

1-1-1989

1988-89 Energy Report Macalester College Physical Plant Department

Macalester College

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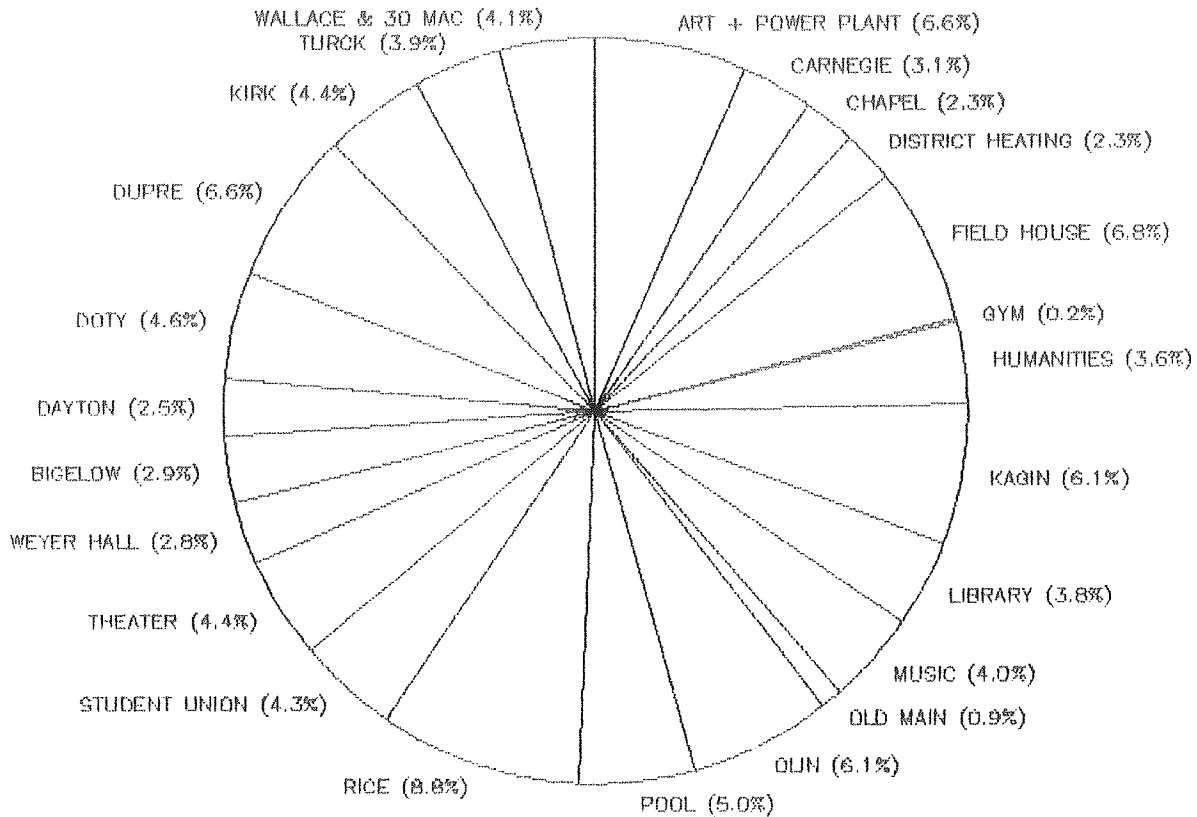
1988-89 ENERGY REPORT
MACALESTER COLLEGE
PHYSICAL PLANT DEPARTMENT

1988-89 FUEL AND ELECTRICITY CONSUMPTION

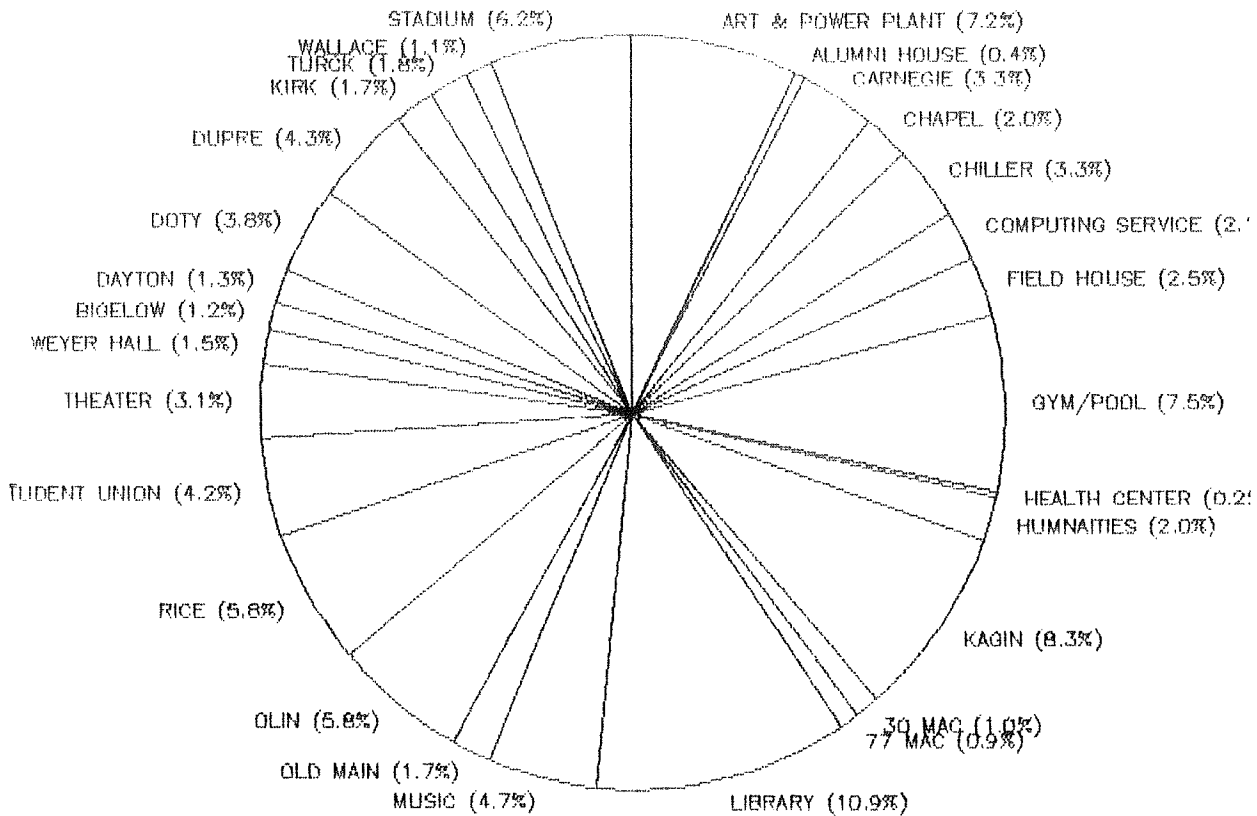
	MAY JUNE	JUNE JULY	JULY AUGUST	AUGUST SEPT.	SEPT. OCT.	OCT. NOV.
GAS	7,840 \$1,748.32 0.223	3,690 \$882.87 0.239	3,510 \$782.73 0.223	11,630 \$2,593.48 0.223	38,310 \$8,619.75 0.225	105,567 \$25,572.14 0.242
OIL	0	0	0	0	0	0
TOTAL BTU CONSUMPTION (*1,000)	784,000	369,000	351,000	1,163,000	3,831,000	10,556,700
ELECTRICITY	657,600 32 20,550 \$32,274.57 0.049	787,200 31 25,394 \$38,259.17 0.049	741,600 29 25,572 \$38,674.36 0.052	825,600 34 26,047 \$44,969.14 0.051	686,400 25 27,456 \$31,214.18 0.045	904,800 33 27,418 \$36,105.03 0.040
# STEAM GENERATED	709,000	352,700	335,000	1,109,600	3,659,700	10,078,800
BOILER EFFICIENCY (BTU STEAM/BTU FUEL)	78.7%	89.2%	88.1%	89.0%	89.1%	82.9%
HEATING DEGREE DAY - ACTUAL (MAC)	29	0	0	39	302	790
COOLING DEGREE DAY - ACTUAL (MAC)	259	384	422	124	15	0
HOURS CHILLER OPERATION	139	339	249	224	51	2
1987-88 GAS (CCF)	10,250	4,390	5,260	19,710	46,190	99,480
1987-88 OIL (GAL)	0	0	0	0	0	0
1987-88 ELEC (KWH)	549,600	784,800	700,800	619,200	712,800	732,200
# DAYS	28	33	29	30	28	29
KWH/DAY	19,629	23,782	24,166	20,640	25,457	25,248
1987-88 # STEAM GENERATED	427,100	946,500	491,100	1,867,800	4,382,600	9,046,100
1987-88 BTU CONSUMPTION (*1,000)	1,025,000	439,000	526,000	1,971,000	4,619,000	9,348,000
1987-88 HEATING DEGREE DAY	0	51	2	40	393	653
13 YR AVG ELEC CONSUMP (75/76-87/88)	445,136	566,186	505,846	582,646	587,446	635,154
17 YR AVG BTU CONSUMP (68/5/OIL*1,000)	2,387,000	2,995,000	2,052,000	2,686,000	5,990,000	11,596,000

NOV. DEC.	DEC. JAN.	JAN. FEB.	FEB. MARCH	MARCH APRIL	APRIL MAY	YEAR END TOTAL
143,500	169,180	171,800	165,310	129,740	46,840	996,917
\$33,319.27	\$40,730.09	\$41,163.28	\$36,960.01	\$28,542.80	\$9,161.91	\$230,076.65
0.232	0.241	0.240	0.224	0.220	0.196	0.227
0	0	4,900	0	0	0	4,900
		\$1,715.00				\$1,715.00
		0.3500				0.3500
14,350,000	16,918,000	17,915,000	16,531,000	12,974,000	4,684,000	100,426,700
840,000	909,600	808,800	664,800	871,200	1,142,400	9,900,000
30	38	29	24	32	45	362
28,000	23,937	27,890	27,700	27,225	25,387	25,916
\$32,534.05	\$36,108.01	\$31,425.83	\$25,520.91	\$33,101.57	\$50,105.05	\$430,291.87
0.039	0.040	0.039	0.038	0.038	0.044	0.044
13,687,200	16,160,300	17,089,000	15,770,900	12,377,400	4,468,700	95,798,300
82.9%	83.1%	82.9%	82.9%	83.0%	83.0%	90.2%
1,141	1,382	1,405	1,336	929	464	7,817
0	0	0	0	0	3	1,207
0	0	0	0	0	10	1,008
132,960	179,260	203,640	137,900	66,280	42,360	941,680
0	2,800	0	0	26,800	11,200	40,800
912,000	787,200	844,800	768,000	871,200	612,000	8,894,600
33	34	30	28	32	28	362
27,636	29,153	28,160	27,429	27,225	21,857	24,571
12,644,600	17,492,000	19,422,000	13,158,600	10,173,900	5,642,500	95,694,800
13,296,000	17,926,000	20,364,000	13,790,000	8,851,293	5,916,000	98,071,293
977	1,483	1,605	994	671	269	7,139
757,108	648,369	686,954	654,462	644,563	588,285	7,306,156
16,568,000	20,459,000	15,248,000	12,631,000	9,459,000	5,516,000	107,587,000

1988 - 89 CONDENSATE CONSUMPTION



1988 - 89 ELECTRICITY CONSUMPTION



ELECTRICITY CONSUMPTION BY BUILDING
1988 - 1989

BUILDING	MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		JAN		FEB		MARCH		APRIL		MAY		TOTAL
	JUNE	JULY	JULY	AUGUST	SEPT	SEPT	OCT	NOV	DEC	JAN	FEB	FEB	MARCH	APRIL	MAY	JAN	FEB	MARCH	APRIL	MAY	JAN	FEB	MARCH	APRIL	MAY		
ALUMNI HOUSE	3,972	4,211	4,153	3,049	2,795	3,508	3,391	3,380	3,272	2,906	2,862	4,833	42,332														
ART + POWER PLANT	49,530	77,990	64,000	58,700	47,230	53,750	66,200	57,860	60,600	68,920	52,570	49,540	706,890														
CARNEGIE	27,120	30,210	27,000	25,170	26,550	27,450	27,300	27,810	23,910	27,810	24,000	25,920	320,250														
CHAPEL	19,290	25,740	24,600	16,470	13,020	12,510	12,690	15,090	15,210	16,770	13,350	12,510	197,250														
COMPUTING SERVICE	16,680	17,530	15,520	16,290	16,270	17,410	17,490	19,760	16,060	19,360	16,950	16,950	206,210														
FIELD HOUSE	15,120	18,870	18,510	16,830	20,250	23,370	22,770	23,070	21,750	23,820	19,020	21,210	244,590														
GYM/POOL	51,300	50,900	44,800	52,300	61,600	66,800	65,500	63,300	67,700	80,400	69,200	61,400	735,200														
HUMANITIES	11,070	15,390	13,290	12,660	16,590	18,630	19,200	17,880	15,980	19,680	15,000	16,290	192,660														
KAGIN	67,620	100,920	88,200	83,040	66,540	64,860	65,220	47,400	54,120	64,800	51,660	57,720	812,100														
30 MAC	7,240	6,720	5,950	7,250	8,400	8,260	9,210	9,195	8,745	9,825	8,760	8,930	98,485														
77 MAC	9,220	12,298	12,127	8,492	4,376	5,260	4,758	5,142	5,564	4,177	4,984	9,077	85,475														
LIBRARY	24,960	56,640	62,400	107,200	112,960	113,920	105,340	103,780	89,180	111,000	86,820	97,340	1,071,540														
MUSIC	29,980	35,700	33,380	35,920	38,400	43,080	42,860	39,280	40,480	46,700	38,540	39,960	464,280														
OLD MAIN	11,600	12,040	10,640	11,920	12,580	12,120	16,260	18,140	16,420	17,960	13,020	12,100	170,011														
OLIN	38,500	42,600	38,040	35,000	47,400	53,920	53,200	49,880	46,320	58,400	49,800	50,080	563,240														
RICE	40,100	38,600	39,300	45,100	51,300	54,100	54,900	47,600	45,100	55,600	49,000	50,500	572,200														
STUDENT UNION	27,240	31,840	26,400	29,480	35,320	35,960	41,000	37,560	39,000	44,000	32,640	34,360	414,800														
THEATER	16,060	18,200	17,000	16,720	27,720	33,000	31,100	29,100	26,780	35,460	28,720	25,000	304,860														
WEYER HALL	26,780	26,160	23,420	14,300	12,360	8,580	8,900	3,060	840	3,400	0	20,800	145,600														
WINTON HEALTH	1,320	1,410	2,360	2,580	2,050	2,070	2,170	2,140	1,910	2,020	1,590	1,630	23,250														
BIGELON	6,420	7,680	5,400	7,920	11,700	12,420	13,200	10,560	11,160	13,140	10,260	11,220	121,080														
DAYTON	9,585	10,260	7,230	13,125	16,065	10,815	10,980	8,085	8,895	10,455	8,520	16,800	130,815														
DUTY	32,430	32,310	29,730	32,730	37,140	29,220	27,630	23,340	25,980	32,730	29,490	37,530	369,660														
DUPRE	24,440	23,120	19,840	27,200	38,160	42,360	42,640	37,920	38,120	45,280	37,320	48,000	424,400														
KIRK	9,620	12,260	8,400	14,600	21,240	16,260	15,600	9,500	12,200	14,640	12,140	18,640	155,100														
TURCK	17,295	16,545	14,025	14,400	14,685	13,800	13,710	12,100	12,105	14,565	12,195	18,930	172,575														
STADIUM	10,700	11,600	5,800	14,700	24,900	60,900	87,300	112,900	90,200	103,800	52,400	29,700	604,900														
MALLACE	5,560	4,730	4,120	7,990	11,280	12,300	12,290	8,800	10,640	12,550	9,885	10,760	110,905														
CHILLER	41,840	108,760	90,040	54,200	17,480	600	0	0	0	0	0	7,600	320,520														

TOTAL KWH CONSUMED 652,692 851,234 755,675 785,336 816,361 857,233 889,418 938,472 806,369 954,262 750,636 815,330 9,791,178

MACALESTER COLLEGE
MONTHLY ENERGY BUDGET REPORT
MAY 15, 1989

ENERGY TYPE	QUANTITY CONSUMED	EXPENDITURE	BUDGETED CONSUMPTION (BTUs/KWH)	BUDGETED TOTAL EXPENDITURE	TOTAL CONSUMPTION	TOTAL EXPENDITURE
	5/16/88 5/15/89	6/1/88- 5/31/89	88-89	88-89	88-89	88-89
GAS (CCF)	996,917	\$230,076.65				
OIL (GAL.)	4,900	\$1,715.00				
TOTAL BTUs (* 1,000)	100,426,700	////////	84,000,000	\$240,400.00	100,426,700	\$231,791.65
ELEC. (KWH)	9,900,000	\$430,291.87	9,000,000	\$494,477.00	9,900,000	\$430,291.87
TOTAL EXPENDITURES	////////	\$662,083.52	////////	\$734,877.00	////////	\$662,083.52

VARIANCE:
BUDGT VS EST \$72,793.48

NOTE: NSP converted to calendar month billing as of 6/1/89. Electric consumption reflects use through 5/31/89. The total days of electric billing for 88/89 was 382.

FUEL VARIANCE
CONSUMPTION \$47,011.65
PRICE (\$55,620.00)
SUB-TOTAL (\$8,608.35)

ELEC VARIANCE
CONSUMPTION \$49,447.70
PRICE (\$113,632.83)
SUB-TOTAL (\$64,185.13)

TOTAL FUEL AND
ELEC VARIANCE (\$72,793.48)

COMPARATIVE CONSUMPTION REPORT
1987/88 VS. 1988/89

CONSUMPTION	GAS (CCF)	OIL (GAL)	TOTAL BTU ₆ (X 1,000)	ELEC (KWH)
1987/88	941,680	40,800	98,071,293	8,894,600
1988/89	996,917	4,900	100,426,700	9,900,000

EXPENDITURE	GAS+OIL COSTS	\$/BTU (1,000 BTU ₆)	ELECTRICITY COSTS	\$/KWH
1987/88	\$207,627.00	0.002117	\$313,923.72	0.035
1988/89	\$231,791.65	0.002308	\$430,291.87	0.044
DIFFERENCE	(\$24,164.65)		(\$116,368.15)	

TOTAL 88/89
VARIANCE
FROM 87/88 (\$140,532.80)

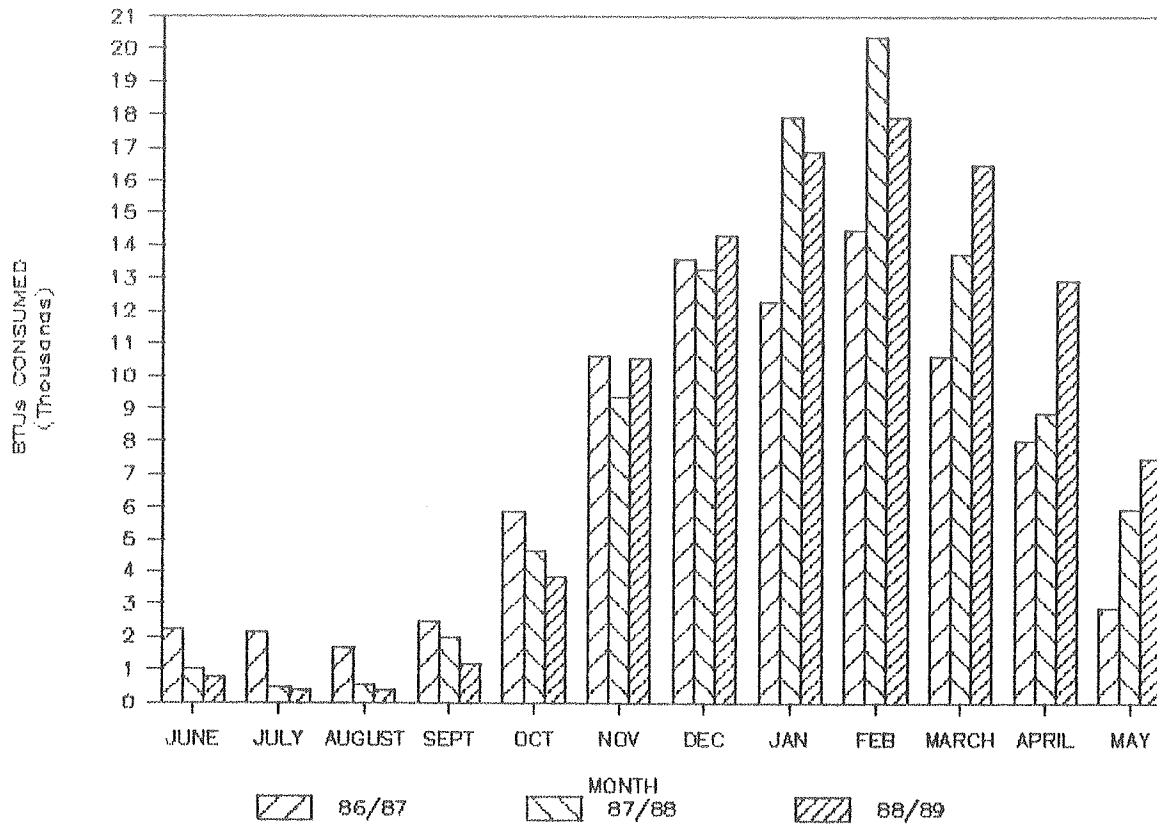
FUEL
VARIANCE \$4,986.64 DUE TO CONSUMPTION

\$19,178.01 DUE TO PRICE

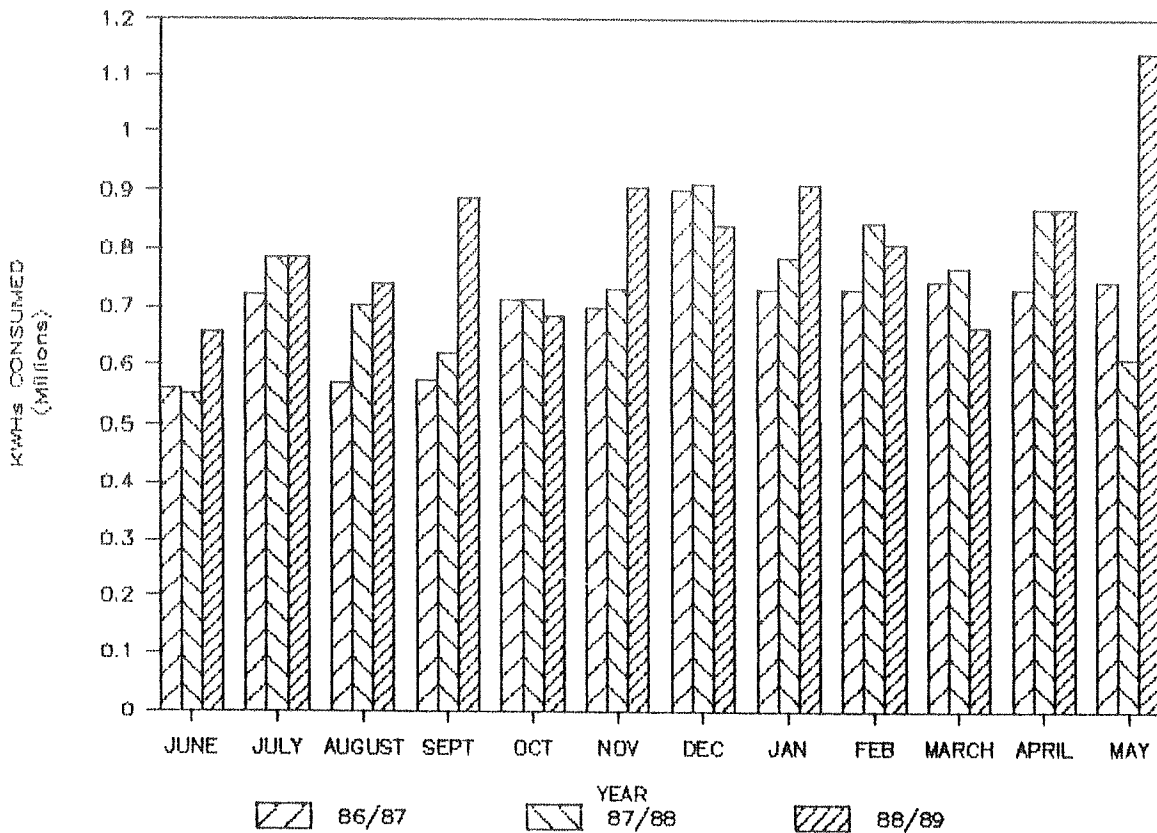
ELEC
VARIANCE \$35,484.33 DUE TO CONSUMPTION

\$80,883.82 DUE TO PRICE

3 YEAR BTU CONSUMPTION COMPARISON

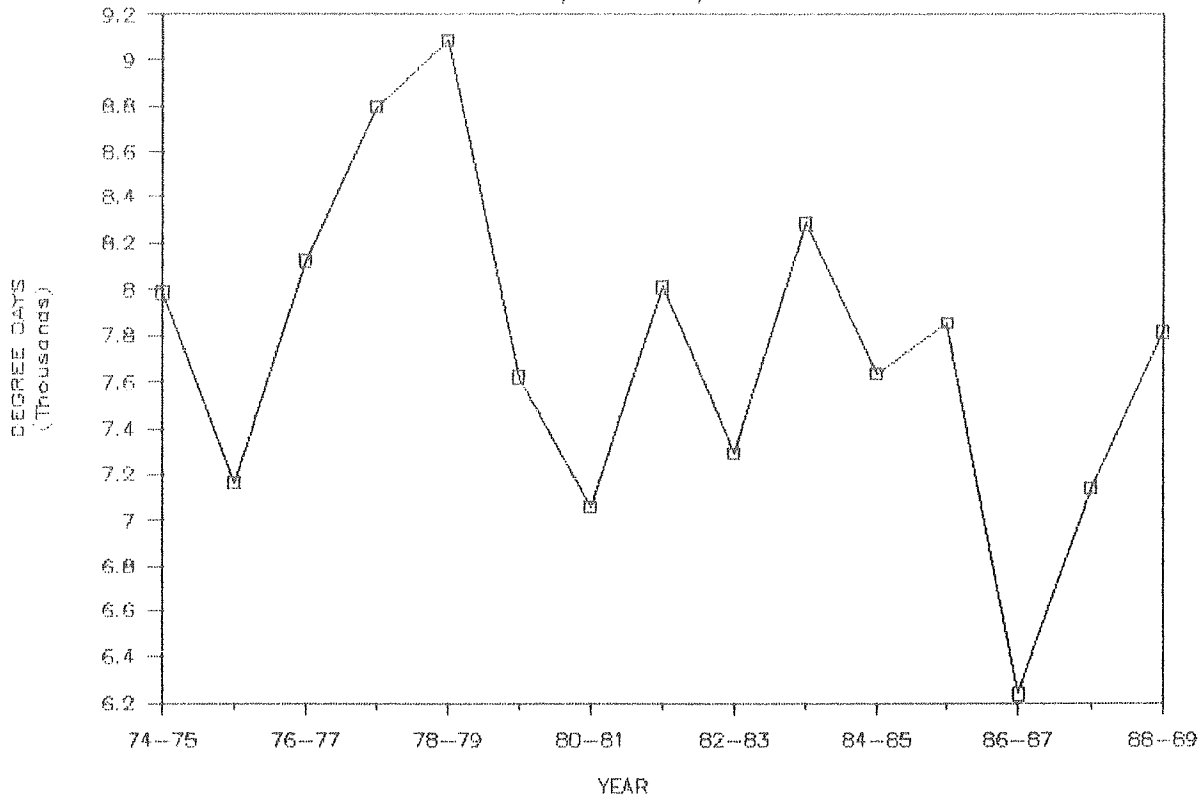


3 YEAR KWH CONSUMPTION COMPARISON



DEGREE DAYS

1974/75 - 1988/89



	MACALESTER COLLEGE ACTUAL READINGS					MAC AVERAGE 4 YR	TWIN CITY AVERAGE 20 YR
	84/85	85/86	86/87	87/88	88/89		
JUNE	150	169	81	0	29	86	41
JULY	41	30	0	51	0	24	12
AUG	10	1	0	2	0	3	16
SEPT	10	59	111	40	39	52	160
OCT	229	470	247	393	302	328	488
NOV	740	658	752	653	790	719	954
DEC	1186	1470	1160	977	1141	1187	1420
JAN	1676	1686	1068	1483	1382	1459	1668
FEB	1720	1396	1264	1605	1405	1478	1330
MARCH	1026	1048	820	994	1336	1045	1110
APRIL	651	597	602	671	929	690	570
MAY	193	268	133	269	464	265	238
TOTAL	7632	7852	6238	7138	7817	7335	8007

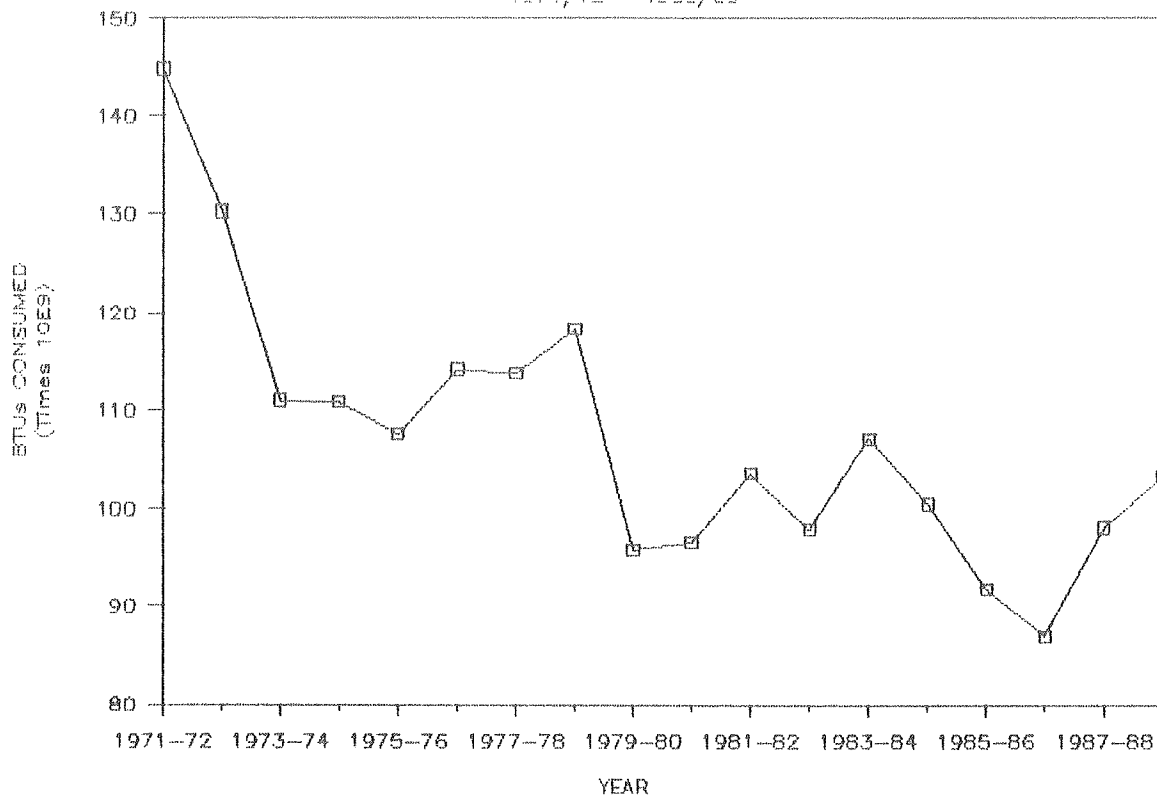
DEGREE DAY COMPARISON
1986/87-87/88-88/89

NUMBER OF DAYS

DEGREE RANGE	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	86/87	87/88	86/87	87/88	86/87	87/88	86/87	87/88	86/87	87/88	86/87	87/88
0-9	2	10	5	-	1	-	-	-	-	-	1	-
10-19	13	14	9	-	9	-	-	-	-	-	7	0
20-29	16	7	12	14	7	14	2	1	2	3	11	16
30-39	5	10	12	11	29	20	16	5	13	6	10	9
40-49			7	5	5	5	8	7	11	6	2	6
50-59			3	-	2	1	3	8	4	6	-	-
60-69					1	-	2	9	1	8	3	2
70-79							-	1	-	2	2	
80-89							-	1	-		1	

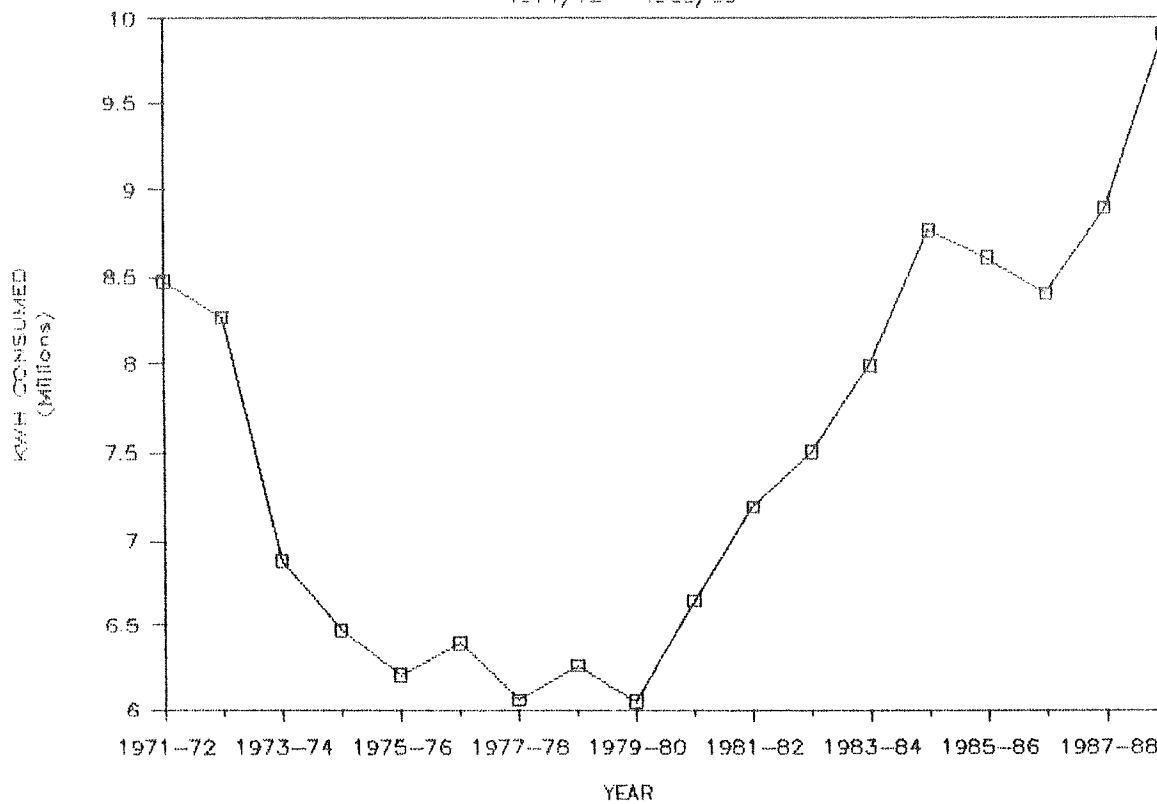
BTU CONSUMPTION

1971/72 - 1988/89



KWH CONSUMPTION

1971/72 - 1988/89



MACALESTER COLLEGE
ENERGY CONSUMPTION

YEAR	ACTUAL D. DAY	MCF GAS CONSUMED	GALLONS OIL CONSUMED	BTU ₆ CONSUMED x100,000	KWH CONSUMED
74-75	7,989	67,595	246,150	110,769	6,468,000
75-76	7,164	51,326	361,503	107,587	6,201,600
76-77	8,125	51,103	408,907	114,191	6,389,400
77-78	8,797	62,161	338,056	113,709	6,062,400
78-79	9,088	47,116	447,725	118,299	6,256,800
79-80	7,617	76,710	111,607	95,864	6,050,400
80-81	7,058	88,585	52,979	96,558	6,640,800
81-82	8,010	56,682	293,415	103,563	7,197,600
82-83	7,293	24,334	481,125	97,945	7,507,200
83-84	8,286	74,636	198,885	107,096	7,993,623
84-85	7,632	100,149	0	100,516	8,767,200
85-86	7,852	37,124	364,850	91,852	8,611,200
86-87	6,238	51,612	235,700	86,956	8,407,200
87-88	7,138	94,168	40,800	98,071	8,894,600
88-89	7,817	99,692	4,900	103,242	9,900,000

BTU CONSUMPTION - OIL AND GAS COMBINED (x 100,000)

YEAR	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	TOTAL (x100,000)
1971-72	5,876	5,550	1,311	5,092	7,998	15,809	19,964	24,273	21,819	17,873	12,976	6,240	144,781
1972-73	4,076	4,088	1,126	4,379	11,306	14,564	21,408	20,827	18,470	14,269	9,782	5,990	130,265
1973-74	4,801	5,158	3,929	4,747	7,442	12,524	13,625	17,434	14,490	13,156	8,134	5,487	110,927
1974-75	4,055	6,146	2,454	4,435	7,492	10,588	13,679	17,421	15,386	14,451	10,813	3,849	110,769
1975-76	1,853	2,696	1,978	3,125	5,240	10,845	20,854	22,125	8,489	15,613	8,151	6,618	107,587
1976-77	3,500	3,179	2,717	3,631	8,514	15,042	16,712	26,847	9,906	10,864	8,898	4,381	114,191
1977-78	1,659	3,386	2,804	2,069	3,999	17,932	18,349	24,038	17,932	9,901	10,820	7,270	113,709
1978-79	1,625	2,931	2,774	2,960	4,046	14,515	17,221	24,873	18,306	10,114	9,638	9,296	118,299
1979-80	2,215	3,459	2,370	1,784	3,873	9,047	13,734	20,738	13,026	11,615	10,583	3,620	98,864
1980-81	1,413	2,271	2,004	1,784	3,873	11,175	13,313	18,330	14,380	12,136	7,636	6,115	96,558
1981-82	1,542	1,647	1,094	1,385	6,890	7,700	13,738	29,446	16,071	10,933	11,735	5,020	103,563
1982-83	836	1,736	1,662	656	3,557	17,322	14,926	16,027	14,321	14,440	6,708	5,954	97,945
1983-84	1,059	1,645	1,847	2,167	5,992	8,436	26,989	20,584	10,897	11,327	10,462	5,991	107,095
1984-85	954	1,984	2,641	2,026	5,327	10,326	14,366	16,338	17,352	14,157	9,760	3,285	100,516
1985-86	1,858	2,463	1,935	1,855	6,497	7,822	15,855	16,270	13,520	10,104	7,832	5,841	91,852
1986-87	2,230	2,138	1,935	1,855	6,497	7,822	15,855	16,270	13,520	10,104	7,832	2,897	86,956
1987-88	1,025	439	526	1,971	4,619	9,348	13,236	17,926	20,364	13,790	8,851	5,916	98,071
1988-89	784	369	351	1,163	3,831	10,556	14,350	16,918	17,915	16,531	12,974	7,500	103,242
18 YR AVG.	2,298	2,849	1,957	2,601	5,870	11,538	16,445	20,263	15,396	12,848	9,654	5,626	107,345

KILOWATT-HOURS CONSUMPTION - (ELECTRICITY)

1971-72													8,476,800
1972-73													8,268,000
1973-74													6,878,400
1974-75													6,468,000
1975-76	396,000	396,000	396,000	405,600	542,400	532,800	659,600	578,400	626,400	561,600	571,200	525,600	6,201,600
1976-77	348,000	415,200	424,800	525,600	525,600	686,400	669,600	595,200	590,400	561,600	554,400	492,600	6,389,400
1977-78	362,400	446,400	352,800	475,200	412,800	489,600	840,000	508,800	592,800	568,800	520,800	492,000	6,062,400
1978-79	333,600	444,000	345,600	506,400	482,400	568,800	669,600	564,000	708,000	537,600	602,400	494,400	6,256,800
1979-80	343,200	446,400	360,000	436,800	506,400	554,400	664,800	559,200	590,400	576,000	494,400	518,400	6,050,400
1980-81	446,400	482,400	448,800	532,800	516,000	583,200	700,800	616,800	600,000	595,200	590,400	528,000	6,640,800
1981-82	446,400	501,600	556,800	580,800	561,600	590,400	748,800	628,800	708,000	657,600	633,600	588,200	7,197,600
1982-83	475,200	628,800	590,400	612,000	748,800	650,400	650,400	691,200	602,400	645,600	672,000	540,000	7,507,200
1983-84	463,200	645,600	585,600	964,800	379,200	729,600	763,200	676,800	708,000	741,600	684,914	651,109	7,993,623
1984-85	513,600	708,000	657,600	655,200	806,400	765,600	787,200	784,800	840,000	777,600	748,800	722,400	8,767,200
1985-86	559,200	720,000	588,000	685,400	732,000	727,200	866,400	708,000	789,600	772,800	705,600	744,000	8,611,200
1986-87	559,200	720,000	568,800	573,600	710,400	698,400	900,000	729,600	729,600	744,000	729,600	744,000	8,407,200
1987-88	549,600	784,800	700,800	619,200	712,800	732,200	912,000	787,200	844,800	766,000	871,200	612,000	8,894,600
1988-89	657,600	787,200	741,600	885,600	686,400	904,800	840,000	909,600	808,800	664,800	871,200	1,142,400	9,900,000
14 YR AVG	460,314	581,971	522,686	604,286	594,514	658,129	763,029	667,029	695,657	655,200	660,751	627,865	7,451,430