future. Consequently the forecast assumes that flexible rate guidelines will continue and current customers on these rates will be retained.

### **Forecast Comparisons**

The following figure compares the 1998 Peak Load Forecast with the 1997 forecast. Both forecasts include the 230 MW Fayetteville Replacement Interchange Contract and the 200 MW reduction in the North Carolina Electric Membership Corporation (NCEMC) load that began in January 1996. Net internal energy input is expected to increase at an average growth rate of 2.6%, or around 1,760 GWh, a year between 1999 and 2013. Net internal peak loads are forecast to increase at an average growth rate of about 2.6%, or around 330 MW a year.



### **Forecast Perspective**

The following two figures provide a comparison of historic and forecast growth for the period from 1960 through 2013. Examining the energy growth for the 1960-70 and 2000-2013 periods illustrates the phenomena of falling percentage growth while annual change in GWh remains nearly constant. During the decade from 1960 to 1970 energy grew at an average of 1,200 GWh per year, a 10.9% growth rate. By comparison, average energy growth for 2000-2013 is projected to be about 1,800 GWh per year, somewhat greater than the 1960-70 period. On a percentage basis this is only a 2.6% growth rate. The lower percentage growth rate results from similar amounts of GWh growth being divided by a much higher base. In other words, similar amounts of growth appear as lower percentage growth rates as the base increases.



**Historical Perspective of Energy** 



#### **Contract Sales**

In addition to the retail and wholesale load previously discussed, CP&L has contracted to supply additional wholesale loads in the Carolinas outside CP&L's historical service area. These loads have been included in CP&L's Short-Term Action Plan and are identified as contract sales. These loads include sales to Santee Cooper of 100 MW in 1999, 150 MW in 2000, and 200 MW from 2001 through 2003. Beginning in 2001 CP&L has a firm sale of 450 MW to NCEMC to supply NCEMC customers in the Duke control area.

## **Resource Requirements**

A reliable supply of electricity requires that a margin of generating capacity be maintained above the capacity used to serve the expected load. At any time during the year, some plants will be out of service for periodic maintenance or due to unanticipated equipment failures. Adequate reserve capacity must be available to provide for this unavailable capacity and also for higher than expected peak demand due to weather extremes. In addition, some reserve capacity must also be available to maintain the balance between supply and demand on a moment-to-moment basis. The peak demand forecast combined with the capacity margin required for reliability determines the resource requirements.

The amount of generating reserve needed to maintain a reliable supply of electricity is a function of the unique characteristics of a utility system including load shape, unit sizes, capacity mix, fuel supply, maintenance scheduling, unit availabilities, and the strength of the transmission interconnections with other utilities. Because system characteristics are particular to each individual utility, there is no one standard measure of reliability that is appropriate for all systems.

Periodically, CP&L conducts comprehensive, multi-area, probabilistic system reliability analysis to evaluate the amount of reserve generating capacity that is needed to ensure an adequate supply of electricity for its customers. The analysis considers, among other things, the assistance available from other utilities, the ability of the transmission system to deliver the power to the CP&L system, load uncertainty, and generator availability. This Resource Plan utilizes a target capacity margin of 13% for scheduling capacity additions. It is important to recognize that reserves do not remain at a constant level due to load growth and the discreet size of generation additions. As a result, the capacity margin in any year may be higher or lower than the target capacity margin. Tables containing projected summer and winter resources, loads, and reserves are shown in Appendices A and B, respectively.

## **Planned Capacity Resources**

CP&L's Short-Term Action Plan (STAP) is designed to provide an adequate and reliable supply of electric power for CP&L's customers at the lowest reasonable cost. However, future capacity requirements are clouded by the on-going restructuring of the electric utility industry. To respond to this uncertainty, CP&L's STAP seeks a balance of resources that can provide flexibility to adapt to uncertain and ever-changing futures.

#### PLANNED RESOURCE ADDITIONS

Resource Additions Duke Schedule J	<u>1999</u> (400)	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
PA/SCPSA Purchase	(50)											
PECO Purchase	100					(300)						
Term Purchase	500	(500)										
NUG Cogeneration		8										
NUG Cogeneration			(67)	(32)	(163)							
Broad River Purchase			500									
Harris Upgrade				40								
AEP Purchase												(250)
Robinson 2												(683)
Asheville CT #1	165											
Asheville CT #2		165										
Wayne Co. CT #1-4		686										
Rowan CT #1-5			800									
Richmond CT #1-2			320									
Richmond CT #3-5				480								
Undesignated CC					500	500	500	500		500		1500
										*****		
Net Resource Additions	315	359	1,553	488	337	200	500	500	-	500	-	567

## **Installed Generation**

CP&L's generating units provide a valuable low-cost resource for the future. Existing capacity includes 5285 MW of coal, 3174 MW of nuclear, 1286 MW of oil/gas, and 218 MW of hydro, for a total of 9963 MW. The map below shows the location of the Company's generation facilities. A listing of the individual units is provided in Appendix D. This installed capacity includes approximately 640 MW jointly-owned by North Carolina Eastern Municipal Power Agency (NCEMPA).

Generating units are continually maintained to ensure that they will provide economic and reliable service. This process, in conjunction with new test data and changing regulatory requirements, occasionally results in some uprating or derating of facilities. Units are periodically reviewed to determine if their capability ratings need to be revised; however, the overall impact on the resource plan of these changes is expected to be minimal. The Harris nuclear plant has a steam generator replacement outage scheduled in 2001. Thermal power modifications, also to be made during the outage, are expected to increase unit capacity by 40 MW beginning in 2002. This uprate is included in the plan.

CP&L's plan assumes that nuclear units will be retired at the end of their current operating licenses. CP&L plans to develop an application to the Nuclear Regulatory Commission to renew

Robinson's operating license and submit the application for review in 2003. No CP&L fossil or hydro units are scheduled for retirement during the planning period.



#### **Contract Purchases**

Purchases can provide flexibility but entail price and deliverability risks. CP&L's Resource Plan includes both short and long-term purchases.

Purchases from non-utility generators (NUGs) currently include 116 MW purchased from renewable resources such as hydro and waste-to-energy plants; a new 8 MW hydro project is projected to go on-line in 2000. Another 330 MW is from cogeneration plants, of which 262 MW belongs to Cogentrix. In 1996, the Company renegotiated its contracts with Cogentrix, thereby lowering our costs and giving CP&L dispatch control over their five generating plants. The contracts for these five plants will expire by the end of 2002. A detailed listing of the current NUGs is provided in Appendix E.

An agreement with American Electric Power (AEP) provides for the purchase of 250 MW of unit power from AEP's coal-fired Rockport 2 generating unit. This purchase began in 1990 and continues for a period of 20 years. An agreement with Duke Power Company provides for 400 MW of system power beginning July 1, 1993 and continues for six years. This purchase ends June 30, 1999.

In 1996, CP&L issued a Request for Proposal (RFP) for peaking capacity with delivery beginning in 1999. As a result of that RFP, a 300 MW option contract was obtained from PECO Power Team for the years 1999 through 2003. Flexibility is built into the purchase allowing the Company to purchase or not purchase in any year of the contract. This is a seasonal purchase for the months June through September of each year. In 1997, CP&L issued a solicitation for capacity purchases for 1999. As a result of this solicitation CP&L obtained capacity for the months June through September totaling 500 MW from four power suppliers. These purchases consist of 200 MW from Duke Energy & Trading, 100 MW from Virginia Power, 100 MW from Constellation, and 100 MW from Pennsylvania Power & Light.

In April 1997, CP&L issued an RFP for 800 MW of peaking capacity to meet capacity requirements for 2000 and 2001. As a result of this RFP, CP&L signed a contract with SkyGen for approximately 500 MW of peaking capacity from its Broad River CTs. This capacity is scheduled for operation in June 2001.

In addition to the above power purchases, CP&L has two contracts with the Department of Energy acting through the Southeastern Power Administration (SEPA). Under these contracts, CP&L delivers power from federal hydroelectric projects to municipalities, electric membership cooperatives, and other public entities located in CP&L's control area. CP&L receives 14 MW from the Cumberland hydro projects at its western interconnections and 95 MW of power from the Kerr hydro project at its eastern interconnections with Virginia Power.

## **Generation Additions**

The Resource Plan also includes CP&L-owned generation additions. The self-build capacity additions provide both reliability and the lowest reasonable cost.

A certificate was granted by the NCUC on August 1, 1997, to construct a combustion turbine in Buncombe County, North Carolina at the existing Asheville plant site. It is scheduled to begin operation prior to the summer peak in 1999. A certificate was granted on December 17, 1998 for a second combustion turbine to be installed at the Asheville Plant. This second combustion turbine is scheduled to begin operation in June 2000. Each Asheville combustion turbine has a planned summer rating of 165 MW.

In March 1996, CP&L was granted a certificate to construct three combustion turbines totaling 500 MW at its Lee Plant site in Wayne County. CP&L received a certificate for a fourth combustion turbine at Lee Plant in December 1998, bringing the total planned capacity additions at Lee Plant to 686 MW (summer rating). All four Lee combustion turbines are currently scheduled to begin commercial operation prior to the year 2000 summer peak season.

In March 1999, CP&L filed application with the North Carolina Utilities Commission to construct five combustion turbines totaling approximately 800 MW at a site in Rowan County and five combustion turbines totaling approximately 800 MW at a site in Richmond County. These generation additions would meet projected peaking capacity requirements in 2001 and 2002.

For the remainder of the plan undesignated combustion turbine and undesignated combined cycle capacity is indicated. These additions are characterized as "undesignated" because the Company has not determined a particular design, unit size, or location for the capacity. Further, the

Company has not committed to building any of this capacity itself, and all or some portion of it may be purchased from other utilities, marketers, or independent power producers.

## **Capacity and Energy Mix**

As shown in the figures below, oil/gas-fueled capacity is projected to increase as a percentage of total supply resources. In the near term, the amount of energy projected to be provided by this capacity is only a small fraction of CP&L's total energy requirements. This small amount of generation from oil/gas-fueled combustion turbines is a result of the significant daily and seasonal variation in customer electricity usage. Customer demand for electricity increases greatly on cold winter mornings and hot summer afternoons. These peak period demands require large amounts of generating capacity. However, this peaking capacity is used for only short periods of time. Consequently it generates a relatively small amount of energy. In the future, as CC generation is added, the energy from natural gas and oil will become a significant part of the energy mix.



#### **RESOURCE MIX BY FUEL TYPE**

# Appendices

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#### Table A CAROLINA POWER & LIGHT CO. INTEGRATED RESOURCE PLAN (Summer)

	<u>1999</u>	2000	2001	<u>2002</u>	2003	<u>2004</u>	<u>2005</u>	2005	2007	2008	2009	2010	2011	2012	2013
GENERATION ADDITIONS															
Asheville CT #1-2	165	165													
Wayne County CT #1-4		686													
Rowan CT #1-5			800												
Richmond CT #1-5			320	480											
Undesignated CT (1)													500	500	
Undesignated CC (1)					500	500	500	500		500		1.500	000	000	
INSTALLED GENERATION															
Combustion Turbine	1,202	1,367	2,218	3,338	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	4,318	4,818
Combined Cycle	84	84	84	84	84	584	1,084	1,584	2,084	2,084	2,584	2,584	4,084	4,084	4,084
Hydro	218	218	218	218	218	218	218	218	218	218	218	218	218	218	218
Coal	5,285	5,285	5,285	5,285	5,285	5,285	5,285	5,285	5,285	5,285	5,285	5,285	5,285	5,285	5,285
Nuclear	3,174	3,174	3,174	3,214	3,214	3,214	3,214	3,214	3,214	3,214	3,214	2,531	2,531	2,531	2,531
PURCHASES & OTHER RESOUR	RCES														
SEPA	109	109	109	109	109	109	109	109	100	100	100	100	100	100	100
NUG Renewable	116	124	124	124	124	124	124	100	100	103	103	103	100	109	109
NUG Cogeneration	330	330	263	231	68	68	68	68	68	124 29	124	124	124	124	124
Favetteville	283	283	283	283	283	283	783	282	282	202	200	00	00	00	60
AFP/Rockport 2	250	250	250	250	250	200	200	200	200	203	203	203	200	283	283
PECO Purchase (2)	300	300	300	300	300	200	250	200	200	200	200				
Term Purchases (2), (3)	500	000	000	000	000										
Broad River CT #1-3			500	500	500	500	500	500	500	500	500	600	500	500	600
	++												500	200	500
TOTAL SUPPLY RESOURCES	12,016	12,375	13,928	14,416	14,753	14,953	15,453	15,953	15,953	16,453	16,453	17,020	17,520	18,020	18,020
PEAK DEMAND															
CP&L SYSTEM PEAK LOAD	10,492	10.782	11.261	11.613	11,951	12.290	12.613	12 923	13 250	13 569	13 881	14 192	14 492	14 807	15 115
Contract Sales	230	230	880	880	880	680	680	680	680	680	680	680	680	680	680
NET INTERNAL DEMAND	10,722	11,012	12,141	12,493	12,831	12.970	13.293	13.603	13.930	14.249	14,561	14 872	15 172	15 487	15 795
Contract Sales	100	150	•	•										10,101	10,100
Large Load Curtailment	370	357	341	325	309	310	311	312	313	313	312	312	312	311	310
Voltage Reduction	154	158	162	166	170	174	179	183	188	192	196	200	205	209	214
Load Served by Others	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
OPERATING AREA LOAD	11,566	11,897	12,864	13,204	13,530	13,674	14,003	14,318	14,651	14,974	15,289	15,604	15,909	16,227	16,539
	4 204	1 202	4 747	4 000	4.000	4 000	0.405								-
CADACITY MADCIN (5)	1,294	1,303	1,707	1,923	1,922	1,983	2,160	2,350	2,023	2,204	1,892	2,148	2,348	2,533	2,225
	10.0%	11.0%	12.0%	13.3%	13.0%	13,3%	14.0%	14.7%	12.7%	13.4%	11.5%	12.6%	13.4%	14.1%	12.3%
NEGERVE MARGIN (D)	12.1%	12.4%	14.1%	15.4%	15.0%	15.3%	16.2%	17.3%	14.5%	15.5%	13.0%	14.4%	15.5%	16.4%	14.1%
ANNUAL ENERGY (GWh)	57,624	59,047	60,838	62,715	64,565	66,469	68,210	69,984	71,785	73,603	75,344	77,106	78,824	80,610	82,295

#### NOTES:

1) For planning purposes only; does not indicate a commitment to type, amount or ownership.

2) For the months of June through September.

3) In 1999: 200 MW Duke Energy & Trading, 100 MW Virginia Power, 100 MW Constellation, 100 MW PP&L.

4) Total Supply Resources - Net Internal Demand.

5) Reserves / Total Supply Resources \* 100.

6) Reserves / Net Internal Demand \* 100.

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#### Table B CAROLINA POWER & LIGHT CO. **INTEGRATED RESOURCE PLAN (Winter)**

	<u>98/99</u>	<u>99/00</u>	<u>00/01</u>	<u>01/02</u>	<u>02/03</u>	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13
GENERATION ADDITIONS															
Asheville CT #1-2		185	185												
Wayne County CT #1-4			774												
Rowan CT #1-5				920											
Richmond CT #1-5				368	552										
Undesignated CT (1)														575	575
Undesignated CC (1)						575	575	575	575		575		1,725	575	515
INSTALLED GENERATION															
Combustion Turbine	1 458	1 458	1 643	2 602	3 800	A AA2	A AA2	A AA2	1 142	4 442	1 112	4 4 4 2	4 4 4 3	4 440	E 017
Combined Cycle	106	106	106	106	106	106	681	1 256	1 221	2 400	9,442 2,406	9,992	4,442	4,44Z	5,017
Hydro	216	216	216	216	216	216	216	216	1,001	2,400	2,400	2,501	2,901	4,700	4,700
Coal	5 369	5 369	5 369	5 360	5 360	5 360	5 360	5 360	5 260	£ 260	5 260	£ 260	Z 10 E 260	210	Z10
Nuclear	3,209	3,209	3,209	3,249	3,249	3,249	3,249	3,249	3,249	3,249	3.249	3,369	2,531	2,531	2,531
								·		,		.,	_,	-1	-,
PORCHASES & UTHER RESUL	100	400	400	400	400	400	400	400	400						
NUG Peroweble	1109	109	109	109	109	109	109	109	109	109	109	109	109	109	109
NUG Cogeneration	220	120	120	120	120	120	120	120	120	120	120	120	120	120	120
	330	220	203	231	005	60	60	68	68	68	68	68	68	68	68
	280	285	285	285	285	285	285	285	285	285	285	285	285	285	285
Reprocedure	200	250	200	200	250	250	250	250	250	250	250				
Duke Purchase Brood Dives OT #4.2	400			<b>670</b>											
Broad River C1 #1-3	******			5/9	579	579	5/9	579	579	579	579	579	579	579	579
TOTAL SUPPLY RESOURCES	11,844	11,637	12,529	14,404	14,793	15,368	15,943	16,518	17,093	17,093	17,668	17,418	18,425	19,000	19,575
PEAK DEMAND															
CP&L SYSTEM PEAK LOAD	9,737	10,006	10,450	10,777	11.091	11,405	11.705	11.993	12.296	12,592	12.882	13,170	13,449	13 741	14 027
Contract Sales	230	230	880	880	880	680	680	680	680	680	680	680	680	680	680
NET INTERNAL DEMAND	9,967	10,236	11,330	11,657	11,971	12.085	12.385	12.673	12.976	13.272	13,562	13.850	14,129	14 421	14 707
Contract Sales	100	150	·	-	·	·	•					1			
Large Load Curtailment	353	340	325	310	295	296	297	298	299	299	298	297	297	297	296
Voltage Reduction	154	158	162	166	170	174	179	183	188	192	196	200	205	209	214
Load Served by Others	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
OPERATING AREA LOAD	10,794	11,104	12,037	12,353	12,656	12,775	13,081	13,374	13,683	13,983	14,276	14,567	14,851	15,147	15,437
RESERVES (2)	1 977	1 404	1 100	2 747	2 222	2 202	2 559	2 045	4 4 4 7	0.004	4.400	0 500	4 000		4.000
CAPACITY MARGIN (3)	15.8%	12 00/	1,133	40.19/	2,042	3,203	3,000	0,040 02 20/	4,117	3,0∠1 00 40/	4,105	3,558	4,296	4,579	4,868
RESERVE MARGIN (A)	18.8%	12.070	3.0%	13.1%	13.170	21.4%	22.3%	20.3%	24.1%	22.4%	23.2%	20.5%	23.3%	24.1%	24.9%
	10.070	10.770	10.070	23.0%	ZJ.0%	£1.270	20.1%	30.3%	31./%	20.0%	30.3%	20.8%	30.4%	31.8%	33.1%

#### NOTES:

For planning purposes only; does not indicate a commitment to type, amount or ownership.
Total Supply Resources - Net Internal Demand.
Reserves / Total Supply Resources \* 100.
Reserves / Net Internal Demand \* 100.

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#### PLANNED DEMAND-SIDE MANAGEMENT SUMMER CAPABILITY (Megawatts)

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	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	2004	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>
Voltage Reduction	51	52	53	55	56	58	59	60	62	63	65	66	68	69	71
COMMERCIAL Voltage Reduction	74	76	78	80	82	84	86	88	90	92	94	96	98	100	103
INDUSTRIAL Large Load Curtailment Voltage Reduction Total Industrial	370 29 399	357 30 387	341 31 372	325 32 357	309 32 342	310 33 343	311 34 345	312 35 347	313 36 349	313 36 350	312 37 350	312 38 350	312 39 351	311 40 351	310 41 351
TOTAL	523	515	503	492	479	485	490	495	501	505	508	512	517	520	524

# Appendix D

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## **INSTALLED GENERATION**

As of 12/31/98

				SUMMER MAX	
		DD1344D3/	INCTATE ATION	DEPENDARLE	W/INTED
PLANT		PRIMARY	INSTALLATION	CADACITY	WINLER CADACIEN
NAME/UNIT	LOCATION	FUEL	DATE	CAPACITI	CAPACITY
				(141 44.)	(19199)
COAL		~ .		140	1.40
Cape Fear 5	Moncure, NC	Coal	1956	143	148
Cape Fear 6	Moncure, NC	Coal	1958	173	175
W. H. Weatherspoon 1	Lumberton, NC	Coal	1949	49	49
W. H. Weatherspoon 2	Lumberton, NC	Coal	1950	49	49
W. H. Weatherspoon 3	Lumberton, NC	Coal	1952	78	79
H, F. Lee 1	Goldsboro, NC	Coal	1952	79	84
H. F. Lee 2	Goldsboro, NC	Coal	1951	76	80
H. F. Lee 3	Goldsboro, NC	Coal	1962	252	257
L. V. Sutton 1	Wilmington, NC	Coal	1954	97	105
L. V. Sutton 2	Wilmington, NC	Coal	1955	106	108
L. V. Sutton 3	Wilmington, NC	Coal	1972	410	416
H. B. Robinson 1	Hartsville, SC	Coal	1960	174	185
Asheville I	Skyland, NC	Coal	1964	198	200
Asheville 2	Skyland, NC	Coal	1971	194	194
Roxboro 1	Roxboro, NC	Coal	1966	385	390
Roxboro 2	Roxboro, NC	Coal	1968	670	675
Roxboro 3	Roxhoro NC	Coal	1973	707	715
Roxboro J (*)	Roxhoro NC	Coal	1980	700	710
$M_{200} 1 (*)$	Roxboro, NC	Coal	1983	745	750
Total Coal Canacity	10,000,000	ooui	1700	5.285	5.369
Total Coal Capacity				0,200	0,005
NUCLEAR STEAM					
L B Robinson 2	Hartsville SC	Nuclear	1971	683	718
Drungwick 1 (*)	Southport NC	Nuclear	1977	820	820
Drunswick 7 (*)	Southport NC	Nuclear	1975	811	811
Bruitswick 2 (*)	New Hill NC	Nuclear	1987	860	860
Total Nuclear Canadity	1100 1111, 110	itacioai	1507	3.174	3.209
Total Nuclear Capacity				5,174	0,209
HVBPOFL FCTRIC					
Blowett 1.6	Lilesville NC	Water	1911	22	25
Tillerit 1-4	Mt Gilead NC	Water	1928 1960	86	86
Wolters 1-3	Waterville NC	Water	1930	105	100
Warden 1-3	Marshall NC	Water	1910	5	5
Tratal Hudro Canacity	Iviaisiiaii, ive	W attr	1710	218	216
Total figuro Capacity				210	210
COMBUSTION TURBINE					
Morehead 1	Morehead City, NC	Oil	1968	15	18
Derlington 1-11	Hartsville SC	Gas/Oil	1974,1975	572	704
Darlington 12-13	Hartsville SC	Gas/Oil	1997	240	266
Damigion 12-15	Lileville NC	Ollo Oll	1971	52	68
Cana Fran 1 4	Monoura NC	01	1060	56	77
Cape Fear 1.2	Monaure NC	Worte Heat	1073 1074	28	34
	Goldeboro NC	110ai	1968-1071	Q1	114
H. F. Lee 1-4	United in SC		1069	15	19
H. B. KODINSON I	nansville, SC		1700	15	10
Koxboro I	KOXDOFO, NC		1908	15	٥١ د ه
L. V. Sutton 1-3	wilmington, NC	Uil	1968,1969	64	84
W. H. Weatherspoon 1-4	Lumberton, NC	Gas/Oil	1970,1971	138	108
Total CT Capacity				1,280	1,504
TOTAL SYSTEM CAPACITY				9,963	10,358

(\*) Jointly-owned by NCEMPA: Roxboro 4 - 90.6 MW; Mayo 1 - 120.5; Brunswick 1 - 144.8 MW; Brunswick 2 - 144.8 MW; and Harris 1 - 139.1 MW.

## NON-UTILITY GENERATION As of 12/31/98

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	LOCATION	PRIMARY	IN SERVICE	CONTRACT END DATE	SUMMER CAPACITY	WINTER CAPACITY
PROJECTS	LUCATION	FUEL	DATE	DAIL		
RENEWABLE						
Various Small - 21	Various	Water, Wood, Methane, Other	Various	Various	12.825	12.825
Craven Co. Wood	New Bern, NC	Wood Waste	10/90	12/31/05	45.0	45.0
Foster Wheeler	Charleston, SC	Solid Waste	11/89	11/09	8.7	5.0
New Hanover Co.	Wilmington, NC	Solid Waste	8/84	11/08	7.5	7.5
PCS Phosphate	Aurora, NC	Waste Heat	12/84	12/99	42.0	42.0
COGENERATION			SUBIUTAL		116.025	112.325
Cogentrix	Lumberton, NC	Coal	12/85	11/00	33.5	33.5
Cogentrix	Elizabethtown, NC	Coal	1/86	11/00	33.3	33.3
Cogentrix	Kenansville, NC	Coal	04/86	9/01	32.4	32.4
Cogentrix	Roxboro, NC	Coal	08/87	12/02	56.0	56.0
Cogentrix	Southport, NC	Coal	09/87	12/02	107.0	107.0
Stone Container	Florence, SC	Coal	03/87	3/1/07	68.0	68.0
			SUBTOTAL		330.2	330.2
TOTAL NUGS					446.225	442.525

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# TRANSMISSION ADDITIONS AND MODIFICATIONS

	LO	CATION		CAPACITY	VOLTAGE			
<u>YEAR</u>	FROM	<u>T</u> (	0	MVA	<u> </u>	<b>COMMENTS</b>		
19 <b>9</b> 9	Darlington County Plant	Robinson (North)	Plant	820	230	New		
	Person	(VAPOW)	) Halifax	700	230	Uprate		
	Henderson	(VAPOW) Kerr Dam	)	200	115	Uprate		
	Lee 230 Substation	Wallace	1	86	115	Uprate		
2000	Fayetteville	Vander (N	lorth)	201	115	New		
	Asheville Plant	Oteen (We	est	319	115	Uprate		
2001	Whiteville	BEMC Ch Peacock P	adbourn/ OD	344	115	New, Build for 230 kV, Operate 115 kV		
2002	Lee	Wommack	(South)	1083	230	Relocate & Uprate		
	New Bern	ern Wommack (South)			230	Relocate		
2003	Rocky Mount	ky Mount Wilson			230	Conversion		
2004	Lee 230 kV Substation	Mount Oli	ve	314	115	New, Build for 230 kV, Operate 115 kV		
	Durham Switching Station	Falls		541	230	New		
<u>YEAR</u>	SUB NAME	<u>COUNTY</u>	<u>STATE</u>	VOLTAGI <u>(KV)</u>	E <u>MVA</u>	<u>COMMENTS</u>		
1999	Raeford	Hoke	NC	230/115	300-400	Increase		
	Asheville Plant	Buncombe	NC	230/115	500-600	Increase		