



CAMBRIDGE CITY COUNCIL

CITY HALL, CAMBRIDGE, MASSACHUSETTS 02139

(617) 498-9094

As a result of hearings before the Committee on Environment of the Cambridge City Council, the Committee submits the following conclusions and recommendations for the consideration of the City Council and recommends their adoption.

Councillor Francis H. Duehay, Chairman
Councillor David E. Sullivan
Councillor David A. Wylie

CONCLUSIONS AND RECOMMENDATIONS

1. The Committee commends the Cambridge School Department, the Cambridge Housing Authority, and the Cambridge Rent Control Department for their detailed programs of energy conservation. The Committee encourages these departments to continue their efforts, to project their planning in greater detail in conjunction with the annual submission of their budgets, and to file annual reports with the City Manager and the City Council.
2. The Committee feels that the city itself should strive to be a highly progressive example of energy management to its own citizens, to the private sector, and to other municipalities. Regrettably, this is not now the case. The Committee is not pleased at the progress made in the weatherization and insulation of public buildings and in the renovation of older heating plants. While energy audits of these buildings are nearly complete and savings have resulted from controlling temperatures more closely, no overall energy conservation plan exists. Despite repeated requests, no budgetary estimates have been presented to the City Council, nor have projected budgetary savings been calculated. No energy conservation annual targets appear to exist. Needless to say, no annual report has been made to the Council and Manager in this area.
3. That the City itself lacks integrated energy conservation planning is especially shocking given the ongoing necessity to stretch every municipal penny due to budget limitations under Proposition 2½. In part, this situation seems to result from the failure to fix operational management of the energy program in any one individual. The Community Development Department coordinates planning and funding requests as well as operating programs of low income energy audits, weatherization, and insulation residential programs. The Public Works Department seems to be responsible for energy conservation in public buildings; and other departments (rent control, school, housing authority, see above) are responsible for their jurisdiction.

4. The Energy Commission is not now active. The City Manager should ascertain the reasons for this and take steps to correct it. Citizens' commissions in Cambridge have resulted in improved departmental responsiveness and operations.
5. The responsibility for the development and operations of all energy conservation programs of the city and for coordinating these programs with those others in both the public and the private sector should be clearly fixed in one department head.
6. The Committee recommends that the City immediately develop an energy conservation plan, with energy reduction goals, projected energy savings related to budgetary outlays, and an integrated energy accounting system which relates the savings achieved to the conservation measures adopted.
7. This plan should have goals for the residential, industrial, and commercial sectors as well as for public buildings.
8. The Committee commends the Energy office of the Community Development Department, but finds that it has focussed largely on conducting energy audits through MASS SAVE in income eligible areas of the city and in providing weatherization assistance as a result of these audits. This is due to the fact that this office is funded through federal grants available only for this purpose.
9. However, large areas of the city which are not income eligible for weatherization assistance are not aware that this audit program is available to an individual homeowner for \$10. There is no coordinated way of expanding or recording the results of this audit program.
10. Records of what homeowners actually do to install energy conservation improvements as a result of audits are apparently not kept by MASS SAVE. Thus it is difficult to say how effective the program is.
11. MASS SAVE and the Cambridge Energy Office should issue an annual report documenting on energy savings in the residential sector. MASS SAVE and the Cambridge Energy Office (within the CDD) must develop and install a permanent record keeping system which will be integrated with the housing data kept in a combined system by all departments concerned with housing (assessors, building, health, fire, rent control, housing/CDD, Housing Authority, etc).
12. Commonwealth Energy (Cambridge Gas and Cambridge Electric) must coordinate their conservation objectives and programs with those of the city.
13. The Committee notes with pleasure programs to assist smaller non-profit organizations and apartment buildings with energy conservation. As is mentioned earlier, no such programs appear to exist in the commercial and industrial sectors and should be instituted.
14. Technical assistance from the city should be available to all new developers. The extent to which maximum energy saving measures have been incorporated in all new and renovated structures should be a matter of municipal concern and public record. Either these records do not now exist, or they cannot easily be compiled.
15. All city departments should be instructed to request energy management training programs from the Cambridge energy coordinator.

ATTACHMENT #1



CAMBRIDGE SCHOOL DEPARTMENT

159 THORNDIKE STREET
CAMBRIDGE, MASSACHUSETTS 02141

November 29, 1982

To: Francis H. Duehay, Chairperson Improvement Committee of the City Council

From: Oliver S. Brown, *OSB* Assistant Superintendent for Planning and Management Services

Report: Energy Management, Projects-Cambridge School Department

Purpose: The purpose of this report is to outline progress to date and proposed improvements with respect to Energy Management Projects in the Cambridge School Department.

Scope: This is a general report. Specifications and cost estimates for proposed improvements are provided; but, in some cases, further, more detailed analysis may be required.

Organization: This report is organized as follows:

1. Summary of Progress:
 - (A) Savings
 - (B) Improvements, Past and Underway in FY83
2. Proposed Improvements:
3. Funding Alternatives:

Attachments:

- .Energy Awards (A)
- .Summary Report (B) FY1981 and FY1982

1. Summary of Progress:

Between 1974 and 1983, the School Department's facilities have changed greatly. However, the overall square footage has not changed appreciably because the loss of the Latin building has been offset by other facilities added to C.R.L.S.

A. Savings:

-----gallons-----

(1) Fuel Consumption:

In FY1975 the Cambridge School Department used	1,100,000 of fuel (est)
In FY1982 we used	(788,713)
reduction (28%)	311,287
In FY1981	901,041
In FY1982	(788,713)
reduction (12%)	112,328

The present price for a gallon of fuel (#4 is \$.85 and the #2 oil is \$1.04).

(2) <u>Electrical Consumption:</u>		-----KW-----
In FY1981		10,831,384
In FY1982		<u>10,780,676</u>
Total		54,197
Adj. Field House		<u>200,000</u>
Reduction (2.3%)		254,197

The present average cost of electricity was .07 per KW

(3) Tobin School	-----KW-----	-----KW-----
In FY1978	2,653,000	FY1981 1,934,943
In FY1982	<u>1,880,943</u>	FY1982 <u>1,880,943</u>
Reduction Total (29%)	772,100	(3%) 54,000

B. Improvements, Past and Underway in FY83

1. Controls: All major buildings are on central computer controls except the Fletcher. These buildings are

(1) Fitzgerald	(4) Peabody	(7) King
(2) C.R.L.S.	(5) Tobin	(8) Kennedy
(3) Morse	(6) Harrington	

We expect the Fletcher to be on central controls within 30 days. All other schools will be controlled beginning in FY84.

2. Motivation: The School Department rewarded schools that saved fuel and electricity. Checks were awarded (\$250/500) this fall for FY1982. A copy of the awards is attached (A).
3. Reporting: A reporting system was implemented in FY1978. A summary report is attached (B).
4. New Boiler and Burners: Boilers and burners have been replaced over the past four years in the following schools:

.Roberts
.Fitzgerald
.Harrington
.C.R.L.S.

by September 1983

.Graham and Parks
.Longfellow
.Agassiz
.Haggerty

will be completed.

5. New Water Heaters: New, efficient gas heaters for domestic hot water have been ordered for the Harrington, Morse, Fitzgerald, Tobin, King, Graham and Parks, Longfellow, Roberts and Peabody. This will mean that main boilers can now be shut down fully in moderate spring, summer and fall weather.

The School Department has standardized on H.B. Smith cast iron sectional boiler. While there is a small difference in initial efficiency in comparison to a new tubular boiler, cast iron sectional boilers are (1) more reliable, (2) require less maintenance (3) last much longer (4) can be operational with a section shut down, and (5) tend to be more efficient over the life of the equipment.

6. Building Envelope: (Roofs, windows, doors, building sides). The School Department has standardized on a R-30 (insulation value) membrane roof (Carlisle or equal). By September of 1983, the following schools will have such roofs:

- .Agassiz
- .Haggerty
- .Graham and Parks
- .Roberts
- .Longfellow
- .Tobin (one section)
- .Peabody (two sections)

New doors (air tight) have or will replace old doors at

- .Haggerty
- .Longfellow
- .Graham and Parks
- .Roberts
- .C.R.L.S.

New energy efficient windows have been or will be placed in the following by April 1983.

- .Agassiz December 1982
- .Haggerty December 1982
- .C.R.L.S. completed
- .Longfellow winter 1983
- .Graham and Parks winter 1983
- .Roberts winter of 1983

We are studying the possibility of insulated inserts in windows.

7. Energy Audits: General energy audits and lighting audits have been completed in all buildings except C.R.L.S. Technical audits have been completed in (1) Tobin and (2) King Schools.

Applications are out for the Morse and Fitzgerald Schools.

8. Solar Energy Project: A contract for a solar heating facility for the War Memorial has been awarded by the School Committee. Credit for developing the project belongs to the City's Energy Co-ordinator and the School Department's energy manager provided by MASBO.

9. Preventive Maintenance: Preventive maintenance manuals for HVAC systems are in place as follows: Tobin, Kennedy, King, Harrington, Fletcher, Fitzgerald, Peabody and C.R.L.S.

2. Proposed Improvements:

We believe that eventually there will be a sharp jump in energy prices. For this reason we proposed that capital projects be planned and budgeted in the following school buildings:

-----Proposed Projects-----

- | | |
|-----------------------|---|
| (1) <u>Morse</u> | (1) R-30 Roof
(2) Insulated sides, some window reduction (R-10-20)
(3) Insulated replacement heating pipes
(4) Weather tight replacement doors (some)
(5) Energy efficient gym lighting |
| (2) <u>Harrington</u> | (1) R-30 Roof
(2) Insulated sides, some window reduction (R-10-20)
(3) Weather tight replacement doors (some)
(4) Energy efficient gym lighting |
| (3) <u>Fitzgerald</u> | (1) R-30 Roof
(2) Insulated sides, some window reduction (R-10-20)
(3) Weather tight replacement doors (some)
(4) Energy efficient gym lighting |
| (4) <u>Peabody</u> | (1) Complete R-30 roof sections
(2) Insulated doors and door sections
(3) Study possible side insulation and possible window reduction (R10-20)
(4) Energy efficient gym lighting |
| (5) <u>Tobin</u> | (1) Complete R-30 roof replacement
(2) Modify or replace windows to make them operable
(3) Modify or replace window area in cafeteria to make it more energy efficient |
| (6) <u>King</u> | (1) Modify or replace windows to make them insulated and operable
(2) Modify and insulate overhead natural light areas in upper classrooms (R 10-20)
(3) Consider adding insulation to roof, R-30 |
| (7) <u>Kennedy</u> | (1) Modify or replace windows to make them insulated and operable
(2) Modify or replace windows in entry area
(3) Consider replacing in part or whole roof with insulated R-30 roof |

3. Funding Alternatives:

The City Manager and City Council may consider a number of alternatives with respect the the funding of these improvements.

(1) General Fund:

Improvements might be implemented and funded over 5-10 year period (pay as you go).

(2) Bonds:

The funding could be provided by bonds over a period of time equal to the average payback related to insulation expenditures to reduce fuel and electrical use.

(3) Lease Purchase:

Funding could be arranged through a 3rd party lease-purchase agreement with payments based upon the average payback period for energy saving aspects of the projects.

CAMBRIDGE SCHOOL DEPARTMENT

159 THORNDIKE STREET
CAMBRIDGE, MASSACHUSETTS 0214

August 10, 1982

TO THE HONORABLE MEMBERS OF THE SCHOOL COMMITTEE:

Energy Conservation Awards

Recommended: That the School Committee approve energy conservation awards for FY1982 in the amounts shown.

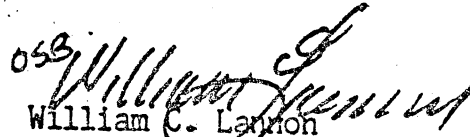
Energy Conservation Award Winners are as follows:

	<u>Electricity Saved</u>	<u>Oil Saved</u>	
	<u>KWH</u>	<u>Gallons</u>	<u>Cash Award</u>
Agassiz	-6,933	--	\$250
Fletcher	--	-4,934	250
Haggerty	-3,004	-6,491	500
Harrington	-70,196	-15,045	500
Kennedy	-54,981	-13,704	500
King	-198,420	-23,985	500
Lincoln	--	-1,707	500
Longfellow	-9,960	--	250
Peabody	--	-17,661	250
Webster	--	-13,172	250
CRLS	--	-12,226	250
Ecology	-1,940	**	500
Total	345,434 KWH	108,925 gals	\$4,500
\$/unit	7¢/KWH	94¢/gal	
Value of Energy Saved	\$24,180	\$102,390	

Description: The FY82 record while reflecting progress is still not satisfactory. Further, some schools achieved significant progress several years ago and this years progress is flat. Tobin is an example. The range of MBTU, per square foot is 95 at Webster to 240 at the Ecology Center. In the next few months, we plan to establish a reasonable target for each school along with the measures required to reach the target.

Supporting Data: Letter of Transmittal from David Keniston, Masbo Cooperative Corporation.

Respectfully submitted,

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William C. Lannon
Superintendent of Schools

Prepared by: Oliver S. Brown
Assistant Superintendent
Planning and Management Services

OSB:np

ATTACHMENT B

CAMBRIDGE SCHOOLS

ENERGY USAGE SUMMARY BY FUEL TYPE
CURRENT AND YEAR TO DATE BY MONTH

08/06/82

PAGE 1

CURRENT MONTH						KEEPING SCORE						PASBO COOPERATIVE CORP					
ELECTRICITY		GAS		OIL		ELECTRICITY		GAS		OIL		ELECTRICITY		GAS		OIL	
KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$	GAL	\$
✓ 681636	41409	✓ 802	539	✓ 4482	4023	JUL 81	681636	41409	802	539	4482	4023					
194544	13211	703	410	0	0	JUL 80	194544	13211	703	410	0	0					
487092	28198	99	129	4482	4023		487092	28198	99	129	4482	4023					
✓ 642362	42115	✓ 2006	1215	✓ 0	0	AUG 81	1323998	83524	2808	1754	4482	4023					
1092944	67002	1142	726	0	0	AUG 80	1285748	80000	1762	1082	0	0					
450582	24887	864	489	0	0		38250	3524	1046	672	4482	4023					
✓ 603021	41030	✓ 970	692	✓ 4464	4060	SEP 81	1913826	123287	3588	2305	8946	8083					
553802	42042	1862	823	9177	7551	SEP 80	1851290	122255	3707	1959	9177	7551					
39219	1012	892	131	4713	3491		62536	1032	119	346	231	532					
✓ 1190617	82563	✓ 1804	1158	✓ 29347	27472	OCT 81	3117636	207117	5582	3604	38293	35555					
950470	67410	2350	1056	35852	27268	OCT 80	2801760	189665	6057	3015	45029	34819					
240147	15153	546	102	6505	204		315876	17452	475	589	6736	736					
✓ 585381	41475	✓ 2475	1624	✓ 65964	61468	NOV 81	3703017	248592	8057	5228	104257	97023					
1116886	75701	3514	1910	107621	84538	NOV 80	3918646	265366	9571	4925	152650	119357					
531505	34226	1039	286	41657	23070		215629	16774	1514	303	48393	22334					
✓ 1223307	81853	✓ 4256	2520	✓ 133482	126943	DEC 81	4926324	330445	12313	7748	237739	223966					
1161733	83201	5417	2791	178718	156912	DEC 80	5080379	348567	14988	7716	331368	276269					
61574	1348	1161	271	45236	29969		154055	18122	2675	32	93629	52303					
✓ 1246609	84866	✓ 7598	2302	✓ 198352	188011	JAN 82	6172933	415311	19911	10050	436091	411977					
1130305	87918	5937	3140	200938	185276	JAN 81	6210684	436485	20925	10856	532306	461545					
116304	3052	1661	838	2586	2735		37751	21174	1014	806	96215	49568					
✓ 1122894	76492	✓ 3586	2161	✓ 132335	125631	FEB 82	7295827	491803	23497	12211	568426	537608					
1098423	85818	4975	2635	143141	144211	FEB 81	7309107	522303	25900	13491	675447	605756					
24471	9326	1389	474	10806	18580		13280	30500	2403	1280	107021	68148					
✓ 1063400	75157	✓ 4821	3011	✓ 109706	102812	MAR 82	8359227	566960	28318	15222	678132	640420					
1034483	83301	4803	2537	128287	130348	MAR 81	8343590	605604	30703	16028	803734	736104					
28917	8144	18	474	18581	27536		15637	38644	2385	806	125602	95684					
✓ 880935	65542	✓ 3282	2100	✓ 59351	53141	APR 82	9240162	632502	31600	17322	737483	693561					
902097	75269	2177	1227	36655	36224	APR 81	9245687	680873	32880	17255	840389	772328					
21162	9727	1105	873	22696	16917		5525	48271	1280	67	102906	78767					
✓ 820051	62575	✓ 1993	1347	✓ 39029	34807	MAY 82	10060213	695077	33593	18669	776512	728368					
804643	68281	1712	1055	16715	16423	MAY 81	10050330	749154	34592	18310	857104	788751					
15408	5706	281	292	22314	18384		9883	54077	999	359	80592	60383					
✓ 720463	57192	✓ 1192	785	✓ 12201	10640	JUN 82	10780676	752249	✓ 14785	19454	788713	739008					
781054	60312	869	550	43937	46100	JUN 81	10831384	809464	34461	18860	901041	834851					
60591	3120	323	235	31736	35460		50708	57197	676	594	112328	95843					

Adjustment (Field Hse) 257197 *

CURRENT MONTH						KEEPING SCORE						COOPERATIVE		CORP	
ELECTRICITY		GAS		OIL		ELECTRICITY		GAS		OIL		OIL		OIL	
KWH		CCF		GAL		KWH		CCF		GAL					
0	0	0	0	0	0	AUG 81	0	0	0	0	0	0	0	0	0
5122	583	32	32	0	0	AUG 80	5122	583	32	32	0	0	0	0	0
5122	583	32	32	0	0		5122	583	32	32	0	0	0	0	0
5889	654	31	35	0	0	SEP 81	5889	654	31	35	0	0	0	0	0
6634	605	22	19	0	0	SEP 80	11756	1188	54	51	0	0	0	0	0
745	49	9	16	0	0		5867	534	23	16	0	0	0	0	0
4893	80	14	14	0	0	OCT 81	10782	734	45	49	0	0	0	0	0
5016	499	20	16	0	0	OCT 80	17572	1687	74	67	0	0	0	0	0
923	419	6	2	0	0		6790	953	29	18	0	0	0	0	0
5856	492	112	77	3063	2859	NOV 81	16638	1226	157	126	3063	2859			
7192	717	0	0	3076	2515	NOV 80	24764	2404	74	67	3076	2515			
1336	225	112	77	13	344		8126	1178	83	59	13	344			
4950	434	0	0	3088	2919	DEC 81	21588	1660	157	126	6151	5776			
0	0	0	0	3076	2698	DEC 80	24764	2404	74	67	6152	5213			
4950	434	0	0	12	221		3176	744	83	59	1	565			
4159	384	0	0	3088	2919	JAN 82	25747	2044	157	126	9239	8697			
2231	225	50	38	6102	5536	JAN 81	26995	2629	124	105	12254	10749			
1928	159	50	38	3014	2617		1248	585	33	21	3015	2052			
4811	387	32	7	6127	5791	FEB 82	30558	2431	189	133	15366	14486			
5676	544	32	23	3076	3121	FEB 81	32671	3173	156	128	15330	13870			
865	157	0	16	2051	2670		2113	742	33	5	36	618			
0	0	21	19	3076	2815	MAR 82	30558	2431	210	152	18442	17303			
5608	536	31	22	3088	3130	MAR 81	38279	3709	187	150	18418	17000			
5608	536	10	3	12	315		7721	1278	23	2	24	303			
6544	626	0	0	0	0	APR 82	37102	3057	210	152	18442	17303			
4897	456	18	16	0	0	APR 81	43176	4165	205	166	18418	17000			
1647	170	18	16	0	0		6074	1108	5	14	24	303			
2734	250	39	36	3350	2987	MAY 82	39836	3307	249	188	21792	20290			
5079	521	17	15	0	0	MAY 81	48255	4686	222	181	18418	17000			
2345	271	22	21	3350	2987		8419	1379	27	7	3374	3290			
5668	513	114	81	1	1	JUN 82	45504	3820	365	269	21793	20291			
4182	442	12	13	3000	2943	JUN 81	52437	5128	234	194	21418	19943			
1486	71	104	68	2999	2942		6933	1308	131	75	375	348			

CAMBRIDGE SCHOOLS
FITZGERALD

ENERGY USAGE SUMMARY BY FUEL TYPE
CURRENT AND YEAR TO DATE BY MONTH

06/30/82

PAGE 2

CURRENT MONTH				YEAR TO DATE				KEEPING SCORE	MASBO	COOPERATIVE	CORP
ELECTRICITY		GAS		OIL		ELECTRICITY		GAS		OIL	
KWH		CCF		GAL		KWH		CCF		GAL	
0	0	0	0	0	0	0	0	0	0	0	0
22860	2066	0	6	0	0	22860	2066	0	6	0	0
22860-	2066-	0	6-	0	0	22860-	2066-	0	6-	0	0
48420	4000	48	45	0	0	48420	4000	48	45	0	0
14220	1026	0	0	0	0	37080	3092	0	6	0	0
34200	2974	48	45	0	0	11340	908	48	39	0	0
16380	1226	30	24	0	0	64800	5226	78	69	0	0
18180	1386	23	175-	4464	4007	55260	4478	23	169-	4464	4007
1800-	160-	7	199	4464-	4007-	9540	746	55	238	4464-	4007-
24660	1908	35	26	4464	4167	89460	7134	113	95	4464	4167
29340	2243	0	0	0	0	84600	6721	23	169-	4464	4007
4680-	335-	35	26	4464	4167	4860	413	90	264	0	160
41580	3145	0	0	4446	4150	131040	10279	113	95	8910	8317
36360	2684	0	0	7472	6109	120960	9409	23	169-	11936	10116
5220	461	0	0	3026-	1959-	10080	874	90	264	3026-	1799-
22680	2145	89	68	8946	8458	153720	12424	202	163	17856	16773
28980	2207	0	0	13428	11778	149940	11612	23	169-	25364	21894
6300-	62-	89	68	4482-	3322-	3780	812	179	332	7508-	5121-
33480	2552	48	36	13445	12709	187200	14974	250	199	31301	29482
32940	2796	0	0	13578	12690	182880	14408	23	169-	38942	34584
540	244-	48	36	133-	19	4320	568	227	368	7641-	5102-
32940	2528	40	31	8946	8456	220140	17504	290	230	40247	37938
30960	2638	200	119	8946	8969	213840	17046	223	50-	47888	43553
1980	110-	160-	88-	0	513-	6300	458	67	280	7641-	5615-
28980	2241	31	25	4482	4236	249120	19745	321	255	44729	42174
27540	2661	74	45	9657	9788	241380	19707	297	5-	57545	53341
1440	420-	43-	20-	5175-	5552-	7740	38	24	260	12816-	11167-
20700	1791	0	0	4464	3980	269820	21536	321	255	49193	46154
21720	2487	0	0	4482	4396	269100	22194	297	5-	62027	57737
7020-	696-	0	0	18-	416-	720	658-	24	260	12834-	11583-
16920	1496	51	44	5019	4474	286740	23034	372	299	54212	50628
24320	2070	71	52	0	0	291420	24264	368	47	62027	57737
5400-	572-	20-	8-	5019	4474	4680-	1230-	4	252	7815-	7109-
15480	1361	16	16	1	1	302220	24395	388	315	54213	50629
1	1	1	1	1	1	291421	24265	369	48	62028	57738
15479	1360	15	15	0	0	10799	130	19	267	7815-	7109-

0210501-1057-010-2180-7520

COMMERCIAL INFORMATION

ELECTRICITY				GAS				OIL				ELECTRICITY				GAS				OIL			
KWH				CCF				GAL				KWH				CCF				GAL			
0	0	116	72	0	0	JUL 81	0	0	0	0	0	0	0	116	72	0	0	0	0	0	0	0	0
120	16	162	91	0	0	JUL 80	120	16	162	91	0	0	0	120	16	162	91	0	0	0	0	0	0
120	16	46	19	0	0		120	16	46	19	0	0		120	16	46	19	0	0	0	0	0	0
15120	1483	99	64	0	0	AUG 81	15120	1483	215	136	0	0	AUG 80	6420	622	166	100	0	0	0	0	0	0
6300	606	4	9	0	0		8700	861	49	36	0	0		8700	861	49	36	0	0	0	0	0	0
8820	877	95	55	0	0																		
6480	665	0	0	0	0	SEP 81	21600	2148	215	136	0	0	SEP 80	24960	2226	367	204	0	0	0	0	0	0
18540	1604	201	104	0	0		3360	78	152	68	0	0		3360	78	152	68	0	0	0	0	0	0
12060	939	201	104	0	0																		
18540	1544	0	0	0	0	OCT 81	40140	3692	215	136	0	0	OCT 80	46200	4012	500	2	4482	3335	4482	3335	4482	3335
21240	1786	133	206	4482	3335		6060	320	285	138	4482	3335		6060	320	285	138	4482	3335	4482	3335	4482	3335
2700	242	133	206	4482	3335																		
27180	2086	0	0	4464	4220	NOV 81	67320	5778	215	136	4464	4220	NOV 80	73200	6160	443	69	4482	3335	4482	3335	4482	3335
27000	2148	143	71	0	0		5880	382	428	67	4482	3335		5880	382	428	67	4482	3335	4482	3335	4482	3335
180	62	143	71	4464	4220																		
33300	2426	153	103	228	292	DEC 81	100620	8204	368	239	4692	4512	DEC 80	95520	8206	818	168	11946	9882	11946	9882	11946	9882
22320	2046	175	99	7464	6547		5100	2	450	71	7254	5370		5100	2	450	71	7254	5370	7254	5370	7254	5370
10980	380	22	4	7236	6255																		
26100	2121	158	105	6164	5826	JAN 82	126720	10325	526	344	10356	10338	JAN 81	121620	10536	965	253	17711	15288	17711	15288	17711	15288
26100	2330	147	85	5765	5406		5100	211	439	91	6855	4950		5100	211	439	91	6855	4950	6855	4950	6855	4950
0	209	11	20	399	420																		
35820	2754	191	125	6164	5826	FEB 82	162540	13079	717	469	17020	16164	FEB 81	154380	13419	965	253	22193	19835	22193	19835	22193	19835
32760	2883	0	0	4482	4547		8160	340	248	216	5173	3671		8160	340	248	216	5173	3671	5173	3671	5173	3671
3060	129	191	125	1682	1279																		
32220	2514	131	88	3088	2919	MAR 82	194760	15593	848	557	20108	19083	MAR 81	182820	16120	1077	317	26675	24378	26675	24378	26675	24378
28440	2701	112	64	4482	4543		11940	527	229	240	6567	5295		11940	527	229	240	6567	5295	6567	5295	6567	5295
3780	187	19	24	1394	1624																		
32940	2670	135	90	3088	2753	APR 82	227700	18263	983	647	23196	21836	APR 81	205680	18372	1114	344	26675	24378	26675	24378	26675	24378
22860	2252	37	27	0	0		22020	109	131	303	3479	2542		22020	109	131	303	3479	2542	3479	2542	3479	2542
10080	418	98	63	3088	2753																		
26460	2190	110	75	2515	2242	MAY 82	254160	20453	1093	722	25711	24078	MAY 81	230160	20695	1218	409	26675	24378	26675	24378	26675	24378
24480	2323	104	65	0	0		24000	242	125	313	964	300		24000	242	125	313	964	300	964	300	964	300
1980	133	6	10	2515	2242																		
30240	2464	1	1	1	1	JUN 82	284400	22917	1094	723	25712	24079	JUN 81	230161	20696	1219	410	30645	28273	30645	28273	30645	28273
1	1	1	1	3970	3895		54239	2221	125	313	4933	4194		54239	2221	125	313	4933	4194	4933	4194	4933	4194
30239	2463	0	0	3969	3894																		

										KEEPING SCORE MASBO COOPERATIVE CORP									
ELECTRICITY					CURRENT MONTH					YEAR TO DATE					YEAR TO DATE				
KWH					GAS					GAS					GAS				
					OIL					OIL					OIL				

CURRENT MONTH				YEAR TO DATE				KEEPING SCORE				MARB COOPERATIVE CORP			
ELECTRICITY		GAS		OIL		ELECTRICITY		GAS		OIL		ELECTRICITY		GAS	
KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$
18064	1413	37	36	0	0	JUL 81	18064	1413	37	36	0	0	0	0	0
1144	108	0	0	0	0	JUL 80	1144	108	0	0	0	0	0	0	0
16920	1305	37	36	0	0		16920	1305	37	36	0	0	0	0	0
10264	750	38	37	0	0	AUG 81	28328	2163	75	73	0	0	0	0	0
25144	2228	84	65	0	0	AUG 80	26288	2336	84	65	0	0	0	0	0
14880	1478	46	28	0	0		2040	173	9	8	0	0	0	0	0
8704	643	83	61	0	0	SEP 81	37032	2806	158	134	0	0	0	0	0
54424	4304	70	47	0	0	SEP 80	80712	6640	154	112	0	0	0	0	0
45720	3661	13	14	0	0		43680	3834	4	22	0	0	0	0	0
23168	1925	357	231	0	0	OCT 81	60200	4731	515	365	0	0	0	0	0
30664	2393	117	76	0	0	OCT 80	111376	9033	271	188	0	0	0	0	0
7496	468	240	155	0	0		51176	4302	244	177	0	0	0	0	0
30304	2359	117	87	6254	5604	NOV 81	90504	7090	632	452	6254	5604	6254	5604	5604
29944	2367	160	99	0	0	NOV 80	141320	11400	431	287	0	0	0	0	0
360	8	43	12	6254	5604		50815	4310	201	165	6254	5604	6254	5604	5604
36184	2886	334	234	11929	11276	DEC 81	126688	9978	966	686	18183	16880	18183	16880	16880
36664	2799	246	135	22942	20123	DEC 80	177984	14199	677	422	22942	20123	22942	20123	20123
480	87	88	99	11013	8847		51296	4223	289	264	4759	3243	4759	3243	3243
32824	2671	174	122	17834	16858	JAN 82	159512	12647	1140	808	36017	33738	36017	33738	33738
38944	3367	238	146	12000	10883	JAN 81	216928	17566	915	568	34942	31006	34942	31006	31006
6120	696	64	24	5834	5975		57416	4919	225	240	1075	2732	1075	2732	2732
27544	2356	0	0	11929	11276	FEB 82	187056	15003	1140	808	47946	45014	47946	45014	45014
37864	3288	226	133	24900	24986	FEB 81	254792	20854	1141	701	59842	55992	59842	55992	55992
10320	932	226	133	12971	13710		67736	5851	1	107	11896	10978	11896	10978	10978
42904	3440	157	111	7000	6617	MAR 82	229960	18443	1297	919	54946	51631	54946	51631	51631
41944	3578	180	108	11906	12068	MAR 81	296736	24432	1321	809	71748	68060	71748	68060	68060
960	138	23	3	4906	5451		66776	5989	24	110	16802	16429	16802	16429	16429
34384	2952	82	57	6449	5749	APR 82	264344	21395	1379	976	61395	57380	61395	57380	57380
36784	3326	88	60	0	0	APR 81	333520	27758	1409	869	71748	68060	71748	68060	68060
2400	374	6	3	6449	5749		69176	6363	30	107	10353	10680	10353	10680	10680
22864	1965	111	78	3255	2902	MAY 82	287208	23360	1490	1054	64650	60282	64650	60282	60282
25984	2486	88	63	0	0	MAY 81	359504	30244	1497	932	71748	68060	71748	68060	68060
3120	521	23	15	3255	2902		72296	6884	7	122	7098	7778	7098	7778	7778
27124	2488	1	1	3076	2669	JUN 82	314332	25848	1491	1055	67726	62951	67726	62951	62951
25024	2412	56	44	11023	10813	JUN 81	384528	32656	1553	976	82771	78373	82771	78373	78373
2100	76	55	43	7947	8144		70196	6808	62	79	15045	15922	15045	15922	15922

										KEEPING SCOPE		MASS COOPERATIVE CORP	
ELECTRICITY		CURRENT MONTH		GAS		OIL		ELECTRICITY		YEAR TO DATE		OIL	
KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$	GAL	\$		
41905	3378	12	21	0	0	JUL 81	41905	3378	12	21	0	0	
61702	4427	116	63	0	0	JUL 80	61702	4427	116	63	0	0	
19797-	1049-	104-	42-	0	0		19797-	1049-	104-	42-	0	0	
60937	4954	254	153	0	0	AUG 81	110842	8332	266	174	0	0	
50034	3920	226	116	0	0	AUG 80	111736	8347	342	179	0	0	
18903	1034	28	37	0	0		894-	15-	76-	5-	0	0	
55466	4580	254	153	0	0	SEP 81	166308	12912	520	327	0	0	
66262	5489	253	129	0	0	SEP 80	177998	13836	595	308	0	0	
10796-	909-	1	24	0	0		11690-	924-	75-	19	0	0	
82518	5523	0	0	0	0	OCT 81	248826	18435	520	327	0	0	
76744	5758	461	247	0	0	OCT 80	254742	19594	1056	555	0	0	
5774	235-	461-	247-	0	0		5916-	1159-	536-	228-	0	0	
71741	5217	254	166	4482	4183	NOV 81	320567	23652	774	493	4482	4183	
84314	5269	386	209	13410	10964	NOV 80	339056	24863	1442	764	13410	10964	
12573-	52-	132-	43-	8928-	6781-		18489-	1211-	668-	271-	8928-	6781-	
68173	4240	401	253	8946	8456	DEC 81	388740	27892	1175	746	13428	12639	
82537	6506	334	179	12638	11085	DEC 80	421593	31369	1776	943	26048	22049	
14364-	2266-	67	74	3692-	2629-		32853-	3477-	601-	197-	12620-	9410-	
76263	5399	340	217	13410	12675	JAN 82	465003	33291	1515	963	26838	25314	
75369	6021	380	202	12948	11860	JAN 81	496962	37390	2156	1145	38996	33909	
894	622-	40-	15	462	815		31959-	4099-	641-	182-	12158-	8595-	
61800	4532	0	0	4464	4220	FEB 82	526803	37823	1515	963	31302	29534	
67915	5560	323	174	8450	8466	FEB 81	564877	42950	2479	1319	47446	42375	
6115-	1028-	323-	174-	3986-	4246-		38074-	5127-	964-	356-	16144-	12841-	
71692	5354	742	471	8946	8322	MAR 82	598495	43177	2257	1434	40248	37856	
70796	5864	301	163	8964	9090	MAR 81	635673	48814	2780	1482	56410	51465	
896	510-	441	308	18-	768-		37178-	5637-	523-	48-	16162-	13609-	
47341	3894	273	178	4464	3980	APR 82	645836	47071	2530	1612	44712	41836	
59088	5232	0	0	4464	4379	APR 81	694761	54046	2780	1482	60874	55844	
11747-	1338-	273	178	0	399-		48925-	6975-	250-	130	16162-	14008-	
71615	5989	513	328	2458	2191	MAY 82	717451	53060	3043	1940	47170	44027	
59915	5564	348	200	0	0	MAY 81	754676	59610	3128	1682	60874	55844	
11700	425	165	128	2458	2191		37225-	6550-	85-	258	13704-	11817-	
53588	4839	1	1	1	1	JUN 82	771039	57899	3044	1941	47171	44028	
71344	5315	1	1	1	1	JUN 81	826020	64925	3129	1683	60875	55845	
17756-	476-	0	0	0	0		54981-	7026-	85-	258	13704-	11817-	

										KEEPING SCORE		MASRO		COOPERATIVE		CORP	
ELECTRICITY				CURRENT MONTH		OIL		ELECTRICITY				YEAR TO DATE		OIL			
KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$	GAL	\$						
142200	6892	11	13	0	0	JUL 81	142200	6892	11	13	0	0					
90000	4988	12	0	0	0	JUL 80	90000	4988	12	0	0	0					
52200	1904	1-	13	0	0		52200	1904	1-	13	0	0					
57000	3397	9	13	0	0	AUG 81	199200	10289	20	26	0	0					
62400	3705	50	24	0	0	AUG 80	152400	8693	62	24	0	0					
5400-	308-	41-	11-	0	0		46800	1596	42-	2	0	0					
0	0	50	37	0	0	SEP 81	199200	10289	70	63	0	0					
86400	5788	161	85	0	0	SEP 80	238800	14481	223	109	0	0					
86400-	5788-	111-	48-	0	0		39600-	4192-	153-	46-	0	0					
70200	4307	130	79	0	0	OCT 81	269400	14596	200	142	0	0					
88800	5455	172	99	0	0	OCT 80	327600	19936	395	208	0	0					
18600-	1148-	42-	20-	0	0		58200-	5340-	195-	66-	0	0					
77400	4635	134	91	0	0	NOV 81	346800	19231	334	233	0	0					
78600	4955	155	90	9072	7438	NOV 80	406200	24891	550	298	9072	7438					
1200-	320-	21-	1	9072-	7438-		59400-	5660-	216-	65-	9072-	7438-					
85200	5207	119	81	13464	12726	DEC 81	432000	24438	453	314	13464	12726					
100020	6894	81	44	16964	14880	DEC 80	506220	31785	631	342	26036	22318					
14820-	1687-	38	37	3500-	2154-		74220-	7347-	178-	28-	12572-	9592-					
91200	5496	84	58	16486	15583	JAN 82	523200	29934	537	372	29950	28309					
94200	6645	126	73	22392	21188	JAN 81	600420	38430	757	415	48428	43506					
3000-	1149-	42-	15-	5906-	5605-		77220-	8496-	220-	43-	18478-	15197-					
72000	4623	138	92	8946	8456	FEB 82	595200	34557	675	464	38896	36765					
79200	5830	142	82	8946	9076	FEB 81	679620	44260	899	497	57374	52582					
7200-	1207-	4-	10	0	620-		84420-	9703-	224-	33-	18478-	15817-					
75000	5049	124	83	8964	8473	MAR 82	670200	39606	799	547	47860	45238					
85200	6412	143	82	9114	9242	MAR 81	764820	50672	1042	579	66488	61824					
10200-	1363-	19-	1	150-	769-		94620-	11066-	243-	32-	18628-	16586-					
58800	4156	163	108	4482	3995	APR 82	729000	43762	962	655	52342	49233					
73200	5672	120	74	4464	4379	APR 81	838020	56344	1162	653	70952	66203					
14400-	1516-	43	34	18	384-		109020-	12582-	200-	2	18610-	16970-					
52200	3873	76	53	0	0	MAY 82	781200	47635	1038	708	52342	49233					
89400	6999	132	80	0	0	MAY 81	927420	63343	1294	733	70952	66203					
37200-	3126-	56-	27-	0	0		146220-	15708-	256-	25-	18610-	16970-					
49800	3822	28	24	4429	3943	JUN 82	831000	51457	1066	732	56771	53076					
102000	5574	132	80	9804	9617	JUN 81	1029420	68517	1426	813	80756	75820					
52200-	1752-	104-	56-	5375-	5774-		198420-	17460-	360-	81-	23985-	22744-					

CURRENT MONTH						KEEPING SCORE						MASRC		COOPERATIVE		CORP	
ELECTRICITY		GAS		OIL		YEAR TO DATE		GAS		OIL		GAS		OIL		GAS	
KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$	GAL	\$	CCF	\$	GAL	\$	CCF	\$
1380	161	55	37	0	0	JUL 81	1380	161	55	37	0	0	0	0	0	0	0
1740	213	41	28	0	0	JUL 80	1740	213	41	28	0	0	0	0	0	0	0
360	52	14	9	0	0		360	52	14	9	0	0	0	0	0	0	0
0	0	106	71	0	0	AUG 81	1380	161	161	108	0	0	0	0	0	0	0
0	0	0	0	0	0	AUG 80	0	0	0	0	0	0	0	0	0	0	0
0	0	106	71	0	0		1380	161	161	108	0	0	0	0	0	0	0
0	0	0	0	0	0	SEP 81	0	0	0	0	0	0	0	0	0	0	0
5100	516	86	54	0	0	SEP 80	6840	729	127	82	0	0	0	0	0	0	0
5100	516	86	54	0	0		6840	729	127	82	0	0	0	0	0	0	0
0	7	0	0	0	0	OCT 81	1380	161	161	108	0	0	0	0	0	0	0
5400	470	71	40	0	0	OCT 80	12240	1199	198	122	0	0	0	0	0	0	0
5400	463	71	40	0	0		10860	1031	37	14	0	0	0	0	0	0	0
8640	1061	141	107	0	0	NOV 81	10020	1229	302	215	0	0	0	0	0	0	0
5940	507	106	63	3026	2474	NOV 80	18180	1706	304	185	3026	2474	3026	2474	3026	2474	2474
2700	554	35	44	3026	2474		8160	477	2	30	3026	2474	3026	2474	3026	2474	2474
3840	360	149	103	6093	5759	DEC 81	13860	1589	451	318	6093	5759	6093	5759	6093	5759	5759
0	0	0	0	2976	2610	DEC 80	18180	1706	304	185	6002	5084	6002	5084	6002	5084	5084
3840	360	149	103	3117	3149		4320	117	147	133	91	675	91	675	91	675	675
5700	531	193	133	4085	5752	JAN 82	19560	2120	644	451	12178	11511	12178	11511	12178	11511	11511
5700	649	290	166	8741	8009	JAN 81	23880	2355	594	351	14743	13093	14743	13093	14743	13093	13093
0	118	97	33	2656	2257		4320	235	50	100	2565	1582	2565	1582	2565	1582	1582
1020	109	37	27	2976	2813	FEB 82	20580	2229	681	478	15154	14324	15154	14324	15154	14324	14324
8400	746	123	72	3089	3133	FEB 81	32280	3101	717	423	17832	16226	17832	16226	17832	16226	16226
7380	637	86	45	113	320		11700	872	36	55	2678	1902	2678	1902	2678	1902	1902
0	0	0	0	2988	2824	MAR 82	20580	2229	681	478	18142	17148	18142	17148	18142	17148	17148
5520	533	106	63	4446	4506	MAR 81	37800	3634	823	486	22278	20732	22278	20732	22278	20732	20732
5520	533	106	63	1458	1882		17220	1405	142	8	4136	3584	4136	3584	4136	3584	3584
0	0	134	98	0	0	APR 82	20580	2229	815	576	18142	17148	18142	17148	18142	17148	17148
4620	486	69	43	0	0	APR 81	42420	4120	892	529	22278	20732	22278	20732	22278	20732	20732
4620	486	65	55	0	0		21840	1891	77	47	4136	3584	4136	3584	4136	3584	3584
7560	707	0	0	4429	3948	MAY 82	28140	2536	815	576	22571	21096	22571	21096	22571	21096	21096
4620	489	56	38	0	0	MAY 81	47040	4609	948	567	22278	20732	22278	20732	22278	20732	20732
2940	218	56	38	4429	3948		18900	1672	133	9	293	364	293	364	293	364	364
3240	302	8	11	1	1	JUN 82	31380	3238	823	587	22572	21097	22572	21097	22572	21097	21097
1	1	1	1	2000	1962	JUN 81	47041	4610	949	568	24278	22694	24278	22694	24278	22694	22694
3239	301	7	10	1999	1961		15661	1372	126	19	1706	1597	1706	1597	1706	1597	1597

CURRENT MONTH						YEAR TO DATE						MASSCO		COOPERATIVE		CORP	
ELECTRICITY		GAS		OIL		ELECTRICITY		GAS		OIL							
KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$	GAL	\$						
6840	573	53	36	0	0	JUL 81	6840	573	53	36	0	0					
0	0	42	26	0	0	JUL 80	0	0	42	26	0	0					
6840	573	11	10	0	0		6840	573	11	10	0	0					
5220	423	40	29	0	0	AUG 81	12060	996	93	65	0	0					
0	0	0	0	0	0	AUG 80	0	0	0	0	0	0					
5220	423	40	29	0	0		12060	996	93	65	0	0					
7320	658	0	0	0	0	SEP 81	19380	1654	93	65	0	0					
23640	2089	83	52	249	222	SEP 80	23640	2089	125	78	249	222					
16320	1431	83	52	249	222		4260	435	32	13	249	222					
14880	1146	56	37	3179	2998	OCT 81	34260	2800	149	102	3179	2998					
16380	1276	53	32	2706	2112	OCT 80	40020	3365	178	110	2955	2334					
1500	130	3	5	473	886		5760	565	29	8	224	664					
16500	1265	61	45	6315	5920	NOV 81	50760	4065	210	147	9494	8918					
18120	1395	68	43	6379	5243	NOV 80	58140	4760	246	153	9334	7577					
1620	130	7	2	64	677		7380	695	36	6	160	1341					
15720	1220	70	50	9161	8679	DEC 81	66480	5285	280	197	18655	17597					
16140	1281	64	40	12466	10946	DEC 80	74280	6041	310	193	21800	18523					
420	61	6	10	3305	2267		7800	756	30	4	3145	926					
26700	1771	0	0	12480	11826	JAN 82	93180	7056	280	197	31135	29423					
23040	2069	103	64	12388	11405	JAN 81	97320	8110	413	257	34188	29928					
3660	298	103	64	92	421		4140	1054	133	60	3053	505					
0	0	123	89	15426	14614	FEB 82	93180	7056	403	286	46561	44037					
7200	650	31	20	9507	9590	FEB 81	104520	8760	444	277	43695	39518					
7200	650	92	69	5919	5024		11340	1704	41	9	2866	4519					
23040	1876	104	74	6184	5763	MAR 82	116220	8932	507	360	52745	49800					
14460	1296	63	40	5820	5924	MAR 81	118980	10056	507	317	49515	45442					
8580	580	41	34	364	161		2760	1124	0	43	3230	4358					
7680	640	33	24	6158	5502	APR 82	123900	9572	540	384	58903	55302					
15000	1396	63	40	6759	6753	APR 81	133980	11452	570	357	56274	52195					
7320	754	30	16	601	1251		10080	1880	30	27	2629	3107					
12660	1081	64	46	93	97	MAY 82	136560	10653	604	430	58996	55399					
0	0	0	0	211	234	MAY 81	133980	11452	570	357	56485	52429					
12660	1081	64	46	118	137		2580	799	34	73	2511	2970					
13140	1132	56	42	256	274	JUN 82	149700	11785	660	472	59252	55673					
25680	2453	107	72	1501	1472	JUN 81	159660	13905	677	429	57986	53901					
12540	1321	51	30	1245	1198		9960	2120	17	43	1266	1772					

										KEEPING SCORE		MASBO	COOPERATIVE	CORP
CURRENT MONTH					YEAR TO DATE									
ELECTRICITY		GAS		OIL	ELECTRICITY		GAS		OIL					
KWH	\$	CCF	\$	GAL	KWH	\$	CCF	\$	GAL					
7680	570	294	170	0	0	JUL 81	7680	570	294	170	0	0		
8520	744	136	72	0	0	JUL 80	8520	744	136	72	0	0		
840-	174-	158	98	0	0		840-	174-	158	98	0	0		
6360	609	278	164	0	0	AUG 81	14040	1179	572	334	0	0		
6960	502	114	63	0	0	AUG 80	15480	1246	250	135	0	0		
600-	107	164	101	0	0		1440-	67-	322	199	0	0		
13560	1163	337	198	0	0	SEP 81	27600	2342	909	532	0	0		
8160	705	121	66	0	0	SEP 80	23640	1951	371	201	0	0		
5400	458	216	132	0	0		3960	391	538	331	0	0		
13560	1163	386	217	2939	2743	OCT 81	41160	3505	1295	749	2939	2743		
15960	1319	224	116	0	0	OCT 80	39600	3270	595	317	0	0		
2400-	156-	162	101	2939	2743		1560	235	700	432	2939	2743		
22080	1681	470	294	4464	4167	NOV 81	63240	5186	1765	1043	7403	6910		
24000	1874	319	175	4582	3746	NOV 80	63600	5144	914	492	4582	3746		
1920-	193-	151	119	118-	421		360-	42	851	551	2821	3164		
43800-	3505	993	609	4500	4253	DEC 81	107040	8691	2758	1652	11903	11163		
24600	1883	350	190	4464	7424	DEC 80	88200	7027	1264	682	13046	11170		
19200	1622	643	419	3964-	3171-		18840	1664	1494	970	1143-	7-		
33960	2474	0	0	13410	12676	JAN 82	141000	11165	2758	1652	25313	23839		
25200	2143	391	207	7576	6828	JAN 81	113400	9170	1655	889	20622	17998		
8760	331	391-	207-	5834	5848		27600	1995	1103	763	4691	5841		
0	0	594	361	4464	4220	FEB 82	141000	11165	3352	2013	29777	28059		
25320	2182	509	266	8927	8952	FEB 81	138720	11352	2164	1155	29549	26950		
25320-	2182-	85	95	4463-	4732-		2280	187-	1188	858	228	1109		
25440	1930	521	319	8946	8322	MAR 82	166440	13095	3873	2332	38723	36381		
36960	3451	772	410	8946	9067	MAR 81	175680	14803	2936	1565	38495	36017		
11520-	1521-	251-	91-	0	745-		9240-	1708-	937	767	228	364		
0	0	488	299	0	0	APR 82	166440	13095	4361	2631	38723	36381		
18240	1874	210	124	0	0	APR 81	193920	16677	3146	1689	38495	36017		
18240-	1874-	278	175	0	0		27480-	3582-	1215	942	228	364		
39600	3507	0	0	4453	3970	MAY 82	206040	16602	4361	2631	43176	40351		
11040	1153	0	0	0	0	MAY 81	204960	17830	3146	1689	38495	36017		
28560	2354	0	0	4453	3970		1080	1228-	1215	942	4681	4334		
16920	1456	398	188	1	1	JUN 82	222960	18058	4759	2819	43177	40352		
6600	591	1	1	2401	2355	JUN 81	211560	18421	3147	1690	40896	38372		
10320	865	397	187	2400-	2354-		11400	363-	1612	1129	2281	1980		

										KEEPING SCORE		NASRC		COOPERATIVE		CORP	
										YEAR TO DATE							
ELECTRICITY		GAS		OIL		ELECTRICITY		GAS		OIL							
KWH	\$	CCF	\$	GAL	\$	KWH	\$	CCF	\$	GAL	\$						
0	0	0	0	0	0	AUG 81	0	0	0	0	0			0		0	
0	0	48	62	0	0	AUG 80	0	48	62	0	0			0		0	
0	0	48	62	0	0		0	48	62	0	0			0		0	
76080	5982	56	85	0	0	SEP 81	76080	5982	56	85	0			0		0	
23040	1730	5	8	0	0	SEP 80	23040	1730	53	70	0			0		0	
53040	4252	51	77	0	0		53040	4252	3	15	0			0		0	
37560	2783	26	27	0	0	OCT 81	113640	8765	82	112	0			0		0	
36840	2774	32	27	5638	4271	OCT 80	59880	4504	85	97	5638			4271		4271	
720	9	6	0	5638	4271		53760	4261	3	15	5638			4271		4271	
40800	3000	0	0	2926	2731	NOV 81	154440	11765	82	112	2926			2731		2731	
38280	2888	51	39	6114	4999	NOV 80	98160	7392	136	136	11752			9270		9270	
2520	112	51	39	3188	2268		56280	4373	54	24	8826			6539		6539	
0	0	0	0	6088	5755	DEC 81	154440	11765	82	112	9014			8486		8486	
36000	2665	0	0	9102	7984	DEC 80	134160	10057	136	136	20854			17254		17254	
36000	2665	0	0	3014	2229		20280	1708	54	24	11840			8768		8768	
81000	6242	80	67	12328	11653	JAN 82	235440	18007	162	179	21342			20139		20139	
39480	3270	147	101	12165	11202	JAN 81	173640	13327	283	237	33019			28456		28456	
41520	2972	67	34	163	451		61800	4680	121	58	11677			8317		8317	
41160	3097	0	0	6152	5815	FEB 82	276600	21104	162	179	27494			25954		25954	
36600	3153	63	46	6126	6142	FEB 81	210240	16480	346	283	39145			34598		34598	
4560	56	63	46	26	327		66360	4624	184	104	11651			8644		8644	
36840	2808	52	61	6164	5826	MAR 82	313440	23912	214	240	33658			31780		31780	
36480	3084	62	45	10128	10268	MAR 81	246720	19564	408	328	49273			44866		44866	
360	276	10	16	3964	4442		66720	4348	194	88	15615			13086		13086	
27960	2352	12	22	3088	2753	APR 82	341400	26264	226	262	36746			34533		34533	
30480	2782	37	31	3076	3017	APR 81	277200	22346	445	359	52349			47883		47883	
2520	430	25	9	12	264		64200	3918	219	97	15603			13350		13350	
35640	2865	5	19	2499	2228	MAY 82	377040	29129	231	281	39245			36761		36761	
31800	2900	26	28	3076	3017	MAY 81	309000	25246	471	387	55425			50900		50900	
3840	35	21	9	577	789		68040	3883	240	106	16180			14139		14139	
32040	2569	1	15	1	1	JUN 82	409080	31698	232	296	39246			36762		36762	
1	1	1	1	1481	1453	JUN 81	309001	25247	472	388	56906			52353		52353	
32039	2568	0	14	1480	1452		100079	6451	240	92	17660			15591		15591	

										KEEPING SCOPE										MASBO COOPERATIVE CORP														
ELECTRICITY					CURRENT MONTH					YEAR TO DATE					ELECTRICITY					YEAR TO DATE					ELECTRICITY									
KWH					GAS					GAS					KWH					GAS					KWH									
					CCF					GAL										CCF										GAL				

										KEEPING SCORE		MASBO		COOPERATIVE		CORP							
ELECTRICITY				CURRENT MONTH								YEAR TO DATE											
KWH		1		GAS		1		OIL		1		KWH		1		GAS		1		OIL		1	
				CCF				GAL								CCF				GAL			
58964	4020	6	10	0	0	JUL	81	58964	4020	6	10	0	0							0	0	0	0
1589	129	9	10	0	0	JUL	80	1589	129	9	10	0	0							0	0	0	0
57375	3891	3	0	0	0			57375	3891	3	0	0	0							0	0	0	0
60089	4139	12	13	0	0	AUG	81	119053	8159	18	23	0	0							0	0	0	0
68839	5349	10	10	0	0	AUG	80	68428	5478	19	20	0	0							0	0	0	0
6750	1210	2	3	0	0			50625	2681	1	3	0	0							0	0	0	0
54464	4136	11	20	0	0	SEP	81	173517	12295	29	43	0	0							0	0	0	0
67964	5297	17	14	0	0	SEP	80	136392	10775	36	34	0	0							0	0	0	0
13500	1161	6	6	0	0			37125	1520	7	9	0	0							0	0	0	0
125339	8808	7	11	0	0	OCT	81	298856	21103	36	54	0	0							0	0	0	0
116339	8729	7	10	0	0	OCT	80	252731	19504	43	44	0	0							0	0	0	0
9000	79	0	1	0	0			46125	1599	7	10	0	0							0	0	0	0
205214	13369	0	0	0	0	NOV	81	504070	34472	36	54	0	0							0	0	0	0
232214	15571	8	10	0	0	NOV	80	484945	35075	51	54	0	0							0	0	0	0
27000	2202	8	10	0	0			19125	603	15	0	0	0							0	0	0	0
265964	17323	7	10	0	0	DEC	81	770034	51795	43	64	0	0							0	0	0	0
369464	26724	6	10	0	0	DEC	80	854409	61799	57	64	0	0							0	0	0	0
103500	9401	1	0	0	0			84375	10004	14	0	0	0							0	0	0	0
319964	20567	9	12	0	0	JAN	82	1089998	72362	52	76	0	0							0	0	0	0
318839	23792	7	10	0	0	JAN	81	1173248	85591	64	74	0	0							0	0	0	0
1125	3225	2	2	0	0			83250	13229	12	2	0	0							0	0	0	0
267089	17342	7	11	0	0	FEB	82	1357087	89704	59	87	0	0							0	0	0	0
267089	20344	15	14	0	0	FEB	81	1440337	105935	79	88	0	0							0	0	0	0
0	3002	8	3	0	0			83250	16231	20	1	0	0							0	0	0	0
219839	15735	8	11	0	0	MAR	82	1576926	105439	67	98	0	0							0	0	0	0
213089	17259	10	11	0	0	MAR	81	1653426	123194	89	99	0	0							0	0	0	0
6750	1524	2	0	0	0			76500	17755	22	1	0	0							0	0	0	0
159089	12339	11	13	0	0	APR	82	1736015	117778	78	111	0	0							0	0	0	0
116339	10434	8	11	0	0	APR	81	1769765	133628	97	110	0	0							0	0	0	0
42750	1905	3	2	0	0			33750	15850	19	1	0	0							0	0	0	0
82589	6439	9	12	0	0	MAY	82	1818604	124217	87	123	0	0							0	0	0	0
81464	7485	9	11	0	0	MAY	81	1851229	141113	106	121	0	0							0	0	0	0
1125	1046	0	1	0	0			32625	16896	19	2	0	0							0	0	0	0
62339	5022	1	1	0	0	JUN	82	1880943	129239	88	124	0	0							0	0	0	0
83714	5694	6	10	0	0	JUN	81	1934943	146807	112	131	0	0							0	0	0	0
21375	672	5	9	0	0			54000	17568	24	7	0	0							0	0	0	0

				KEEPING SCORE				MASRC COOPERATIVE				CORP			
ELECTRICITY				YEAR TO DATE				OIL							
KWH				GAS				GAL							
CURRENT MONTH				CURRENT MONTH				CURRENT MONTH				CURRENT MONTH			
GAS				GAS				OIL				OIL			
CCF				CCF				GAL				GAL			
\$				\$				\$				\$			
8480	828	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3010	215	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5470	613	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	18	2	18	0	0	0	0	0	0	0	0	0	0
430	43	2	18	2	18	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8240	768	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8240	768	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29700	2022	4	35	4	35	0	0	0	0	0	0	0	0	0	0
15360	1301	11	20	11	20	0	0	0	0	0	0	0	0	0	0
14340	721	7	15	7	15	0	0	0	0	0	0	0	0	0	0
13560	1058	8	11	8	11	2976	2778	NOV 81	52170	3951	12	46	2976	2778	
4870	306	2	5	2	5	8306	5040	NOV 80	31480	2590	15	43	8306	5040	
8690	752	6	6	6	6	5330	2262		20690	1361	3	3	5330	2262	
34180	2405	5	0	5	0	3076	2908	DEC 81	86350	6356	17	46	6052	5686	
9930	749	8	10	8	10	6052	5308	DEC 80	41410	3339	23	53	14358	10348	
24250	1656	3	10	3	10	2976	2400		44940	3017	6	7	8306	4662	
22880	1863	10	12	10	12	9155	8654	JAN 82	109230	8219	27	58	15207	14340	
7660	753	21	17	21	17	12142	11175	JAN 81	49070	4092	44	70	26500	21523	
15220	1110	11	5	11	5	2987	2521		60160	4127	17	12	11293	7183	
23580	1911	22	20	22	20	6115	5780	FEB 82	132810	10130	49	78	21322	20120	
9670	794	27	20	27	20	6164	6180	FEB 81	58740	4886	71	90	32664	27703	
13910	1117	5	0	5	0	49	400		74070	5244	22	12	11342	7583	
12370	1015	20	18	20	18	6064	5732	MAR 82	145180	11145	69	96	27386	25852	
9340	884	15	14	15	14	8682	8803	MAR 81	68080	5770	86	104	41346	36506	
3030	131	5	4	5	4	2618	3071		77100	5375	17	8	13960	10654	
1060	106	18	17	18	17	3088	2753	APR 82	146240	11251	87	113	30474	28605	
10030	986	9	11	9	11	0	0	APR 81	78110	5756	95	115	41346	36506	
8970	880	9	6	9	6	3088	2753		68130	4495	8	2	10872	7901	
12810	1087	10	12	10	12	0	0	MAY 82	159050	12338	97	125	30474	28605	
7800	775	5	10	5	10	0	0	MAY 81	85910	7531	100	125	41346	36506	
5010	312	5	2	5	2	0	0		73140	4807	3	0	10872	7901	
450	49	8	16	8	16	1	1	JUN 82	159500	12387	105	141	30475	28606	
440	52	1	1	1	1	2300	2256	JUN 81	86350	7543	101	126	43646	38762	
10	3	7	15	7	15	2299	2255		73150	4804	4	15	13171	10156	

										KEEPING SCORE		MASBO		COOPERATIVE		CORP			
ELECTRICITY				CURRENT MONTH				YEAR TO DATE				OIL							
KWH		\$		GAS		\$		GAL		\$		GAS		\$		GAL		\$	
0	0	25	21	0	0	JUL 81	0	0	0	25	21	0	0	0	0	0	0	0	0
0	0	21	17	0	0	JUL 80	0	0	0	21	17	0	0	0	0	0	0	0	0
0	0	4	4	0	0		0	0	0	4	4	0	0	0	0	0	0	0	0
6930	752	26	22	0	0	AUG 81	6930	752	51	43	0	0	0	0	0	0	0	0	0
8280	778	40	25	0	0	AUG 80	8280	778	61	42	0	0	0	0	0	0	0	0	0
1350-	26-	14-	3-	0	0		1350-	26-	10-	1	0	0	0	0	0	0	0	0	0
2850	308	0	0	0	0	SEP 81	9780	1060	51	43	0	0	0	0	0	0	0	0	0
6730	606	102	56	0	0	SEP 80	15010	1384	163	98	0	0	0	0	0	0	0	0	0
3880-	298-	102-	56-	0	0		5230-	324-	112-	55-	0	0	0	0	0	0	0	0	0
6830	600	102	63	908	1004	OCT 81	16610	1660	153	106	908	1004	0	0	0	0	0	0	0
0	0	102	61	0	0	OCT 80	15010	1384	265	159	0	0	0	0	0	0	0	0	0
6830	600	0	2	908	1004		1600	276	112-	53-	908	1004	0	0	0	0	0	0	0
14960	1299	0	0	0	0	NOV 81	31570	2959	153	106	908	1004	0	0	0	0	0	0	0
21170	1702	102	61	809	729	NOV 80	36180	3086	367	220	809	729	0	0	0	0	0	0	0
6210-	403-	102-	61-	809-	729-		4610-	127-	214-	114-	99	275	0	0	0	0	0	0	0
0	0	0	0	3792	4260	DEC 81	31570	2959	153	106	4700	5264	0	0	0	0	0	0	0
12710	1114	61	38	2727	2533	DEC 80	48890	4200	428	258	3536	3262	0	0	0	0	0	0	0
12710-	1114-	61-	38-	1065	1727		17320-	1241-	275-	152-	1164	2002	0	0	0	0	0	0	0
0	0	0	0	2713	3055	JAN 82	31570	2959	153	106	7413	8319	0	0	0	0	0	0	0
0	0	83	50	3785	3676	JAN 81	48890	4200	511	308	7321	6938	0	0	0	0	0	0	0
0	0	83-	50-	1072-	621-		17320-	1241-	358-	202-	92	1381	0	0	0	0	0	0	0
19590	1580	95	65	2926	3276	FEB 82	51160	4539	248	171	10339	11595	0	0	0	0	0	0	0
19390	1622	101	55	3217	3460	FEB 81	68280	5822	612	363	10538	10398	0	0	0	0	0	0	0
200	42-	6-	10	291-	184-		17120-	1283-	364-	192-	199-	1197	0	0	0	0	0	0	0
13980	1143	92	63	1195	1293	MAR 82	65140	5682	340	234	11534	12888	0	0	0	0	0	0	0
7280	722	138	80	1302	1460	MAR 81	75560	6544	750	443	11840	11858	0	0	0	0	0	0	0
6700	421	46-	17-	107-	167-		10420-	862-	410-	209-	306-	1030	0	0	0	0	0	0	0
4870	415	0	0	1714	1747	APR 82	70010	6097	340	234	13248	14635	0	0	0	0	0	0	0
5910	625	86	54	0	0	APR 81	81470	7169	836	497	11840	11858	0	0	0	0	0	0	0
1040-	210-	86-	54-	1714	1747		11460-	1072-	496-	263-	1408	2777	0	0	0	0	0	0	0
7010	644	83	58	0	0	MAY 82	77020	6741	423	292	13248	14635	0	0	0	0	0	0	0
7320	763	89	56	0	0	MAY 81	88790	7932	925	553	11840	11858	0	0	0	0	0	0	0
310-	119-	6-	2	0	0		11770-	1191-	502-	261-	1408	2777	0	0	0	0	0	0	0
7800	705	101	71	1	1	JUN 82	84820	7446	524	363	13249	14636	0	0	0	0	0	0	0
1	1	1	1	1	1	JUN 81	88791	7933	926	554	11841	11859	0	0	0	0	0	0	0
7799	704	100	70	0	0		3971-	487-	402-	191-	1408	2777	0	0	0	0	0	0	0

ENERGY USAGE SUMMARY BY FUEL TYPE
CURRENT AND YEAR TO DATE BY MONTH

06/30/82

PAGE 16

						KEEPING SCORE		MASRC COOPERATIVE CORP				
ELECTRICITY		CURRENT MONTH		OIL		ELECTRICITY		YEAR TO DATE		OIL		
KWH	1	CCF GAS	1	GAL	1	KWH	1	CCF GAS	1	GAL	1	
393000	23315	179	107	4482	4023	JUL 81	393000	23315	179	107	4482	4023
130	0	147	78	0	0	JUL 80	130	0	147	78	0	0
392870	23315	32	29	4482	4023		392870	23315	32	29	4482	4023
340500	19507	162	97	0	0	AUG 81	733500	42822	341	204	4482	4023
831146	46637	184	96	0	0	AUG 80	831276	46637	331	174	0	0
490646	27130	22	1	0	0		97776	3815	10	30	4482	4023
346500	20102	0	0	4464	4060	SEP 81	1080000	62924	341	204	8946	8083
150161	9405	357	176	4464	3322	SEP 80	981437	56042	688	350	4464	3322
196339	10697	357	176	0	738		98563	6882	347	146	4482	4761
714187	48966	340	192	17857	16560	OCT 81	1794187	111890	681	396	26803	24643
468187	31433	395	213	23026	17550	OCT 80	1449624	87475	1083	563	27490	20872
246000	17533	55	21	5169	990		344563	24415	402	167	687	3771
198	19	472	304	19029	17814	NOV 81	1794385	111909	1153	700	45832	42457
480198	30941	327	178	31734	25946	NOV 80	1929822	118416	1410	741	59224	46818
480000	30922	145	126	12705	8132		135437	6507	257	41	13392	4361
573214	36982	498	129	42113	39806	DEC 81	2367599	148891	1651	829	87945	82263
397714	26038	1296	644	48917	42907	DEC 80	2327536	144454	2706	1385	108141	89725
175500	10944	798	515	6804	3101		40063	4437	1055	556	20196	7462
454709	29867	4351	278	49174	46482	JAN 82	2822308	178758	6002	1107	137119	128745
403709	30428	1296	644	50069	46132	JAN 81	2731245	174882	4002	2029	158210	135857
51000	561	3055	366	895	350		91063	3876	2000	922	21091	7112
508500	33064	321	202	35696	33741	FEB 82	3330808	211822	6323	1309	172815	162486
442678	33012	642	346	35837	36040	FEB 81	3173923	207894	4644	2375	194047	171897
65822	52	321	144	141	2299		156885	3928	1679	1066	21232	9411
456178	29889	377	234	30557	28519	MAR 82	3786986	241711	6700	1543	203372	191005
424674	31711	0	0	31338	31772	MAR 81	3598597	239605	4644	2375	225385	203669
31504	1822	377	234	781	3253		188389	2106	2056	832	22013	12664
457822	31629	483	307	22356	19929	APR 82	4244808	273340	7183	1850	225728	210934
451648	34784	0	0	13410	13300	APR 81	4050245	274389	4644	2375	238795	216969
6174	3155	483	307	8946	6629		194563	1049	2539	525	13067	6035
411735	28928	353	220	8858	7896	MAY 82	4656543	302268	7536	2070	234586	218830
411135	32494	0	0	8946	8776	MAY 81	4461380	306883	4644	2375	247741	225745
600	3566	353	220	88	880		195163	4615	2892	305	13155	6915
382622	28541	303	199	4429	3843	JUN 82	5039165	330809	7839	2269	239015	222673
438122	35345	179	107	3500	3433	JUN 81	4899502	342228	4823	2482	251241	229178
55500	6804	124	92	929	410		139663	11419	3016	213	12226	6505

										KEEPING SCORE										MASHO COOPERATIVE CORP									
CURRENT MONTH										YEAR TO DATE																			
ELECTRICITY					GAS					OIL					ELECTRICITY					GAS					OIL				
KWH					CCF					GAL					KWH					CCF					GAL				
220	24				0	0				0	0				220	24				0	0			0	0				
0	0				0	0				0	0				0	0				0	0			0	0				
220	24				0	0				0	0				220	24				0	0			0	0				
220	24				0	0				0	0				440	48				0	0			0	0				
0	0				0	0				0	0				0	0				0	0			0	0				
220	24				0	0				0	0				440	48				0	0			0	0				
730	127				0	0				0	0				1170	175				0	0			0	0				
710	109				0	0				0	0				710	109				0	0			0	0				
20	18				0	0				0	0				460	66				0	0			0	0				
1660	139				0	0				0	0				2830	214				0	0			0	0				
1340	174				0	0				0	0				2050	283				0	0			0	0				
320	35				0	0				0	0				780	31				0	0			0	0				
1520	201				0	0				0	0				4350	515				0	0			0	0				
2680	265				0	0				0	0				4730	548				0	0			0	0				
1160	64				0	0				0	0				380	33				0	0			0	0				
2570	9				0	0				0	0				6920	524				0	0			0	0				
3420	331				0	0				0	0				8150	879				0	0			0	0				
850	322				0	0				0	0				1230	355				0	0			0	0				
3400	285				0	0				0	0				10320	809				0	0			0	0				
4260	394				0	0				0	0				12410	1273				0	0			0	0				
860	109				0	0				0	0				2090	464				0	0			0	0				
2830	252				0	0				0	0				13150	1061				0	0			0	0				
2370	248				0	0				0	0				14760	1521				0	0			0	0				
460	4				0	0				0	0				1630	460				0	0			0	0				
2730	271				0	0				0	0				15880	1332				0	0			0	0				
2370	248				0	0				0	0				17150	1769				0	0			0	0				
360	23				0	0				0	0				1270	437				0	0			0	0				
2160	222				0	0				0	0				18040	1554				0	0			0	0				
2280	261				0	0				0	0				19430	2030				0	0			0	0				
120	39				0	0				0	0				1390	476				0	0			0	0				
840	113				0	0				0	0				18880	1667				0	0			0	0				
1370	176				0	0				0	0				20800	2206				0	0			0	0				
530	63				0	0				0	0				1920	539				0	0			0	0				
490	79				151	104				0	0				19370	1746				151	104			0	0				
510	75				0	0				0	0				21310	2281				0	0			0	0				
20	4				151	104				0	0				1940	535				151	104			0	0				

										KEEPING SCORE		MASBO	COOPERATIVE	CORP
ELECTRICITY					CURRENT MONTH					YEAR TO DATE				
KWH					GAS					GAS				

ATTACHMENT #2

CAMBRIDGE HOUSING AUTHORITY



RECEIVED
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CAMBRIDGE
MASSACHUSETTS
02139
(617) 864-3020

CAMBRIDGE COMMUNITY
DEVELOPMENT DEPARTMENT
November 22, 1982

Councillor Francis Duehay
Cambridge City Council
City Hall
Cambridge, MA 02139

Dear Councillor Duehay,

I would like to thank you and the members of the Environment and Energy Committee for the opportunity to discuss the Cambridge Housing Authority's energy conservation activities. I appreciated the chance to share this information with you, and to hear of the work of other agencies throughout the City.

As you requested at that hearing, we have prepared a report on the energy conservation improvements that remain for the future. I hope the enclosed document proves useful in your planning efforts.

Thank you again for hosting an informative session on energy in Cambridge.

Sincerely,

Frederic P. Putnam
Director
Office of Planning
and Development

FPP/tr

enc.

cc: Richard Fahlander

Cambridge Housing Authority Energy Conservation Planning Overview

The Cambridge Housing Authority is committed to a long-term program of energy conservation in its 24 developments. Approximately \$4 million has been invested to this end, over the past five years. Moreover, careful attention is paid to energy-efficient system design in all new developments. The results have been encouraging - energy consumption at CHA developments has been falling steadily, making Cambridge one of the most energy-efficient large housing authorities in the nation.

Despite this serious attention to energy conservation, there remains a good deal of work to be done to further reduce consumption. Some of this work is already underway or planned, while some remains for future efforts. Currently the Authority is involved in the following projects:

1. Substantial rehabilitation of Washington Elms and Jefferson Park, to include new, energy-efficient heating systems. This will involve installation of modular, hydrotherm boilers, with water temperature in inverse proportion to the outdoor temperature. Moreover, some valves are controlled at the individual unit level, by thermostats which have an upper limit.
2. Adaptive rehabilitation of the Putnam School, with a similar heating system to the one described above.
3. Construction of a new elderly housing development, built to extremely tight thermal standards. Here the Authority will pioneer a recently-developed boiler system which captures the exhaust heat so as to increase vastly the combustion efficiency of the unit.
4. Conversion of the Newtowne Court heating system from purchased steam to forced hot water, with a boiler in each building. The boilers will be new, efficient models with state-of-the-art controls.
5. Purchase of computerized energy management system for the Manning Apartments. A subsequent evaluation of this approach to energy conservation will assist the Authority in deciding whether to add other developments to the system. In addition, CHA is embarking on an evaluation of methods to reduce electric heating costs in Manning, and plans to pursue cost-effective measures.
6. Installation of attic insulation and storm windows at Lincoln Way.

With these projects demanding such a large share of the Authority staff's time, several other energy conservation opportunities remain to be addressed. On a broader scale, manager and tenant education represents a serious gap in our efforts at all our developments. Such an education program will require a great deal of creative thought by the Authority, since the traditional incentives motivating tenants and landlords in the private sector are absent in the case of public housing.

The complexity of this issue demands serious attention, both due to the difficulty of finding solutions and the centrality of the actors' co-operation to the success of the conservation program. On a more specific level, the precise configuration of measures varies among developments. A detailed audit has been completed on each of the 13 federally-sponsored developments, making the cataloging of remaining improvements possible. For the state-aided developments, however, the information available at this time is more limited. Therefore, the following is a "wish list" of energy conservation improvements.

1. Corcoran Park. In this 152-unit, family development, the CHA has improved the exterior walls through installation of siding, thereby reducing the heat loss factor of the development. Future work should include adjustments to the hot water reset controller and the domestic hot water setpoint, replacement of shower heads and faucets with water-saving fixtures, and the addition of insulation to the basement, attic, and crawl space. Moreover, the boilers are approaching the end of their useful lives and will have to be replaced as they go.
2. Putnam Gardens. This development, having families in its 123 units, has seen significant energy conservation investment. The Authority has reroofed one of the building with the new roof having a great deal of insulation; the underground heat lines have been replaced with well-insulated ones; the windows have been replaced with double-paned ones; the burner has been replaced; and heat control valves and a condensate return tank have been added. The following improvements remain for the future: reroofing of the 2 other buildings, replacement of shower-head and faucets with water-saving fixtures, insulation of basement, exterior walls, and vertical and horizontal building heating pipes; and relamping to reduce wattages.
3. John F. Kennedy. Kennedy, less than twenty years old, houses the elderly in 88 units. The building envelope is relatively tight, so improvements will focus on the heating system. For instance, the existing oil burners will be replaced with newer, efficient models; the thermostats should be moved and a hot water reset controller added to provide each zone with separate control; and radiator valves need to be replaced.
4. Newtowne Court. A 294-unit, family development, Newtowne Court is to receive major investments to reduce energy expenditures. The domestic hot water piping has been replaced and insulated, reroofing in three of the six buildings has been done, and an entirely new heating plant will be built. After this highly efficient system is in place, building envelope improvements will be next, including basement insulation, caulking and weatherstripping of doors and windows, replacement of faucets, and reroofing at the remaining three buildings.
5. Harry S. Truman. This elderly development of 67 units was built in 1970 and is in good physical condition. Heating and domestic hot water is provided by electricity, which is operating properly. The only major energy improvement on the horizon is roof repair with additional insulation.

6. Daniel F. Burns. Burns is in reasonably good condition, similar to Truman, although there have been significant water leaks observed. It houses the elderly, in 199 units. The improvements contemplated here are concentrated on adjusting or weatherstripping doors and windows for a tighter fit, and replacing faucets and showerheads with water-conserving features, in addition to the envelope measures to plug the leaks which will tighten the structure from the energy perspective as well.

7. Miller's River. This is a 304-unit, elderly development of recent construction. The roof allows excessive heat loss, and the building has experienced water leaks. Therefore, future improvements will include reroofing with reinsulation, recaulking and weatherstripping doors and windows, installing water-saving fixtures, and structural improvements to fix the leaks.

8. Lyndon B. Johnson. These 181 units of elderly housing were built in 1973, and are slated for improvements in lighting, doors and windows, and faucets and showerheads. Also, like Burns and Miller's River, significant water leak problems will have to be corrected.

9. R.C. Weaver. Similar to the Johnson development in terms of existing conditions and elderly tenants, Weaver's 20 units demand only minor investments in lighting, doors and windows, and faucets and showerheads.

10. UDIC's. These developments, totalling 26 units of family housing, are in fairly good condition. Some work will need to be done on the exterior walls, caulking and weatherstripping doors and windows, new thermostats, and attic insulation.

11. Homeownership Developments. These developments offer 30 units of family housing and will require some attention. Insulation is needed in the basement walls, building exteriors, domestic hot and cold water pipes, and horizontal heat piping; weatherstripping and caulking is required on most doors and windows; new thermostats would be important; a 3-way valve and hot water reset controller would be quite useful additions; and faucets and showerheads ought to be replaced with water saving fixtures.

12. Washington Elms. As indicated earlier, this 175 units of family housing is undergoing substantial rehabilitation with a high level of attention to energy-efficient design. The Authority has no plans for further improvements in the near future.

13. River Howard. This new development of 32 units of family housing is a model of energy-efficiency for CHA's other developments. Its modular boilers with step controls provide maximum seasonal efficiency; the zone valves in each apartment facilitate precise control; and the insulated walls and roofs plus thermal-pane, double glazed windows allow minimal heat loss. The Authority is pleased about the low consumption experienced here, and has no plans to work on the energy systems here.

14. Jefferson Park Extension. This part of Jefferson Park will contain 173 units of family housing, and is being substantially rehabilitated. Like Washington Elms, the redesign has incorporated the latest energy controls systems, and is being constructed to tight thermal standards.

15. Jefferson Park. The other 109 of family units at the Jefferson Park development are slated for energy conservation improvements. Already, the heat plant has been modernized, the boiler room retrofitted, and new, more energy-efficient windows installed. Future plans include the installation of a new domestic hot water heater and some modern boiler controls.

16. Woodrow Wilson Court. This development of 69 units of family housing, has experienced a serious program of conservation improvements. The heat plant has been renovated, and new doors and windows have been put in. Future work will focus on boiler controls and installation of water-saving fixtures.

17. Lincoln Way. These 60 family units have received recent attention for their energy conservation potential. The underground heat lines have been replaced and insulated, storm windows have been installed, and the roof is being insulated. In the future, the Authority will install a system of boiler controls, improve the efficiency of the domestic hot water heating, and caulk and weatherstrip all doors and windows.

18. Roosevelt Towers. Housing families in a total of 207 units, Roosevelt Towers consists of 75 units in a mid-rise building and 132 units in a series of low-rise buildings. The mid-rise has recently undergone a major rehabilitation, complete with energy conservation features, heat control devices, and a new pump. Therefore, future energy improvements are likely to be concentrated on the low-rises. The Authority is evaluating currently the options for controlling the heat in these buildings, and will follow through by installing the most appropriate system of thermostats and controls. Moreover, a set of envelope improvements will be slated.

19. Jackson Gardens. The 46 units of family housing that comprise Jackson Gardens have received substantial investments recently, in order to improve the energy efficiency of the development. Three of the roofs have been replaced with insulated ones, the heat plant has been replaced, and new exterior and interior doors installed. Remaining work includes the completion of the reroofing, reducing the heat loss through the windows, and replacement of showerheads and faucets with water saving fixtures.

20. Frank J Manning. This 199 unit, 19-story building houses elderly tenants. It is now undergoing a serious evaluation of its energy consumption. The Authority is considering the following improvements: the purchase of an energy management system for the building, the retrofit installation of electric heat storage units, and envelope improvements. Furthermore, the Authority will make a substantial investment

To stop the water leakage problem, which will improve the thermal quality of the building as well.

21. Norfolk Street. Providing 39 units of elderly housing and built in 1975, this development does not require significant energy conservation investment. In 1981 the heat plant was upgraded, so it is now operating at a high level of seasonal efficiency. Further work here may include improvements to the domestic hot water system, installation of water-saving faucets and showerheads, and recaulking of windows.

22. Linnean Street. These 29 units of elderly housing are part of the Authority's most innovative energy program. Last year, a trombe wall was constructed at this development, enabling sunlight to be stored and used to heat the building. This exciting experiment will be evaluated for its applicability to other CHA buildings.

23. Condominium Units. These are five units housing the elderly in condominiums. Since they are scattered in various buildings and were recently purchased by the Authority, energy conservation improvements have not yet been made. Work here might in the future consist of caulking and weatherstripping windows and doors, installation of better thermostats, and replacement of showerhead and faucet fixtures with water-conserving devices.

24. Willow Street. There are 15 units of family housing at Willow Street. The Authority has completed recently \$200,000 worth of rehabilitation work--tightening exterior roofs, replacing windows and doors, and adding siding. Therefore, no further work is planned here.

The above "laundry lists" represents the improvements that the Cambridge Housing Authority has identified as important given its energy conservation goals. They are being integrated into the Authority's long range plans, as the CHA maintains its role at the forefront of housing authority energy-consciousness.



CITY OF CAMBRIDGE

147 HAMPSHIRE ST., CAMBRIDGE, MASSACHUSETTS 02139

PUBLIC WORKS DEPARTMENT

Everett R. Kennedy
Acting Commissioner

TO: Everett Kennedy

FROM: Seth Goldfine *SG*

DATE: September 24, 1982

RE: Fiscal Year 1982
Energy Use

Attached is a copy of some energy use statistics for Fiscal Year 1982. Where there have been substantial increases in energy use I plan to monitor temperatures and controls more closely during the coming heating season, and when applicable, use our on call-electrical contractor, Scelzi Electric Service, to make low cost repairs/improvements to those controls. I trust I have your backing in this matter.

attachment

Fiscal Year 1982 Energy Use Statistics

1. SAVINGS

The following list represents those buildings in which there has been a decrease, in FY 1982 from 1981, in BTU's per square foot per degree day (that is a decrease in units of energy with an adjustment factor for temperature conditions during the year). Those buildings marked with an asterisk have achieved BTU/SF/DD savings greater than 10%:

Central Square Library	*
City Hall	*
City Hospital	*
Coffin (telephone) Building	*
Corporal Burns	*
D.P.W. Shop	*
Engine 2	*
Engine 3	
Engine 4	
Engine 5	*
Engine 6	
Engine 7	
Engine 8	
Engine 9	*
Field Branch Library	
Golf Course	*
Koyt Shelter	*
Model Cities	
Police Station	*
Rindge Shelter	*
Water Treatment Plant	*
105 Windsor Street	*

2. INCREASE/INCOMPLETE

The following buildings have, as indicated, either had an increase in BTU/SQ.FT./DD or have incomplete computer print-outs. Incomplete buildings will be rerun shortly where data is available. Again, those buildings with a greater than 10% increase are marked with an asterisk.

Mount Auburn Library	
Cemetery Garage	*
Cemetery Office	
City Hall Annex	*
D.P.W. Office/Garage	
Fire Headquarters	*
Electrical Dept.	incomplete
Neville Manor	incomplete
Water Dept. Garage	incomplete
N. Cambridge Library	incomplete
Sixth St. Library	incomplete

3. ENERGY COSTS

Despite the reduction of energy use in previous years, this is the first time in the computing program that we have seen unit savings surpass energy cost increases. The result is a \$175,201. net savings, or reduction in cost, when comparing FY 1982 to 1981.



MEMO A
technical development corporation

11 beacon street, boston, massachusetts 02108 617-523-7557

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Memo to Richard Fahlander

Date: 16 January 1983

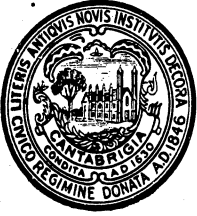
From Steve Morgan and Edith Stowell

Subject: 12/31/82 update on Cambridge Energy Conservation Loan Program

DEVELOPMENT DEPT.

The following sets forth (1) in the lefthand column, the names of agencies for whom audits have been completed under the Cambridge Energy Conservation Loan Program; (2) in the second column, the audit cost for each agency plus the amount of any interest-free loan requested; (3) in the third column, the private money already expended or committed for implementation; and (4) in the right-hand column, work planned in the near future (P) or the maximum implementation cost based on the audit report (M).

Buckingham, Browne & Nichols	\$13,500	\$ 2,000	\$70,000 (P)
Blessed Sacrament School	1,932	47,400	72,500 (M)
Cambridge Center for Adult Ed.	2,156	--	25,219 (M)
Cambridge Friends School	1,432	--	10,221 (P)
Cambridge Community Services	8,500	23,000	41,000 (P)
Central School	570	1,681	2,281 (P)
Charles River Academy	2,600	5,238	7,600 (P)
Church of Jesus Christ/Latter Day Saints	2,246	800	18,690 (P)
Christ Church	2,110	100	27,152 (M)
First Baptist Church	1,200	3,350	5,890 (M)
First Parish	2,320	--	25,267 (M)
Immaculate Conception	4,468	--	12,800 (M)
Margaret Fuller Neighborhood House	3,000	9,600	11,900 (P)
North Cambridge Congregational	1,186	7,039	7,039 (P)
New England Food Coop	900	--	4,120 (M)
Old Cambridge Baptist	1,672	8,737	6,316 (M)
Sacred Heart School	12,744	40,535	40,535 (M)
St. John School	1,260	22,500	39,510 (M)
St. Patrick's	2,490	1,650	3,975 (P)
Society of St. John's	2,176	5,088	18,260 (M)
Youville Hospital	14,500	--	873,000 (M)
	\$ 81,712	\$178,718	\$1,323,275
TDC Costs through 12/31/82	20,373		
	102,085		
	x 2.5		
	\$255,213		



CITY OF CAMBRIDGE
COMMUNITY DEVELOPMENT DEPARTMENT
City Hall Annex Inman & Broadway

To Interested Persons 
From Don Falk, Residential Energy Coordinator **Date** December 16, 1982
Subject Grants Summary

Attached is a summary of Residential Energy Grants administered by our office from 1980 through the present. The figures include Federal and State-funded programs, use of CDBG funds, and other sources.

As of December 15, 1982, the cumulative totals are:

CASH	\$367,611
WEATHERIZATION	240,009
NEIGHBORHOOD PROGRAMS	<u>126,900</u>
TOTAL	\$734,520

Attachment

RESIDENTIAL ENERGY PROGRAM

SUMMARY OF GRANTS ADMINISTERED 1980-1983

(current programs marked with an *)

PROGRAM & GRANTS	AMOUNT	IN-KIND	TOTAL	SOURCE
<u>I. CASH PROGRAM</u>				
80-81 MCAF	\$ 57,278	\$ 750 (booklets)	\$ 58,028	EOCD
80-81 CSC VOLUNTEER GRANT	2,000		2,000	EOCD
81-82 MCAF (including contingency allocation)	111,488	750 (booklets)	112,238	EOCD
81 MASSSAVE AUDITING PROGRAM	---	15,000 (auditor salaries)	15,000	MSI
82 SUMMER YOUTH PROGRAM	20,610	---	20,610	EMHRDA
82 MASSSAVE AUDITING PROGRAM		30,000 (auditor salaries)	30,000	MSI
Portuguese Pilot Program	60	---		MSI
*82-83 MCAF	95,425	1,000	96,425	EDCD
*82-83 TENANT AUDIT EDUCATION	1,500	1,200 (publications, slide-tape show, staff)	2,700	MASS AUDUBON/ EDER
*83 MASSSAVE AUDITING PROGRAM	---	30,000 (est) (auditor salaries)	30,000	MSI
*83 MASSSAVE PORTUGUESE AUDITING PROGRAM	(under negotiation)	(under negotiation)		MSI
*83 COM GAS CONSERVATION PROGRAM	---	(under negotiation)		COMMON. GAS
*82-83 UMASS COMMUNITY ENERGY PROGRAM	---	1,000 (volunteer and staff time)	1,000	UMASS/ BOSTON
TOTAL AS OF DECEMBER 15, 1982	\$287,911	\$79,700	\$367,611	

PROGRAM & GRANTS	AMOUNT	IN-KIND	TOTAL	SOURCE
II. <u>WEATHERIZATION</u>				
81 DOE-WAP (Jan-June)	\$ 97,605	---	\$ 97,605	EOCD/DOE
(July-Sept.)	1,160	---	1,160	EOCD/DOE
(Oct.-Dec.)	27,356	---	27,356	EOCD/DOE
82 DOE-WAP (Jan.-Mar.)	4,097	---	4,097	EOCD/DOE
*(April-Dec.)	109,791	---	109,791	EOCD/DOE
*83 STATE WEATHERIZATION GRANT (under nego.)		---		EOCD
*83 HUD CONSERVATION/SOLAR BANK	(under nego.)	---		EOCD/HUD
*83 DOE-WAP	(under nego.)	---		EOCD/DOE
TOTAL AS OF DECEMBER 15, 1982	\$240,009	---	\$240,009	

PROGRAM & GRANTS	AMOUNT	IN-KIND	TOTAL	SOURCE
III. <u>NEIGHBORHOOD ENERGY PROJECTS (NEP)</u>				
A. EAST CAMBRIDGE				
80-81 EC NEP	\$ 12,500	---	\$ 12,500	ECSC/CDBG
81-82 EC NEP	12,500	---	12,500	ECSC/CDBG
*82-83 EC NEP	12,500	---	12,500	ECSC/CDBG
E. CAMBRIDGE TOTAL AS OF 12/15/82	137,500	---	\$137,500	
B. NORTH CAMBRIDGE				
81-82 NC NEP	17,500	---	17,500	NCSC/CDBG
82 NC TENANT WEATHERIZATION (TW)	27,000	---	27,000	NCSC/CDBG
*82-83 NC NEP	14,100	---	14,100	NCSC/CDBG
*82-83 NC TW	48,300	---	48,300	NCSC/CDBG
NORTH CAMBRIDGE TOTAL AS OF DECEMBER 15, 1982	\$ 89,400	---	\$ 89,400	
NEIGHBORHOOD TOTAL	\$126,900		\$126,900	

I. INFILTRATION

A. WINDOWS

1. caulk around storm window frame (inside or outside)
2. tighten or refit storm window and frame
3. tighten primary sash stops and parting beads
4. replace broken sash cords
5. replace glass and deteriorated glazing
6. strengthen sash frames with brackets (L's or T's)
7. install spring bronze (in special cases only, felt stick may be substituted)
8. replace broken or missing sash locks
9. nonpermanent measures: glass patch
rope caulk
plastic storm windows
- *10. replace sash
- *11. install interior or exterior storm windows

B. DOORS

1. install door weatherstripping
2. install door sweep
3. replace broken door glass or deteriorated glazing
4. tighten or replace hinges, rehang door, planing as needed
5. tighten or repair storm door and glass
6. repair door casing or moulding
- *7. install storm door

C. BASEMENTS

1. windows and doors as above, or as appropriate
2. caulk and stuff sill boxes
3. stuff miscellaneous cracks and openings
4. repair gaps in foundation masonry

D. EXTERIOR

1. caulk window frames
2. caulk door frames
3. caulk foundation sill
4. caulk all utility entries, flue pi , vents, etc.

II. DHW SYSTEM

1. insulate hot water tank (if in unheated space)
2. drain tank sediment
3. insulate hot water pipes (unheated spaces)
4. install low-flow showerhead
5. install low-flow faucet aerators
6. lower tank temperature to 110-120°F

(OVER)

III. HEATING SYSTEM

1. wrap heating system pipes (in unheated spaces)
2. repair boiler/furnace insulation
3. install radiator reflectors
4. replace defective radiator/baseboard vents
5. insulate ducts
6. calibrate and level thermostat
7. Audit: perform efficiency test
- *8. Burner: clean, tune, lubricate, replace filter, optimize firing rate
- *9. replace burner (if required to meet efficiency/performance standards)
- *10. install automatic flue damper
- *11. install modulating aquastat
- *12. install clock thermostat

IV. INSULATION

- *1. attic
- *2. basement perimeter
- *3. basement overhead
- *4. walls

*major work, recommended as resources allow

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3. caulk foundation sill
4. caulk all utility entries, flue pi vents, etc.

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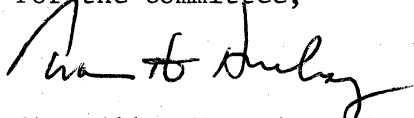
(OVER)

Ms. Goodwin further stated that since its inception in 1980 the CA\$H program has served over 2,000 low-income Cambridge households with weatherization materials, installation assistance and training. She further stated 1,300 households have received Mass Save audits, making the Cambridge program the largest and most effective low-income auditing program in Massachusetts, and among the best in the country. This program she said has also provided bilingual workshops and audits in Portuguese, Spanish and French creole. Ms. Goodwin further stated that funding for the CA\$H program is provided primarily by the Massachusetts Executive Office of Communities and Development.

Relative to weatherization programs operated by the department, Ms. Goodwin stated they offer a comprehensive set of measures including insulation, storm windows, major heating system improvements and building envelope tightening. She further stated that full weatherization is also incorporated into the city's Housing Improvement Program (HIP) which performs basic rehab on residential structures. (See attached #4)

Relative to Neighborhood Energy Projects, Ms. Goodwin stated that projects have been initiated in both East and North Cambridge in order to test the efficiency of providing energy outreach and services on a neighborhood basis. She further stated the East Cambridge program actually was among the city's first energy programs, beginning in 1980. Since that time residents of the area have revised energy audits, (in both English and Portuguese) home installation assistance, training and educational workshops and referrals to other weatherization programs. The North Cambridge project began in 1981 and has been offered similar assistance. Mr. Goodwin further stated that in January 1982 the Stabilization Committee appropriated an additional pool of money to initiate a Tenant-Weatherization Project for the area. Through this project, a trained Just-A-Start weatherization crew can perform basic weatherization for tenants in the North Cambridge neighborhood.

For the Committee,



Councillor Francis H. Duehay
Chairman
Environment Committee

FHD/smc

Attachments (6)

Also attached is Conclusions and Recommendations

Ms. Patricia McCarthy of Mass Save stated they are presently involved in a joint audit program with the city and the current breakdown is 2,600 through the joint effort and 1,400 through CASH. Councillor Duehay stated that detailed records on implementation of audit recommendations should be available. Ms. McCarthy responded by stating that possibly a survey sample could be done of the people who were audited in an effort to determine what action had been taken upon completion of the audit. Councillor Duehay further stated there should be some outreach to people throughout the city who are not "income eligible". He further stated more press releases should be issued on the efforts made by the city on this weatherization project.

Mr. James McLaughlin of the Commonwealth Gas Company stated that his company last September had prepared and sent to the State Department of Public Utilities a conservation plan proposal and it was currently being evaluated and approval is expected very soon.

Councillor Duehay stated that the information about the energy status of buildings should be integrated into the comprehensive data base now being formulated by the city.

Ms. Decia Goodwin of the Community Development Department described a variety of residential energy programs stating the "Residential Energy Programs" serving the Cambridge community are grouped into three areas of activity:

1. low-cost and no-cost conservation training and assistance, organized under the CA\$H program (Cambridge Action to Save Heat);
2. full-scale professional weatherization;
3. neighborhood programs

She further stated that the CA\$H program offers a wide range of energy-conservation services and materials, primarily to lower-income Cambridge residents. Among the elements of this program are:

- basic energy-conservation materials for apartments and domestic hot water systems;
- house installation assistance for elderly and disabled persons;
- heating system tuneups and evaluations;
- training and education for tenants and homeowners

Ms. Goodwin further stated that CA\$H services are available for any Cambridge resident, regardless of income, include:

- priority scheduling of home energy audits, performed by Mass. Save, Inc.;
- discounts at local hardware stores on energy items;
- consultation on home energy conservation questions

At this time Mr. Paul Feloney of the Public Works Department, stated that the Department of Public Works has been working throughout the city and its buildings to put into place as many energy conservation programs as possible. He stated that in city hall alone the Department of Public Works expended \$1,500 and realized an energy consumption saving of \$1,800. Mr. Feloney further stated that complete energy audits will be conducted soon in city hall, the annex, and the telephone building. He further stated that with the Department of Public Work's assistance, the hospital realized \$2,500 energy savings in the current fiscal year. Mr. Feloney also submitted a report as prepared by Mr. Seth Goldfine. (See attached report #2A)

Mr. Dave Dayton representing Technical Development Corporation stated his firm was placed under contract with the city to do some energy conservation work, specifically to devise programs for small non-profit organizations. He further stated his firm has worked with many non-profit corporations in Cambridge, twenty of which were currently involved in some kind of energy conservation efforts.

Councillor Duehay requested a list of both companies which are involved and those which are not and further stated he would be willing to send each a letter asking them to participate.

At this time Mr. Donald Falk of the Community Development Department, stated that although it was difficult to conceive of a unified approach to solving the energy conservation problem, there is within the Community Development Department a central energy office dealing with residential conservation issues. He further stated that most of the department's money was from either state or federal grants and he further stated that the stabilization committees in East and North Cambridge have both appropriated money for energy conservation efforts. Furthermore, he stated "Mass Save" has done approximately 2,200 audits out of a potential 14,000 units in Cambridge.

The hearing was adjourned at 7:40 PM.

The Committee on Environment conducted a second public hearing relative to energy conservation on Tuesday, November 23, 1982 beginning at 5:30 PM in the Ackermann Room at City Hall.

Mr. Richard Fahlander of the Community Development Department stated that in 1981 the city received a \$338,000 Urban Development Action Grant to assist non-profit organizations implement energy conservation improvements. The program offers free energy audits and zero-interest loans to eligible organizations. Technical Development Corporation is the city's consultant responsible for operating the project. Program services will be available until December 31, 1983. (See attached memo A)

Mr. Donald Falk of the Community Development Department expanded upon his previous outline to the committee relative to the "Weatherization and Conservation Program" specifically speaking about Cambridge Action to Save Heat (CASH) recommending housing improvements through the city and overall weatherization assistance provided by the city. He further stated the main focus has been on providing assistance to low and moderate income households. (See attached report #3)

City of Cambridge

In City Council February 28, 1983

The Committee on Environment conducted a public hearing on Tuesday, November 9, 1982 at 5:30 PM in the Ackermann Room at City Hall.

Councillor Duehay opened the meeting by stating the discussion would focus around energy and weatherization conservation programs currently ongoing in the city. He further stated that he believed a centralized listing of all programs should be prepared and distributed throughout Cambridge in order that people can be made aware of what is available.

Mr. Oliver Brown, Assistant Superintendent of Schools, submitted a progress report on up-to-date improvements made throughout the various school department buildings as well as proposed improvements with respect to "Energy Management Projects" in the School Department. (See attached report #1)

Councillor Duehay praised the report but raised the question of constraints placed on the community when a school building formally utilized for weekend activities when these buildings are closed due to energy conservation. Mr. Brown responded by stating these constraints, and it was indeed unfortunate, and the school department officials will continue to work with the City Manager for some alternatives. Councillor David Sullivan questioned if the school department realized an extraordinary saving from their energy conservation program. Mr. Brown responded by stating he believed the greatest savings occurred at the Tobin Elementary School.

At this time Mr. Alfred Cohn, member of the Rent Control Board, submitted a report relative to what the Board had done in terms of encouraging landlords to enter into either an energy audit or conservation program. He further stated that the Board has calculated that one gallon of fuel oil per square foot is the allowable limit for their computation purposes. He further stated the Board had granted a general rent adjustment in 1981 which went into effect for 1982. Taken into consideration in this adjustment, he continued, was the rising cost of fuel. He further stated that an organization called Massachusetts Save is doing family audits and they do a comprehensive one. He further stated the Board was considering ordering something on the line for rent controlled properties.

At this time Mr. Frederick Putnam of the Cambridge Housing Authority, submitted a report on what the Authority had done in terms of conservation. He stated that in 1975 the Cambridge Housing Authority was faced with two major problems, poorly maintained buildings and a way to best implement the necessary repairs and conservation programs. He further stated the Cambridge Housing Authority was at a point where they could begin to look at centralized control of energy in their buildings. (See attached report #2)

7. S-127

REPORT

Committee on Environment

Re: energy and weatherization programs
currently ongoing in the City.

3/14/83

Report Annex 1A14
The Title and on
motion of E Duchay
Report 2/28/83 Accepted

Initiated by

E Duchay

In City Council,

February 28, 1983

2/28/83

LD Place on Calendar
for discussion of
conclusions and
Recommendations
contained in the Report