TABLE 7.1A

SOUTHWESTERN PUBLIC SERVICE COMPANY

NUMBER OF CUSTOMERS - TEXAS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975					
1976					
1977					
1978	169,355	27,415	2,202	17,409	22
1979	172,907	27,990	2,248	17,777	22
1980	178,518	25,772	2,936	16,739	100
1981	183,384	27,729	1,779	17,491	100
1982	187,121	28,435	1,930	18,033	13
1983	189,872	30,625	2,160	18,176	15
1984	193,429	30,764	2,315	18,634	17
1985	194,325	31,062	2,385	18,708	17
1986	194,318	30,959	2,510	18,949	16
1987	194,000	30,927	2,525	19,061	17
1988	194,017	30,966	2,550	19,307	16
1989	193,638	31,281	2,505	19,527	17
1990	194,874	31,803	2,596	20,079	16
1991	195,167	32,100	2,621	20,450	16
1992	195,459	32,400	2,645	20,829	16
1993	195,753	32,703	2,670	21,215	16
1994	196,046	33,009	2,695	21,610	16
1995	196,340	33,317	2,720	22,014	16
1996	196,635	33,629	2,746	22,426	16
1997	196,930	33,929	2,771	22,847	16
1998	197,188	34,203	2,794	23,219	16
1999	197,447	34,480	2,817	23,598	16
2000	197,706	34,759	2,840	23,984	16
2001	197,965	35,040	2,863	24,377	16
2002	198,225	35,323	2,886	24,777	16
2003	198,485	35,609	2,910	25,185	16
2004	198,745	35,897	2,934	25,600	16

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 7.1B

SOUTHWESTERN PUBLIC SERVICE COMPANY

NUMBER OF CUSTOMERS - TOTAL SYSTEM

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975					
1976					
1977					
1978	220,586	35,208	3,653	24,013	26
1979	225,198	35,944	3,730	24,515	27
1980	236,965	34,220	3,093	22,589	122
1981	243,442	36,303	1,950	23,630	121
1982	248,543	37,211	2,118	24,449	18
1983	268,260	42,594	4,075	27,078	20
1984	272,934	42,842	4,409	27,664	22
1985	274,506	43,289	4,642	27,896	22
1986	272,950	42,947	4,757	28,090	21
1987	272,359	42,837	4,775	28,520	22
1988	272,292	42,824	4,865	29,005	21
1989	272,358	43,232	4,851	29,437	22
1990	273,586	43,978	4,910	30,143	21
1991	273,997	44,365	4,956	30,700	21
1992	274,408	44,755	5,002	31,269	21
1993	274,819	45,149	5,049	31,850	21
1994	275,232	45,546	5,096	32,444	21
1995	275,645	45,947	5,144	33,050	21
1996	276,058	46,352	5,192	33,669	21
1997	276,472	46,759	5,241	34,301	21
1998	276,835	47,117	5,284	34,860	21
1999	277,198	47,478	5,327	35,429	21
2000	277,562	47,842	5,370	36,009	21
2001	277,926	48,209	5,414	36,599	21
2002	278,291	48,578	5,458	37,200	21
2003	278,656	48,950	5,503	37,812	21
2004	279,022	49,325	5,548	38,436	21

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 7.2A

SOUTHWESTERN PUBLIC SERVICE COMPANY

ANNUAL SALES BY SECTOR - TEXAS *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	1,113,223	1,159,388	3,400,589	373,433	1,218,867	7,265,499	
1976	1,207,209	1,257,271	3,687,688	404,960	1,582,933	8,140,061	
1977	1,287,140	1,340,516	3,931,854	431,773	1,657,760	8,649,043	1,066
1978	1,335,604	1,390,990	4,079,901	448,031	1,806,465	9,060,991	2,501
1979	1,374,605	1,431,608	4,199,037	461,114	1,515,156	8,981,520	9,250
1980	1,435,533	1,495,063	4,385,155	481,552	2,009,372	9,806,675	18,734
1981	1,382,199	1,338,003	4,805,373	451,909	1,903,163	9,880,647	19,071
1982	1,441,773	1,446,682	4,799,030	454,687	2,032,520	10,174,692	32,407
1983	1,497,989	1,431,293	4,940,603	434,438	1,951,938	10,256,261	53,948
1984	1,531,608	1,293,704	5,285,234	463,010	2,179,293	10,752,849	53,302
1985	1,586,629	1,331,817	5,322,178	471,082	2,006,823	10,718,529	79,696
1986	1,562,814	1,324,276	5,384,074	422,933	1,899,035	10,593,132	103,720
1987	1,594,405	1,292,084	5,444,701	432,635	1,809,087	10,572,912	68,925
1988	1,633,419	1,330,305	5,514,974	474,610	1,952,460	10,905,768	121,660
1989	1,666,242	1,358,869	5,882,101	480,874	2,341,415	11,729,501	126,844
1990	1,656,012	1,340,669	5,957,760	467,927	2,019,538	11,441,906	95,662
1991	1,672,566	1,350,478	6,043,248	473,703	2,047,692	11,587,687	96,620
1992	1,689,248	1,365,408	6,131,688	479,669	2,071,191	11,737,204	97,584
1993	1,705,511	1,384,815	6,218,122	485,854	2,091,960	11,886,262	98,559
1994	1,722,325	1,399,841	6,307,370	491,978	2,116,742	12,038,256	99,544
1995	1,739,299	1,415,025	6,397,876	498,179	2,141,851	12,192,230	100,537
1996	1,756,434	1,430,370	6,489,659	504,455	2,167,292	12,348,210	101,541
1997	1,773,731	1,445,875	6,582,736	510,809	2,193,069	12,506,220	102,554
1998	1,791,192	1,461,543	6,677,126	517,241	2,219,188	12,666,290	103,579
1999	1,808,819	1,477,376	6,772,848	523,751	2,245,651	12,828,445	104,611
2000	1,824,782	1,491,729	6,859,677	529,653	2,269,474	12,975,316	105,546
2001	1,840,886	1,506,222	6,947,620	535,622	2,293,550	13,123,899	106,490
2002	1,857,132	1,520,855	7,036,689	541,659	2,317,881	13,274,216	107,442
2003	1,873,521	1,535,630	7,126,901	547,763	2,342,471	13,426,286	108,403
2004	1,890,055	1,550,549	7,218,269	553,936	2,367,321	13,580,130	109,372

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 7.2B

SOUTHWESTERN PUBLIC SERVICE COMPANY

ANNUAL SALES BY SECTOR - TOTAL SYSTEM *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	1,531,169	1,458,256	3,864,380	437,477	1,700,711	8,991,993	28,089
1976	1,672,527	1,592,883	4,221,139	477,865	2,116,256	10,080,670	36,288
1977	1,787,437	1,702,321	4,511,151	510,696	2,181,221	10,692,826	128,619
1978	1,832,078	1,744,837	4,623,817	523,451	2,365,994	11,090,177	293,779
1979	1,872,847	1,783,664	4,726,709	535,099	2,267,805	11,186,123	192,480
1980	1,836,174	1,787,109	5,109,830	620,568	2,864,954	12,218,635	92,347
1981	1,777,652	1,639,408	5,572,468	585,860	2,756,159	12,331,547	37,783
1982	1,866,497	1,768,316	5,589,250	599,422	3,001,128	12,824,613	39,658
1983	2,026,907	1,844,784	6,004,023	599,838	3,034,573	13,510,125	82,867
1984	2,119,946	1,745,802	6,607,322	629,824	3,428,224	14,531,118	477,754
1985	2,186,214	1,796,600	6,601,987	636,382	3,856,319	15,077,502	2,318,156
1986	2,162,034	1,785,627	6,562,528	584,681	3,573,992	14,668,862	1,124,561
1987	2,205,303	1,770,850	6,668,888	595,153	3,270,003	14,510,197	1,631,724
1988	2,260,953	1,792,558	6,801,282	645,800	3,251,859	14,752,452	2,347,006
1989	2,305,986	1,826,945	7,244,626	671,249	3,621,039	15,669,845	3,101,608
1990	2,292,616	1,810,314	7,286,323	639,808	3,350,298	15,379,359	1,213,662
1991	2,315,542	1,824,798	7,389,125	647,876	3,401,059	15,578,400	988,620
1992	2,339,337	1,844,870	7,495,262	656,201	3,446,370	15,782,040	953,784
1993	2,364,093	1,869,530	7,601,373	664,838	3,486,451	15,986,285	1,127,691
1994	2,388,517	1,889,780	7,709,730	673,427	3,617,743	16,279,197	1,167,536
1995	2,413,186	1,910,244	7,819,607	682,126	3,829,614	16,654,777	1,091,529
1996	2,438,111	1,930,930	7,931,050	690,939	3,874,071	16,865,101	1,076,537
1997	2,463,285	1,951,834	8,044,051	699,860	3,919,123	17,078,153	971,550
1998	2,488,723	1,972,966	8,158,674	708,901	3,964,776	17,294,040	965,239
1999	2,514,418	1,994,323	8,274,908	718,056	4,011,040	17,512,745	966,271
2000	2,537,638	2,013,638	8,380,177	726,341	4,082,862	17,740,655	964,514
2001	2,561,073	2,033,140	8,486,785	734,721	4,155,970	17,971,688	962,760
2002	2,584,724	2,052,830	8,594,749	743,198	4,230,387	18,205,888	961,009
2003	2,608,594	2,072,712	8,704,087	751,772	4,306,136	18,443,301	959,262
2004	2,632,684	2,092,786	8,814,815	760,446	4,383,242	18,683,973	957,518

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 7.3A

SOUTHWESTERN PUBLIC SERVICE COMPANY

ANNUAL PEAK DEMAND AND RESERVE MARGINS - TEXAS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	1,236				1,236	1,571	27.1%
1976	1,466				1,466	1,864	27.1%
1977	1,623				1,623	1,864	14.8%
1978	1,734				1,734	2,102	21.2%
1979	1,500				1,500	2,153	43.5%
1980	2,022		5		2,017	2,586	28.2%
1981	2,137		21		2,116	2,542	20.1%
1982	1,878		23		1,855	2,815	51.7%
1983	2,116		16		2,100	2,886	37.4%
1984	2,071		14		2,057	2,714	32.0%
1985	2,084		13		2,071	3,057	47.6%
1986	2,151		13		2,138	3,160	47.8%
1987	2,084		13		2,071	3,161	52.6%
1988	2,084		15		2,069	3,149	52.2%
1989	2,246		13		2,233	3,180	42.4%
1990	2,217	(39)	17	16	2,223	3,009	35.4%
1991	2,245	(39)	17	16	2,251	3,009	33.7%
1992	2,274	(39)	17	16	2,280	3,009	32.0%
1993	2,303	(39)	17	16	2,309	3,008	30.3%
1994	2,333	(39)	17	16	2,339	3,009	28.6%
1995	2,363	(39)	17	16	2,369	3,009	27.0%
1996	2,393	(39)	17	16	2,399	3,009	25.4%
1997	2,424	(39)	17	16	2,430	3,009	23.8%
1998	2,455	(39)	17	16	2,461	3,008	22.2%
1999	2,487	(39)	17	16	2,493	3,009	20.7%
2000	2,557				2,557	3,058	19.6%
2001	2,587				2,587	3,058	18.2%
2002	2,616				2,616	3,058	16.9%
2003	2,647				2,647	3,058	15.6%
2004	2,677				2,677	3,058	14.2%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 7.3B

SOUTHWESTERN PUBLIC SERVICE COMPANY

ANNUAL PEAK DEMAND AND RESERVE MARGINS - TOTAL SYSTEM *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	1,641				1,641	2,086	27.1%
1976	1,947				1,947	2,469	26.8%
1977	2,155				2,155	2,469	14.6%
1978	2,303		5		2,298	2,786	21.2%
1979	1,992		5		1,987	2,853	43.6%
1980	2,487		5		2,482	3,180	28.1%
1981	2,574		21		2,553	3,062	19.9%
1982	2,378		23		2,355	3,564	51.3%
1983	2,664		16		2,648	3,633	37.2%
1984	2,736		14		2,722	3,586	31.7%
1985	2,850		13		2,837	4,181	47.4%
1986	2,894		13		2,881	4,251	47.6%
1987	2,803		13		2,790	4,251	52.4%
1988	2,813		15		2,798	4,251	51.9%
1989	3,002		13		2,989	4,251	42.2%
1990	2,992	(39)	17	16	2,998	4,061	35.5%
1991	3,030	(39)	17	16	3,036	4,061	33.8%
1992	3,069	(39)	17	16	3,075	4,061	32.1%
1993	3,109	(39)	17	16	3,115	4,061	30.4%
1994	3,149	(39)	17	16	3,155	4,061	28.7%
1995	3,189	(39)	17	16	3,195	4,061	27.1%
1996	3,230	(39)	17	16	3,236	4,061	25.5%
1997	3,272	(39)	17	16	3,278	4,061	23.9%
1998	3,314	(39)	17	16	3,320	4,061	22.3%
1999	3,357	(39)	17	16	3,363	4,061	20.8%
2000	3,396				3,396	4,061	19.6%
2001	3,435				3,435	4,061	18.2%
2002	3,474				3,474	4,061	16.9%
2003	3,514				3,514	4,061	15.6%
2004	3,555				3,555	4,061	14.2%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 7.4

SOUTHWESTERN PUBLIC SERVICE COMPANY

NET GENERATION BY FUEL TYPE - TOTAL SYSTEM *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS/OIL	COAL	TOTAL
1975	9,720,058		9,720,058
1976	10,347,741	528,141	10,875,882
1977	9,913,079	1,656,053	11,569,132
1978	9,368,800	2,982,322	12,351,122
1979	8,641,385	3,642,993	12,284,378
1980	8,170,555	5,177,114	13,347,669
1981	7,628,128	5,803,866	13,431,994
1982	6,989,274	6,841,381	13,830,655
1983	6,967,604	7,721,788	14,689,392
1984	6,843,546	9,325,362	16,168,908
1985	4,408,890	12,558,277	16,967,167
1986	2,856,452	12,409,374	15,265,826
1987	2,510,785	13,134,143	15,644,928
1988	2,676,880	13,830,064	16,506,944
1989	3,638,417	14,591,213	18,229,630
1990	2,860,981	14,619,319	17,480,300
1991	2,514,775	14,945,380	17,460,155
1992	2,211,475	15,430,230	17,641,705
1993	1,743,430	16,299,030	18,042,460
1994	1,616,595	16,778,925	18,395,520
1995	1,366,798	17,347,582	18,714,380
1996	1,550,170	17,374,710	18,924,880
1997	1,861,076	17,183,024	19,044,100
1998	1,807,144	17,463,156	19,270,300
1999	1,958,012	17,548,288	19,506,300
2000	1,993,294	17,730,982	19,724,276
2001	2,029,212	17,915,578	19,944,791
2002	2,065,778	18,102,096	20,167,874
2003	2,103,002	18,290,556	20,393,558
2004	2,140,897	18,480,978	20,621,876

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 7.5A

SOUTHWESTERN PUBLIC SERVICE COMPANY

NET SYSTEM CAPACITY BY SOURCE - TEXAS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	FIRM PURCHASES FROM UTILITIES	NET SYSTEM CAPACITY
1975	2,086			1,571
1976	2,086	317	54	1,864
1977	2,086	317	54	1,864
1978	2,086	634	54	2,102
1979	2,086	701	54	2,153
1980	2,075	1,039	54	2,586
1981	1,927	1,069	55	2,542
1982	1,921	1,577	52	2,815
1983	2,040	1,593		2,886
1984	1,993	1,593		2,714
1985	1,876	2,105	146	3,057
1986	1,876	2,175	149	3,160
1987	1,876	2,175	149	3,161
1988	1,876	2,175	148	3,149
1989	1,876	2,175	150	3,180
1990	1,886	2,175		3,009
1991	1,886	2,175		3,009
1992	1,886	2,175		3,009
1993	1,642	2,419		3,008
1994	1,642	2,419		3,009
1995	1,642	2,419		3,009
1996	1,642	2,419		3,009
1997	1,642	2,419		3,009
1998	1,642	2,419		3,008
1999	1,642	2,419		3,009
2000	1,642	2,419		3,058
2001	1,642	2,419		3,058
2002	1,642	2,419		3,058
2003	1,642	2,419		3,058
2004	1,642	2,419		3,058

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

TABLE 7.5B

SOUTHWESTERN PUBLIC SERVICE COMPANY

NET SYSTEM CAPACITY BY SOURCE - TOTAL SYSTEM *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	FIRM PURCHASES FROM UTILITIES	NET SYSTEM CAPACITY
1975	2,086			2,086
1976	2,086	317	66	2,469
1977	2,086	317	66	2,469
1978	2,086	634	66	2,786
1979	2,086	701	66	2,853
1980	2,075	1,039	66	3,180
1981	1,927	1,069	66	3,062
1982	1,921	1,577	66	3,564
1983	2,040	1,593		3,633
1984	1,993	1,593		3,586
1985	1,876	2,105	200	4,181
1986	1,876	2,175	200	4,251
1987	1,876	2,175	200	4,251
1988	1,876	2,175	200	4,251
1989	1,876	2,175	200	4,251
1990	1,886	2,175		4,061
1991	1,886	2,175		4,061
1992	1,886	2,175		4,061
1993	1,642	2,419		4,061
1994	1,642	2,419		4,061
1995	1,642	2,419		4,061
1996	1,642	2,419		4,061
1997	1,642	2,419		4,061
1998	1,642	2,419		4,061
1999	1,642	2,419		4,061
2000	1,642	2,419		4,061
2001	1,642	2,419		4,061
2002	1,642	2,419		4,061
2003	1,642	2,419		4,061
2004	1,642	2,419		4,061

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

CHAPTER EIGHT

SOUTHWESTERN ELECTRIC POWER COMPANY

Southwestern Electric Power Company (SWEPCO) is a subsidiary of Central and South West Corporation, Inc., a holding company that controls SWEPCO, CPL, WTU, and PSO of Oklahoma. SWEPCO is a public utility engaged in generating, purchasing, transmitting, and distributing electricity in portions of northeastern Texas, northwestern Louisiana, and western Arkansas. The Company also owns some transmission facilities in Oklahoma, but serves no customers there. SWEPCO functions as a member of the Southwest Power Pool (SPP).

SWEPCO is an investor-owned utility. Equity accounts for 50 percent of the capital structure while 4 percent is held as preferred stock. As of December 1989, the Company's total assets were valued at $1,880,100,000, and long-term debt comprised 46 percent of its total capital structure. Revenues for the twelve months ending December 1989 totaled $729,861,000. Total system sales during 1989 amounted to 13,483,166 MWH.

The 1989 peak demand on SWEPCO of 3,045 MW occurred in August. The Texas portion of that peak demand amounted to 1,524 MW. The Texas winter peak, which occurred in December of 1989, was approximately 138 MW less than the summer peak. The 1989 aggregate sales in Texas amounted to 7,541,431 MWH. SWEPCO has an installed capacity of about 4,464 MW. In 1989, about 59 percent of the total electricity generated by the utility used coal as the primary fuel.

Unless otherwise noted in the following analysis, totals and percentages refer to the portion of the SWEPCO system allocated to Texas rather than the entire system.

Demand Forecast

The demand forecast for the 1990 Joint Facilities Plan was performed using a simple econometric model. The regression was performed on the SWEPCO annual peak load using population, real per capita income, and a temperature variable as independent variables. The economic data used came from a regional model of the SWEPCO service territory prepared by Central and South West Services.

Number of Customers

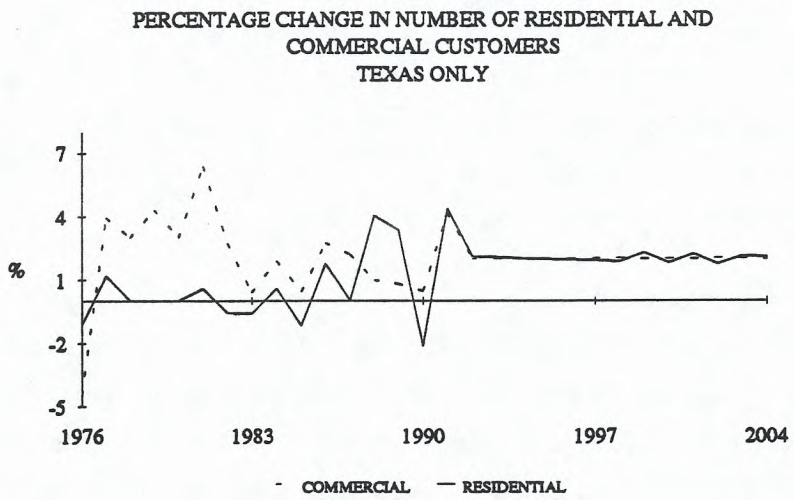


Figure 8.1

As shown in Table 8.1B, SWEPCO provided electric service to 123,153 residential customers in Texas. The historical data for the period from 1979 through 1989 shown in Figure 8.1 reflects an annual growth rate of 1.2 percent for this class of customers. SWEPCO expects an annual growth rate of 1.2 percent through 1999 and less than one percent annually over the 1999-2004 period. In Texas, the Company served 20,573 commercial customers in 1989. During the ten years ending 1989, this group grew at a rate of 2.6 percent per annum and the expected annual growth rate through 1999 is expected to be 2 percent. The number of customers in the industrial class has consistently declined since 1980, with a ten-year decrease through 1989 of 1.4 percent per year. It is expected that this group will continue to decline through 1999 at an annual rate of less than one percent.

Sales

SWEPCO sold 13,483,166 MWH on system in 1989. Texas sales were 55.9 percent of that total. System sales are

projected to increase at an annual rate of 2.9 percent through 1999 and 2 percent annually from 1999-2004. Total Texas system sales are projected to increase at the rate of 3.2 percent annually through 1999 and at 2 percent from 1999 through 2004.

Figure 8.2 shows that sales to Texas residential customers in 1989 accounted for 19 percent of the aggregate sales. In 1989, the residential sector purchased 1,445,421 MWH of electricity. SWEPCO projects an annual compound growth rate for sales to the residential sector of 1.6 percent through 1999, down significantly from the 2.5 percent experienced for the years 1979 through 1989, but above the 0.9 percent recorded between 1984 through 1989.

Historically, the commercial sector in Texas exhibited an average compound growth rate of 4.5 percent annually. SWEPCO does not expect this rate to continue into the future. The Company is predicting a 2.9 percent annual growth rate for the period 1989 through 1999, the same rate of growth which occurred between 1984 through 1989. Sales to commercial customers totalled 1,176,385 MWH in 1989, representing 16 percent of the total sales in Texas.

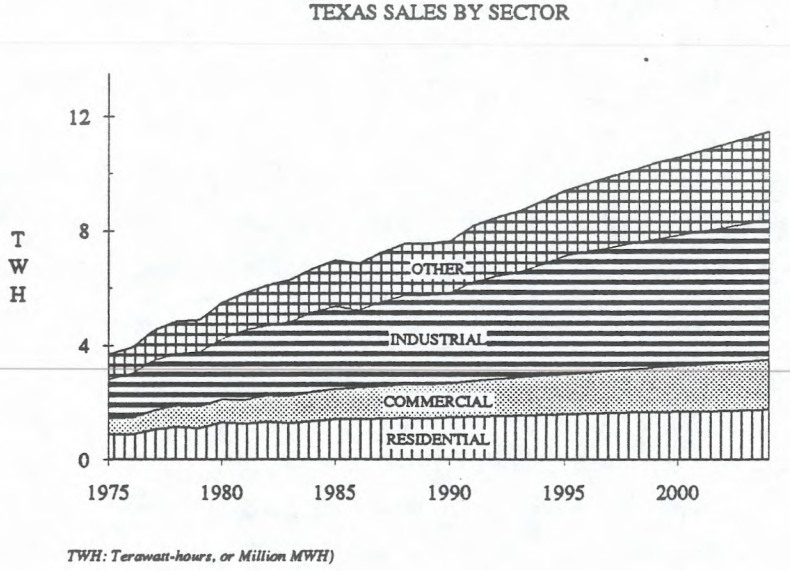


Figure 8.2

The industrial class is the primary consumer of power in the SWEPCO service area with purchases of 41.4 percent of the total electricity sold by SWEPCO in Texas during 1989. The total industrial sales in 1989 amounted to 3,119,812 MWH. During the period 1979 through 1989, sales to this group grew at an annual rate of 5.1 percent; however for the period 1984 through 1989, the rate of growth fell to 2.3

percent. Over the ten years 1989 through 1999, a 3.7 percent annual growth rate is expected. SWEPCO anticipates that this class' contribution to total sales will increase to just over 43 percent by 1999.

The remaining retail sales, comprised primarily of sales to municipalities for street lighting and other purposes, represent 1.7 percent of the total 1989 sales in Texas. This group did not experience any significant growth during the past ten years. During the next ten years it is expected that this segment will grow annually at a rate of just over 2 percent.

Sales to wholesale customers represent the second largest segment in the Company's Texas service area with 22.1 percent of the total sales in 1989. The 1979 to 1989 annual growth rate for this category has been 5 percent and is expected to be 4.4 percent for the ten years ending in 1999. By 1999, it is predicted this category will account for 24.2 percent of the Company's Texas sales.

Peak Demand Over the period from 1979 through 1989, SWEPCO experienced 3.2 percent annual growth in peak demand for their total system. The peak demand for the whole system rose from 2,056 MW in 1979 to 2,812 MW in 1989. The share allocated to Texas rose from 1,069 MW in 1979 to 1,407 MW in 1989, representing a 2.5 percent annual growth rate for the Texas portion of the total system. Peak demand fell 4.2 percent from 1988 to 1989 for the total system and 7.1 percent for the Texas portion of the system, but is projected to increase by more than four percent for both the total and Texas system in 1990. Peak demand growth is expected to continue from 1990 to 2004 at about 2.5 percent compounded annually in both the total and Texas share of the system. SWEPCO anticipates a peak demand of 4,265 MW for their total system by 2004 with 2,132 MW of this total allocated to Texas.

The coincident peak of the residential sector accounted for 24 percent of the total system peak demand in 1989, the industrial sector 31 percent, the commercial sector 20 percent, and the wholesale sector, 25 percent. The sector in Texas with the highest non-coincident peak was the industrial sector with 705 MW in 1989. The industrial sector was followed by the residential sector at 699 MW. The wholesale sector reached a non-coincident peak of 381 in 1989 and the commercial sector, 369 MW.

Adjustments to Demand

SWEPCO states that its energy efficiency goal is to promote the wise use of electricity by its customers. In an effort to achieve this goal, the utility offers four end-user programs. One provides advice to improve energy use in residential dwellings through better insulation, efficient heating and cooling, and efficient water heating equipment. Another is the existing home heat pump replacement program. The third program is the air conditioner maintenance program. In addition, an interruptible load program is offered. SWEPCO does not adjust its future peak demand forecast for the effects of its demand-side programs.

Supply-Side Plan

SWEPCO has three programs to improve the efficiency of its generation. Five programs focus on improvements in transmission and distribution plant and equipment efficiencies.

Three cogenerators are currently connected to the network, and SWEPCO anticipates purchasing 10,000 MWH annually from 1989 through 2004.

Installed Capacity

In 1989, SWEPCO had an installed capacity of about 4,464 MW. About 41 percent of this capacity is fueled by coal, and an equal percentage by gas. The remainder of the installed capacity is fueled by either lignite or oil.

SWEPCO reports a production plant balance at year end 1989 of about $1.3 billion with a net cost of about $1 billion.

Net System Capacity

The net system capacity for the total system was 4,478 MW, with 2,241 MW attributed to the Texas portion of the system in 1989. SWEPCO maintained a 67.5 percent reserve margin in that year, represented in Figure 8.3 by the area between net system capacity and peak demand after adjustments.

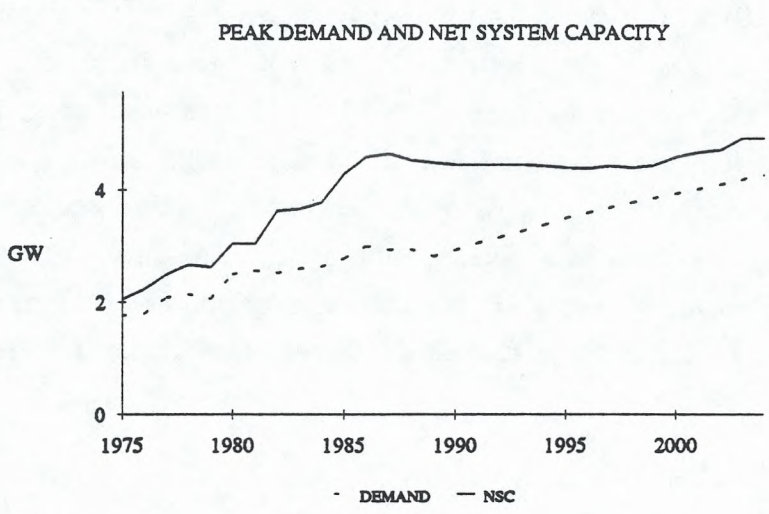


Figure 8.3

The Company expects a net system capacity of 4,910 MW for the total system in 2004, yielding a systemwide reserve margin of 15.1 percent .

Net Generation In 1979, SWEPCO generated 68 percent of its electricity using gas. The utility began using coal in 1977. Generation using coal accounted for 32 percent of the system total in 1979. Over the 10-year period to 1989, these percentages showed a marked change, illustrated in Figure 8.4. By 1989, 59 percent of the total electricity generated by the utility used coal as the source of energy. Lignite generation contributed 29 percent of the total.

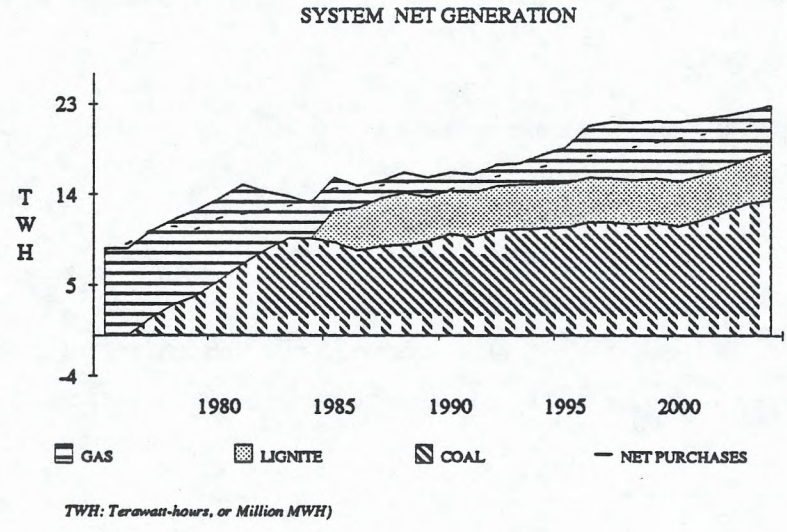


Figure 8.4

Other sources, such as hydro and biomass, accounted for 0.3 percent. In the years 1989 and 1990, generation using gas was comparatively low, 12 percent in 1989. Over the forecast period from 1989 to

2004, it is the intention of SWEPCO to maintain fairly constant levels of coal- and lignite-fueled generation. Any projected increase in the total net generation will be gas-fueled. By 2004, the Company expects to generate 58.8 percent of its electricity using coal, 20.0 percent using gas, and 21.0 percent using lignite. SWEPCO projects their total generation to be 22,881,979 MWH in 2004.

System Expansion At this time, the Company plans to augment their system with additional generating capacity in the year 2000, shown in Figure 8.5. Presently, these plans are to repower the Company's Wilkes 2 and Wilkes 3 units yielding an increase in capability of 174 MW. In subsequent years, the Company plans the addition of a combustion turbine with 135-MW capacity by 2001 and joint unit participation with other Central and Southwest Companies in coal units yielding a 124-MW capacity increase in 2002 and a 212-MW capacity increase in 2003.

Planned retirements include a 180-MW reduction in capacity in 2002 due to the retirements of the Company's Knox Lee 2, Knox Lee 3, Lone Star 1, Lieberman 1, and Lieberman 2.

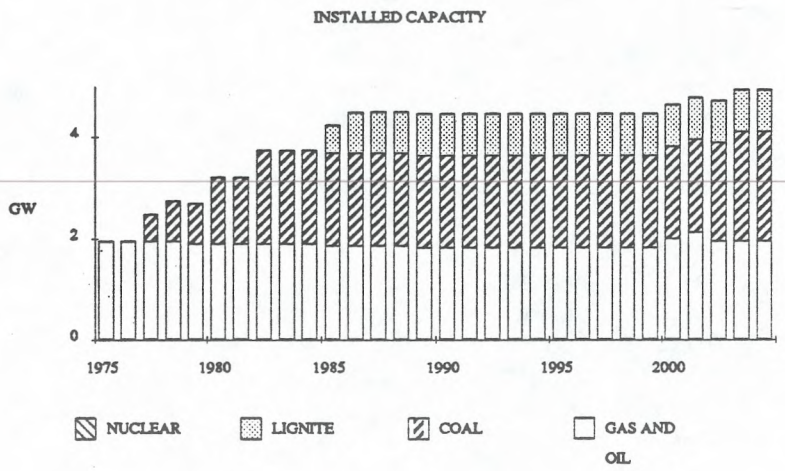


Figure 8.5

SWEPCO could potentially add 1,280 MW of lignite capacity in equal measure at the existing sites of Pirkey and Dolet Hills. Development of additional generating units may be limited by financial, transmission, water, and environmental requirements, site layout, and fuel supply. A site-specific study may be required to determine the best technology and size.

TABLE 8.1A

SOUTHWESTERN ELECTRIC POWER COMPANY

NUMBER OF CUSTOMERS - TEXAS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975	96,915	14,385	2,793	771	15
1976	99,724	14,791	2,795	684	13
1977	102,811	15,098	2,832	718	14
1978	106,412	15,479	2,863	739	9
1979	109,590	15,948	2,951	779	10
1980	112,433	16,486	3,021	814	10
1981	115,114	17,068	3,019	820	10
1982	117,149	17,675	3,009	849	10
1983	119,530	18,262	2,927	840	11
1984	120,767	18,960	2,726	845	11
1985	121,799	19,498	2,688	837	11
1986	121,481	19,757	2,576	851	12
1987	121,162	20,340	2,576	851	12
1988	121,551	20,486	2,553	865	10
1989	123,153	20,573	2,546	870	9
1990	123,968	20,778	2,571	857	9
1991	125,559	21,360	2,492	878	9
1992	127,040	21,787	2,480	888	9
1993	128,844	22,223	2,468	898	9
1994	130,635	22,667	2,456	908	9
1995	132,399	23,120	2,444	918	9
1996	134,041	23,582	2,432	928	9
1997	135,569	24,054	2,420	938	9
1998	136,965	24,535	2,408	948	9
1999	138,252	25,026	2,400	959	9
2000	139,428	25,527	2,392	970	9
2001	140,599	26,038	2,384	981	9
2002	141,822	26,559	2,376	992	9
2003	143,070	27,090	2,368	1,003	9
2004	144,386	27,632	2,360	1,014	9

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 8.1B

SOUTHWESTERN ELECTRIC POWER COMPANY

NUMBER OF CUSTOMERS - TOTAL SYSTEM

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975	253,475	31,966	6,627	2,014	15
1976	259,592	32,963	6,727	1,929	13
1977	267,069	33,553	6,841	2,000	14
1978	274,935	33,986	6,979	2,055	9
1979	281,709	34,910	7,064	2,137	10
1980	286,861	35,780	7,259	2,193	10
1981	293,146	36,925	7,108	2,327	10
1982	298,079	37,869	6,983	2,386	10
1983	304,457	39,151	6,792	2,390	11
1984	310,912	40,645	6,592	2,436	11
1985	313,336	42,061	6,561	2,443	11
1986	313,951	42,724	6,197	2,507	12
1987	314,265	43,483	6,090	2,555	12
1988	314,910	43,670	5,850	2,586	10
1989	316,819	43,955	5,725	2,612	9
1990	318,480	44,257	5,757	2,619	9
1991	324,903	45,407	5,697	2,728	9
1992	328,960	46,224	5,669	2,783	9
1993	333,547	47,056	5,641	2,839	9
1994	338,349	47,903	5,613	2,896	9
1995	343,336	48,765	5,585	2,954	9
1996	348,203	49,643	5,557	3,013	9
1997	352,872	50,537	5,529	3,073	9
1998	357,330	51,447	5,501	3,135	9
1999	361,564	52,373	5,483	3,198	9
2000	365,653	53,316	5,465	3,262	9
2001	369,703	54,276	5,447	3,327	9
2002	373,828	55,253	5,429	3,394	9
2003	377,985	56,248	5,411	3,462	9
2004	382,219	57,260	5,393	3,531	9

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 8.2A

SOUTHWESTERN ELECTRIC POWER COMPANY

ANNUAL SALES BY SECTOR - TEXAS *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES					
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM
1975	877,553	559,533	1,372,422	97,504	524,545	3,431,557
1976	880,658	590,581	1,533,254	98,385	636,504	3,739,382
1977	1,050,391	672,806	1,742,866	103,973	744,516	4,314,552
1978	1,146,702	737,924	1,807,155	122,652	874,710	4,689,143
1979	1,109,626	752,224	1,897,235	129,060	763,832	4,651,977
1980	1,291,989	816,185	2,102,380	137,461	955,680	5,303,695
1981	1,252,037	844,648	2,425,697	134,900	963,110	5,620,392
1982	1,333,505	923,360	2,438,641	139,463	1,057,133	5,892,102
1983	1,282,086	938,109	2,604,046	140,489	1,095,196	6,059,926
1984	1,360,784	1,010,823	2,780,381	153,222	1,091,531	6,396,741
1985	1,404,669	1,071,901	2,884,412	154,402	1,172,772	6,688,156
1986	1,405,523	1,100,872	2,716,673	150,341	1,252,068	6,625,477
1987	1,428,336	1,123,193	2,955,912	146,261	1,083,579	6,737,281
1988	1,452,651	1,162,223	3,127,844	132,332	1,073,134	6,948,184
1989	1,445,421	1,176,385	3,119,812	129,659	1,009,483	6,880,760
1990	1,475,889	1,195,133	3,146,826	136,690	895,356	6,849,894
1991	1,514,779	1,250,762	3,448,147	140,819	1,062,335	7,416,842
1992	1,532,653	1,285,159	3,596,765	142,905	1,144,053	7,701,535
1993	1,554,417	1,320,500	3,696,341	145,058	1,218,792	7,935,108
1994	1,576,023	1,356,814	3,878,077	147,286	1,297,475	8,255,675
1995	1,597,299	1,394,127	4,126,775	149,589	1,379,332	8,647,122
1996	1,617,106	1,432,466	4,220,980	151,971	1,463,691	8,886,214
1997	1,635,541	1,471,859	4,309,236	154,438	1,554,686	9,125,760
1998	1,652,387	1,512,336	4,395,075	156,993	1,645,244	9,362,035
1999	1,667,919	1,553,925	4,475,941	159,641	1,742,020	9,599,446
2000	1,682,096	1,592,773	4,556,385	162,141	1,816,236	9,809,631
2001	1,696,226	1,632,592	4,633,975	164,718	1,892,613	10,020,124
2002	1,710,983	1,673,407	4,714,950	167,373	1,974,630	10,241,343
2003	1,726,040	1,715,243	4,796,694	170,111	2,055,024	10,463,112
2004	1,741,920	1,758,124	4,881,885	172,935	2,139,494	10,694,358

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 8.2B

SOUTHWESTERN ELECTRIC POWER COMPANY

ANNUAL SALES BY SECTOR - TOTAL SYSTEM *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	2,285,250	1,515,763	2,665,298	232,910	1,075,019	7,774,240	
1976	2,278,149	1,605,130	2,944,698	244,191	1,305,786	8,377,954	
1977	2,697,444	1,789,406	3,311,770	266,301	1,525,460	9,590,381	820,792
1978	2,897,967	1,902,912	3,463,476	274,153	1,548,989	10,087,497	325,604
1979	2,782,229	1,908,504	3,622,248	285,238	1,058,713	9,656,932	455,848
1980	3,217,160	2,053,027	3,859,622	299,291	1,325,085	10,754,185	1,083,568
1981	3,070,573	2,103,505	4,260,750	304,256	1,333,536	11,072,620	2,447,767
1982	3,224,665	2,258,115	4,340,691	321,960	1,448,194	11,593,625	2,295,369
1983	3,149,545	2,316,591	4,531,631	329,571	1,607,558	11,934,896	3,507,788
1984	3,325,460	2,485,768	4,811,913	349,198	1,611,947	12,584,286	3,339,013
1985	3,475,815	2,646,621	4,998,876	358,544	1,804,018	13,283,874	3,034,268
1986	3,477,613	2,712,303	4,795,843	356,228	1,563,398	12,905,385	2,021,015
1987	3,549,134	2,761,099	5,081,988	353,804	1,572,112	13,318,137	2,590,289
1988	3,596,920	2,840,123	5,325,643	350,035	1,430,037	13,542,758	1,260,386
1989	3,562,588	2,899,442	5,361,508	353,486	1,306,142	13,483,166	880,205
1990	3,648,000	2,962,140	5,443,700	363,884	1,135,757	13,553,481	1,318,876
1991	3,717,631	3,056,485	5,808,659	371,018	1,333,789	14,287,582	1,544,596
1992	3,762,276	3,140,540	6,024,308	376,513	1,433,901	14,737,538	1,677,000
1993	3,813,364	3,226,904	6,196,840	382,190	1,526,248	15,145,546	673,000
1994	3,867,266	3,315,644	6,449,717	388,057	1,623,281	15,643,965	1,371,000
1995	3,923,525	3,406,824	6,767,285	394,124	1,724,152	16,215,910	1,179,000
1996	3,978,442	3,500,512	6,929,249	400,402	1,828,015	16,636,620	1,408,000
1997	4,031,013	3,596,776	7,082,688	406,901	1,940,025	17,057,403	1,576,000
1998	4,081,023	3,695,688	7,231,071	413,633	2,051,348	17,472,763	3,137,000
1999	4,128,521	3,797,319	7,370,856	420,609	2,170,160	17,887,465	3,112,000
2000	4,174,380	3,892,252	7,509,034	427,196	2,261,648	18,264,510	2,701,000
2001	4,219,886	3,989,558	7,644,036	433,984	2,355,880	18,643,344	2,358,000
2002	4,266,247	4,089,297	7,784,010	440,980	2,456,940	19,037,474	1,896,000
2003	4,312,957	4,191,530	7,925,313	448,196	2,555,909	19,433,905	1,899,000
2004	4,360,528	4,296,318	8,071,695	455,638	2,659,874	19,844,053	1,734,000

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 8.3A

SOUTHWESTERN ELECTRIC POWER COMPANY

ANNUAL PEAK DEMAND AND RESERVE MARGINS -TEXAS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	923	141			782	913	16.7%
1976	917	137			780	965	23.7%
1977	1,072	141			931	1,114	19.7%
1978	1,153	114			1,039	1,289	24.0%
1979	1,191	122			1,069	1,359	27.1%
1980	1,263	64	12		1,186	1,449	22.1%
1981	1,312	65	13		1,234	1,466	18.8%
1982	1,298	67	9		1,222	1,761	44.1%
1983	1,410	115	7		1,288	1,809	40.4%
1984	1,469	149	7		1,313	1,879	43.1%
1985	1,446	75	7		1,364	2,103	54.2%
1986	1,447	69			1,378	2,114	53.4%
1987	1,542	78			1,464	2,319	58.4%
1988	1,640	113			1,527	2,353	54.1%
1989	1,524	117			1,407	2,241	59.2%
1990	1,595	132			1,464	2,222	51.8%
1991	1,660	132			1,528	2,222	45.4%
1992	1,710	131			1,579	2,221	40.7%
1993	1,762	132			1,631	2,222	36.2%
1994	1,818	132			1,686	2,213	31.2%
1995	1,878	132			1,747	2,195	25.7%
1996	1,925	132			1,794	2,191	22.1%
1997	1,971	132			1,840	2,211	20.2%
1998	2,015	131			1,884	2,193	16.5%
1999	2,056	131			1,925	2,217	15.2%
2000	2,098	132			1,966	2,293	16.6%
2001	2,138	132			2,007	2,334	16.3%
2002	2,179	132			2,048	2,356	15.0%
2003	2,221	132			2,090	2,454	17.4%
2004	2,264	132			2,133	2,455	15.1%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 8.3B

SOUTHWESTERN ELECTRIC POWER COMPANY

ANNUAL PEAK DEMAND AND RESERVE MARGINS - TOTAL SYSTEM *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	2,075	317			1,758	2,052	16.7%
1976	2,117	317			1,800	2,227	23.7%
1977	2,404	317			2,087	2,498	19.7%
1978	2,381	235			2,146	2,662	24.0%
1979	2,291	235			2,056	2,614	27.1%
1980	2,652	135	26		2,491	3,042	22.1%
1981	2,723	135	27		2,561	3,042	18.8%
1982	2,668	135	20		2,513	3,620	44.1%
1983	2,849	229	18		2,602	3,655	40.5%
1984	2,948	297	16		2,635	3,770	43.1%
1985	2,943	148	19		2,776	4,281	54.2%
1986	3,140	148	1		2,991	4,587	53.4%
1987	3,085	156			2,929	4,639	58.4%
1988	3,153	217			2,936	4,523	54.1%
1989	3,045	233			2,812	4,478	59.2%
1990	3,190	263			2,927	4,443	51.8%
1991	3,319	263			3,056	4,443	45.4%
1992	3,421	263			3,158	4,443	40.7%
1993	3,524	263			3,261	4,443	36.2%
1994	3,635	263			3,372	4,424	31.2%
1995	3,756	263			3,493	4,390	25.7%
1996	3,850	263			3,587	4,381	22.1%
1997	3,942	263			3,679	4,421	20.2%
1998	4,031	263			3,768	4,388	16.5%
1999	4,113	263			3,850	4,434	15.2%
2000	4,195	263			3,932	4,584	16.6%
2001	4,276	263			4,013	4,667	16.3%
2002	4,358	263			4,095	4,711	15.0%
2003	4,442	263			4,179	4,908	17.4%
2004	4,528	263			4,265	4,910	15.1%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 8.4

SOUTHWESTERN ELECTRIC POWER COMPANY

NET GENERATION BY FUEL TYPE - TOTAL SYSTEM *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS/OIL	COAL	LIGNITE	HYDRO	ALTERNATE SOURCES	TOTAL
1975	8,617,083					8,617,083
1976	8,639,709					8,639,709
1977	8,677,981	1,687,795				10,365,776
1978	8,373,009	3,085,997				11,459,006
1979	8,505,642	3,931,511				12,437,153
1980	8,121,077	5,471,200				13,592,277
1981	7,882,335	7,080,907				14,963,242
1982	5,772,342	8,517,681				14,290,023
1983	4,180,826	9,655,306			884	13,837,016
1984	3,578,304	9,652,406		37,538	5,759	13,274,007
1985	3,143,248	9,284,293	3,230,421	39,832	7,573	15,705,367
1986	2,160,992	8,458,638	4,250,036	35,530	10,331	14,915,527
1987	1,727,969	8,904,778	4,726,910	34,401	11,505	15,405,563
1988	2,008,982	9,014,082	5,161,033	40,979	15,332	16,240,408
1989	1,853,437	9,305,105	4,489,014	40,979	9,374	15,697,909
1990	1,767,000	10,072,000	4,330,000	40,979	9,855	16,219,834
1991	1,759,000	9,791,000	4,418,000	40,979	9,855	16,018,834
1992	2,089,000	10,463,000	4,407,000	40,979	10,000	17,009,979
1993	2,137,000	10,548,000	4,413,000	40,979	10,000	17,148,979
1994	2,872,000	10,652,000	4,415,000	40,979	10,000	17,989,979
1995	3,541,000	10,724,000	4,416,000	40,979	10,000	18,731,979
1996	5,186,000	11,224,000	4,425,000	40,979	10,000	20,885,979
1997	5,602,000	11,218,000	4,402,000	40,979	10,000	21,272,979
1998	5,718,000	11,028,000	4,413,000	40,979	10,000	21,209,979
1999	5,621,000	11,217,000	4,412,000	40,979	10,000	21,300,979
2000	5,876,000	10,887,000	4,415,000	40,979	10,000	21,228,979
2001	5,641,000	11,495,000	4,425,000	40,979	10,000	21,611,979
2002	5,088,000	12,311,000	4,403,000	40,979	10,000	21,852,979
2003	4,701,000	13,161,000	4,415,000	40,979	10,000	22,327,979
2004	4,567,000	13,466,000	4,798,000	40,979	10,000	22,881,979

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 8.5A

SOUTHWESTERN ELECTRIC POWER COMPANY

NET SYSTEM CAPACITY BY SOURCE - TEXAS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	LIGNITE	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	1,950			45			913
1976	1,950			120			965
1977	1,943	528		12			1,114
1978	1,943	792		13		48	1,289
1979	1,895	792		14		52	1,359
1980	1,895	1,320		13		95	1,449
1981	1,895	1,320		90		174	1,466
1982	1,895	1,848		110		170	1,761
1983	1,895	1,848		85		129	1,809
1984	1,895	1,848		14			1,879
1985	1,859	1,824	550	55		31	2,103
1986	1,859	1,824	807	67		22	2,114
1987	1,859	1,824	816	70			2,319
1988	1,859	1,824	816	24		11	2,353
1989	1,819	1,824	821	15		8	2,241
1990	1,819	1,824	821			11	2,222
1991	1,819	1,824	821			11	2,222
1992	1,819	1,824	821			11	2,221
1993	1,819	1,824	821			11	2,222
1994	1,819	1,824	821			20	2,213
1995	1,819	1,824	821			37	2,195
1996	1,819	1,824	821			42	2,191
1997	1,819	1,824	821			22	2,211
1998	1,819	1,824	821			38	2,193
1999	1,819	1,824	821			15	2,217
2000	1,993	1,824	821			27	2,293
2001	2,128	1,824	821			53	2,334
2002	1,948	1,948	821	8		11	2,356
2003	1,948	2,160	821			11	2,454
2004	1,948	2,160	821	1		11	2,455

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

TABLE 8.5B

SOUTHWESTERN ELECTRIC POWER COMPANY

NET SYSTEM CAPACITY BY SOURCE - TOTAL SYSTEM *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	LIGNITE	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	1,950			102			2,052
1976	1,950			277			2,227
1977	1,943	528		27			2,498
1978	1,943	792		27		100	2,662
1979	1,895	792		27		100	2,614
1980	1,895	1,320		27		200	3,042
1981	1,895	1,320		187		360	3,042
1982	1,895	1,848		227		350	3,620
1983	1,895	1,848		172		260	3,655
1984	1,895	1,848		27			3,770
1985	1,859	1,824	550	112		64	4,281
1986	1,859	1,824	807	145		48	4,587
1987	1,859	1,824	816	140			4,639
1988	1,859	1,824	816	46		22	4,523
1989	1,819	1,824	821	30		16	4,478
1990	1,819	1,824	821			21	4,443
1991	1,819	1,824	821			21	4,443
1992	1,819	1,824	821			21	4,443
1993	1,819	1,824	821			21	4,443
1994	1,819	1,824	821			40	4,424
1995	1,819	1,824	821			74	4,390
1996	1,819	1,824	821			83	4,381
1997	1,819	1,824	821			43	4,421
1998	1,819	1,824	821			76	4,388
1999	1,819	1,824	821			30	4,434
2000	1,993	1,824	821			54	4,584
2001	2,128	1,824	821			106	4,667
2002	1,948	1,948	821	15		21	4,711
2003	1,948	2,160	821			21	4,908
2004	1,948	2,160	821	2		21	4,910

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

CHAPTER NINE

LOWER COLORADO RIVER AUTHORITY

The Lower Colorado River Authority (LCRA) is a governmental agency created by the Legislature of the State of Texas in 1934. The Board of Directors of the LCRA is composed of 15 Directors; twelve from the counties of Blanco, Burnet, Llano, Travis, Bastrop, Fayette, Colorado, Wharton, San Saba, and Matagorda, the ten-county area which forms the LCRA boundaries, and three at-large Directors from counties outside the boundaries which are served with electric power and energy by the LCRA. The Directors are appointed by the Governor of Texas with the advice and consent of the Texas Senate.

The LCRA functions to store, control, conserve, protect, and distribute the waters of the Colorado River in Texas for useful purposes, and to generate, transmit, and sell electric power and energy. The LCRA generates both thermal-electric and hydroelectric power and energy for sale to customers at retail *(3 percent of LCRA's total sales)* and wholesale *(97 percent of LCRA's total sales)* in all or part of a 52-county area of Central Texas. LCRA power and energy is sold at wholesale rates to 33 municipalities, 11 rural electric cooperatives, and certain private utility companies; and at retail rates to 64 retail customers in unincorporated areas.

The LCRA system consists of generators, transformers, substation and transmission line equipment, distribution lines and meters, together with the normal facilities necessary to conduct business as a utility. LCRA operates six dams and reservoirs on the Colorado River with 13 hydroelectric generation units for a total capacity of 241 MW in 1989.

LCRA reported a 1989 summer peak demand of approximately 1,568 MW. Total sales amounted to 7,501,993 MWH, of which two percent was sold to retail customers and 98 percent to wholesale customers. Installed net capacity totals 2,249 MW. This includes the Fayette Power Project Unit 3 at a net capacity rating of 430

MW. This unit is currently being tested to verify net capacity using western coal. Net capacity shown may be revised downward by 15 MW. Net generation in 1989 shows a fuel mix of 72 percent coal, 22 percent gas, 3.5 percent lignite, and 2.5 percent hydroelectric power.

Demand Forecast

The LCRA demand forecast consists of three separate components, the Service Area Economic Forecast, the Rate Class Sales Model, and the Load Temperature Model. The Service Area Economic Model, developed by Data Resources, Inc. (DRI), relates the economic performance of three geographic regions of the LCRA service area with that of the national economy using econometric techniques. DRI's base case forecast of the national economy serves as a basis for the base case scenario for the service area. This model serves to generate input for the Rate Class Sales Model. The Rate Class Sales Model calculates annual sales from the output of the Service Area Economic Model, the price of electricity and fuels, appliance saturation, and weather conditions. Regression analysis is used to calculate the relative influence of the inputs. The Load Temperature Model distributes the annual generation requirements from the Rate Class Sales Model across the months of the year and yields peak demand forecasts. The model relates daily generation requirements given average daily temperature. The application of historical monthly load factors yields forecasts of monthly peak demands. The LCRA has not updated its load forecast since 1988 because new models are being developed to analyze economics and load characteristics of eleven subregions. The actual performance to date has been slightly better than the forecast but is well within upper and lower bounds for the base forecast presented in the 1988 LCRA Total System Load Forecast Report.

Number of Customers

In 1989, LCRA provided electric service to 15 retail industrial customers and 49 other retail customers. The historical data for the period from 1977 through 1989 shows growth in retail customers through 1985 followed by declines. These declines are a result of the sale of LCRA's distribution systems in Kerr, San Saba, and Hayes Counties. The number of wholesale customers was 44 in 1989. LCRA projects a stable mix of 59 industrial and wholesale customers through the forecast period.

Sales Retail sales peaked in 1985. Miscellaneous retail sales are not projected separately and historical data are no longer recorded for forecast purposes. Industrial sales are projected to decline through the forecast period. LCRA also sells power off-system, but makes no projection of the non-firm off-system sales. From 1977 through 1989, annual non-firm off-system sales ranged from 51,961 MWH to 863,129 MWH, with 635,344 MWH in 1989.

Wholesale sales should increase continually from 1989 to 2004. The annual rate of growth of sales to the wholesale class drops to 3.1 percent for 1989 to 1999 from a rate of 7.9 percent per year over the period 1979 to 1989. A 4.4 percent annual rate is shown for the 1999-2004 period. To maintain comparability with the forecast period, the historical data have been adjusted to include as wholesale the formerly classified retail sales from the Kerrville, San Marcos, and San Saba districts. Wholesale totals for 1989 of 7,357,133 MWH should increase to 10,020,750 MWH in 1999, according to projections. Similarly, reflecting the fact that most sales of the LCRA are wholesale, the total on system sales of 7,501,993 MWH in 1989 are projected to grow to 10,150,750 MWH in 1999.

Figure 9.1

Peak Demand Over the period from 1979 through 1989, LCRA experienced an 8 percent growth in winter peak demand and a 6 percent growth in summer peak demand. The utility expects growth through 1999 to occur at about 2.8 percent annually in the summer peak, leading to a peak demand of 2,074

MW in 1999; and a 1.7 percent annual rate of growth in the winter peak, leading to a peak demand of 2,322 MW in 1999.

Whereas peak load for Texas utilities has traditionally occurred during the summer, by 1994 the LCRA expects to be a consistent winter peaking utility. That is, prior to conservation and load management adjustments, the 1994 winter peak projection of 1,766 MW exceeds the summer peak in 1994 of 1,723 MW. After accounting for adjustments to demand, the winter peak is projected to exceed the summer peak in 1992.

Adjustments to Demand

The LCRA offers six end-user energy efficiency programs designed to reduce peak demand. One limits simultaneous running of residential central air conditioners and electric water heaters thus reducing peak load. Economic incentives are offered to the wholesale customers, their retail customers, and the dealers who purchase energy-efficient air conditioners and heat pumps. Additionally, the LCRA presents a performance-based standard for new home construction which requires the energy consumption to be cut in half compared to common designs of new homes. Commercial customers are encouraged to replace existing lamps with energy-efficient lamps.

Adjustments to peak load occurred during the period 1983 to 1988, but precise savings were not measured. Summer peak savings for 1989 were estimated to be 24 MW, on target with projected program savings. However, LCRA records measured load and not potential load. The Authority expects its conservation and load management savings on the summer peak to equal 35 MW capacity in 1990 and 141 MW by 1999. However, due to a reorganization and review of the programs by a consultant, additional near-term program savings may not be achieved. LCRA, at this time, expects to be able to achieve projected long-term savings. Preliminary assessments of potential conservation and load management savings by the consultant suggest savings may be double what is currently forecast due to appliance standards and additional programs particularly targeting the commercial sector.

Adjustments to peak demand do not equate across the seasons. Savings on the summer peak are projected to grow from 25 MW in 1989 to 141 MW capacity in 1999. Thus a 1999 summer peak of 2,074 MW represents about 94 percent of the

capacity that would be needed, some 2,215 MW, if capacity savings were not achieved through conservation and load management practices. Savings achievable during the winter period run from 20 MW in 1990 to 72 MW in 1999.

Supply-Side Plan

Information on LCRA efforts to improve efficiency indicates savings are expected from three programs focused on generation at the Fayette plant and from two programs for its transmission system. In addition, a rate program encourages efficiency among the wholesale customers.

Installed Capacity In 1989, LCRA operated 20 generating units with a total capacity of 2,274 MW. Four gas plants make up 45 percent of the installed capacity, three coal units provide 44 percent, and 13 hydroelectric units total 11 percent. While hydroelectric generation is a very efficient means of producing electricity, there are competing uses for the available water and generation is largely dependent upon rainfall.

Net System Capacity The LCRA made firm, off-system sales from 1981 to 1985, but has not contracted for such sales recently and does not project any such sales. No firm purchases are projected. Net system capacity of 2,274 MW now is projected to increase by 620 MW during the 1999 to 2004 period. Figure 9.2 shows net system capacity in relation to both the winter and summer peaks in demand.

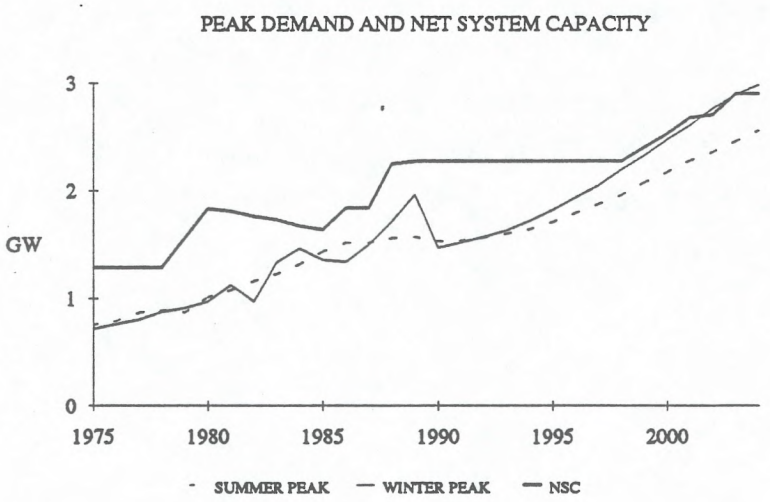


Figure 9.2

Net Generation. About 72 percent of LCRA's power was generated by coal in 1989, as shown in Figure 9.3. Of the remaining electricity generated, 22 percent was fired using gas, 2.5 percent hydroelectric power, and 3.5 percent lignite. LCRA was totally reliant on hydroelectric and gas generation in 1978. Projections show 1999 net generation by coal at 59 percent, gas at 33 percent, lignite at 4.5 percent, and hydroelectric at 3.5 percent. According to LCRA projections, total system net generation is expected to exhibit an annual growth rate of 3.5 percent to reach 10,684,839 MWH in 1999 and, for the 1999-2004 period, 4.3 percent per year to reach 13,193,848 MWH in 2004.

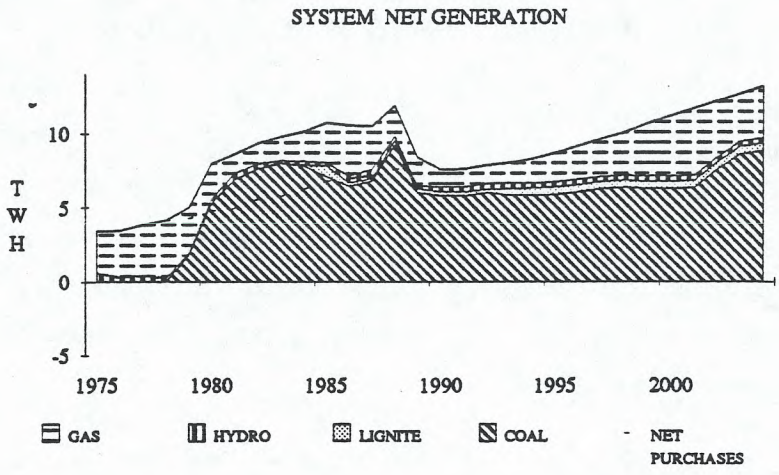


Figure 9.3

System Expansion The LCRA added a third unit to the Fayette complex in 1988. Originally planned as a 400-MW lignite unit, current expectations call for burning subbituminous coal and re-rating the plant to 430 MW. Through 1998, the Authority plans no further capacity additions, but as shown in Figure 9.4, additional capacity may be needed in the 1999-2004 period, beginning with 127 MW in 1999.

The LCRA transmission system 10-year plan includes 4.25 miles of new 138-KV line construction, 31.5 miles of 138-KV line conversion, 8 miles of 138-KV upgrades, and two auto-transformers.

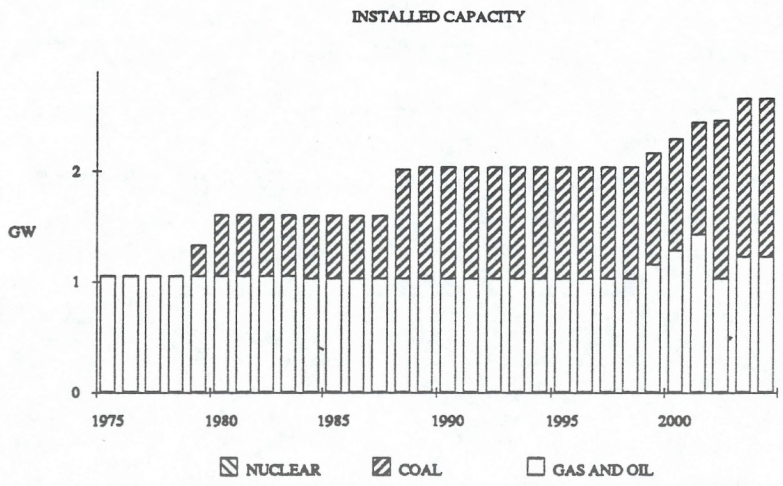


Figure 9.4

There are no projects involving 345-KV construction. Total estimated cost of the transmission projects amount to approximately $11,000,000.

TABLE 9.1

LOWER COLORADO RIVER AUTHORITY

NUMBER OF CUSTOMERS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975					41
1976			19	19,085	41
1977			19	19,555	41
1978			21	19,944	41
1979			19	20,932	41
1980			29	21,817	41
1981			27	22,801	41
1982			28	23,872	41
1983			31	25,605	41
1984			32	27,286	41
1985			32	28,501	41
1986			24	17,117	42
1987			16	17,092	43
1988			16	51	44
1989			15	49	44
1990			15	49	44
1991			15	49	44
1992			15	49	44
1993			15	49	44
1994			15	49	44
1995			15	49	44
1996			15	49	44
1997			15	49	44
1998			15	49	44
1999			15	49	44
2000			15	49	44
2001			15	49	44
2002			15	49	44
2003			15	49	44
2004			15	49	44

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 9.2

LOWER COLORADO RIVER AUTHORITY

ANNUAL SALES BY SECTOR *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975			197,522		2,606,477	2,803,999	
1976			184,748		2,721,091	2,905,839	
1977			199,699	319,378	3,031,121	3,550,198	
1978			185,155	342,898	3,319,021	3,847,074	
1979			177,639	335,292	3,432,638	3,945,569	
1980			178,484	375,078	3,790,218	4,343,780	
1981			165,951	378,318	4,001,571	4,545,840	
1982			155,980	418,918	4,514,095	5,088,993	
1983			161,709	426,853	4,700,975	5,289,537	23,724
1984			176,389	480,762	5,234,537	5,891,688	706,916
1985			210,669	503,635	5,563,140	6,277,444	2,272,716
1986			187,493	499,182	5,803,247	6,489,922	1,606,558
1987			161,622	342,830	6,285,657	6,790,109	665,069
1988			167,087	14,568	7,039,424	7,221,079	558,728
1989			143,126	1,734	7,357,133	7,501,993	212,250
1990			147,000		7,033,100	7,180,100	224,195
1991			144,000		7,100,700	7,244,700	61,928
1992			141,000		7,321,250	7,462,250	35,324
1993			140,000		7,509,400	7,649,400	266,383
1994			139,000		7,751,700	7,890,700	
1995			137,000		8,133,700	8,270,700	
1996			136,000		8,574,550	8,710,550	
1997			133,000		9,019,300	9,152,300	
1998			131,000		9,462,100	9,593,100	
1999			130,000		10,020,750	10,150,750	
2000			129,000		10,508,150	10,637,150	
2001			128,000		11,017,400	11,145,400	
2002			127,000		11,444,000	11,571,000	
2003			126,000		11,933,300	12,059,300	
2004			125,000		12,409,300	12,534,300	

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 9.3

LOWER COLORADO RIVER AUTHORITY

ANNUAL PEAK DEMAND AND RESERVE MARGINS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	753				753	1,280	70.0%
1976	792				792	1,280	61.6%
1977	869				869	1,280	47.4%
1978	888				888	1,280	44.1%
1979	868				868	1,555	79.3%
1980	1,007				1,007	1,830	81.8%
1981	1,078				1,078	1,805	67.5%
1982	1,158				1,158	1,760	51.9%
1983	1,221				1,221	1,730	41.7%
1984	1,314				1,314	1,668	26.9%
1985	1,434				1,434	1,636	14.1%
1986	1,515				1,515	1,836	21.2%
1987	1,514				1,514	1,836	21.3%
1988	1,555				1,555	2,249	44.6%
1989	1,568				1,568	2,274	45.0%
1990	1,565		22	13	1,530	2,274	48.6%
1991	1,580		30	17	1,533	2,274	48.3%
1992	1,624		38	22	1,564	2,274	45.4%
1993	1,669		46	26	1,597	2,274	42.4%
1994	1,723		54	31	1,638	2,274	38.8%
1995	1,806		63	37	1,706	2,274	33.3%
1996	1,899		71	41	1,787	2,274	27.3%
1997	1,999		80	46	1,873	2,274	21.4%
1998	2,095		85	52	1,958	2,274	16.1%
1999	2,215		86	55	2,074	2,401	15.8%
2000	2,316		88	59	2,169	2,528	16.6%
2001	2,429		89	63	2,277	2,676	17.5%
2002	2,523		90	76	2,357	2,699	14.5%
2003	2,628		91	79	2,458	2,894	17.7%
2004	2,732		93	82	2,557	2,894	13.2%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 9.4

LOWER COLORADO RIVER AUTHORITY

NET GENERATION BY FUEL TYPE *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS/OIL	COAL	LIGNITE	HYDRO	TOTAL
1975	2,817,357			595,251	3,412,608
1976	3,153,582			307,277	3,460,859
1977	3,384,148			432,243	3,816,391
1978	3,890,644			236,928	4,127,572
1979	3,035,113	1,808,561		183,813	5,027,487
1980	2,388,789	5,259,020		293,212	7,941,021
1981	1,319,590	6,849,152		441,175	8,609,917
1982	1,393,114	7,625,279		325,040	9,343,433
1983	1,609,648	8,014,000		154,793	9,778,441
1984	2,029,403	7,847,992	15,248	243,342	10,135,985
1985	2,651,802	7,103,550	737,013	213,589	10,705,954
1986	3,436,762	6,458,999	186,062	491,469	10,573,292
1987	2,871,556	6,791,163	156,421	671,642	10,490,782
1988	2,120,018	9,211,350	305,736	278,039	11,915,143
1989	1,865,844	5,990,637	297,247	213,064	8,366,792
1990	1,151,688	5,807,411	246,000	353,100	7,558,199
1991	1,218,415	5,808,556	246,000	353,100	7,626,071
1992	1,267,443	5,988,143	246,000	353,100	7,854,686
1993	1,417,606	5,850,656	431,000	353,100	8,052,362
1994	1,646,088	5,817,169	490,000	353,100	8,306,357
1995	1,982,729	5,880,286	490,000	353,100	8,706,115
1996	2,275,743	6,050,593	490,000	353,100	9,169,436
1997	2,532,960	6,258,281	490,000	353,100	9,634,341
1998	2,903,153	6,351,589	490,000	353,100	10,097,842
1999	3,566,913	6,274,826	490,000	353,100	10,684,839
2000	4,084,200	6,270,129	490,000	353,100	11,197,429
2001	4,540,527	6,348,535	490,000	353,100	11,732,162
2002	3,775,649	7,561,180	490,000	353,100	12,179,929
2003	3,227,464	8,623,318	490,000	353,100	12,693,882
2004	3,516,066	8,834,682	490,000	353,100	13,193,848

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 9.5

LOWER COLORADO RIVER AUTHORITY

NET SYSTEM CAPACITY BY SOURCE *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	LIGNITE	HYDRO	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	1,050			230				1,280
1976	1,050			230				1,280
1977	1,050			230				1,280
1978	1,050			230				1,280
1979	1,050	275		230				1,555
1980	1,050	550		230				1,830
1981	1,050	550		230			25	1,805
1982	1,050	550		230			70	1,760
1983	1,050	550		230			100	1,730
1984	1,025	570		223			150	1,668
1985	1,025	570		241			200	1,636
1986	1,025	570		241				1,836
1987	1,025	570		241				1,836
1988	1,025	983		241				2,249
1989	1,025	1,008		241				2,274
1990	1,025	1,008		241				2,274
1991	1,025	1,008		241				2,274
1992	1,025	1,008		241				2,274
1993	1,025	1,008		241				2,274
1994	1,025	1,008		241				2,274
1995	1,025	1,008		241				2,274
1996	1,025	1,008		241				2,274
1997	1,025	1,008		241				2,274
1998	1,025	1,008		241				2,274
1999	1,152	1,008		241				2,401
2000	1,279	1,008		241				2,528
2001	1,427	1,008		241				2,676
2002	1,025	1,433		241				2,699
2003	1,220	1,433		241				2,894
2004	1,220	1,433		241				2,894

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

CHAPTER TEN

CITY OF AUSTIN ELECTRIC UTILITY

The City of Austin Electric Utility (COA), a municipally owned utility, renders electrical service in Travis County and in a small portion of Williamson County. Most of its 420-square-mile certified service area is served solely by the City of Austin Electric Utility Department. About 10 square miles in the northeast corner of the area is dually certified, and customers there can elect to receive electricity from either the COA or TU Electric. The pattern in the past shows that residential customers choose COA service and commercial customers choose TU Electric.

COA reported a 1989 peak demand after adjustments of 1,408 MW, up slightly from the previous year. Total system sales also rose to 6,117,280 MWH. Installed capacity totals 2,528 MW. Net generation in 1989 exhibited a fuel mix of 55.5 percent coal, 23 percent nuclear, and 21.5 percent gas.

Demand Forecast

The COA forecast employs end-use/econometric energy models to project long-term electric sales to customers. The modeling considers a forecast range in its planning process in recognition of the uncertainties in a load forecast. The forecast ranges of system peak and energy consumption are based on historical information and recent per customer or per building patterns of energy use. The ranges include assumptions about the change in number of customers and amount of commercial floorspace. The system energy projections provide the inputs to the Hourly Electric Load Model (HELM). In HELM, hourly load shapes for appliances and building types are used to distribute the annual energy forecasts to demand over time. The projections of maximum system demand are modeled to occur between 4 pm and 5 pm on a weekday in August of each year.

Number of Customers

In 1989, COA provided electric service to 230,585 residential customers. As shown in Figure 10.1, the historical data for the period from 1979 through 1989 reflect an average annual growth rate of 5 percent for this class of customers. COA expects a 0.3 percent annual growth rate through 1999, and a 1.9 percent rate from 1999 to 2004.

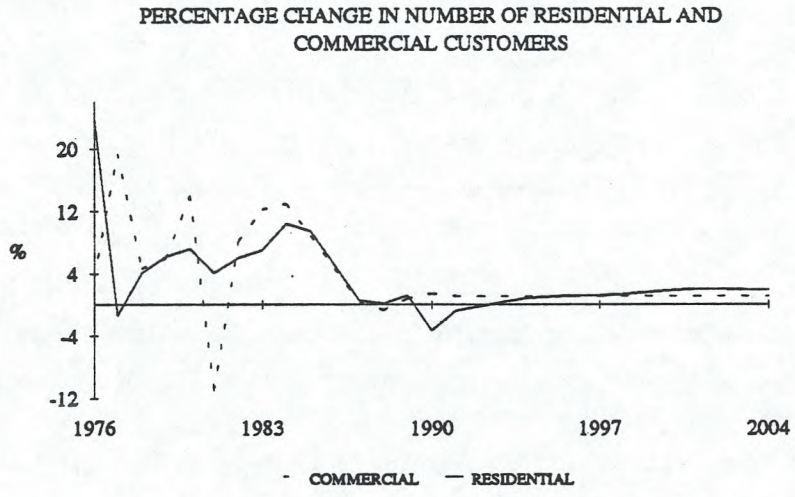


Figure 10.1

The utility served 26,991 commercial customers in 1989, about the same number as in 1986 and 1987 but up a little from 1988. The utility served 12 industrial customers in 1989. All other retail sales were to 162 customers in 1989.

Sales

System sales in 1989 amounted to 6,117,280 MWH. According to COA's projection of system sales shown in Figure 10.2, growth will slow from the 7.4 percent annual rate demonstrated over the past decade to 3.8 percent per year from 1989 through 1999 and 3 percent anually from 1999-2004. Sales are expected to total 10,890,025 MWH in 2004.

The residential sector purchased 2,344,835 MWH after 10 years of growth at 6.6 percent per year. A growth rate of 2.7 percent results in projected sales of 3,053,240 MWH in 1999 to residential customers. Sales of 2,977,135 MWH in 1989 to the commercial sector make that group the largest consumer class in the COA service area. Projected growth in commercial sales occurs at the annual rate of 4.8 percent through 1999, enough to keep the commercial sector at about 50 percent of total sales over the forecast period.

Industrial sales are projected to increase to 808,535 MWH in 1999 from 626,318 MWH in 1989, reflecting a growth rate of 2.6 percent. COA also sold 266,383 MWH off the system in 1989 but makes no projection of off-system sales.

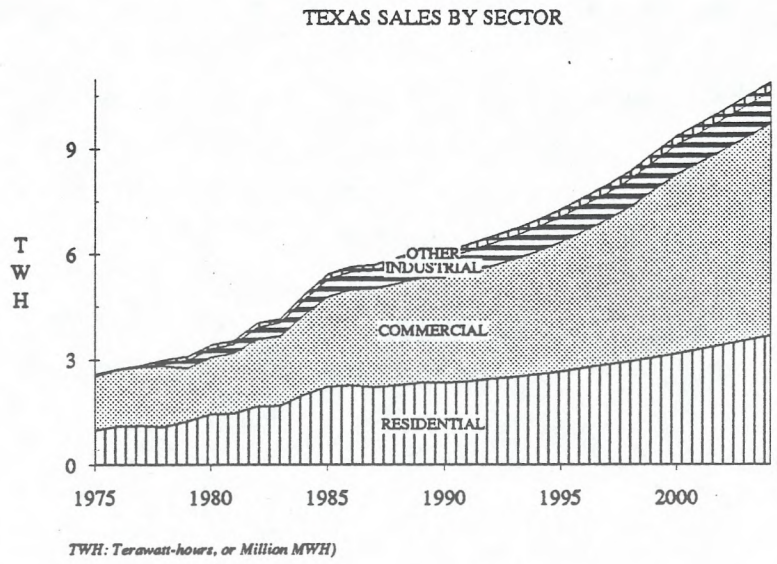


Figure 10.2

Peak Demand Peak demand in 1989 reached 1,408 MW for the COA system. Over the period from 1979 through 1989, COA experienced 6.6 percent annual growth in peak demand. The utility expects growth through 1999 to occur at about 3.8 percent annually and from 1999 to 2004 at about 4 percent annually.

Adjustments to Demand The utility is pursuing two major types of demand-side management programs. One type is aimed at reducing demand and the other at using alternative or nontraditional sources of generation. Programs involving alternative generation strategies will not affect the forecast of energy and demand but are being considered as part of Austin's long-range generation planning.

COA reported a 13-MW reduction in 1989 peak demand due to conservation and load management practices. The utility expects its conservation and load management activities to save 26 MW of capacity in 1990, 148 MW in 1999, and 218 MW by 2004.

Supply-Side Plan

Installed Capacity In 1989, COA generated from 18 units with a total capacity of 2,528 MW. Gas plants make up 61 percent of the installed capacity, coal about 23 percent, nuclear 16 percent, and the photovoltaic plant PV300, just over 0.01 percent.

Net System Capacity COA sold 10 MW on a firm basis in 1989 and has 15 MW scheduled through 1996. Net system capacity and peak demand are shown in Figure 10.3 where the reserve margin is represented as the area between the two curves.

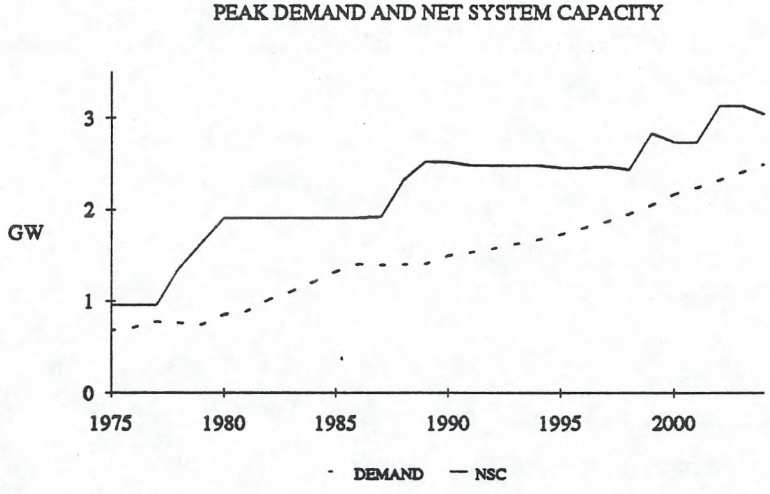


Figure 10.3

Net Generation Net generation by fuel type, as illustrated in Figure 10.4, shows that the utility was totally reliant on gas generation in 1977. Gas generation provided only 22 percent of the mix in 1989. Nuclear power accounted for 23 percent of

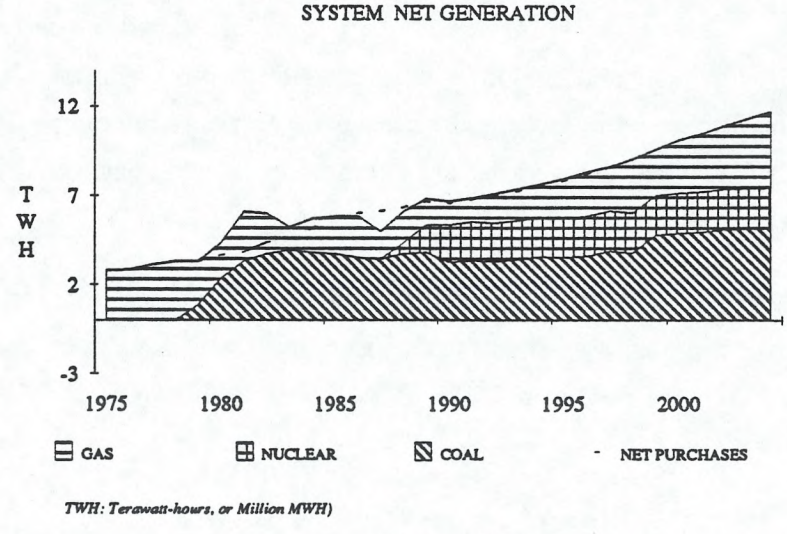


Figure 10.4

the energy produced in 1989 but is scheduled to increase generation in 1990.

System Expansion Over the period through 2004, net generating capabilities will grow by 20 percent, if planned capacity expansion of 506 MW occurs. Five gas units totalling 294 MW are scheduled to be retired, as shown in Figure 10.5, and two coal units of 400 MW each are scheduled to be added in 1999 and 2002.

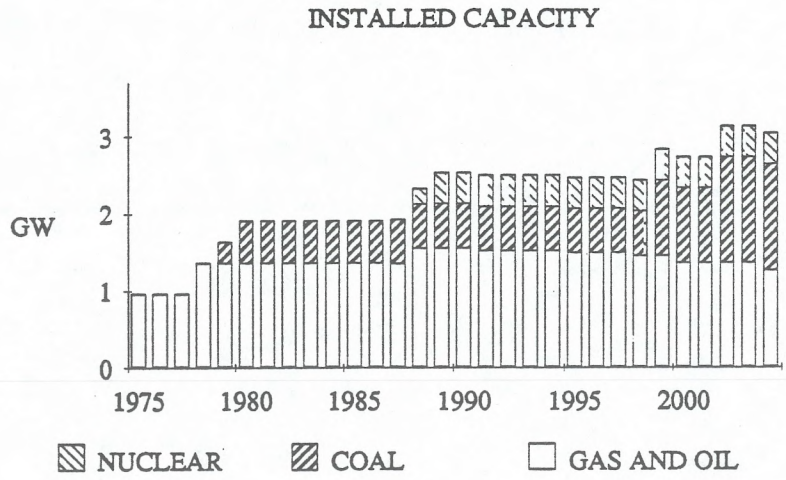


Figure 10.5

Three transmission projects involving 8.5 miles of 138-KV line were completed in 1989. Two 138-KV projects, 30.5 miles total, and four 138-KV projects, 30 miles total, are scheduled to be completed in 1990 and 1991, respectively. The lines are located in Travis and Caldwell Counties.

TABLE 10.1

CITY OF AUSTIN ELECTRIC DEPARTMENT

NUMBER OF CUSTOMERS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975	104,417	12,444		88	
1976	129,618	12,864		116	0
1977	127,753	15,358		128	0
1978	132,907	16,070	5	129	0
1979	141,131	17,022	5	117	0
1980	151,293	19,398	5	123	0
1981	157,400	17,259	6	117	0
1982	166,855	18,662	7	123	0
1983	178,464	20,938	7	127	0
1984	196,987	23,636	7	137	0
1985	215,429	25,711	9	145	0
1986	226,321	26,903	10	151	0
1987	227,603	26,977	9	160	0
1988	227,938	26,783	10	160	0
1989	230,585	26,991	12	162	0
1990	222,942	27,378	10	160	0
1991	221,188	27,680	10	160	0
1992	220,805	27,986	10	160	0
1993	221,617	28,295	10	160	0
1994	223,441	28,608	10	160	0
1995	225,789	28,924	10	160	0
1996	228,387	29,244	10	160	0
1997	231,143	29,567	10	160	0
1998	234,204	29,894	10	160	0
1999	237,853	30,224	10	160	0
2000	242,249	30,558	10	160	0
2001	247,162	30,896	10	160	0
2002	252,088	31,237	10	160	0
2003	256,976	31,582	10	160	0
2004	261,918	31,931	10	160	0

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 10.2

CITY OF AUSTIN ELECTRIC DEPARTMENT

ANNUAL SALES BY SECTOR *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	993,882	1,520,957		52,325		2,567,164	
1976	1,091,515	1,636,273				2,727,788	
1977	1,119,799	1,674,703		31,669		2,826,171	
1978	1,079,226	1,743,315	51,607	118,542		2,992,690	
1979	1,236,205	1,524,843	213,057	113,961		3,088,066	23,724
1980	1,446,574	1,614,383	238,398	117,593		3,416,948	706,916
1981	1,459,135	1,713,895	261,823	109,653		3,544,506	2,272,716
1982	1,669,244	1,904,238	335,274	119,227		4,027,983	1,606,558
1983	1,679,062	1,980,415	386,704	120,060		4,166,241	665,069
1984	1,993,770	2,266,753	415,308	141,370		4,817,201	558,728
1985	2,223,769	2,564,702	494,010	144,631		5,427,112	212,250
1986	2,260,650	2,725,168	507,571	150,186		5,643,575	224,195
1987	2,214,423	2,803,179	516,167	158,652		5,692,421	61,928
1988	2,259,286	2,908,961	564,267	171,227		5,903,741	35,324
1989	2,344,835	2,977,135	626,318	168,992		6,117,280	266,383
1990	2,329,798	3,001,348	573,776	176,584		6,081,505	
1991	2,378,823	3,104,763	601,786	185,204		6,270,575	
1992	2,441,630	3,223,163	629,796	193,824		6,488,413	
1993	2,508,508	3,355,345	656,462	202,031		6,722,345	
1994	2,578,160	3,502,698	682,916	210,172		6,973,945	
1995	2,654,935	3,674,563	710,430	218,640		7,258,568	
1996	2,747,158	3,897,395	736,884	226,781		7,608,218	
1997	2,843,635	4,119,303	759,943	233,877		7,956,758	
1998	2,944,553	4,395,230	783,708	241,192		8,364,683	
1999	3,053,240	4,750,615	808,535	248,832		8,861,223	
2000	3,167,200	5,108,035	831,735	255,972		9,362,943	
2001	3,286,340	5,322,543	850,267	261,675		9,720,825	
2002	3,410,845	5,547,410	868,092	267,161		10,093,508	
2003	3,540,900	5,784,303	884,784	272,298		10,482,285	
2004	3,677,708	6,033,498	901,406	277,414		10,890,025	

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 10.3

CITY OF AUSTIN ELECTRIC DEPARTMENT

ANNUAL PEAK DEMAND AND RESERVE MARGINS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	681				681	956	40.4%
1976	711				711	956	34.5%
1977	774				774	956	23.5%
1978	763				763	1,356	77.7%
1979	743				743	1,631	119.5%
1980	849				849	1,906	124.5%
1981	888				888	1,906	114.6%
1982	1,013				1,013	1,906	88.2%
1983	1,101				1,101	1,906	73.1%
1984	1,210				1,210	1,906	57.5%
1985	1,339			19	1,320	1,906	44.4%
1986	1,425			23	1,402	1,906	35.9%
1987	1,408			17	1,391	1,920	38.1%
1988	1,407			12	1,395	2,320	66.3%
1989	1,421		1	12	1,408	2,518	78.8%
1990	1,521		2	24	1,495	2,513	68.1%
1991	1,569		2	37	1,530	2,477	61.9%
1992	1,622		2	47	1,573	2,477	57.5%
1993	1,680		3	58	1,619	2,477	53.0%
1994	1,744		3	71	1,670	2,477	48.3%
1995	1,811		4	84	1,723	2,449	42.1%
1996	1,898		5	97	1,796	2,449	36.4%
1997	1,984		5	113	1,866	2,464	32.1%
1998	2,080		6	126	1,948	2,428	24.6%
1999	2,197		6	142	2,049	2,828	38.0%
2000	2,327		7	156	2,164	2,731	26.2%
2001	2,418		7	173	2,238	2,731	22.0%
2002	2,511		8	185	2,318	3,131	35.1%
2003	2,607		9	196	2,402	3,131	30.4%
2004	2,710		9	209	2,492	3,034	21.8%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 10.4

CITY OF AUSTIN ELECTRIC DEPARTMENT

NET GENERATION BY FUEL TYPE *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS/OIL	COAL	NUCLEAR	ALTERNATE	TOTAL
1975	2,778,662				2,778,662
1976	2,823,819				2,823,819
1977	3,103,327				3,103,327
1978	3,297,351				3,297,351
1979	2,449,769	854,775			3,304,544
1980	1,978,225	2,377,470			4,355,695
1981	2,776,201	3,337,504			6,113,705
1982	2,257,848	3,726,491			5,984,339
1983	1,275,770	3,956,367			5,232,137
1984	1,904,598	3,811,856			5,716,454
1985	2,106,727	3,749,813			5,856,540
1986	2,327,861	3,525,635			5,853,496
1987	1,558,425	3,431,827		339	4,990,591
1988	1,779,882	3,717,228	608,932	481	6,106,523
1989	1,466,412	3,781,046	1,565,426	445	6,813,329
1990	1,307,000	3,260,900	2,099,100	680	6,667,680
1991	1,349,000	3,339,900	2,181,900	680	6,871,480
1992	1,655,300	3,286,700	2,164,900	680	7,107,580
1993	1,754,500	3,413,600	2,191,700	680	7,360,480
1994	1,869,000	3,552,200	2,210,500	680	7,632,380
1995	2,235,000	3,499,800	2,204,500	680	7,939,980
1996	2,474,600	3,582,400	2,260,100	680	8,317,780
1997	2,467,500	3,876,200	2,257,300	680	8,601,680
1998	3,016,500	3,764,900	2,259,300	680	9,041,380
1999	2,562,600	4,760,100	2,256,900	680	9,580,280
2000	2,982,300	4,870,300	2,267,900	680	10,121,180
2001	3,274,900	4,969,200	2,260,900	680	10,505,680
2002	3,549,300	5,095,600	2,260,900	680	10,906,480
2003	3,917,600	5,135,000	2,261,600	680	11,314,880
2004	4,267,400	5,166,800	2,269,100	680	11,703,980

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 10.5

CITY OF AUSTIN ELECTRIC DEPARTMENT

NET SYSTEM CAPACITY BY SOURCE *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	NUCLEAR	ALTERNATIVE	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	956							956
1976	956							956
1977	956							956
1978	1,356							1,356
1979	1,356	275						1,631
1980	1,356	550						1,906
1981	1,356	550						1,906
1982	1,356	550						1,906
1983	1,356	550						1,906
1984	1,356	550						1,906
1985	1,356	550						1,906
1986	1,356	550						1,906
1987	1,350	570		0				1,920
1988	1,550	570	200	0				2,320
1989	1,550	578	400	0			10	2,518
1990	1,550	578	400	1			15	2,513
1991	1,514	578	400	1			15	2,477
1992	1,514	578	400	1			15	2,477
1993	1,514	578	400	1			15	2,477
1994	1,514	578	400	1			15	2,477
1995	1,486	578	400	1			15	2,449
1996	1,486	578	400	1			15	2,449
1997	1,486	578	400	1				2,464
1998	1,450	578	400	1				2,428
1999	1,450	978	400	1				2,828
2000	1,353	978	400	1				2,731
2001	1,353	978	400	1				2,731
2002	1,353	1,378	400	1				3,131
2003	1,353	1,378	400	1				3,131
2004	1,256	1,378	400	1				3,034

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

CHAPTER ELEVEN

WEST TEXAS UTILITIES COMPANY

West Texas Utilities Company (WTU) is a public utility engaged in generating, purchasing, transmitting, and distributing electricity. The utility's service area covers an estimated 53,000 square miles in north central and western Texas. The two largest cities served by the utility are Abilene and San Angelo. WTU is a subsidiary of the Central and South West Corporation and a member of ERCOT.

WTU is an investor-owned company. Its revenues for 1988 totaled $302,134,000 while total assets as of December 31, 1988 were $736,679,000. The Company's capital structure was comprised of 51.7 percent common equity, 5.7 percent preferred stock, and 42.6 percent long-term debt.

WTU is a summer peaking utility. The annual peak demand usually occurs during the months of either July or August. Peak demand after adjustments was 1,134 MW in July of 1989. The utility reports 1989 system sales at 5,517,136 MWH. WTU possesses the installed capacity to generate up to 1,399 MW. In 1989, about 60 percent of the total electricity generated by the utility used gas as the primary fuel. The remaining electricity was generated utilizing coal as the source of energy.

Demand Forecast

In formulating its forecasts of peak loads, WTU uses an exponential time-trend extrapolation method to project historical trends into the future. The exponential relations are derived through a series of processes which involve the manipulation of such data as hourly system temperatures and hourly system loads. WTU employs a modular forecasting system to project its sales. The system is composed of two components: 1) a regional economic and demographic component and, 2) a company KWH sales component. Both components are subsystems which describe or emulate items which measure levels of economic activity. Equations are derived using basic

economic behavioral theory and facts about the items under consideration. The resulting equations are combined into one automated simulation routine. Once the routine is developed, the utility performs a four-step process to generate a KWH sales forecast.

Number of Customers

WTU provided electric service to 140,212 residential customers in 1989. As shown in Figure 11.1, the historical data for the period from 1979-1989 reflect an average annual growth rate of 1.5 percent. The Company expects a 1.9 percent annual growth rate into 1999, and 1.7 percent for the 1999-2004 period. WTU served 24,769 commercial customers in 1989. The utility projects a decline in the growth rate from 2.0 percent annually for the period from 1979 to 1989 to 1.2 percent over the next ten years. Unlike either the residential or commerical sector, the industrial sector has exhibited a fairly constant average per annum growth. Over the historical period 1979 through 1989, this class grew at an average compound rate of approximately 4.7 percent per year. The growth rate is expected to drop to 3.9 percent for the period from 1989 through 1999. Currently, WTU serves 6,338 industrial customers.

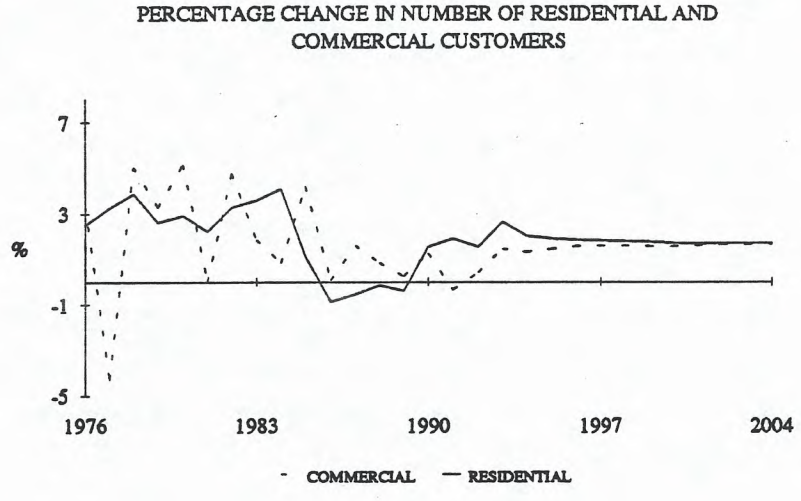


Figure 11.1

Sales

Total system sales grew at a compound rate of 3 percent annually from 1979 to 1989. Projections shown in Table 11.2 indicate growth from 1989 to 1999 at 2 percent per year and from 1999 to 2004 at 2.3 percent per year. Figure 11.2 shows that the second largest contributor to total sales in 1979 was the residential sector. In that year, sales to residential customers comprised 24 percent of the aggregate sales. In 1989, the residential sector purchased

1,365,295 MWH of electricity. Currently, this class maintains the position as the second-largest customer class, purchasing 25 percent of the total. The utility has projected an average annual rate of growth for sales to the residential sector of 2.4 percent through 1999. This is down somewhat from the 3.3 percent annual growth experienced over the previous decade. The utility projects the residential class contribution to the total sales will be 26 percent by 1999.

Historically, the commercial sector exhibited a growth rate of 3.3 percent annually. WTU expects this rate to remain fairly constant into the future. It is predicting 2.7 percent annual growth for the period from 1989 through 1999. Sales to commercial customers totaled 1,038,361 MWH in 1989. This amount represents 18.6 percent of the total sales which makes this sector the fourth-largest customer class.

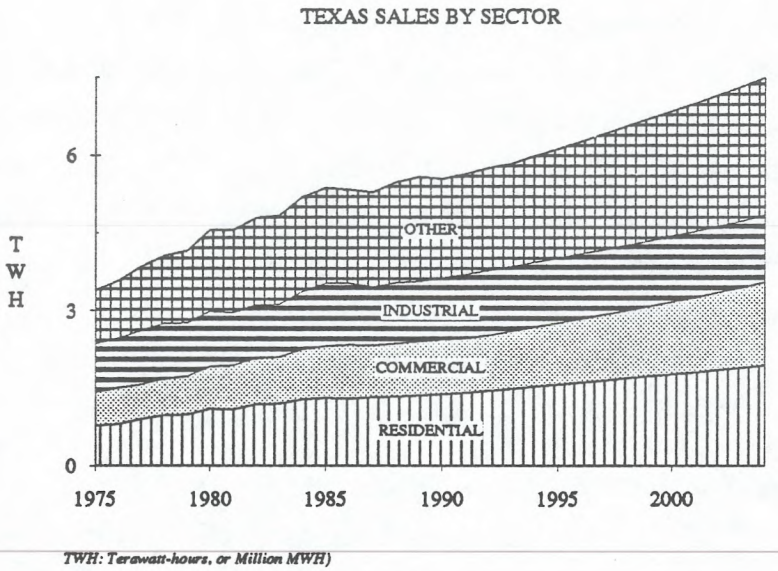


Figure 11.2

The industrial class purchased 21 percent of the total electricity generated by the Company in 1989. The total industrial sales in that year amounted to 1,162,611 MWH. The industrial sector has exhibited a growth rate of 1.4 percent since 1979 and has moved from the largest purchaser class in 1979 to the third largest in 1989. The utility projects an even slower 0.9 percent annual rate of growth through 1999. WTU anticipates that the industrial sector will drop in position to fourth largest consumer by 1999.

The remaining retail sales are composed primarily of sales to cotton gins, sales for irrigation, and sales to municipalities for street lighting and other purposes. These combined sales amounted to 502,252 MWH in 1989, or 9 percent of the total sales for that year. The growth rate for this combination of classes is expected to decrease from the 1.6 percent per year over the historical period to 0.8 percent per year over the period from 1989 through 1999.

In 1979, the wholesale sector accounted for 24 percent of the total sales. By 1989, sales to this sector had grown at an average rate of 4.5 percent per year to 1,448,617 MWH, or 26 percent of the total. Over the historical period the wholesale sector exhibited the highest growth rate of any sector and consequently has grown from the third-largest purchasing sector to the largest. The utility does not anticipate the growth in this sector to be quite as strong as has been demonstrated in the past. WTU projects an annual growth rate of 2.3 percent through 1999. However, this decline in growth is not sufficient to alter its standing as the major purchasing sector. In fact, the utility anticipates a small increase in the wholesale class' contribution to the total sales, up to 27.2 percent by 1999.

Peak Demand Over the period from 1979 through 1989, WTU experienced 3.6 percent annual growth in peak demand for its system. Peak demand rose from 807 MW in the base year to 1,134 MW in 1989. The utility expects growth from 1989 to 1999 to occur at about 2.0 percent annually, and at about the same rate through 2004. WTU anticipates a peak demand after adjustments of 1,379 MW for its system by 1999 and 1,515 in 2004.

Of the 1989 system peak demand before adjustments of 1,171 MW, the coincident peak of the residential sector accounted for 34.7 percent of the total system peak demand; the commercial sector, 29.6 percent; the wholesale sector, 21.3 percent; and the industrial sector, 12.6 percent.

In 1989, the sector with the highest non-coincident peak was the residential sector which peaked at 431 MW. The residential sector was followed by the commercial sector with 386 MW. The wholesale sector reached a peak of 267 MW, and the industrial sector peaked at 156 MW in 1989.

Adjustments to Demand

WTU's goals include reducing peak demand and increasing the use of off-peak energy. The majority of the utility's 16 end-user programs are aimed at residential and commercial customers. These programs offer economic incentives to customers who install efficient heating and cooling equipment. By offering incentives to its commercial customers, the utility encourages the installation of heat recovery systems for air conditioning units, heat pumps, and electric water heaters with solar assistance.

In 1989, WTU reported 23-MW reduction in peak demand due to its conservation and load management activities. By 1999, the utility projects a total reduction of 70 MW as a result of its energy efficiency programs. The effects of the utility's adjustments may be seen in Tables 11.2 and 11.3 as the difference between peak demand before adjustments and peak demand after adjustments. Figure 11.3 shows the peak demand after adjustments along with net system capacity.

Supply Side Plan

Installed Capacity

In 1989, WTU had the installed capacity to generate up to 1,399 MW of electricity. The overwhelming majority, 74 percent, of this capacity is fired using gas. The remainder of the installed capacity is fueled with coal. At the close of 1989, WTU carried a production plant balance of approximately $0.4 billion historical cost with a book value of $0.3 billion.

Net System Capacity

Installed capacity plus the net of firm sales and purchases yields net system capacity. In 1979, the net system capacity for WTU was 1,066 MW with 1,054 MW being contributed by the utility's installed capacity and 12 MW from firm purchases. WTU maintained a 32.1 percent reserve margin in that year. The reserve margin is represented in Figure 11.3 as the difference between peak demand after adjustments and net system capacity. In 1989, WTU reported firm purchases of only 14 MW. However, purchases reached as high as 274 MW in 1986. Installed capacity of 1,399 MW combined with the 14 MW purchased resulted in a net capacity of 1,413 MW in 1989.

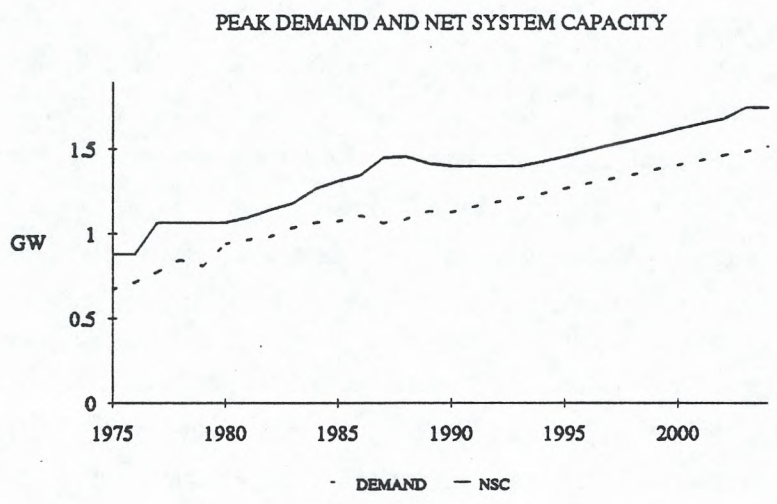


Figure 11.3

The utility's reserve margin for 1989 was 24.6 percent. As shown in Table 11.5, WTU projects the need for slight increases in its net system capacity annually from 1994 to 2003. The Company expects installed capacity to be 1,475 MW in 1999 and will also increase purchases. The utility is projecting firm purchases of 111 MW in 1999, resulting in a net system capacity of 1,586 MW for the system. This net capacity would yield a reserve margin of 15.0 percent for 1999.

Net Generation As shown in Figure 11.4, WTU generated all of its electricity using gas 0r oil in 1979. Beginning in 1986, WTU was able to diversify its fuel somewhat by installing additional coal-fired capacity. By 1989, 58.4 percent of the total electricity generated by the utility used gas as the source of energy. Coal generation contributed 40.2 percent of the total. Oil-

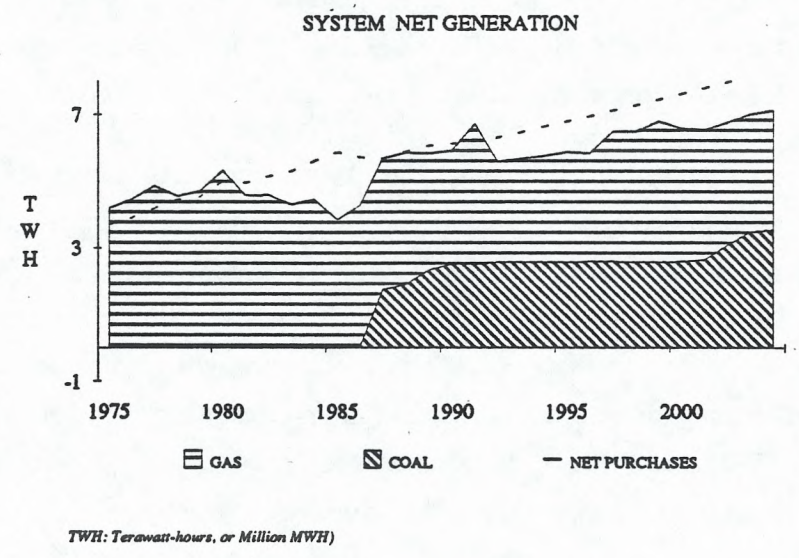


Figure 11.4

powered generation accounted for the remaining 1.4 percent. By 1999, the Company expects to generate 62 percent of its electricity using gas and 38 percent using coal. WTU projects its total net generation to be 6,794,076 MWH, excluding purchased power, by 1999.

System Expansion WTU added 364 MW of capacity to its system in December of 1986, from its 54.7 percent ownership of the Oklaunion coal plant in Wilbarger, Texas.

WTU currently has plans to retire three gas plants. These plants are scheduled to be retired in December of 1998. The units are Abilene 4, Concho 3, and Lake Pauline 1. These retirements, as seen in Figure 11.5, will result in a total 52-MW reduction in the WTU system.

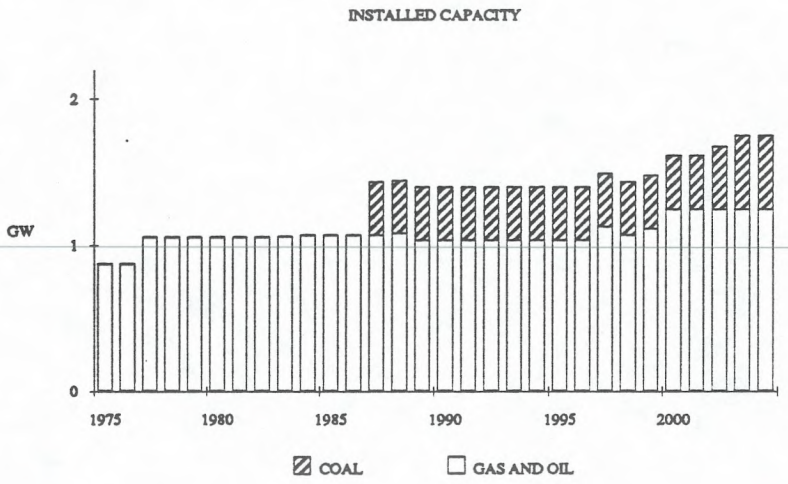


Figure 11.5

Included in WTU's planned construction work through 1999 are 14 major transmission line projects. Eight of these projects are to be completed in the five-year period through 1994. A stretch of approximately 5.0 miles of 69-KV line located in Coke County is due to begin construction in June of 1990. This project carries an estimated cost of $314,000. Also in June of 1990 WTU plans to begin construction of 1.8 miles of 138-KV line located in Stonewall County. The project is scheduled to last one year and will cost approximately $227,000. In Brewster and Jeff Davis Counties, WTU is planning to build 28.5 miles of 69-KV line. The line is scheduled to be completed in December of 1992 with an estimated cost of $1,744,000. Construction of 3.8 miles of 138-KV line in Coke County is expected to be completed in August of 1992 at a cost of

$266,000. Also in 1992, WTU plans to build 2.5 miles of 69-KV line in McCulloch County. The estimated cost of the project is $224,000. A 53.5 mile 138-KV line is planned for 1992 in Ward County. Total estimated cost of the project is $3,690,000. In 1993, WTU plans to build 6.0 miles of 138-KV line in Callahan County. Total cost is expected to be $761,000. The eighth line to be constructed before the end of 1994 is a 345-KV line in Taylor, Runnels, Coke, and Tom Green Counties. The 87-mile line will cost approximately $16,308,000 and should be completed by August of 1994. The six lines scheduled for construction between 1995 and 1999 will result in a total 166.5 additional miles of 138-KV line and 60 miles of 69-KV line. These projects are located in several counties in the WTU service area. The combined cost of these six projects is an estimated $19,750,000.

TABLE 11.1

WEST TEXAS UTILITIES COMPANY

NUMBER OF CUSTOMERS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975	107,099	19,068	3,098	3,976	115
1976	109,759	19,707	3,147	4,082	127
1977	113,332	18,860	3,577	4,284	129
1978	117,710	19,807	3,674	4,491	132
1979	120,762	20,455	4,021	4,636	133
1980	124,275	21,509	4,405	4,780	129
1981	127,020	21,515	4,731	4,564	126
1982	131,164	22,541	4,799	4,571	126
1983	135,841	22,953	5,380	4,724	128
1984	141,405	23,144	6,135	4,877	121
1985	142,993	24,112	6,399	5,026	120
1986	141,750	24,126	6,410	5,179	124
1987	140,997	24,506	6,378	5,427	121
1988	140,794	24,710	6,394	5,547	121
1989	140,212	24,769	6,338	5,850	123
1990	142,370	25,080	7,450	4,700	120
1991	145,070	24,990	7,500	4,690	120
1992	147,290	25,090	7,580	4,680	120
1993	151,170	25,450	7,770	4,750	120
1994	154,210	25,780	7,990	4,810	120
1995	157,130	26,150	8,240	4,890	120
1996	160,010	26,560	8,520	4,970	120
1997	162,920	26,980	8,800	5,070	120
1998	165,830	27,410	9,080	5,160	120
1999	168,750	27,840	9,330	5,260	120
2000	171,630	28,270	9,570	5,350	120
2001	174,510	28,720	9,840	5,450	120
2002	177,480	29,190	10,150	5,550	120
2003	180,510	29,670	10,480	5,660	120
2004	183,580	30,160	10,840	5,760	120

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 11.2

WEST TEXAS UTILITIES COMPANY

ANNUAL SALES BY SECTOR *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	773,074	648,600	936,998	338,584	648,067	3,345,323	685,732
1976	803,902	698,679	959,894	349,247	715,310	3,527,032	644,619
1977	907,778	664,808	1,035,219	408,205	786,477	3,802,487	803,266
1978	978,809	707,532	1,063,797	378,820	883,292	4,012,250	296,705
1979	985,026	746,493	1,023,736	417,805	930,756	4,103,816	430,068
1980	1,103,256	814,301	1,057,543	422,968	1,099,369	4,497,437	614,439
1981	1,093,200	847,941	1,017,668	405,799	1,136,861	4,501,469	5,000
1982	1,181,209	895,033	1,030,711	421,663	1,205,813	4,734,429	13,989
1983	1,199,784	902,503	1,017,121	424,981	1,230,404	4,774,793	5,211
1984	1,292,764	960,213	1,115,396	437,326	1,320,304	5,126,003	7,791
1985	1,309,510	998,130	1,211,351	461,905	1,326,040	5,306,936	3,750
1986	1,299,347	1,033,157	1,192,412	457,585	1,281,082	5,263,583	22,817
1987	1,317,664	1,010,896	1,116,477	470,042	1,299,870	5,214,949	386,916
1988	1,341,011	1,025,654	1,165,137	489,968	1,389,084	5,410,854	278,390
1989	1,365,295	1,038,361	1,162,611	502,252	1,448,617	5,517,136	254,915
1990	1,389,800	1,046,600	1,185,800	493,600	1,419,400	5,535,200	271,700
1991	1,409,900	1,056,800	1,232,400	493,500	1,440,800	5,633,400	845,100
1992	1,443,500	1,078,700	1,248,600	494,900	1,482,600	5,748,300	43,000
1993	1,484,600	1,112,800	1,249,500	497,800	1,498,100	5,842,800	46,000
1994	1,529,300	1,148,500	1,251,100	502,000	1,551,600	5,982,500	21,000
1995	1,569,800	1,184,400	1,253,200	506,700	1,605,400	6,119,500	57,000
1996	1,608,900	1,222,900	1,255,900	512,000	1,659,200	6,258,900	14,000
1997	1,648,300	1,264,700	1,259,000	517,900	1,714,700	6,404,600	101,000
1998	1,688,400	1,307,300	1,262,400	524,200	1,769,000	6,551,300	52,000
1999	1,728,500	1,351,100	1,265,600	530,700	1,823,200	6,699,100	128,000
2000	1,769,100	1,397,100	1,268,800	537,400	1,877,400	6,849,800	36,000
2001	1,809,700	1,444,400	1,272,400	544,200	1,930,600	7,001,300	12,000
2002	1,851,200	1,495,700	1,276,700	551,300	1,985,200	7,160,100	17,000
2003	1,894,100	1,549,600	1,281,500	558,800	2,041,300	7,325,300	15,000
2004	1,937,300	1,605,400	1,286,900	566,500	2,098,500	7,494,600	20,000

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 11.3

WEST TEXAS UTILITIES COMPANY

ANNUAL PEAK DEMAND AND RESERVE MARGINS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	684	11			673	880	30.8%
1976	725	11			714	880	23.2%
1977	785	12			773	1,066	37.9%
1978	857	13			844	1,067	26.4%
1979	819	12			807	1,066	32.1%
1980	954	13			941	1,067	13.4%
1981	974	12			962	1,096	13.9%
1982	994	13			981	1,142	16.5%
1983	1,051	14		2	1,035	1,178	13.8%
1984	1,085	15		5	1,065	1,265	18.8%
1985	1,097	15		8	1,074	1,311	22.1%
1986	1,131	12		11	1,108	1,344	21.3%
1987	1,092	14		15	1,063	1,448	36.2%
1988	1,118	14		18	1,086	1,457	34.1%
1989	1,171	14		23	1,134	1,413	24.7%
1990	1,155			27	1,128	1,399	24.0%
1991	1,191			31	1,159	1,399	20.7%
1992	1,224			36	1,188	1,399	17.8%
1993	1,251			41	1,210	1,399	15.6%
1994	1,283			45	1,238	1,424	15.0%
1995	1,317			50	1,267	1,457	15.0%
1996	1,350			55	1,295	1,489	15.0%
1997	1,384			60	1,324	1,523	15.0%
1998	1,416			65	1,351	1,554	15.0%
1999	1,449			70	1,379	1,586	15.0%
2000	1,481			75	1,406	1,617	15.0%
2001	1,515			81	1,434	1,649	15.0%
2002	1,548			86	1,462	1,680	14.9%
2003	1,580			92	1,488	1,746	17.3%
2004	1,612			97	1,515	1,745	15.2%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 11.4

WEST TEXAS UTILITIES COMPANY

NET GENERATION BY FUEL TYPE *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS/OIL	COAL	LIGNITE	TOTAL
1975	4,182,320			4,182,320
1976	4,459,806			4,459,806
1977	4,860,150			4,860,150
1978	4,543,701			4,543,701
1979	4,709,147			4,709,147
1980	5,312,776			5,312,776
1981	4,563,349			4,563,349
1982	4,595,604			4,595,604
1983	4,308,771			4,308,771
1984	4,445,229			4,445,229
1985	3,844,859			3,844,859
1986	4,233,330	52,872		4,286,202
1987	3,916,959	1,750,301		5,667,260
1988	3,932,406	1,911,587		5,843,993
1989	3,493,670	2,345,418		5,839,088
1990	3,382,018	2,519,243		5,901,261
1991	4,190,794	2,519,303		6,710,097
1992	3,014,960	2,572,679		5,587,640
1993	3,117,187	2,565,672		5,682,860
1994	3,186,152	2,567,607		5,753,759
1995	3,300,650	2,565,138		5,865,788
1996	3,239,159	2,591,899		5,831,058
1997	3,905,843	2,583,667		6,489,510
1998	3,897,398	2,582,984		6,480,382
1999	4,211,658	2,582,418		6,794,076
2000	3,985,004	2,589,073		6,574,077
2001	3,894,005	2,651,380		6,545,384
2002	3,675,176	3,068,687		6,743,863
2003	3,534,007	3,472,348		7,006,356
2004	3,587,752	3,532,511	53,909	7,174,171

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 11.5

WEST TEXAS UTILITIES COMPANY

NET SYSTEM CAPACITY BY SOURCE *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	869		11			880
1976	869		11			880
1977	1,054		12			1,066
1978	1,054		13			1,067
1979	1,054		12			1,066
1980	1,054		13			1,067
1981	1,054		42			1,096
1982	1,054		88			1,142
1983	1,059		119			1,178
1984	1,067		198			1,265
1985	1,068		243			1,311
1986	1,070		274			1,344
1987	1,070	364	14			1,448
1988	1,079	364	14			1,457
1989	1,035	364	14			1,413
1990	1,035	364				1,399
1991	1,035	364				1,399
1992	1,035	364				1,399
1993	1,035	364				1,399
1994	1,035	364	25			1,424
1995	1,035	364	58			1,457
1996	1,035	364	90			1,489
1997	1,127	364	32			1,523
1998	1,070	364	120			1,554
1999	1,111	364	111			1,586
2000	1,246	364	7			1,617
2001	1,246	364	39			1,649
2002	1,246	429	5			1,680
2003	1,246	500				1,746
2004	1,246	500			1	1,745

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

CHAPTER TWELVE

EL PASO ELECTRIC COMPANY

El Paso Electric Company (EPE), a public utility, generates, transmits and distributes electric energy, serving the county of El Paso and portions of Culberson and Hudspeth counties in the State of Texas. The Company serves portions of Dona Ana, Sierra, Otero and Luna Counties in the State of New Mexico. EPE has transmission line interconnections in the states of Arizona and New Mexico and to the Republic of Mexico and provides electrical energy to Rio Grande Electric Cooperative, Inc., to Texas-New Mexico Power Company, and to Imperial Irrigation District in California. EPE operates as a member of Western Systems Coordinating Council.

EPE is an investor-owned company. Equity accounts for 42 percent of its capital structure while 9 percent is held as preferred stock. As of December 1989, the Company's total assets were valued at $1,769,518,000, and long-term debt comprised 40 percent of its total liabilities. Revenues for 1988 totaled $481,774,000.

EPE reported a 1989 peak demand of 923 MW and, for its Texas operations, 743 MW. Texas sales of 3,587,413 MWH amount to nearly 80 percent of EPE system sales of 4,506,913 MWH.

Demand Forecast

EPE applies econometric methods to develop approximately 75 percent of its forecast, and judgmental and survey estimates for the remainder. Estimates of the basic native system load, consisting of the service area in Texas and New Mexico, begin with development of the estimates of sales for each customer class. The wholesale load for the Rio Grande Electric Cooperative (RGEC) is then added. Estimates for Company use and unaccounted for losses are combined with customer class and RGEC to obtain net-energy-output-to-lines. By applying a projected load factor to this figure a basic system peak is developed. Extraordinary loads are then

added along with off-system sales and losses to obtain the total peak demand. EPE continues to develop and improve models for segmented residential sales forecasts and appliance efficiency forecasts.

Number of Customers

EPE provided electric service to 212,256 residential customers in 1989 as shown in Table 12.1 A, of which 167,431 resided in Texas as shown in Table 12.1 B. The historical data for the period from 1979 through 1989 reflect an average annual growth rate of 2.9 percent for this class of customers in Texas. As shown in Figure 12.1, EPE expects a 3.3 percent annual growth rate over the forecast period through 1999 and 2.3 percent per year from 1999-2004. The Company served 21,086 small commercial/industrial customers in 1989 with 15,911 of these in Texas. The historical growth rate for the small commercial/industrial sector in Texas averaged 3.2 percent per annum over the period from 1979 through 1989. EPE anticipates an average annual growth rate in the number of small industrial and commercial customers of 4.0 percent between 1989 and 1999. The large commercial/industrial sector includes 52 customers in 1989 and 50 of these are in Texas. EPE serves 2,999 other retail customers, (1,945 in Texas), primarily municipalities, and two wholesale customers. Overall, Texas retail customer growth is expected to be 3.3 percent over the 1989-1999 period.

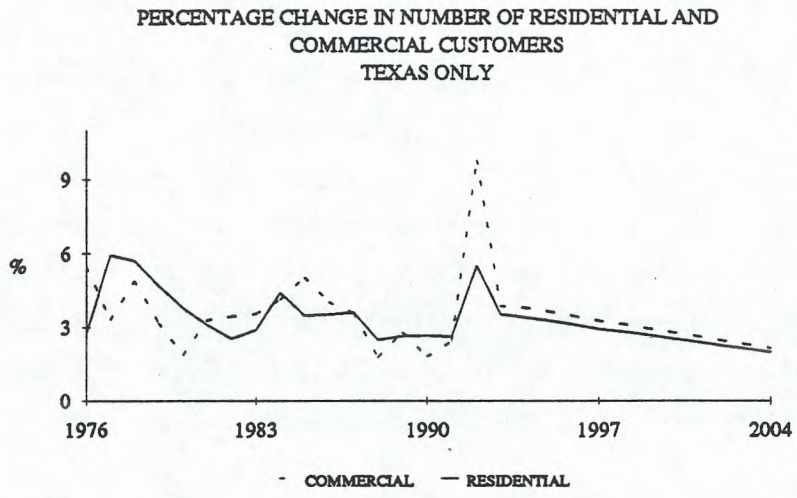


Figure 12.1

Sales

Total system sales amounted to 4,506,913 MWH in 1989 with Texas sales at 3,587,413 MWH. Growth in Texas sales, shown in Figure 12.2, averaged nearly 2.94 percent compounded annually from 1979 through 1989. The Company expects sales in Texas to grow at an average annual

rate of about 2.6 percent through 1999 to reach 4,649,904 MWH in that year, and, with a similar rate of growth also for the period 1999-2004, to reach 5,302,313 MWH in 2004.

Residential sales grew fairly steadily in Texas over the past 10 years at an average compound rate of 3.2 percent per year to reach 1,004,731 MWH in 1989. EPE projects continued growth in the residential sector at 2.8 percent per year through 1999.

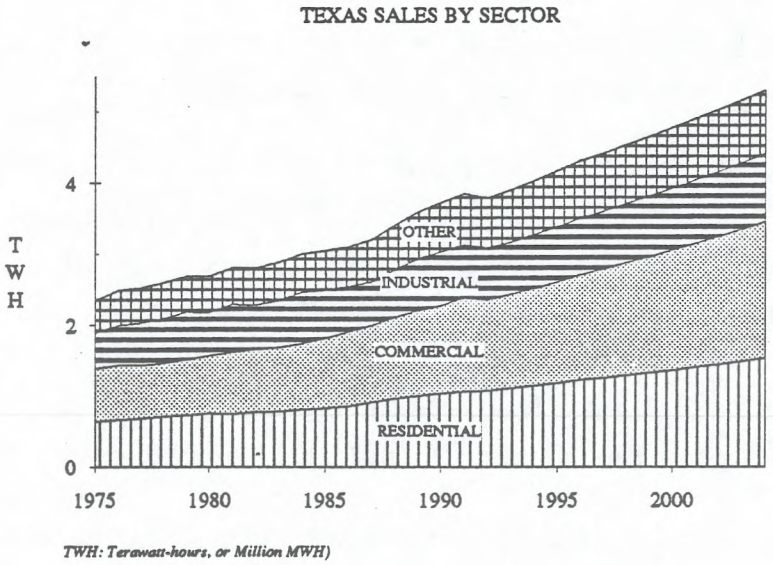


Figure 12.2

In terms of energy sales, the small commercial/industrial sector provides the biggest market for EPE with 1,423,852 MWH total in 1989. Sales to Texas customers amounted to 1,189,264 MWH, 33 percent of total sales in Texas. Steady growth in sales over the past 10 years averaged 4.2 percent annually and is projected to increase by 3.2 percent per year through 1999, when this sector will comprise 35 percent of total Texas sales.

The slower growing large commercial/industrial sector in the EPE Texas service area will experience a 1.5 percent annual sales growth over the forecast period, according to Company expectations. In 1989, this group purchased 733,218 MWH, about 20 percent of total sales in Texas. By 1999, the industrial sector will be only 18 percent of total sales, or 850,445 MWH.

The remaining retail sales are composed primarily of sales to municipalities, for street lighting and other purposes. In Texas, these sales amounted to 615,475 MWH

in 1989, or 17 percent of the total Texas sales for that year. Growth of 1.6 percent per year is expected in this market.

EPE projects sales within the wholesale sector to increase at a rate of 10.4 percent per annum through 1999 from 44,725 MWH in 1989 to 120,623 MWH in 1999. This high growth rate is contingent on the operation of a large pipeline pump. No off-system sales within EPE's Texas operation are reported.

Peak Demand Over the period from 1979 through 1989, EPE experienced 3.0 percent annual growth in total system peak demand to reach 923 MW in 1989. The Company expects growth through 1999 to occur at about 2.6 percent annually, and from 1999-2004 at about 2.5 percent annually. EPE anticipates a total system peak demand of 1,190 MW in 1999 and 1,346 by 2004. The 1989 peak demand in Texas registered 743 MW and is projected to grow at about 2.5 percent through 1999 and at a similar rate through 2004.

The coincident peak of the residential sector accounted for 25 percent of the 1989 Texas peak demand while the commercial and industrial sectors demanded 60 percent. The 1989 commercial sector's noncoincident peak of 536 MW represents the greatest load of any one sector in Texas, compared to noncoincident residential peak at 367 MW.

Adjustments to Demand EPE's Energy Efficiency Plan focuses on two methods to influence electricity consumption patterns: (1) the provision of technical information to customers to allow them to make better informed economic decisions; and (2) appropriate pricing signals to promote the efficient use of the utility's resources.

The emphasis on price signals is to affect the operating costs of electricity applications through rate design programs. Rate design programs are easier to administer and can influence the behavior of a large base of customers, meaning that rate design programs are available to all customers on the applicable rate schedule.

EPE is expending effort into investigating programs and technologies that control or shift load, such as its Thermal Energy Storage Program, and other opportunities to control or shift load. EPE is also developing quantitative analysis in end-uses of electricity and the interrelationship with the economic processes in the service area.

The Company continues to offer residential customers energy audits and suggestions to improve energy efficiency in their houses. EPE also provides commercial customers lighting audits, and evaluation of operating costs of HVAC systems. Projected savings due to conservation and load management activities are just over 3 MW.

Supply-Side Plan

The Company is pursuing one program to improve the efficiency of its generation units and one program to purchase more efficient transformers for its distribution network.

Installed Capacity EPE operates eight local generation gas units with an installed capacity in 1989 of 794 MW. EPE has partial ownership in five remote generating units totalling 704 MW, yielding a total installed capacity base of 1,498 MW in 1989. Almost 53 percent of the capacity is fueled by gas, about 40 percent by nuclear fuel, and 7 percent by coal. It is projected that 57 percent of the installed capacity will be fired by gas in 1999, 6.4 percent by coal, and 36.6 percent by nuclear power.

Net System Capacity

Installed capacity plus the net of firm purchases and sales yields net system capacity. The EPE system had a net system capacity of 1,336 MW in 1989. Figure 12.3 shows peak

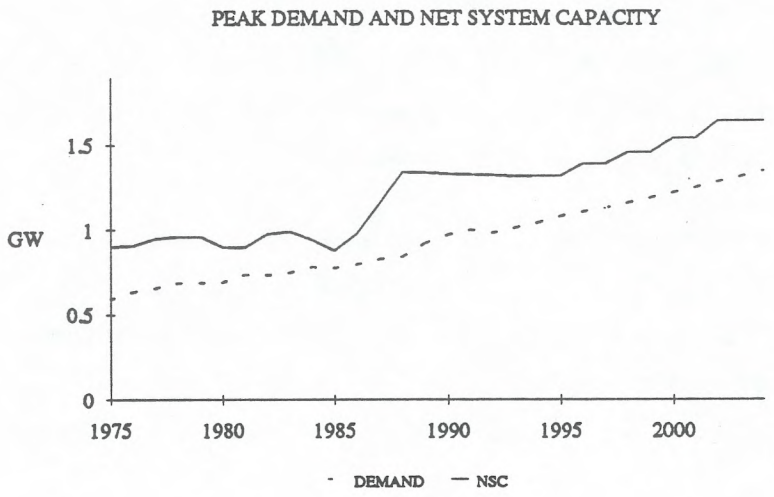


Figure 12.3

demand after adjustments along with net system capacity. The Company expects to achieve a net system capacity of 1,459 MW in 1999 and 1,641 MW in 2004.

Net Generation Nuclear power is projected to produce about 64 percent of total net generation in 1991, declining to 61 percent in 1999, as shown in Figure 12.4. The Palo Verde nuclear plant in Arizona provided 1,201,834 MWH of electricity in 1989, 24.5 percent of net generation that year, after a 1988 performance of 3,680,446 MWH. After the significant outages at the Palo Verde station in 1989, the Company projects output to return to the level of 3,869,100 MWH in 1991 and to maintain output at a similar level through the forecast period. Gas use was high in 1989, providing 60.8 percent of net generation. Projections show a drop to 24.9 percent in 1991 with the return of normal operations at Palo Verde, and an increase to 28.6 percent, or 1,844,000 MWH in 1999. Coal generation will remain fairly constant and fall as a percentage of total generation from 14.6 percent in 1989 to a bit under 11 percent in 1999.

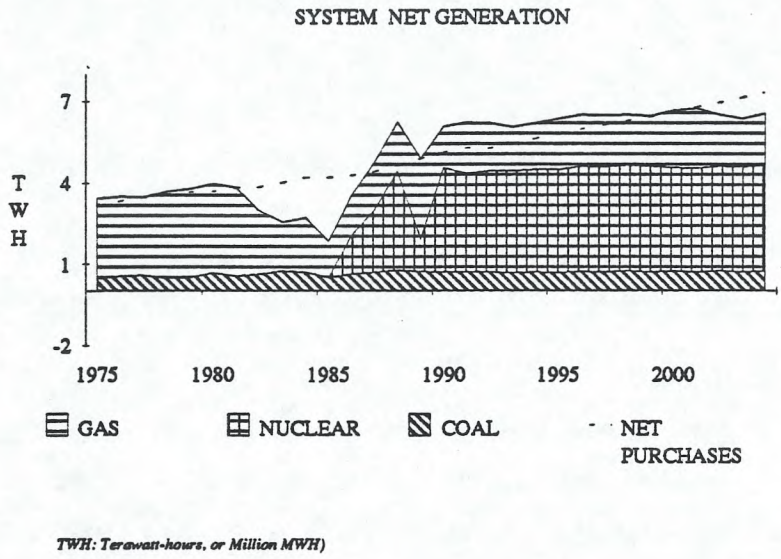


Figure 12.4

System Expansion EPE currently projects a need for capacity in 1996 and 1998. The expected need is estimated at 70 MW, shown as gas-fired units on Table 12.5, but future studies will be performed in order to confirm the actual size, siting, and type of units that will be built. Additional capacity may be needed over the 1999-2004 time period, as shown on Table 12.5.

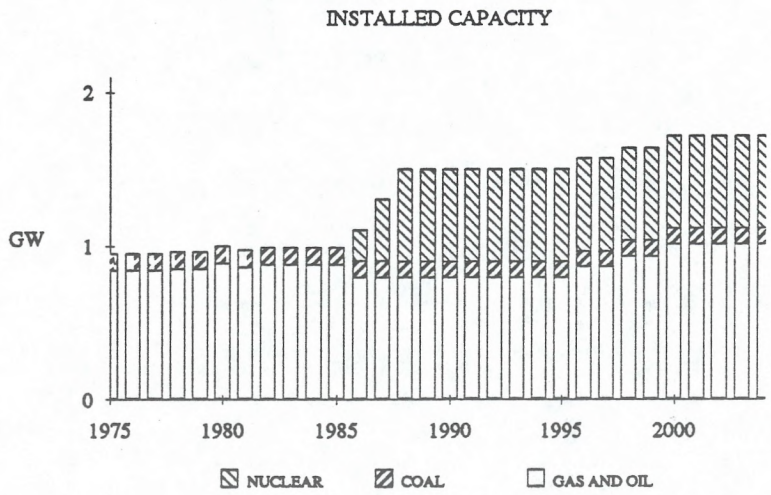


Figure 12.5

Certain EPE power plant sites were initially designed for generating units now not planned to be installed over the next ten years. However, the potential for adding initially planned capability is limited by financial, water, environmental and transmission requirements, site layout and fuel supply. Specific units may also be limited by ambient air quality standards, station water balance, cooling pond temperature, water discharge permit and solid waste handling and storage. Site specific studies will be needed to determine the best technology and size of any unit additions.

In 1990, EPE completed a major 345-KV transmission line project extending from its Rio Grande power plant in El Paso to Springerville, Arizona, a distance of approximately 320 miles. This is the third major interconnection with utilities to the north and west of the service area.

TABLE 12.1A

EL PASO ELECTRIC COMPANY

NUMBER OF CUSTOMERS - TEXAS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975	104,971	9,916	27	1,301	2
1976	107,340	10,217	33	1,306	2
1977	113,702	10,773	42	1,394	2
1978	120,074	11,290	45	1,469	3
1979	125,384	11,647	42	1,516	3
1980	129,838	11,944	40	1,551	3
1981	133,627	12,337	41	1,578	3
1982	136,642	12,745	41	1,606	2
1983	140,076	13,077	39	1,635	2
1984	145,748	13,575	38	1,646	2
1985	150,255	14,232	38	1,649	2
1986	155,099	14,765	38	1,676	2
1987	160,330	15,247	37	1,765	2
1988	163,546	15,474	38	1,885	2
1989	167,431	15,911	50	1,945	2
1990	171,673	16,172	50	1,986	2
1991	175,752	16,528	51	2,032	2
1992	186,671	18,388	48	2,002	2
1993	193,207	19,123	50	2,032	2
1994	199,735	19,877	52	2,059	2
1995	206,241	20,629	53	2,082	2
1996	212,662	21,375	55	2,099	2
1997	218,948	22,109	57	2,113	2
1998	225,185	22,834	58	2,125	2
1999	231,302	23,544	58	2,134	2
2000	237,278	24,237	59	2,141	2
2001	243,095	24,909	60	2,145	2
2002	248,733	25,558	60	2,147	2
2003	254,172	26,181	61	2,146	2
2004	259,394	26,775	61	2,142	2

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 12.1B

EL PASO ELECTRIC COMPANY

NUMBER OF CUSTOMERS - TOTAL SYSTEM

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975	128,315	12,895	29	1,943	2
1976	131,793	13,599	35	1,959	2
1977	139,618	14,048	44	2,101	3
1978	147,555	14,735	47	2,235	4
1979	154,453	15,202	44	2,336	4
1980	160,288	15,482	42	2,386	4
1981	165,239	15,990	43	2,430	4
1982	169,383	16,539	43	2,482	3
1983	174,258	17,123	40	2,531	3
1984	181,926	17,828	40	2,571	3
1985	188,207	18,720	40	2,604	2
1986	194,830	19,470	40	2,635	2
1987	201,829	20,161	39	2,734	2
1988	206,832	20,516	40	2,880	2
1989	212,256	21,086	52	2,999	2
1990	217,874	21,464	52	3,041	2
1991	223,521	21,985	53	3,092	2
1992	235,783	24,137	50	3,125	2
1993	244,040	25,063	52	3,187	2
1994	252,279	26,007	54	3,247	2
1995	260,469	26,947	55	3,300	2
1996	268,514	27,873	57	3,349	2
1997	276,351	28,780	59	3,392	2
1998	284,111	29,675	60	3,435	2
1999	291,690	30,549	60	3,475	2
2000	299,062	31,400	61	3,513	2
2001	306,201	32,222	62	3,548	2
2002	313,081	33,014	62	3,580	2
2003	319,676	33,771	63	3,609	2
2004	325,961	34,490	63	3,634	2

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 12.2A

EL PASO ELECTRIC COMPANY

ANNUAL SALES BY SECTOR - TEXAS *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	635,000	755,761	498,933	415,881	38,663	2,344,238	
1976	664,090	763,953	566,562	446,496	47,376	2,488,477	
1977	684,972	744,794	599,820	449,074	47,127	2,525,787	
1978	709,582	748,458	631,393	456,093	44,973	2,590,499	
1979	730,326	787,029	661,746	460,137	45,264	2,684,502	
1980	756,898	815,108	604,047	460,754	45,510	2,682,317	
1981	752,005	856,222	683,919	460,064	48,909	2,801,119	
1982	773,512	883,787	617,965	473,450	53,145	2,801,859	
1983	788,765	898,941	659,335	493,041	44,553	2,884,635	
1984	807,944	929,637	718,964	500,112	47,090	3,003,747	
1985	832,947	983,115	673,867	510,992	47,910	3,048,831	
1986	859,578	1,044,031	634,485	517,127	44,991	3,100,212	
1987	909,589	1,085,615	608,769	548,378	45,023	3,197,374	
1988	960,110	1,150,530	668,446	585,766	44,727	3,409,579	
1989	1,004,731	1,189,264	733,218	615,475	44,725	3,587,413	
1990	1,039,609	1,231,396	759,440	646,328	44,950	3,721,723	
1991	1,067,458	1,318,997	742,520	672,580	45,396	3,846,951	
1992	1,073,712	1,281,505	728,013	635,232	63,513	3,781,975	
1993	1,107,720	1,325,398	733,771	648,720	82,399	3,898,008	
1994	1,140,601	1,376,080	752,808	662,545	98,085	4,030,119	
1995	1,178,518	1,430,215	772,807	675,771	115,329	4,172,640	
1996	1,222,286	1,484,460	793,711	690,031	118,262	4,308,750	
1997	1,251,845	1,532,000	811,675	698,943	118,918	4,413,381	
1998	1,288,014	1,582,386	831,275	709,620	119,928	4,531,223	
1999	1,324,747	1,634,078	850,445	720,012	120,623	4,649,904	
2000	1,363,207	1,688,247	870,484	730,821	121,345	4,774,103	
2001	1,402,457	1,743,752	890,781	741,517	122,054	4,900,562	
2002	1,443,141	1,801,407	911,734	752,422	122,775	5,031,481	
2003	1,484,627	1,860,439	932,935	763,182	123,481	5,164,664	
2004	1,527,560	1,921,668	954,780	774,109	124,195	5,302,313	

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 12.2B

EL PASO ELECTRIC COMPANY

ANNUAL SALES BY SECTOR - TOTAL SYSTEM *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	805,330	868,456	513,637	571,064	38,663	2,797,150	309,696
1976	840,026	886,456	582,127	656,413	47,376	3,012,398	232,104
1977	874,140	879,002	617,957	698,600	169,618	3,239,317	3,408
1978	907,958	887,604	650,543	709,097	165,453	3,320,655	
1979	937,859	929,985	682,163	710,478	162,600	3,423,085	1,200
1980	972,070	963,148	621,877	702,790	164,941	3,424,826	308,681
1981	966,487	1,013,735	702,321	712,884	168,514	3,563,941	122,706
1982	994,109	1,052,964	634,008	745,184	178,871	3,605,136	45,502
1983	1,017,566	1,083,648	677,118	778,803	178,113	3,735,248	32,252
1984	1,046,934	1,127,241	741,134	796,115	182,005	3,893,429	187,092
1985	1,079,433	1,180,392	696,660	809,529	47,910	3,813,924	515,464
1986	1,114,177	1,245,059	658,519	831,690	44,991	3,894,436	633,515
1987	1,179,814	1,296,856	635,446	880,197	45,023	4,037,336	1,148,072
1988	1,246,083	1,377,393	697,756	928,758	44,727	4,294,717	2,114,043
1989	1,299,771	1,423,852	763,650	974,915	44,725	4,506,913	1,617,471
1990	1,344,648	1,476,978	791,450	1,012,031	44,950	4,670,057	1,702,724
1991	1,384,141	1,585,087	775,290	1,047,438	45,396	4,837,352	1,728,836
1992	1,388,021	1,544,248	796,262	991,408	63,513	4,783,452	1,455,215
1993	1,431,377	1,598,082	810,127	1,014,246	82,399	4,936,231	1,553,636
1994	1,473,514	1,659,466	849,927	1,037,802	98,085	5,118,794	1,522,100
1995	1,521,565	1,724,109	870,029	1,060,708	115,329	5,291,740	1,522,100
1996	1,577,474	1,789,383	891,214	1,085,121	118,262	5,461,454	1,526,220
1997	1,615,025	1,845,519	909,094	1,102,423	118,918	5,590,979	1,522,100
1998	1,661,200	1,905,272	928,796	1,122,214	119,928	5,737,410	1,522,100
1999	1,707,985	1,966,736	947,985	1,141,625	120,623	5,884,954	1,522,100
2000	1,756,963	2,031,136	968,039	1,161,863	121,345	6,039,346	1,522,100
2001	1,806,926	2,097,096	988,323	1,182,095	122,054	6,196,495	1,397,100
2002	1,858,703	2,165,591	1,009,251	1,202,838	122,775	6,359,158	836,100
2003	1,911,476	2,235,690	1,030,394	1,223,536	123,481	6,524,578	591,300
2004	1,966,076	2,308,379	1,052,164	1,244,696	124,195	6,695,512	591,300

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 12.3A

EL PASO ELECTRIC COMPANY

ANNUAL PEAK DEMAND AND RESERVE MARGINS - TEXAS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	472				472	720	52.4%
1976	507				507	725	43.1%
1977	520				520	752	44.6%
1978	542				542	755	39.1%
1979	539				539	752	39.5%
1980	544				544	705	29.7%
1981	580				580	705	21.6%
1982	578				578	770	33.2%
1983	583				583	772	32.3%
1984	612				612	734	19.9%
1985	624				624	704	12.9%
1986	633				633	777	22.7%
1987	676	10			667	934	40.0%
1988	686	10		2	674	1,072	59.0%
1989	754	10		2	743	1,076	44.9%
1990	776	10		2	765	1,050	37.3%
1991	811	19		2	790	1,049	32.8%
1992	800	13		2	786	1,062	35.2%
1993	825	13		2	810	1,060	30.8%
1994	847	11		2	834	1,062	27.4%
1995	873	10		2	862	1,060	23.1%
1996	898	10		2	886	1,119	26.2%
1997	916	10		2	904	1,118	23.7%
1998	941	11		2	929	1,174	26.5%
1999	964	11		2	952	1,174	23.4%
2000	987	11		2	975	1,238	27.0%
2001	1,012	11		2	1,000	1,239	23.9%
2002	1,038	11		2	1,026	1,320	28.7%
2003	1,064	11		2	1,052	1,319	25.4%
2004	1,090	11		2	1,078	1,321	22.6%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 12.3B

EL PASO ELECTRIC COMPANY

ANNUAL PEAK DEMAND AND RESERVE MARGINS - TOTAL SYSTEM *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	591				591	901	52.5%
1976	634				634	907	43.1%
1977	657				657	950	44.6%
1978	690				690	960	39.1%
1979	688				688	960	39.5%
1980	693				693	898	29.7%
1981	738				738	897	21.6%
1982	733				733	976	33.2%
1983	749				749	991	32.3%
1984	784				784	940	19.9%
1985	776			0	776	876	12.9%
1986	797			0	797	978	22.8%
1987	838	10		0	828	1,157	39.7%
1988	857	10		3	844	1,340	58.7%
1989	936	10		3	923	1,336	44.7%
1990	984	12		3	969	1,331	37.3%
1991	1,025	21		3	1,001	1,326	32.5%
1992	994	10		3	981	1,320	34.5%
1993	1,024	9		3	1,012	1,315	30.0%
1994	1,052	5		3	1,044	1,319	26.4%
1995	1,086	4		3	1,079	1,319	22.2%
1996	1,115	4		3	1,108	1,389	25.4%
1997	1,138	4		3	1,131	1,389	22.8%
1998	1,169	4		3	1,161	1,459	25.6%
1999	1,198	4		3	1,190	1,459	22.6%
2000	1,227	4		3	1,219	1,539	26.2%
2001	1,257	4		3	1,249	1,539	23.2%
2002	1,290	4		3	1,282	1,641	28.0%
2003	1,324	4		3	1,316	1,641	24.7%
2004	1,354	4		3	1,346	1,641	21.9%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 12.4

EL PASO ELECTRIC COMPANY

NET GENERATION BY FUEL TYPE *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS/OIL	COAL	NUCLEAR	TOTAL
1975	2,976,523	456,705		3,433,228
1976	2,942,287	559,149		3,501,436
1977	2,900,346	575,407		3,475,753
1978	3,193,038	480,647		3,673,685
1979	3,255,178	515,865		3,771,043
1980	3,309,400	667,444		3,976,844
1981	3,270,797	545,520		3,816,317
1982	2,352,046	613,515		2,965,561
1983	1,795,817	736,904		2,532,721
1984	2,000,509	704,704		2,705,213
1985	1,326,446	497,502		1,823,948
1986	1,463,186	624,473	1,432,177	3,519,836
1987	1,757,200	690,000	2,290,624	4,737,824
1988	1,792,465	764,085	3,680,446	6,236,996
1989	2,975,883	718,526	1,201,834	4,896,243
1990	1,514,000	694,900	3,869,100	6,078,000
1991	1,858,000	687,500	3,660,900	6,206,400
1992	1,746,000	702,800	3,730,600	6,179,400
1993	1,609,000	668,700	3,759,200	6,036,900
1994	1,695,000	705,800	3,789,400	6,190,200
1995	1,871,000	681,600	3,811,300	6,363,900
1996	1,900,000	723,200	3,876,400	6,499,600
1997	1,901,000	691,600	3,888,300	6,480,900
1998	1,862,000	732,100	3,913,200	6,507,300
1999	1,844,000	699,400	3,898,800	6,442,200
2000	2,108,000	740,400	3,823,000	6,671,400
2001	2,219,000	698,500	3,826,200	6,743,700
2002	1,882,000	732,300	3,877,900	6,492,200
2003	1,779,000	693,700	3,889,300	6,362,000
2004	1,885,000	731,300	3,923,000	6,539,300

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 12.5A

EL PASO ELECTRIC COMPANY

NET SYSTEM CAPACITY BY SOURCE - TEXAS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	NUCLEAR	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	839	111				39	720
1976	839	111				34	725
1977	839	111					752
1978	849	111					755
1979	849	111					752
1980	888	111				79	705
1981	862	111				60	705
1982	879	111				11	770
1983	879	112					772
1984	879	111				39	734
1985	879	110				91	704
1986	793	110	200			99	777
1987	793	110	400			118	934
1988	793	104	600			126	1,072
1989	794	104	600			131	1,076
1990	793	104	600			131	1,050
1991	793	104	600			135	1,049
1992	793	104	600			143	1,062
1993	793	104	600			147	1,060
1994	793	104	600			143	1,062
1995	793	104	600			143	1,060
1996	863	104	600			143	1,119
1997	863	104	600			143	1,118
1998	933	104	600			143	1,174
1999	933	104	600			143	1,174
2000	1,013	104	600			143	1,238
2001	1,013	104	600			143	1,239
2002	1,013	104	600			61	1,320
2003	1,013	104	600			61	1,319
2004	1,013	104	600			61	1,321

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

TABLE 12.5B

EL PASO ELECTRIC COMPANY

NET SYSTEM CAPACITY BY SOURCE - TOTAL SYSTEM *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	NUCLEAR	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	839	111				49	901
1976	839	111				43	907
1977	839	111					950
1978	849	111					960
1979	849	111					960
1980	888	111				101	898
1981	862	111				76	897
1982	879	111				14	976
1983	879	112					991
1984	879	111				50	940
1985	879	110				113	876
1986	793	110	200			125	978
1987	793	110	400			146	1,157
1988	793	104	600			157	1,340
1989	794	104	600			162	1,336
1990	793	104	600			166	1,331
1991	793	104	600			171	1,326
1992	793	104	600			177	1,320
1993	793	104	600			182	1,315
1994	793	104	600			178	1,319
1995	793	104	600			178	1,319
1996	863	104	600			178	1,389
1997	863	104	600			178	1,389
1998	933	104	600			178	1,459
1999	933	104	600			178	1,459
2000	1,013	104	600			178	1,539
2001	1,013	104	600			178	1,539
2002	1,013	104	600			76	1,641
2003	1,013	104	600			76	1,641
2004	1,013	104	600			76	1,641

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

CHAPTER THIRTEEN

TEXAS-NEW MEXICO POWER COMPANY

Texas-New Mexico Power Company (TNP) is an investor-owned, public utility company rendering electrical service in the states of Texas and New Mexico. The TNP service territory covers a wide range of geographic and climatic regions with operations separated into five Divisions: four located in Texas and one in New Mexico. The four Texas Divisions serve 80 incorporated cities and towns and surrounding unincorporated areas and are defined as follows:

1. Central Division covers portions of seventeen counties located northwest to southeast of Fort Worth

2. Northern Division includes two geographic areas

   A. North Central Texas with portions of fifteen counties ranging from the Oklahoma border to North Dallas

   B. the Texas Panhandle in Hansford, Lipscomb, and Ochiltree Counties

3. Southeast Division includes communities in Galveston, Brazoria, and Matagordo Counties near the Texas Gulf Coast

4. Western Division serves communities in Pecos, Reeves, Terrell, Ward, and Winkler Counties

The 1989 Texas peak demand of 968 MW was distributed among the four divisions at 10.5 percent, 24 percent, 59.3 percent, and 6.2 percent, respectively.

TNP operates as a member of ERCOT, and all of the TNP Texas service territory is within ERCOT except the Panhandle operating district in the Northern Division, which is within the Southwest Power Pool (SPP).

The TNP New Mexico Division operates completely separate from the Texas operations, with no transmission interconnections with any part of the ERCOT system. TNP has a small amount of generation in New Mexico but purchases most of its electrical power requirements from other utility companies for its system. In the New Mexico Division, the Company serves nine incorporated towns and surrounding areas.

Through 1989, TNP has been a distribution electric utility with no generation facilities in Texas. All of the electric power requirements needed to serve customers are purchased from other utilities and cogenerators in the state. Starting in 1990, TNP becomes a generating electric utility with the commercial operation of the first unit of TNP One, a circulating fluidized-bed (CFB), lignite/coal generating plant. The facility currently includes two units with 160 MW of gross dependable capacity per unit. Construction is complete for Unit 1 and about 70 percent complete for Unit 2. Units 3 and 4 were decertified in 1990. TNP will continue to evaluate the potential of Units 3 and 4 in its resource planning process.

As of December 31, 1988, TNP's total assets were valued at $442,840,000 and annual operating revenues were $378,289,000. As of that date, its capital structure was comprised of 53.2 percent common equity, 4.4 percent preferred stock, and 42.4 percent long-term debt.

The coincident system peak for the TNP Texas system was 968 MW in 1989. In 1989, energy sales in Texas totaled 4,840,017 MWH compared to total Company sales of 6,212,668 MWH. The remaining details concerning TNP operations in this section represent its Texas system unless otherwise noted.

Demand Forecast

TNP forecasts Kwh sales by each of its 10 Texas operating districts. The forecast model uses multiple regression techniques on historical data, including energy sales by customer class, customer counts, and weather. The short-range forecasts may be adjusted if necessary in annual budget meetings. Personnel from the operating division review the forecast projections and make modifications based on their knowledge of economic conditions, prices of alternative energy sources, probable actions of competitors, population growth, and the intentions of industrial and other

significant customer groups. The operating district non-coincident peaks are projected by using average load factors by customer class from historical data. TNP forecasts its ERCOT coincident peak using average historical coincidence factors from the operating districts.

Number of Customers

In 1989, TNP served 162,512 retail customers in Texas: 137,187 residential; 24,950 commercial; 173 industrial; and 202 municipal customers. Additionally, TNP supplies power to two wholesale customers in Texas. During the 10-year historical period ending in 1989, the average annual growth rate by customer class was 2.4 percent for residential and three percent for commercial. As seen in Figure 13.1, the future annual growth rates from 1989 to 2004 are projected to be 2.4 percent for the residential class and 2.6 percent for the commercial class. The industrial and other retail sectors are expected to have little or no growth in customer count through 2004.

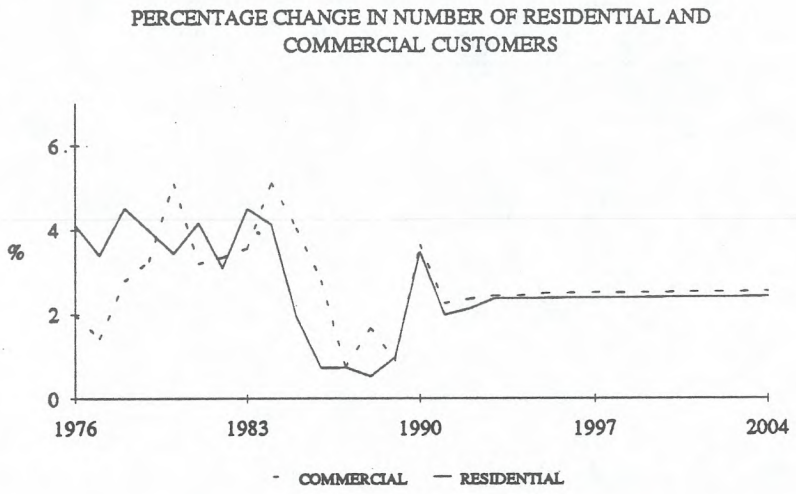


Figure 13.1

Sales

In 1989, TNP's annual energy sales in Texas were 4,840,017 MWH including 20,628 MWH of wholesale power sales. Industrial energy sales of 1,778,668 MWH represented 37 percent of TNP system sales, followed by 1,742,462 MWH for the residential class (36 percent), 1,202,984 MWH for the commercial class (25 percent) and 95,275 MWH for other retail customers (two percent). Other retail customers are comprised mostly of municipal power and street lighting. By 2004, TNP projects the residential class will become

the largest class with 40 percent of total Texas sales followed by the industrial sector at 30 percent, and the commercial class at 28 percent.

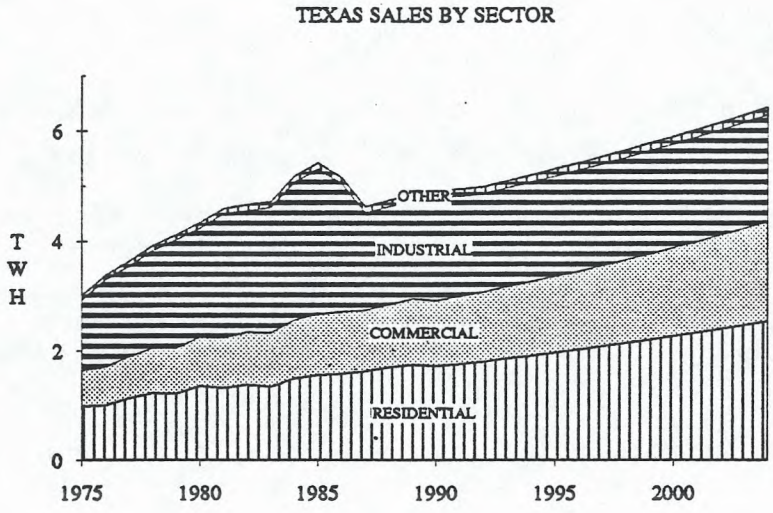


Figure 13.2

TNP forecasts its Texas system annual sales to grow at 1.9 percent for the 15-year forecast period. As shown in Figure 13.2, the commercial class has the highest projected average annual growth rate of 2.8 percent followed by the residential class at 2.5 percent. For the historical period from 1979 through 1989, the commercial and residential classes experienced annual growth rates of 3.8 percent and 3.6 percent respectively. TNP's industrial segment is projected by the Company to grow in energy sales by only 0.5 percent annually over the 15-year forecast period. In 1985, TNP experienced its largest level of energy sales for any 12-month period at 5,418,127. TNP's current energy sales forecast remains below this historical high level until 1996.

Peak Demand From 1983 to 1989, TNP's Texas system coincident peak demand has fluctuated from the low of 908 MW in 1983 to the high of 1,019 MW in 1986. The 1989 coincident peak was 968 MW. TNP's 15-year forecast indicates coincident peak growth at an average annual rate of 2.1 percent which yields a 1,323 MW peak demand in 2004.

In 1989, the residential customer class had a non-coincident peak demand of 521 MW and a coincident peak demand of 475 MW which represented 49.1 percent of the Texas coincident peak demand. The commercial class had a 298-MW non-coincident demand and a 251-MW coincident peak demand. The industrial class had non-

coincident and coincident peak demands of 231 MW and 219 MW, respectively. The commercial coincident peak demand represented 25.9 percent of the Texas coincident peak demand while the industrial coincident peak demand represented 22.6 percent.

Adjustments to Demand TNP has been directing Demand-Side Management efforts to improve overall system load factor by reducing summer peak load and increasing winter month and shoulder-month energy sales. TNP also promotes electric energy conservation among customers for improvement of their operating efficiency.

TNP is introducing two new DSM programs for 1990 to achieve these results. The Good Cents Home program targets new residential construction to enhance the thermal integrity of the structure and incorporate properly sized and energy-efficient space heating and cooling systems. The High Efficiency Air Conditioning and Heat Pump program targets the efficiency of space heating and cooling equipment for residential and small commercial customers. Additionally, TNP has promoted energy conservation and peak-load reduction through the ongoing programs of Energy Checked Efficiency Homes and Interruptible Irrigation Service. TNP has reduced the 1989 summer peak load requirement by 11 MW and projects a 21-MW peak-load reduction by 2000.

Supply-Side Plan

Installed Capacity Through 1989, TNP has been a distribution electric utility with no generation facilities in Texas. All of the electric power requirements needed to serve customers have been purchased from other utilities and cogenerators in the state. As detailed below, TNP expects to own capacity beginning in 1990.

Net Generation TNP projects 666,461 MWH of lignite-fired generation in 1990 increasing to 1,774,585 MWH in 1991 and 2,258,842 MWH in 1992. Significant increases from this level will depend upon the construction of additional capacity as noted below.

Net System Capacity

TNP has long-term purchased power contracts for firm capacity and energy with the following suppliers for its Texas Divisions.

Division	Supplier
Central	TU Electric
Northern	TU Electric Southwestern Public Service Company
Southeast	Houston Lighting and Power Company Clear Lake Cogeneration Texas Municipal Power Agency
Western	TU Electric West Texas Utilities Company

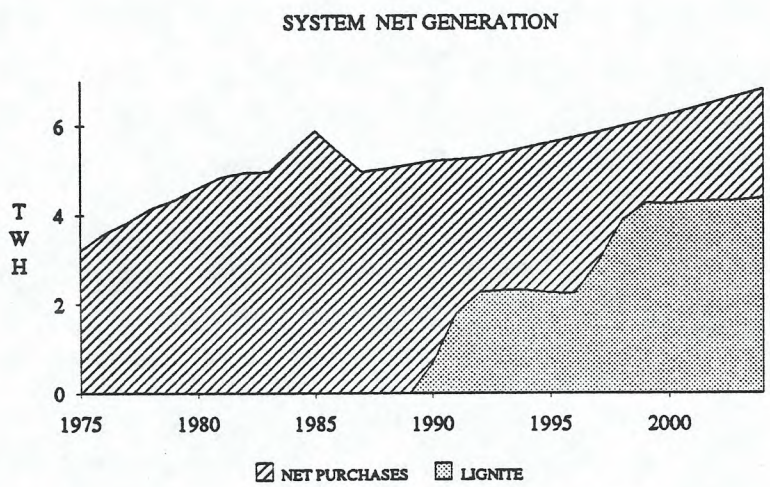


Figure 13.3

In 1989, TNP purchased 633 MW from utilities and 335 MW from Clear Lake Cogeneration. These purchases include reserve capacity from the wholesale suppliers, so there is no need for additional reserves. When the capacity from TNP One becomes available, TNP has arranged to purchase required reserves through a standby contract with HL&P.

System Expansion

In 1990, TNP becomes a generating electric utility. The Public Utility Commission of Texas granted approval of TNP's Certification of Convenience and Necessity filing in 1987 to construct and operate a CFB, lignite/coal generating plant. The proposed facility will provide 320

MW from two units each having 160 MW of gross dependable capacity. Under the current resource plan, operation of the first unit is scheduled to begin in June, 1990. The second unit will begin commercial operation in June 1991. This generation plant will serve as a base load facility for TNP's ERCOT service territory and will offset existing purchased power supply.

Within the ERCOT system, TNP does not have an interconnected transmission system between its Divisions, and many of the points of service within a Division are not interconnected by a TNP bulk power system. TNP will wheel TNP One power through the HL&P and TU Electric bulk power grids to serve its communities.

TNP One, Unit 1 is expected to begin commercial operation in the summer of 1990. The total cost of TNP One unit 1 is $349,931,171. Unit 2 is expected to have a total unit cost of $278,980,988. Both units have a gross dependable capacity of 160 MW and an annual capacity factor around 90 percent.

TNP's recent transmission projects include the 19-mile, 345-KV two-circuit line from the TNP One generation plant to TU Electric's Twin Oak substation on the ERCOT power grid. The capitalized price of the transmission line is $12,203,780. TNP's planned transmission projects include:

Location	Distance	Voltage	Cost
Bosque/Coryell Counties	25 mi	138 KV	$1,710,000
Hood/Somervell Counties	5mi	69 KV	585,000
Somervell County	8 mi	138 KV	2,750,000
Hamilton County	25 mi	138 KV	720,000
Collin County	4 mi	69 KV	278,000
Franklin/Titus Counties	4 mi	138 KV	940,000
Brazoria County	1 mi	69 KV	53,000
Brazoria County	10 mi	69 KV	830,000
Brazoria County	9 mi	69 KV	597,000
Galveston County	6 mi	138 KV	2,705,000

TABLE 13.1

TEXAS-NEW MEXICO POWER COMPANY

NUMBER OF CUSTOMERS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975	92,395	16,849	129	76	1
1976	96,204	17,186	137	76	1
1977	99,472	17,429	141	76	1
1978	103,969	17,915	155	76	1
1979	108,113	18,498	162	77	1
1980	111,824	19,444	178	77	1
1981	116,480	20,064	179	80	1
1982	120,083	20,734	191	78	1
1983	125,487	21,472	170	86	1
1984	130,659	22,573	180	92	1
1985	133,201	23,485	182	293	1
1986	134,169	24,143	189	305	1
1987	135,155	24,322	188	292	2
1988	135,858	24,729	184	297	2
1989	137,187	24,950	173	301	2
1990	141,959	25,860	209	333	2
1991	144,764	26,444	209	363	2
1992	147,851	27,070	209	316	2
1993	151,368	27,728	209	329	2
1994	154,973	28,402	209	345	2
1995	158,667	29,111	209	354	2
1996	162,457	29,836	209	363	2
1997	166,339	30,587	209	369	2
1998	170,323	31,351	209	367	2
1999	174,404	32,140	209	383	2
2000	178,591	32,947	209	395	2
2001	182,884	33,779	209	403	2
2002	187,286	34,635	209	412	2
2003	191,799	35,511	209	420	2
2004	196,427	36,413	209	429	2

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 13.2

TEXAS-NEW MEXICO POWER COMPANY

ANNUAL SALES BY SECTOR *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	984,894	660,052	1,283,735	67,175	11,537	3,007,393	
1976	1,011,515	701,150	1,583,089	70,958	11,374	3,378,086	
1977	1,132,837	762,875	1,645,294	77,250	12,752	3,631,008	
1978	1,231,104	811,352	1,775,716	79,976	13,864	3,912,012	
1979	1,221,113	824,529	1,976,767	80,844	12,894	4,116,147	
1980	1,356,202	891,877	1,987,887	85,851	14,996	4,336,813	
1981	1,324,575	909,215	2,260,601	86,819	13,432	4,594,642	
1982	1,380,476	964,692	2,203,493	92,978	13,608	4,655,247	
1983	1,341,939	980,703	2,288,955	95,736	14,104	4,721,437	
1984	1,500,860	1,062,685	2,503,934	97,681	15,398	5,180,558	
1985	1,555,402	1,112,703	2,632,844	99,793	17,385	5,418,127	
1986	1,585,108	1,126,041	2,327,090	101,184	17,848	5,157,271	
1987	1,623,019	1,111,566	1,773,040	98,512	19,626	4,625,763	
1988	1,693,767	1,148,925	1,778,330	101,130	20,861	4,743,013	
1989	1,742,462	1,202,984	1,788,668	95,275	20,628	4,850,017	
1990	1,717,083	1,196,396	1,889,332	103,199	20,278	4,926,288	
1991	1,760,243	1,233,379	1,824,823	104,511	20,629	4,943,585	
1992	1,805,659	1,272,856	1,784,151	105,829	20,988	4,989,483	
1993	1,857,319	1,310,323	1,798,367	107,155	21,353	5,094,517	
1994	1,910,451	1,348,982	1,810,230	108,489	21,726	5,199,878	
1995	1,965,093	1,389,581	1,822,436	109,831	22,106	5,309,047	
1996	2,021,288	1,431,501	1,834,642	111,179	22,494	5,421,104	
1997	2,079,103	1,474,804	1,846,848	112,536	22,890	5,536,181	
1998	2,138,580	1,519,518	1,859,054	113,900	23,293	5,654,345	
1999	2,199,812	1,565,774	1,871,260	115,273	23,705	5,775,824	
2000	2,262,854	1,613,634	1,883,466	116,653	24,125	5,900,732	
2001	2,327,760	1,663,162	1,895,673	118,042	24,553	6,029,190	
2002	2,394,587	1,714,426	1,907,879	119,439	24,990	6,161,321	
2003	2,463,392	1,767,495	1,920,085	120,845	25,435	6,297,252	
2004	2,534,236	1,822,444	1,932,291	122,260	25,890	6,437,121	

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 13.3

TEXAS-NEW MEXICO POWER COMPANY

ANNUAL PEAK DEMAND AND RESERVE MARGINS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND				
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY
1975	642				642	642
1976	706			1	705	705
1977	738			2	736	736
1978	786			3	783	783
1979	800			3	797	797
1980	886			3	883	883
1981	933			3	930	930
1982	923			4	919	919
1983	918		5	5	908	908
1984	940		5	5	930	930
1985	998		5	7	986	986
1986	1,030		3	8	1,019	1,019
1987	943		2	8	933	933
1988	992		2	9	981	981
1989	979		2	9	968	968
1990	994	5	2	9	978	978
1991	1,014	16	2	10	986	986
1992	1,038	25	2	11	1,000	1,000
1993	1,065	27	2	12	1,024	1,024
1994	1,091	29	2	13	1,047	1,047
1995	1,119	31	2	14	1,072	1,072
1996	1,147	33	2	15	1,097	1,097
1997	1,175	35	2	16	1,122	1,122
1998	1,206	37	2	18	1,150	1,150
1999	1,236	39	2	19	1,176	1,177
2000	1,266	41	2	19	1,204	1,204
2001	1,297	43	2	19	1,233	1,233
2002	1,327	45	2	19	1,261	1,261
2003	1,360	47	2	19	1,292	1,293
2004	1,393	49	2	19	1,323	1,324

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.
2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.
3) Reserves are provided for within TNP's purchase power agreements with it's wholesale suppliers.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 13.4

TEXAS-NEW MEXICO POWER COMPANY

NET GENERATION BY FUEL TYPE *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	LIGNITE
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1983	
1984	
1985	
1986	
1987	
1988	
1989	
1990	666,461
1991	1,774,585
1992	2,258,842
1993	2,302,687
1994	2,312,044
1995	2,254,457
1996	2,231,187
1997	2,937,428
1998	3,865,460
1999	4,256,821
2000	4,243,951
2001	4,276,306
2002	4,295,251
2003	4,310,831
2004	4,365,991

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.
2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.
3) TNP reports lignite generation from TNP-One units 3 and 4 beginning in 1997 even though these units are no longer scheduled for construction. Their output is not counted in the Chapter One state total.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 13.5

TEXAS-NEW MEXICO POWER COMPANY

NET SYSTEM CAPACITY BY SOURCE *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	LIGNITE	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975		642			642
1976		705			705
1977		736			736
1978		783			783
1979		797			797
1980		883			883
1981		930			930
1982		898	21		919
1983		883	25		908
1984		903	27		930
1985		629	357		986
1986		681	338		1,019
1987		633	300		933
1988		640	341		981
1989		633	335		968
1990	146	616	216		978
1991	291	453	242		986
1992	291	421	288		1,000
1993	291	419	314		1,024
1994	291	432	324		1,047
1995	291	506	275		1,072
1996	291	520	286		1,097
1997	291	561	270		1,122
1998	291	717	142		1,150
1999	291	727	158		1,177
2000	291	739	174		1,204
2001	291	751	191		1,233
2002	291	761	209		1,261
2003	291	774	227		1,293
2004	291	786	246		1,324

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

CHAPTER FOURTEEN

BRAZOS ELECTRIC POWER COOPERATIVE

Brazos Electric Power Cooperative (BEPC) is a generation and transmission cooperative governed by the 20 member distribution cooperatives it serves. BEPC sells wholesale to the 20 cooperatives and through interconnection agreements to six Texas cities and Texas A & M University. BEPC's member-cooperatives, with individually certified service areas, render electric service covering all or part of 66 counties in Texas. The Cooperative is a member of the Texas Municipal Power Pool and ERCOT.

BEPC reported a summer peak demand of 811 MW and a winter peak of 958 MW in 1989. Annual sales for the Cooperative amounted to 3,437,366 MWH in 1989. BEPC currently has an installed capacity of 662 MW of natural gas and lignite units.

Demand Forecast

In formulating its forecasts, BEPC employs econometric models developed by its staff and its consultant, Dr. Ray Perryman of Baylor University. Models are developed for each of the member cooperatives and the municipalities served by BEPC. Texas A & M University provides BEPC with its forecast. These models are combined to formulate the forecasts for the Cooperative.

Number of Customers

BEPC provides wholesale electric service to 20 member cooperatives, six municipalities, and Texas A & M University. These 27 customers comprise the total firm sales of Brazos over the forecast period.

Sales

BEPC reported sales of 3,437,366 MWH in 1989 to the wholesale sector. Figure 14.1 reflects the 7 percent annual growth rate in sales over the period 1979 through 1989. The Cooperative anticipates growth at 4.2 percent per annum through 1999 and at 3 percent annually for the 1999-2004 period.

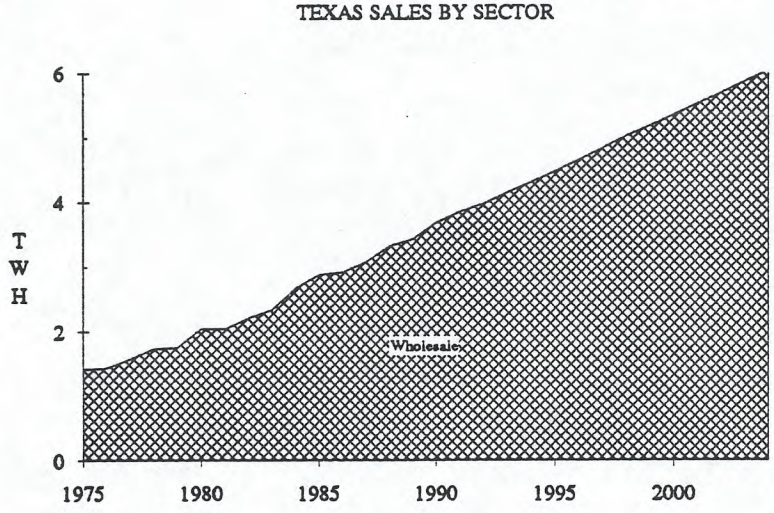


Figure 14.1

Peak Demand

Historically, BEPC experienced a growth in peak demand of 7.2 percent per year for the ten-year period beginning in 1979. Peak demand rose from 405 MW in 1979 to 811 MW in 1989. The Cooperative expects growth to occur at a rate of 2.6 percent annually over the next decade and at 3 percent annually from 1999 to 2004.

Adjustments to Demand

At this time, BEPC reports no demand-side adjustments. BEPC is reviewing a consultant study to determine what DSM programs to implement.

Supply-Side Plan

Installed Capacity

BEPC has an installed capacity of about 662 MW which includes 195 MW of lignite capacity which is operated by San Miguel Electric Cooperative Inc. and is included in BEPC's Net System Capacity as purchased power. Projections indicate additions to more than double gas-fired capacity by the turn of the century including the addition of 288 MW gas-fired base capacity in 1995.

Net System Capacity

BEPC contracts for 64 MW of power from the Brazos River Authority and the Southwestern Power Administration and also purchases capacity from other utilities. The net system capacity (including purchases) for the BEPC system grew to 1,102 MW in 1989 from 521 MW in 1979.

BEPC maintained a 15 percent reserve margin in 1989, shown in Figure 14.2 as the area between net system capacity and peak demand. Projections show the margin averaging below 15 percent through 1999.

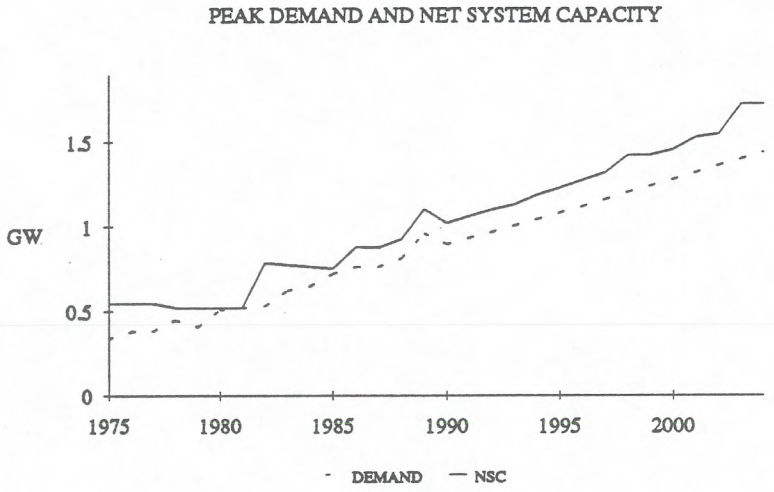


Figure 14.2

Net Generation

BEPC net generation mix, shown in Figure 14.3, was about 48 percent gas-fired and 52 percent lignite-fired in 1989. Projections indicate gas-fired capacity will continue to play

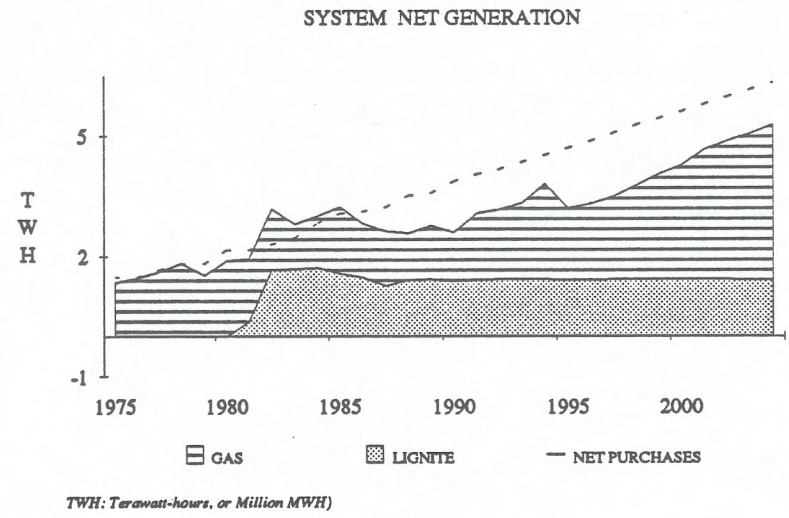


Figure 14.3

a significant and increasing role in future generation.

System Expansion Brazos Electric has a capacity resource plan at this time for the 1990-93 timeframe, but no capacity resource plan for the 1994-2004 period is yet available. BEPC expects to begin studies towards the development of such a plan in 1990.

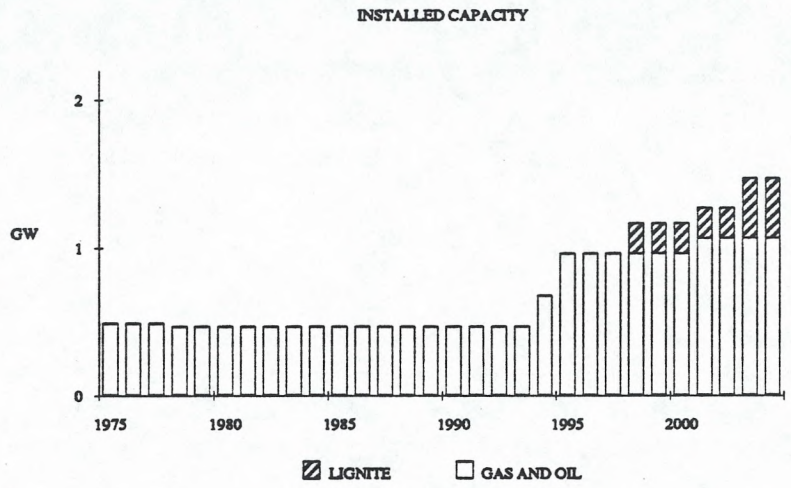


Figure 14.4

The generation addition and purchased capacity schedule used in this filing is a feasible schedule for the 1994-2004 timeframe, and BEPC management believes the 1994 and 1995 capacity additions are a likely scenario based upon the available information. Figure 14.4 lays out the schedule of capacity additions, beginning with 208 MW of gas-fired capacity in 1994 and 288 MW of gas-fired base capacity in 1995.

Included in BEPC's planned construction work are 6 transmission line projects. All of these projects are scheduled to be completed by 1994. These projects constitute a total of 70 miles of 138-KV line and 28 miles of 69-KV line.

TABLE 14.1

BRAZOS ELECTRIC POWER COOPERATIVE

NUMBER OF CUSTOMERS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975					27
1976					27
1977					27
1978					27
1979					27
1980					27
1981					27
1982					27
1983					27
1984					27
1985					26
1986					28
1987					28
1988					28
1989					27
1990					27
1991					27
1992					27
1993					27
1994					27
1995					27
1996					27
1997					27
1998					27
1999					27
2000					27
2001					27
2002					27
2003					27
2004					27

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 14.2

BRAZOS ELECTRIC POWER COOPERATIVE

ANNUAL SALES BY SECTOR *(MWH)*

(After Adjustments for Exogenous Factors and DSM Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975					1,409,360	1,409,360	8,042
1976					1,431,427	1,431,427	21,885
1977					1,570,051	1,570,051	47,167
1978					1,733,399	1,733,399	46,989
1979					1,749,680	1,749,680	25,540
1980					2,039,761	2,039,761	36,112
1981					2,041,012	2,041,012	92,913
1982					2,207,758	2,207,758	1,068,224
1983					2,343,967	2,343,967	470,011
1984					2,679,229	2,679,229	396,138
1985					2,875,377	2,875,377	540,175
1986					2,913,135	2,913,135	244,692
1987					3,075,661	3,075,661	153,760
1988					3,321,732	3,321,732	85,158
1989					3,437,366	3,437,366	133,468
1990					3,684,730	3,684,730	58,000
1991					3,850,047	3,850,047	93,000
1992					3,983,242	3,983,242	95,000
1993					4,151,604	4,151,604	113,000
1994					4,314,829	4,314,829	221,000
1995					4,482,814	4,482,814	383,000
1996					4,655,717	4,655,717	394,000
1997					4,836,383	4,836,383	409,000
1998					5,028,191	5,028,191	483,000
1999					5,188,352	5,188,352	589,000
2000					5,355,606	5,355,606	681,000
2001					5,525,483	5,525,483	815,000
2002					5,696,761	5,696,761	864,000
2003					5,867,106	5,867,106	911,000
2004					6,036,912	6,036,912	971,000

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 14.3

BRAZOS ELECTRIC POWER COOPERATIVE

ANNUAL PEAK DEMAND AND RESERVE MARGINS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	338				338	545	61.2%
1976	380				380	545	43.4%
1977	382				382	545	42.7%
1978	449				449	521	16.0%
1979	405				405	521	28.6%
1980	508				508	521	2.6%
1981	520				520	521	0.2%
1982	531				531	785	47.8%
1983	624				624	775	24.2%
1984	650				650	761	17.1%
1985	721				721	749	3.9%
1986	764				764	879	15.1%
1987	762				762	875	14.8%
1988	811				811	927	14.3%
1989	958				958	1,102	15.0%
1990	897				897	1,021	13.8%
1991	934				934	1,063	13.8%
1992	966				966	1,100	13.9%
1993	1,005				1,005	1,130	12.4%
1994	1,042				1,042	1,186	13.8%
1995	1,079				1,079	1,228	13.8%
1996	1,119				1,119	1,274	13.9%
1997	1,160				1,160	1,321	13.9%
1998	1,202				1,202	1,422	18.3%
1999	1,240				1,240	1,422	14.7%
2000	1,279				1,279	1,456	13.8%
2001	1,319				1,319	1,526	15.7%
2002	1,360				1,360	1,548	13.8%
2003	1,399				1,399	1,726	23.4%
2004	1,439				1,439	1,726	19.9%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 14.4

BRAZOS ELECTRIC POWER COOPERATIVE

NET GENERATION BY FUEL TYPE *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS/OIL	LIGNITE	TOTAL
1975	1,333,901		1,333,901
1976	1,446,091		1,446,091
1977	1,609,370		1,609,370
1978	1,815,742		1,815,742
1979	1,516,942		1,516,942
1980	1,882,297		1,882,297
1981	1,566,039	366,518	1,932,557
1982	1,522,464	1,654,877	3,177,341
1983	1,127,358	1,668,411	2,795,769
1984	1,296,765	1,707,432	3,004,197
1985	1,670,890	1,558,827	3,229,717
1986	1,344,734	1,469,983	2,814,717
1987	1,357,572	1,260,327	2,617,899
1988	1,164,884	1,402,179	2,567,063
1989	1,331,643	1,423,237	2,754,880
1990	1,215,000	1,374,000	2,589,000
1991	1,654,000	1,407,000	3,061,000
1992	1,744,000	1,413,000	3,157,000
1993	1,911,000	1,411,000	3,322,000
1994	2,392,000	1,414,000	3,806,000
1995	1,775,000	1,410,000	3,185,000
1996	1,893,000	1,406,000	3,299,000
1997	2,069,000	1,412,000	3,481,000
1998	2,348,000	1,412,000	3,760,000
1999	2,623,000	1,412,000	4,035,000
2000	2,855,000	1,412,000	4,267,000
2001	3,239,000	1,412,000	4,651,000
2002	3,451,000	1,412,000	4,863,000
2003	3,634,000	1,408,000	5,042,000
2004	3,866,000	1,408,000	5,274,000

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 14.5

BRAZOS ELECTRIC POWER COOPERATIVE
NET SYSTEM CAPACITY BY SOURCE *(MW)*
AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	LIGNITE	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	491			54		545
1976	491			54		545
1977	491			54		545
1978	467			54		521
1979	467			54		521
1980	467			54		521
1981	467			54		521
1982	467		264	54		785
1983	467		254	54		775
1984	467		240	54		761
1985	467		228	54		749
1986	467		358	54		879
1987	467		354	54		875
1988	467		406	54		927
1989	467		581	54		1,102
1990	467		490	64		1,021
1991	467		532	64		1,063
1992	467		569	64		1,100
1993	467		599	64		1,130
1994	675		447	64		1,186
1995	963		201	64		1,228
1996	963		247	64		1,274
1997	963		294	64		1,321
1998	963	200	195	64		1,422
1999	963	200	195	64		1,422
2000	963	200	229	64		1,456
2001	1,067	200	195	64		1,526
2002	1,067	200	217	64		1,548
2003	1,067	400	195	64		1,726
2004	1,067	400	195	64		1,726

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.

CHAPTER FIFTEEN

OTHER GENERATING UTILITIES

In addition to the utilities discussed in Chapters Two through Fourteen of this volume, 21 other utilities provided information to the PUC. In this chapter, data from these utilities will be treated in the aggregate and will be followed by a brief description of each utility. Most of these 21 other utilities serve wholesale customers who sell to the final consumer.

Demand Forecast

Number of Customers The 21 Other generating utilities served 138,253 residential customers in 1989. Growth is expected at 1.8 percent annually through 1999. Wholesale customers form the most significant class and provide electricity to retail residential, commercial, industrial and other consumers. The number of wholesale customers is expected to grow at over 3 percent per year through the forecast period.

Sales As shown in Table 15.2, the 21 other utilities reported total system sales in 1979 of 5,254,712 MWH. Over the period from 1979 through 1989, sales demonstrated an annual growth rate of 9.5 percent to reach 13,053,781 MWH. The majority of system sales, approximately 78 percent, were made to the wholesale sector. An additional 665,208 MWH were sold off system. Growth is projected to slow considerably. An average growth rate of 1.5 percent is anticipated through 1999, resulting in total system sales of 15,106,511 MWH.

Peak Demand Over the period from 1979 through 1989, the total peak demand of the 21 utilities, after adjustments, exhibited an annual growth rate of 5.5 percent. Table 15.3 indicates that peak demand after adjustments rose from a total of 1,390 MW in 1979 to 2,369 MW in 1989. The

projections indicate that growth through 1999 is expected to occur at a rate of 1.75 percent per year, resulting in a total peak demand of 2,820 MW by 1999. Growth over the 1999 to 2004 time period is expected at 1.7 percent per year.

Supply-Side Plan

Net System Capacity

The 21 utilities reported a 1979 total of 1,090 MW installed capacity. Of this capacity, 72 percent was gas-fired and 18 percent utilized hydroelectric power. Lignite capacity was added in 1982 and coal in the following year. In 1989, 40 percent of the total 2,140 MW of installed capacity was fired using gas, 41 percent used lignite, 11 percent used hydroelectric power, and 8 percent used coal. Projections show a total installed capacity of 2,370 MW in 1999. Each of the fuel types are expected to comprise roughly the same percentage as in 1989 with coal up slightly and lignite down slightly as a percent of the total. Net system capacity compared to peak demand after adjustments is shown in Figure 15.1.

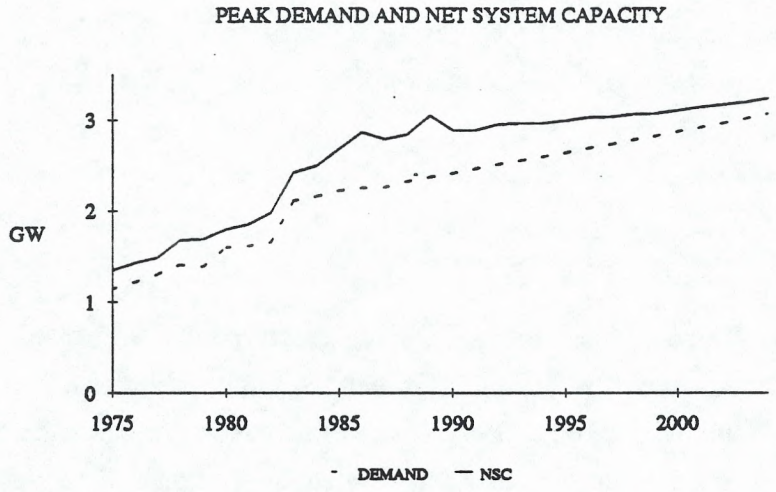


Figure 15.1

Installed capacity plus purchased power equals net system capacity. This group of small utilities obtains a significant portion of their total requirements, 43 percent in 1989, from purchased power. This is projected to fall to 36 percent in 1999 and slightly increases to 39 percent in 2004. Changes in installed capacity are shown in Figure 15.2.

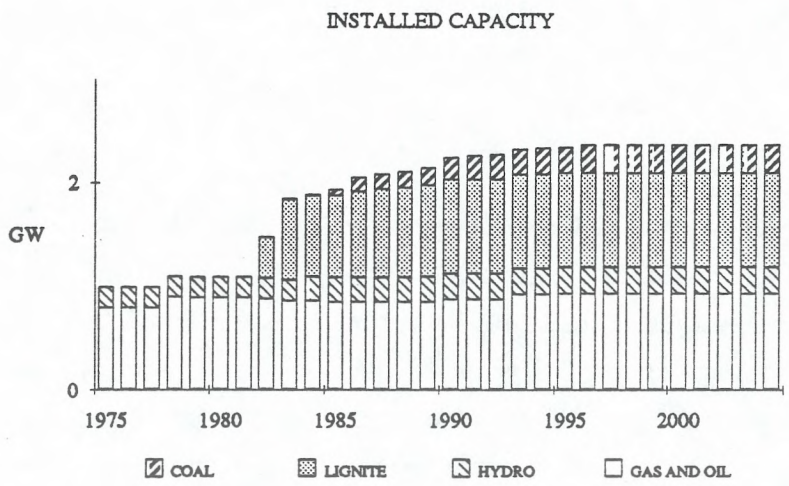
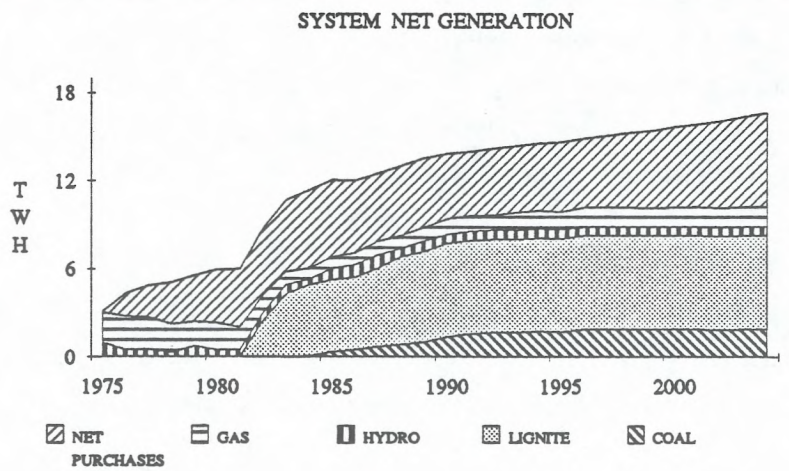


Figure 15.2

Net Generation

As seen in Figure 15.3, the total net generation of the 21 other utilities was reported to be 8,825,574 MWH in 1989. Net generation is projected to be 10,216,917 MWH in 1999 for a growth rate of 1.5 percent per year.



TWH: Terawatt-hours, or Million MWH)

Figure 15.3

Net purchases should increase from 4,697,062 MWH in 1989 to 5,266,452 MWH in 1999 and 6,392,284 MWH in 2004.

Other Utilities Description

South Texas Electric Cooperative/Medina Electric Cooperative (STEC/MEC), which consists of two generating transmission and distribution cooperatives, provides service to customers in 17 counties in southwest Texas. The service area covers approximately 12,000 square miles of mainly unincorporated areas outside small towns and cities. The two cooperatives are power pooling partners which operate under an agreement in which generation of each is pooled and dedicated to combined system load. Isolated portions of MEC are served by Central Power and Light.

The 1989 combined peak demand after adjustments was reported as approximately 254 MW. The cooperatives have a total installed capacity of 112 MW. Purchases of 228 MW are made from San Miguel Electric Cooperative and the Western Area Power Administration. Projected needs to increase capacity are listed at 35 MW in 1996, 30 MW in 2000, and 35 MW in 2003.

Total system sales amounted to 1,147,595 MWH in 1989 and are expected to grow at a rate of 3.2 percent annually, reaching 1,567,783 MWH in 1999, and at 2.5 percent annually from 1999 to 2004 reaching 1,778,089 MWH. The largest portion of the total sales are made to the wholesale sector. STEC/MEC is a wholesale supplier to Rio Grande Electric Cooperative.

Sam Rayburn G & T, Inc. (SRG&T) is a generation and transmission cooperative headquartered in Nacogdoches, Texas. SRG&T is comprised of three member distribution cooperatives; Jasper-Newton Electric Cooperative, Sam Houston Electric Cooperative, and Houston County Electric Cooperative.

SRG&T estimated a 1989 peak demand of 213 MW. That summer peak was exceeded by a December 1989 demand of 255 MW. Growth is projected to occur at 2.2 percent per year, resulting in a peak demand of 264 MW in 1999 and 290 MW in 2004.

SRG&T meets its demand with capacity from 10 percent (55 MW) of the Nelson 6 coal plant, purchases from 67 percent (34.7 MW) of the Sam Rayburn Dam Hydroelectric Project, the Sam Rayburn Municipal Power Agency, and Entergy services (Middle South Utilities). Supplemental wholesale purchases are made from Gulf States Utilities. A contract is in place to own seven percent (37.8 MW) of the coal-fired Big Cajun II, Unit 1 power plant upon approval of a Certificate of Convenience and Necessity (CCN) application presently filed with the Public Utility Commission of Texas. Current installed capacity is reported as 55 MW. Additional coal capacity is expected to result in an installed capacity of 92 MW. This is expected to remain constant through the forecast period.

Total sales grew at a rate of 4.2 percent per year between 1979 and 1989, beginning with 620,990 MWH in 1979 and leading to a projected 933,103 MWH in 1989. Growth is expected to slow to 2.5 percent annually through 1999, yielding projected total annual sales of 1,197,367 MWH in that year and 1,343,044 MWH in 2004. All SRG&T sales are made to the wholesale sector.

San Miguel Electric Cooperative (SMEC) sells all of its power to two member cooperatives, Brazos Electric Power Cooperative and South Texas Electric Cooperative. SMEC generates from a lignite plant with a net dependable capacity of 391 MW. Sales and net generation are reported at 2,865,752 MWH in 1989.

Northeast Texas Electric Cooperative, Inc. (NTEC) is a generation and transmission cooperative headquartered in Longview, Texas. NTEC provides power to six member distribution cooperatives, Bowie-Cass Electric Cooperative, Deep East Texas Electric Cooperative, Panola-Harrison Electric Cooperative, Rusk County Electric Cooperative, Upshur Rural Electric Cooperative, and Wood County Electric Cooperative. NTEC was founded in 1972 to make joint power supply arrangements for its member cooperatives.

The cooperative's 1989 peak demand was approximately 380 MW and is projected to increase at a rate of 2.7 percent annually, with growth tapering off at the end of the period, reaching 543 MW by 2004. Peak demand is met through part ownership in the H. W. Pirkey (76.2 MW) and Dolet Hills (38.1 MW) lignite plants operated by SWEPCO and Central Louisiana Electric Company. In addition, NTEC makes purchases of hydro peaking power from Southwestern Power Administration.

Remaining power requirements are purchased from SWEPCO. Sales for 1989 amounted to 1,709,070 MWH and are expected to total 2,640,461 MWH in 2004.

The City of Denton Municipal Utility (DMU), a generation and distribution utility, provides service to customers in the City of Denton. In 1989, DMU reported a peak demand of 184 MW. Peak demand is projected to increase to 256 MW in 2004. Maximum generating capacity, which varies due to reliance upon hydroelectric units, is reported as 256 MW in 1989. Two MW of additional hydroelectric capacity are expected in 1990 and one more in 1991 for a total of 259 MW through the projected time period.

Tex-La Electric Cooperative of Texas (TEX-LA) is a generation and transmission cooperative headquartered in Nacogdoches, Texas. TEX-LA provides power to seven member distribution cooperatives, Jasper Newton Electric Cooperative, Sam Houston Electric Cooperative, Houston County Electric Cooperative, Rusk County Electric Cooperative, Cherokee County Electric Cooperative Association, Deep East Texas Electric Cooperative, and Wood County Electric Cooperative. TEXLA was founded in 1979 to make joint power supply arrangements for its member cooperatives.

The cooperative's 1989 peak demand was 169 MW and is projected to increase at a rate of 2.5 percent annually, reaching approximately 246 MW by 2004. Peak demand is met by purchase of capacity (5.1 MW, increasing to 27.5 MW in 1990) from the Denison Dam Hydroelectric Project of the Southwestern Power Administration. Additional requirements are provided by TU Electric and Southwestern Electric Power Company and economy purchases from other ERCOT utilities. Total sales projected for 1989 amounted to 779,787 MWH. Sales are expected to total 1,117,778 MWH in 2004.

Lubbock Power & Light (LPL), a generation and distribution utility, provides service primarily to residential and commercial customers in the City of Lubbock. In 1989, LPL reported a peak demand of 198 MW and an installed capacity of approximately 201 MW. Peak demand is projected to increase to 308 MW by 2004. Additions in installed capacity of 20 MW in 1990, 50 MW in 1993 and 10 MW in 1995 are anticipated by LPL. In 1989, LPL reported total sales of 806,349 MWH and projects sales of 1,231,703 MWH in 2004.

Public Utilities Board of the City of Brownsville registered sales of 670,382 MWH in 1989. The largest sector was the industrial with 311,874 MWH, or 50 percent of the total. The residential sector accounted for 39 percent of total sales with 244,948 MWH. Sales are forecast to reach 729,645 MWH in 1999. Peak demand registered 148 MW in 1989 and is forecast to reach 164 MW in 1999. The city owns a natural gas power plant with a capacity of 96 MW and 10.16 percent (68 MW) of the coal-fired Oklaunion Unit 1 plant.

The Southwestern Power Administration (SPA), a Federal agency of the Department of Energy, markets hydroelectric power supplied from 86 generating units installed in 23 reservoirs located in Oklahoma, Texas, Arkansas, and Missouri. SPA does not have utility responsibility nor a specifically defined service area. The total system installed capacity amounted to 1,821 MW in 1989. Projections show capacity of 1,940 MW in 1990 and 2,044 MW in 1991 through 2004. Installed capacity delivered to Texas equals 152 MW and is reported to continue at the same level over the forecast period.

Net generation from the Sam Rayburn Project amounted to 119,631 MWH in 1989 and the entire amount is sold to the Sam Rayburn Dam Electric Cooperative served by GSU. Gross generation of 91,590 MWH annually is projected through the forecast period. Net generation from the Whitney Project amounted to 49,766 MWH in 1989 and the entire amount is sold to the Brazos Electric Power Cooperative. Gross generation of 75,500 MWH annually is projected through the forecast period. Net generation from the Denison Project amounted to 307,426 MWH in 1989 and the entire amount is sold to Tex-La Electric Cooperative of Texas and Rayburn County Electric Cooperative served by TU Electric. Gross generation of 205,700 MWH annually is projected through the forecast period.

Sam Rayburn Municipal Power Agency is a municipal corporation and political subdivision formed to plan, finance, develop, acquire, and operate projects for the generation and transmission to supply the Cities of Jasper, Liberty and Livingston, and the Vinton Public Power Authority. Sales to the four wholesale customers amounted to 316,100 MWH in 1989 and are projected to increase 1.5 percent annually over the forecast period. Peak demand in 1989 was 70.7 MW and is projected to rise to 87.2 MW in 2004.

The Agency receives a 17.3 MW entitlement share of the Sam Rayburn Dam Hydroelectric Project and 7.6 MW from the Robert D. Willis Hydroelectric Project. The Agency also has entered into a joint ownership agreement with GSU and Sam Rayburn G&T for 20 percent of the Nelson 6 coal-fired plant that provides for 54 MW in 1989, 69.3 MW in 1990, and 110 MW in 1996. Remaining requirements are procured from GSU.

Texas Municipal Power Agency is a joint-action agency supplying a part of the needs of the Cities of Bryan, Denton, Garland, and Greenville. The Agency reports an installed capacity of 405 MW and net generation using lignite of 2,832,421 MWH in 1989.

Guadalupe-Blanco River Authority (GBRA) operates seven hydroelectric generating units in Guadalupe County, Texas, with a total installed capacity of 22.1 MW. Net generation in 1989 amounted to 47,163 MWH. Projected output over the forecast period equals 86,770 MWH annually. The energy is sold to the Gualdalupe Valley Electric Cooperative and the City of New Braunfels.

The Brazos River Authority operates two hydroelectric generating units installed at Possum Kingdom Lake in Palo Pinto County, Texas, with a total installed capacity of 25 MW. The entire output, 27,088 MWH in 1989, is sold to BEPC. Power is generated on call from BEPC dispatch rather than at Brazos River Authority discretion.

The Sabine River Authority owns the Toledo Bend hydroelectric units with installed capacity of 40 MW, operated by GSU. Net generation in 1989 equaled 159,321 MWH with a forecast annual generation of 108,283 MWH.

The City of Greenville reports a 1989 peak demand of 83 MW with sales of 363,700 MWH. Demand is projected to grow to 125 MW in 2004. Generating capacity is reported to be 142 MW.

Brownfield Municipal Power and Light sold 56,582 MWH in 1989 at a peak demand of 16 MW. The city owns seven generating units, six diesels and one turbine, with a total installed capacity of 26 MW. In 1989, 2,202 MWH was generated from gas and 145 MWH from oil. Brownfield purchased 63,079 MWH in 1989.

The City of Tulia owns 12 gas-fired internal combustion generating units with a total capacity of about 16 MW. Three of the units are retired and the others are on standby. The city purchases three MW from SPS to serve its needs. Total sales amounted to 26,389 MWH in 1989 with projections indicating 2.8 percent annual growth through 2004 when sales of 40,400 MWH are expected.

The City of Floydada owns generating capacity in the form of dual-fuel engines but has purchased power from SPS since 1977. Total sales amounted to 16,446 MWH in 1989.

The City of Electra owns six generating units with a combined capacity of 3 MW. The units have not operated since 1984 and energy is supplied by the Western Farmers Electric Cooperative of Anadarko, Oklahoma. Sales in 1989 totaled 1,139 MWH.

The City of Hearne purchased 31,627 MWH in 1989 at a peak demand of 10.5 MW. Hearne owns five gas generating units with a total installed capacity of 7.8 MW. Hearne has not generated any electricity since 1985 and projects none for the future. The city intends to maintain the capacity on an indefinite, standby basis for the foreseeable future. A firm contract with BEPC for 10.26 MW supplies the city's needs. A significant drop in sales occurred recently when the Sparkle Ice Cream Company transferred its operations to Bryan.

TABLE 15.1

TOTAL OF ALL OTHER UTILITIES

NUMBER OF CUSTOMERS

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL				
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE
1975	74,661	10,220	934	5,111	29,458
1976	78,348	11,155	1,028	5,326	30,984
1977	82,573	11,955	1,120	5,592	32,247
1978	86,181	12,992	1,170	5,815	33,512
1979	90,187	13,211	1,252	6,012	35,111
1980	95,998	13,762	1,336	6,418	36,874
1981	100,587	14,027	1,481	6,669	38,220
1982	105,469	14,448	1,544	6,916	39,663
1983	108,502	15,137	1,005	7,207	42,260
1984	114,106	15,568	1,018	1,821	39,071
1985	117,723	15,892	1,154	2,468	40,540
1986	130,356	17,702	1,066	2,594	41,794
1987	134,271	18,076	1,141	2,550	41,646
1988	138,035	18,071	1,539	2,578	43,220
1989	138,253	17,738	1,602	2,589	44,380
1990	132,260	16,352	1,617	2,508	45,625
1991	135,650	16,647	1,636	2,533	46,909
1992	139,048	16,951	1,655	2,556	48,230
1993	142,456	17,331	1,675	2,577	49,589
1994	145,950	17,630	1,694	2,602	50,987
1995	149,533	17,934	1,714	2,626	52,425
1996	153,401	18,283	1,735	2,648	53,905
1997	157,382	18,643	1,756	2,673	55,427
1998	161,095	18,959	1,776	2,695	56,994
1999	164,903	19,280	1,799	2,720	58,606
2000	168,808	19,609	1,821	2,746	60,264
2001	172,814	19,946	1,843	2,770	61,971
2002	176,922	20,292	1,866	2,795	63,727
2003	181,134	20,642	1,891	2,820	65,533
2004	185,502	21,012	1,914	2,844	67,392

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 12

TABLE 15.2

TOTAL OF ALL OTHER UTILITIES

ANNUAL SALES BY SECTOR *(MWH)*

(After Adjustments for Exogenous Factors and DMS Programs)

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

	RETAIL SALES						
YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	ALL OTHER RETAIL	WHOLESALE	TOTAL SYSTEM	TOTAL OFF-SYSTEM
1975	453,094	676,125	218,641	84,587	1,453,839	2,886,286	
1976	522,471	796,542	235,955	95,575	2,461,396	4,111,938	
1977	600,827	837,547	243,983	118,611	2,810,581	4,611,549	
1978	652,887	858,601	262,000	134,384	2,831,710	4,739,582	
1979	640,199	832,579	264,510	131,332	3,386,092	5,254,712	
1980	739,197	900,597	282,083	164,893	3,525,308	5,612,077	
1981	753,780	915,946	296,880	127,573	3,585,384	5,679,563	
1982	794,727	938,997	321,889	175,507	6,273,717	8,504,837	76,241
1983	806,251	960,109	310,724	140,123	8,129,561	10,346,769	199,924
1984	863,273	768,654	527,172	299,030	8,615,713	11,073,842	244,420
1985	923,674	823,723	550,886	247,835	9,171,016	11,717,134	245,517
1986	940,029	839,860	535,929	261,640	9,076,277	11,653,735	115,224
1987	964,406	885,894	545,799	235,398	9,491,982	12,123,478	526,358
1988	1,016,301	936,531	599,419	291,171	9,835,443	12,678,865	605,338
1989	1,024,887	962,089	607,172	296,128	10,163,505	13,053,781	665,208
1990	1,037,271	1,009,485	606,393	283,449	10,289,410	13,226,007	331,774
1991	1,069,852	1,058,545	604,623	294,020	10,437,593	13,464,632	387,377
1992	1,101,448	1,088,514	623,198	301,429	10,576,035	13,690,624	453,158
1993	1,133,057	1,107,289	653,697	307,175	10,693,239	13,894,456	447,949
1994	1,164,645	1,138,055	663,862	304,187	10,821,510	14,092,259	514,014
1995	1,197,080	1,168,252	679,094	310,121	10,936,469	14,291,016	469,560
1996	1,228,583	1,198,215	694,687	315,873	11,055,178	14,492,536	646,352
1997	1,261,104	1,231,008	710,671	321,871	11,174,955	14,699,608	640,831
1998	1,293,872	1,262,056	727,044	327,718	11,299,594	14,910,285	635,414
1999	1,328,145	1,296,255	744,125	333,794	11,404,192	15,106,511	629,918
2000	1,364,469	1,329,152	761,925	340,234	11,521,163	15,316,944	624,342
2001	1,402,439	1,365,396	780,244	346,799	11,638,308	15,533,186	618,684
2002	1,441,908	1,400,438	799,050	353,633	11,770,738	15,765,767	564,764
2003	1,482,960	1,438,649	818,351	360,778	11,889,367	15,990,104	607,120
2004	1,525,830	1,476,094	838,241	366,759	12,024,947	16,231,871	601,211

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 5

TABLE 15.3

TOTAL OF ALL OTHER UTILITIES

ANNUAL PEAK DEMAND AND RESERVE MARGINS *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

		ADJUSTMENTS TO PEAK DEMAND					
YEAR	PEAK DEMAND Before Adjs.	EXOGENOUS FACTORS	ACTIVE DSM	PASSIVE DSM	PEAK DEMAND After Adjs.	NET SYSTEM CAPACITY	RESERVE MARGIN
1975	1,141				1,141	1,348	18.1%
1976	1,215				1,215	1,427	17.5%
1977	1,305				1,305	1,489	14.1%
1978	1,406				1,406	1,675	19.1%
1979	1,390				1,390	1,686	21.3%
1980	1,600				1,600	1,798	12.4%
1981	1,614				1,614	1,854	14.8%
1982	1,653				1,653	1,975	19.5%
1983	2,113				2,113	2,418	14.4%
1984	2,161		3		2,158	2,500	15.9%
1985	2,222				2,222	2,683	20.7%
1986	2,254		2		2,252	2,864	27.2%
1987	2,258				2,258	2,789	23.5%
1988	2,320				2,320	2,837	22.3%
1989	2,369				2,369	3,043	28.5%
1990	2,418		2		2,416	2,882	19.3%
1991	2,463		3		2,460	2,885	17.3%
1992	2,513		4		2,509	2,946	17.5%
1993	2,558		5		2,553	2,958	15.9%
1994	2,601		6		2,595	2,962	14.1%
1995	2,648		6		2,642	2,992	13.3%
1996	2,693		6		2,687	3,023	12.5%
1997	2,738		6		2,732	3,035	11.1%
1998	2,784		6		2,778	3,062	10.2%
1999	2,826		6		2,820	3,070	8.9%
2000	2,874		6		2,868	3,102	8.2%
2001	2,920		6		2,914	3,134	7.6%
2002	2,969		6		2,963	3,167	6.9%
2003	3,018		6		3,012	3,196	6.1%
2004	3,075		6		3,069	3,237	5.5%

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 1

TABLE 15.4

TOTAL OF ALL OTHER UTILITIES

NET GENERATION BY FUEL TYPE *(MWH)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS/OIL	COAL	LIGNITE	HYDRO	ALTERNATE SOURCES	TOTAL
1975	2,029,542			981,214		2,029,542
1976	2,305,084			478,002		2,305,084
1977	2,176,901			527,750		2,176,901
1978	1,912,424			302,766		1,912,424
1979	1,680,778			740,791		1,680,778
1980	1,839,063			493,570		1,839,063
1981	1,502,711			499,019		1,502,711
1982	1,190,717		2,459,578	554,214		3,650,295
1983	862,755	17,539	4,251,928	672,139		5,132,222
1984	767,714	41,493	4,848,866	391,296		5,658,073
1985	818,612	369,527	4,861,347	793,019		6,049,486
1986	795,509	467,947	4,962,657	849,726		6,226,112
1987	922,879	722,254	5,297,526	940,681		6,942,659
1988	908,514	833,265	5,983,547	554,910		7,725,326
1989	930,168	1,013,997	6,168,023	713,387		8,112,187
1990	1,046,039	1,369,114	6,361,585	627,265		8,776,738
1991	1,050,678	1,578,630	6,353,809	627,265		8,983,118
1992	1,021,689	1,658,411	6,354,507	627,265		9,034,608
1993	1,174,280	1,662,411	6,353,809	627,265		9,190,500
1994	1,223,238	1,740,083	6,361,585	627,265		9,324,906
1995	1,184,136	1,704,648	6,353,809	627,265	74,460	9,242,593
1996	1,299,336	1,890,856	6,354,507	627,265	74,460	9,544,700
1997	1,321,310	1,890,856	6,353,809	627,265	74,460	9,565,975
1998	1,304,151	1,891,046	6,361,585	627,265	74,460	9,556,782
1999	1,270,527	1,890,856	6,353,809	627,265	74,460	9,515,192
2000	1,305,350	1,890,856	6,354,507	627,265	74,460	9,550,714
2001	1,344,976	1,890,856	6,353,809	627,265	74,460	9,589,641
2002	1,320,842	1,842,866	6,361,585	627,265	74,460	9,525,293
2003	1,337,012	1,890,856	6,353,809	627,265	74,460	9,581,677
2004	1,372,896	1,890,856	6,354,507	627,265	74,460	9,618,260

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Request 16

TABLE 15.5

TOTAL OF ALL OTHER UTILITIES

NET SYSTEM CAPACITY BY SOURCE *(MW)*

AS REPORTED TO THE PUBLIC UTILITY COMMISSION OF TEXAS

YEAR	NATURAL GAS & OIL	COAL	LIGNITE	HYDRO	FIRM PURCHASES FROM UTILITIES	FIRM PURCHASES FROM NON-UTILITIES	FIRM OFF-SYSTEM SALES	NET SYSTEM CAPACITY
1975	790			199	359			1,348
1976	790			199	438			1,427
1977	790			199	500			1,489
1978	895			199	581			1,675
1979	891			199	596			1,686
1980	891			199	707			1,798
1981	891			199	763			1,854
1982	880		391	199	896		391	1,975
1983	858	3	781	200	966		391	2,418
1984	858	9	781	234	1,010		391	2,500
1985	850	52	791	235	1,146		391	2,683
1986	850	135	824	235	1,210		391	2,864
1987	850	141	854	233	1,101		391	2,789
1988	850	153	864	233	1,128		391	2,837
1989	850	168	880	242	1,295		391	3,043
1990	870	211	910	249	1,042		401	2,882
1991	870	230	910	249	1,024		399	2,885
1992	870	240	910	249	1,085		408	2,946
1993	920	240	910	249	1,045		407	2,958
1994	920	250	910	249	1,043		410	2,962
1995	930	250	910	249	1,053		410	2,992
1996	930	271	910	249	1,063		410	3,023
1997	930	271	910	249	1,075		410	3,035
1998	930	271	910	249	1,102		410	3,062
1999	930	271	910	249	1,110		410	3,070
2000	930	271	910	249	1,142		410	3,102
2001	930	271	910	249	1,174		410	3,134
2002	930	271	910	249	1,207		410	3,167
2003	930	271	910	249	1,236		410	3,196
2004	930	271	910	249	1,277		410	3,237

NOTES:

1) Data from 1975 through 1989 is actual; data from 1990 to 2004 is projected.

2) If data was not provided by the utility it was interpolated by Electric Division staff as necessary.

SOURCE: Load Forecast 1989 Filing, Requests 14 & 15.