50-329 MIDLAND #1

RESIDENTIAL ELECTRICITY ELASTICITIES IN THE LOWER PENINSULA OF MICHIGAN...Vol. 3

w/letter 9-11-78...[redacted]

THIS DOCUMENT CONTAINS POOR QUALITY PAGES

8006190751 A

RESIDENTIAL ELECTRICITY ELASTICITIES IN THE LOWER PENINSULA OF MICHIGAN

VOLUME 3

Prepared For:

Consumers Power Company and Detroit Edison Company

Prepared By:

Philip M. Banks
John M. Campbell, Jr.
Richard K. Knowles
E. Kemp Prugh
George S. Tolley, Consultant

Economic Analysts
Division of
Equitable Environmental Health, Inc.
455 Fullerton Avenue
Elmhurst, Illinois 60126

July 1977

A Subsidiary of The Equitable Life Assurance Society of the United States

APPENDIX F

COMPANY LEVEL TIME SERIES

A model similar to that used for the regional time series has been developed for estimating demand elasticities at the company level for Consumers Power Company and Detroit Edison Company. The company-level data are basically the regional data aggregated to the company level. For the consumption data, the aggregation is straightforward. For the electricity price variable, no aggregation is required since it is already company-wide. The income data are aggregated using the same procedure applied to the county income data for the Consumers Power regions. The fuel oil price variable is statewide and therefore presents no problem. The gas price variable is aggregated using the number of customers served by a certain gas company as the weighting factor. The weather variable was not aggregated, but weather stations representative of the company as a whole were used. Lansing was chosen for Consumers Power and the average of the two Detroit airports was selected for Detroit Edison.

A model using these variables was chosen for each of the companies. A logarithmic specification employing real prices was used, similar to the final regional models. In neither case was the weather variable found significant. This implies that annual climatic variables do not change enough over the entire service area to significantly explain differences in annual electricity consumption. Also, the fuel oil price variable was not found to be statistically significant in the Detroit Edison service area. Otherwise the model has the same form as the individual region models. Table F-1 summarizes the estimated coefficients for the company-level demand equations considered most appropriate

Table F-1

Company Time Series Model

$$\text{Demand} = \lambda * \text{Electricity}^{\varepsilon} * \text{Income}^{\alpha} * \text{Gas}^{\delta^1} * \text{Oil}^{\delta^2} * \text{Demand}(-1)^{\rho}$$

	Short run				Long run Elasticity Estimates	
	Consumers Power		Detroit Edison		Consumers Power	Detroit Edison
	Coefficient	t-statistic	Coefficient	t-statistic		
Electricity	-.316	4.00	-.180	2.76	-2.98	-1.15
Income	.068	1.[illegible]4	.094	1.24	.64	.60
Gas	.187	2.81	.166	1.44	1.76	1.07
Oil	.146	3.09			1.38	
Lagged dependent variable	.899	36.62	.844	21.47		
R^2	.9984		.9977			
F	2174		2054			
Standard Error as percent of Mean Demand	.159		.221			

Table F-2

Detroit Edison Company
Companywide Time Series Regressions

EQUATION

$$DEMAND = 1.402*ELECTRICITY^{-.17988}*GAS^{.16624}*INCOME^{.093845}*DEMAND(-1)^{.84407}$$

R-SQUARED = .99769

24 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .99721
STANDARD ERROR = .018229
DEPENDENT MEAN = 8.2634
STANDARD ERROR AS % MEAN DEMAND = .22059

RESIDUAL SUM SQUARE = .0063166
F-RATIO = 2,054
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL-F
ELECTRICITY	-.17988	.65091E-01	-.13283	-2.7635	7.6473
GAS	.16624	.11528	.51319E-01	1.4420	2.0794
INCOME	.93845E-01	.75506E-01	.48867E-01	1.2429	1.5448
DEMAND(-1)	.84407	.39309E-01	.87236	21.473	461.09

Table F-3

Consumers Power Company
Companywide Time Series Regressions

EQUATION

$$DEMAND = 0.773*ELECTRICITY^{-0.31621}*GAS^{0.18712}*INCOME^{0.068456}*FUEL\ OIL^{0.14649}*DEMAND(-1)^{0.89892}$$

R-SQUARED = .99835

24 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .99789
STANDARD ERROR = .01335
DEPENDENT MEAN = 8.3851
STANDARD ERROR AS % MEAN DEMAND = .15921

RESIDUAL SUM SQUARE = .0032081
F-RATIO = 2,173.7
DEGREES OF FREEDOM = 18

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL-F
ELECTRICITY	-.31621	.79024E-01	-.16474	-4.0015	16.012
GAS	.18712	.66475E-01	.71041E-01	2.8149	7.9238
INCOME	.68456E-01	.50921E-01	.41540E-01	1.3444	1.8073
FUEL OIL	.14649	.47473E-01	.74022E-01	3.0857	9.5216
DEMAND(-1)	.89892	.24547E-01	.93460	36.621	1341.1

for each company, and Tables F-2 and F-3 contain the detailed regression results. However, these regression results, as explained in Section V of Volume 1, are considered inferior to the regional results. The company-level elasticity estimates obtained by aggregating the regional results together are considered superior.

In the process of developing a company-wide model, a variety of other regressions were run that involved different equation specifications. Each had various problems and/or disadvantages over the model finally chosen.

The process began with the most naive model possible--a linear one based upon nominal rather than real dollar quantities. Table F-4 gives the results of such a regression, which includes a price for electricity, prices for natural gas, income, heating degree-days, and the percent urbanization as independent variables. The coefficients all have the expected signs except for the percent urbanization. It was expected that this variable would be negative because consumers in cities tend to use less electricity. The regression shown is for the Consumers Power Company service area. The equation statistics are all very impressive, indicating a high degree of explanatory power. However, there is no explicit control for changes that have occurred over time, and the method of interpolation for the percent urban variable makes it very highly correlated with time, thereby muddling its effects.

There are a variety of ways to control for changes over time. One commonly used procedure is to use real prices, meaning prices are divided by a price level measure (the consumer price index in this study). Other possibilities include explicitly including either the consumer price index or time as an independent variable. All three of these approaches were investigated.

Table F-4

Consumers Power Company Regression
Not Controlling for Time

EQUATION

DEMAND = -7914 - 1109*ELECTRICITY + 312.32*GAS + .71468*INCOME + 119.94*URBAN + .16112*HEATING DEGREE DAYS

R-SQUARED = .9964

STANDARD ERROR RESIDUALS = 125.524

F-RATIO = 529.74

VARIABLE	COEFFICIENT	STANDARD ERROR	T	CALCULATED ELASTICITY ESTIMATE
ELECTRICITY (500 TEB)	-1109	358.72	-3.092	-.454
GAS	312.32	86.792	3.600	.084
INCOME	.71468	.061238	11.671	.485
% URBAN	119.94	13.255	9.049	
HEATING DEGREE DAYS	.16112	.00824	1.956	
CONSTANT	-7914	909.49	-8.702	

An example of a regression for the Consumers Power Company service area that includes the consumer price index as an independent variable is reported in Table F-5. Again, only the percent urban variable is of an unexpected sign. When time is included, the significance of the percent urban variable decreases to almost zero. The major problem with including either time or the consumer price index as an independent variable is that it is tantamount to admitting the underlying factors causing changes in consumption cannot be identified. They are "catch-all" variables that do not explain causes, but make the statistics look good.

The use of real prices represents one method of overcoming this problem. Extensive testing of various models was done where real prices were employed. Table F-6 reports the results of one of the better real price regressions using a linear specification. This regression, as do the other preliminary models that have been discussed, uses the 500 kilowatthour typical electric bill as the basis for the price of electricity. Again, the percent urban variable is positive and highly significant. Also, the income variable is implausibly negative. The improper signs are the major objections to this model.

The regressions described in this appendix have all been on a company-wide basis, and predominantly for the Consumers Power Company service area. Similar regressions have been run for the Detroit Edison service area. As explained in Section V, the regional level regressions are considered more reliable. Regional level regressions have been run for all of the above specifications and many more. The results of these regressions should be considered developmental and are not reported here. Appendix E reports more fully on regional regressions that overcome the objections to the regressions

Table F-5

Consumers Power Company Regression
Including the CPI as an Independent Variable

EQUATION

DEMAND = -6728 -1716*ELECTRICITY + 212.22*GAS + .3643*INCOME + 120.51*URBAN + 3389.1*CPI

R-SQUARED = .9970

STANDARD ERROR RESIDUALS = 114.741

F-RATIO = 634.72

VARIABLE	COEFFICIENT	STANDARD ERROR	T	CALCULATED ELASTICITY ESTIMATE
ELECTRICITY (500 TEB)	-1716	407.87	-4.208	-.702
GAS	212.22	75.201	2.822	.057
INCOME	.3643	.1409	2.585	.247
% URBAN	120.51	11.604	10.385	
CPI	3389.1	1175.2	2.884	
CONSTANT	-6728	711.49	-9.456	

Table F-6

Consumers Power Company Regression
Using Real Prices

EQUATION

DEMAND = -24040 - 826.2*ELECTRICITY + 155.09*FUEL OIL - .3534*INCOME + 300.07*MULTIUNIT + 397.76*URBAN

R-SQUARED = .9953

STANDARD ERROR RESIDUALS = 144.043

F-RATIO = 401.37

VARIABLE	COEFFICIENT	STANDARD ERROR	T	CALCULATED ELASTICITY ESTIMATE
ELECTRICITY (500 TEB)	-826.2	549.10	-1.505	-.356
FUEL OIL	155.09	38.944	3.982	.404
INCOME	-.3534	.22313	-1.584	-.241
% MULTIUNIT	300.07	35.754	8.392	
% URBAN	397.76	35.12	11.324	
CONSTANT	-24040	3066.1	-7.840	

reported in this section. The data utilized in the company-wide regressions are included as part of Appendix D. Section VI of the text details why the regional regressions are considered more reliable.

APPENDIX G

REGIONAL CROSS SECTION MODEL

APPENDIX G

REGIONAL CROSS-SECTION MODEL

The regional data utilized in the time-series work were also used in estimating a regional cross-section model. Rather than grouping all observations of a certain region, all 24 regional observations for each year were grouped as a set and an equation estimated for that year. Tables G-1 through G-10 give the results of this procedure for both linear and logarithmic specifications. Only the years 1970 through 1974 are reported. These and earlier years' equations have the overriding problem of Wayne County having a high percentage of the sales for Detroit Edison. Company-wide, the Consumers Power Company customers face lower prices and consume more electricity than Detroit Edison customers. But on a regional basis, the Detroit Edison customers outside of Wayne County consume more electricity than the Consumers Power customers. This results in positive electricity price elasticities in a regional model because each region is weighted equally. The cause of the difference in consumption levels lies in the degree of urbanization. Outside of the Detroit SMSA, the Detroit Edison service area is almost completely rural, and urban customers tend to use less elect city. All of Consumers Power Company's divisions except the Northwest Division are partially urban. This tends to lower average consumption as compared to the rural Detroit Edison counties. The large number of Detroit Edison counties that consume more electricity per customer than Consumers Power divisions and pay higher prices result in a positive price elasticity. This lack of uniformity in consumption rates in the counties for Detroit Edison prevents forming a model that properly takes advantage of the two different price levels (one for each company).

A weighted least squares procedure was considered as a method of overcoming this problem. However, any rational weighting scheme would have to be based on either kilowatthour consumption or number of customers. Use of either of these is objectionable because both are involved in construction of the dependent variable. The net effect of such a weighting scheme would be some kind of implicit modification of the dependent variable, a practice which is highly recommended against in the literature. Therefore, a weighting scheme was not employed.

The regression results reported in this appendix include many variables which are not statistically significant, notably percent urban, percent multi-unit, and heating degree days. The reason these are included is that the variation of these variables across regions was a source of variation which it was hoped would add additional explanatory power in a cross-section analysis. The low significance indicates this power was not captured, and is another reason why these results are not very useful. These results are included only to demonstrate a plausible method of analyses which was investigated and did not prove fruitful.

Table G-1

Regional Cross-Section Model
Linear Specification

1970

EQUATION

DEMAND = - 27,392 + 9,787.1*ELECTRICITY + 11,056*GAS + .23156*INCOME - 11.355*URBAN + 59.33*MULTIUNIT + .49856*DEGREE DAYS

R-SQUARED = .55077

24 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .39222
STANDARD ERROR = 1,096.7
DEPENDENT MEAN = 6,969
STANDARD ERROR AS % MEAN DEMAND = 15.736

RESIDUAL SUM SQUARE = 20,445,298
F-RATIO = 3.4737
DEGREES OF FREEDOM = 17

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	9787.1	3883.6	.53556	2.4332	2.5201	6.3508
GAS	11056.	3620.0	.53987	1.8084	3.0543	9.3288
INCOME	.23156	.89693	.74706E-01	.10964	.25817	.66652E-01
URBAN	-11.355	17.005	-.23224	-.80825E-01	-.66778	.44593
MULTIUNIT	59.330	47.876	.30906	.15995	1.2393	1.5358
DEGREE DAYS	.49856	.77278	.12789	.50015	.64515	.41621

Table G-2

Regional Cross-Section Model
Linear Specification

1971

EQUATION
DEMAND = - 40.724 + 16,150*ELECTRICITY + 11,078*GAS + .1887*INCOME - 7.8837*URBAN + 72.173*MULTIUNIT + 1.0556*DEGREE DAYS

R-SQUARED = .58468

24 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .4381
STANDARD ERROR = 1,062.3
DEPENDENT MEAN = 7,200.3
STANDARD ERROR AS % MEAN DEMAND = 14.754

RESIDUAL SUM SQUARE = 19,184,720
F-RATIO = 3.9887
DEGREES OF FREEDOM = 17

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	16150.	6105.3	.51880	3.7697	2.6452	6.9969
GAS	11078.	3369-9	.58298	1.6720	3.2873	10.806
INCOME	.18870	.79754	.69557E-01	.88898E-01	.23660	.55980E-01
URBAN	-7.8837	16.809	-.16087	-.54380E-01	-.46902	.21998
MULTIUNIT	72.173	44.961	.37704	.19458	1.6052	2.5767
DEGREE DAYS	1.0556	.65562	.30009	.98498	1.6100	2.5923

Table G-3

Regional Cross-Section Model
Linear Specification

1972

EQUATION

DEMAND = - 6,803.8 - 8,925.3*ELECTRICITY + 16,718*GAS + .16563*INCOME - 10.847*URBAN + 96.972*MULTIUNIT + 1.3025*DEGREE DAYS

R-SQUARED = .5889

24 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .44381
STANDARD ERROR = 1,101.9
DEPENDENT MEAN = 7,532
STANDARD ERROR AS % MEAN DEMAND = 14.629

RESIDUAL SUM SQUARE = 20,640,688
F-RATIO = 4.0588
DEGREES OF FREEDOM = 17

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	-8925.3	4392.7	-.42616	-2.0390	-2.0318	4.1284
GAS	16718.	4943.5	.63315	2.4004	3.3818	11.436
INCOME	.16563	.80923	.61200E-01	.79465E-01	.20467	.41889E-01
URBAN	-10.847	18.025	-.21319	-.71623E-01	-.60178	.36214
MULTIUNIT	96.972	47.126	.49187	.25819	2.0577	4.2341
DEGREE DAYS	1.3025	.68182	.36296	1.2759	1.9104	3.6495

Table G-4

Regional Cross-Section Model
Linear Specification

1973

EQUATION
DEMAND = - 13,794 + 3,297*ELECTRICITY + 6,987.2*GAS + .76354*INCOME - 23.774*URBAN + 84.233*MULTIUNIT + .6821*DEGREE DAYS

R-SQUARED = .38842

24 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .17257
STANDARD ERROR = 1,321.8
DEPENDENT MEAN = 7,547.7
STANDARD ERROR AS % MEAN DEMAND = 17.513

RESIDUAL SUM SQUARE = 29,702,435
F-RATIO = 1.7995
DEGREES OF FREEDOM = 17

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	3297.0	3808.3	.22068	.80651	.86574	.74950
GAS	6987.2	4189.4	.40758	1.0058	1.6678	2.7817
INCOME	.76354	.93989	.30390	.37971	.81238	.65996
URBAN	-23.774	22.001	-.47752	-.15683	-1.0806	1.1677
MULTIUNIT	84.233	57.987	.44016	.23083	1.4526	2.1101
DEGREE DAYS	.68210	.97494	.16414	.56162	.69963	.48949

Table G-5

Regional Cross-Section Model
Linear Specification

1974

EQUATION

DEMAND = - 42,162 + 21,294*ELECTRICITY + 4,730.6*GAS + .18631*INCOME - 16.253*URBAN + 50.217*MULTIUNIT + .60043*DEGREE DAYS

R-SQUARED = .34863

24 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .11874
STANDARD ERROR = 1,395.2
DEPENDENT MEAN = 7,507
STANDARD ERROR AS % MEAN DEMAND = 18.585

RESIDUAL SUM SQUARE = 33,092,538
F-RATIO = 1.5165
DEGREES OF FREEDOM = 17

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	21294.	15077.	.37382	5.3198	1.4123	1.9947
GAS	4730.6	5156.5	.24115	.62575	.91739	.84160
INCOME	.18631	1.0890	.62718E-01	.98927E-01	.17108	.29269E-01
URBAN	-16.253	22.969	-.32085	-.10794	-.70761	.50072
MULTIUNIT	50.217	62.831	.25959	.14257	.79924	.63878
DEGREE DAYS	.60043	.99059	.15324	.54630	.60613	.36739

Table G-6

Regional Cross-Section Model
Logarithmic Specification

1970

EQUATION

$$\text{DEMAND} = 13.088*\text{ELECTRICITY}^{2.5149}*\text{GAS}^{1.7133}*\text{INCOME}^{-0.0017806}*\text{URBAN}^{-0.026967}*\text{MULTIUNIT}^{0.15831}*\text{DEGREE DAYS}^{0.48761}$$

R-SQUARED = .58164

23 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .42476
STANDARD ERROR = .14609
DEPENDENT MEAN = 8.8255
STANDARD ERROR AS % MEAN DEMAND = 1.6553

RESIDUAL SUM SQUARE = .34149
F-RATIO = 3.7075
DEGREES OF FREEDOM = 16

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL-F
ELECTRICITY	2.5149	1.0222	.58322	2.4603	6.0531
GAS	1.7133	.51240	.58388	3.3437	11.180
INCOME	-.17806E-02	.32997	-.12056-E-02	-.45311E-02	.20531E-04
URBAN	-.26967E-01	.84800E-01	-.10049	-.31801	.10113
MULTIUNIT	.15831	.13669	.27538	1.1582	1.3414
DEGREE DAYS	.48761	.75071	.13045	.64954	.42190

Table G-7

Regional Cross-Section Model
Logarithmic Specification

1971

EQUATION

$$DEMAND = 0.107*ELECTRICITY^{3.9411}*GAS^{1.5757}*INCOME^{-0.0046074}*URBAN^{-0.013811}*MULTIUNIT^{0.20769}*DEGREE\ DAYS^{0.95459}$$

R-SQUARED = .62578

23 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .48545
STANDARD ERROR = .13473
DEPENDENT MEAN = 8.861
STANDARD ERROR AS % MEAN DEMAND = 1.5205

RESIDUAL SUM SQUARE = .29043
F-RATIO = 4.4593
DEGREES OF FREEDOM = 16

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL-F
ELECTRICITY	3.9411	1.4519	.57106	2.7145	7.3686
GAS	1.5757	.42963	.62652	3.6675	13.451
INCOME	-.46074E-02	.33597	-.35967E-02	-.13714E-01	.18806E-03
URBAN	-.13811E-01	.75835E-01	-.53170E-01	-.18212	.33167E-01
MULTIUNIT	.20769	.12966	.36352	1.6019	2.5660
DEGREE DAYS	.95459	.58038	.30459	1.6448	2.7053

Table G-8

Regional Cross-Section Model
Logarithmic Specification

1972

EQUATION
$$\text{DEMAND} = 0.100 * \text{ELECTRICITY}^{-2.2767} * \text{GAS}^{2.3483} * \text{INCOME}^{-0.03325} * \text{URBAN}^{-0.03662} * \text{MULTIUNIT}^{0.27482} * \text{DEGREE DAYS}^{1.3326}$$

R-SQUARED = .65317

23 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .52311
STANDARD ERROR = .1291
DEPENDENT MEAN = 8.9056
STANDARD ERROR AS % MEAN DEMAND = 1.4496

RESIDUAL SUM SQUARE = .26666
F-RATIO = 5.022
DEGREES OF FREEDOM = 16

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL-F
ELECTRICITY	-2.2767	.99765	-.50057	-2.2797	5.1973
GAS	2.3483	.58172	.67811	4.0368	16.296
INCOME	-.33250E-01	.32979	-.25476E-01	-.10082	.10165E-01
URBAN	-.36620E-01	.72289E-01	-.14242	-.50658	.25662
MULTIUNIT	.27482	.12731	.47471	2.1588	4.6602
DEGREE DAYS	1.3326	.61273	.39565	2.1748	4.7297

Table G-9

Regional Cross-Section Model
Logarithmic Specification

1973

EQUATION

$$DEMAND = 0.2898*ELECTRICITY^{0.86695}*GAS^{1.446}*INCOME^{0.20911}*URBAN^{-0.098751}*MULTIUNIT^{0.30356}*DEGREE\ DAYS^{0.83082}$$

R-SQUARED = .51412

23 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .33192
STANDARD ERROR = .1487
DEPENDENT MEAN = 8.909
STANDARD ERROR AS % MEAN DEMAND = 1.6691

RESIDUAL SUM SQUARE = .35379
F-RATIO = 2.8217
DEGREES OF FREEDOM = 16

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL-F
ELECTRICITY	.86695	.88288	.25268	.98196	.96424
GAS	1.4460	.51317	.58087	2.8177	7.9396
INCOME	.20911	.36888	.16871	.56687	.32134
URBAN	-.98751E-01	.83701E-01	-.39771	-1.1798	1.3920
MULTIUNIT	.30356	.15430	.53133	1.9674	3.8706
DEGREE DAYS	.83082	.72625	.25356	1.1440	1.3087

Table G-10

Regional Cross-Section Model
Logarithmic Specification

1974

EQUATION

$$DEMAND = 0.005*ELECTRICITY^{3.8803}*GAS^{1.6806}*INCOME^{0.14357}*URBAN^{-0.10169}*MULTIUNIT^{0.28655}*DEGREE\ DAYS^{1.154}$$

R-SQUARED = .48168

23 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .2873
STANDARD ERROR = .15891
DEPENDENT MEAN = 8.9013
STANDARD ERROR AS % MEAN DEMAND = 1.7853

RESIDUAL SUM SQUARE = .40405
F-RATIO = 2.4781
DEGREES OF FREEDOM = 16

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL-F
ELECTRICITY	3.8803	3.5736	.28611	1.0858	1.1790
GAS	1.6806	.69764	.56114	2.4090	5.8031
INCOME	.14357	.41670	.99669E-01	.34454	.11871
URBAN	-.10169	.91732E-01	-.39895	-1.1086	1.2290
MULTIUNIT	.28655	.17605	.47760	1.6276	2.6491
DEGREE DAYS	1.1540	.82521	.33991	1.3984	1.9556

APPENDIX H

COMBINED CROSS-SECTION/TIME SERIES ANALYSIS

COMBINED CROSS-SECTION/TIME SERIES ANALYSIS

An effort at combined cross-section/time series analysis was made utilizing the regional level data base. By pooling the data it was possible to do an analysis which considered observations for 13 regions over 25 years at one time. Most procedures for the combining of time series and cross section data fall into the category of generalized least squares estimators. The particular procedure chosen for use is commonly referred to as "Seemingly Unrelated Regressions". This procedure was chosen because the assumptions required concerning the residuals appears less restrictive and more general than requirements for other procedures.

The procedure is best described in matrix notation. If one has *m* separate equations (in this case 13 regional equations) with a number of observations for each, the ordinary least squares coefficient estimates for each equation are given by

$$\hat{\beta}_m = (\underline{X}_m' * \underline{X}_m)^{-1} (\underline{X}_m' * \underline{Y}_m)$$

The variance-covariance matrix for each of the equations is given by

$$E\ (\varepsilon_m\ \varepsilon'_m) = \sigma_{mm}\ \underline{I}_t$$

where T is the number of observations and ε_m represents the residuals for the *m*th equation. The "Seemingly Unrelated Regressions" approach then connects the different equations through their residuals by assuming;

$$E\ (\varepsilon_m\ \varepsilon_p'\ ) = \sigma_{mp}\ \underline{I}_t$$

Thus, σ_{mp} is the covariance of the disturbances of the *m*th and *p*th equations, and that covariance is assumed to be constant over time. This says this covariance is the <u>only</u> link between equations. In this instance this procedure is especially useful because the effect of any omitted variable affecting all the different regions in the same manner would be captured.

This effect captured by the procedure is incorporated into the coefficient estimates by an re-estimation which incorporates the variance-covariance matrix of the ordinary least squares estimates. The variance-covariance matrix for all the equations is denoted Ω and, in matrix notation again, the new coefficient estimates are given by;

$$\hat{\beta} = (\underline{X}'\Omega^{-1}\underline{X})^{-1}\ (\underline{X}'\Omega^{-1}\underline{Y})$$

and the variance-covariance matrix of these estimates is given by

$$(X'\Omega^{-1}\underline{X})^{-1}$$

It can be shown that in the case of the regressions actually being unrelated, ie. $\sigma_{mp} = 0$, then this estimator reduces to the ordinary least squares estimator. Further, it can be shown that the variance for the "Seemingly Unrelated Regressions" is smaller or equal to that of the ordinary least squares procedure. This is a relatively straightforward result of the procedure being a maximum likelihood estimator.

A different approach which is frequently used is known as an error components model, often attributed to Balestra and Nerlove. In this procedure the regression disturbance is assumed to be comprised of three separate components—one associated with time, another with cross sectional units, and a third varying in both dimensions. Specifically the assumptions are

$$\varepsilon_{it} = u_i + v_t + w_{it} \quad \text{where}$$

$$u_i \sim N\ (0,\ \sigma_u^2)$$

$$v_t \sim N\ (0,\ \sigma_v^2)$$

$$w_{it} \sim N\ (0,\ \sigma_w^2)$$

and the components satisfy the following components

$$E\ (u_i v_t) = E\ (u_t w_{it}) = E\ (v_t w_{it}) = 0$$

$$E\ (u_i u_j) = 0 \quad i \neq j$$

$$E\ (v_t v_s) = 0 \quad t \neq s$$

$$E\ (w_{it} w_{is}) = E\ (w_{it} w_{jt}) = E\ (w_{it} w_{js}) = 0 \quad \text{for } i \neq j,\ t \neq s$$

Again, this procedure requires that the correlation of the disturbances over time remains unchanged no matter how far apart in time the disturbances are. But the additional requirements concerning the cross sectional error component are not required in a "Seemingly Unrelated Regressions" approach. However, in a case where the requirements of the error components model are met the two procedures should give the same results because both are unbiased, consistent, and efficient.

The "Seemingly Unrelated Regressions" procedures was applied to the regional data for each company. Aggregation into a Lower Peninsula of Michigan data set was not possible because of computer software limitations. The price for electricity used in the analysis that was done is based upon the 500 kWh Typical Electric Bill, rather than the Bill 10 prices. It is felt that this does not change the evaluation of the procedure for this study.

Table H-1 summarizes the results of the procedure for Consumers Power Company and Table H-2 does the same for Detroit Edison. The equation used to estimate was linear in the independent variables electricity price, gas price, income, and heating degree days. The procedure had somewhat different effects for the two companies. For Consumers Power, as evident in Table H-1, the procedure had relatively major effects. But the effects were counterintuitive. The gas price coefficients all became negative with the exception of Pontiac division (which actually faces Detroit Edison rate schedules). This is not at all expected of an alternative fuel. Also, the electricity price coefficients became much more elastic than in the OLS equations. The income coefficients did respond in an appropriate manner — the coefficients became much closer to each other and inelastic as compared to the OLS estimates.

Table H-1

Seemingly Unrelated Regression Results
for Consumers Power Company

Region	Ordinary Least Squares Estimates: Price of Electricity		Price of Gas		Income		Seemingly Unrelated Regression Estimates: Price of Electricity			Price of Gas		Income	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Elas.	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Central	-3940	3.17	-451	0.31	1.16	1.95	-2.21	-4819	6.22	-1194	1.14	.465	3.01
Battle Creek	-3844	3.82	-833	0.62	1.13	2.95	-1.93	-4875	7.29	-1391	1.71	.558	3.98
Northeast	-3531	2.91	-485	0.36	.95	2.16	-2.25	-4492	6.50	-1355	1.51	.385	3.27
Pontiac	-3531	6.79	3087	0.23	.70	3.05	-2.08	-3850	11.81	1694	1.74	.287	2.04
Flint	-4365	3.57	154	0.12	1.42	3.24	-2.13	-5433	7.99	-971	1.15	.673	4.80
Grand Rapids	-3362	3.61	-2760	2.24	.52	1.33	-1.78	-3906	7.42	-2462	4.81	.316	1.88
Jackson	-3789	2.94	214	0.15	1.36	3.50	-1.91	-5135	6.84	-1472	1.55	.635	4.65
Kalamazoo	-4775	4.38	495	0.38	.94	2.18	-2.18	-5547	8.87	-866	1.19	.286	2.18
Lansing	-4888	3.15	292	0.17	1.55	2.94	-2.14	-6278	7.11	-1174	0.99	.739	5.51
Muskegon	-3058	3.21	-3236	3.15	.15	0.34	-1.75	-3803	6.17	-2820	5.00	.004	.02
Saginaw	-4436	4.71	332	0.27	1.35	4.50	-2.21	-5167	8.28	-1198	1.52	.733	6.34
Northwest	-2250	2.02	-4838	3.98	0	0	-1.44	-2969	4.39	-4220	6.92	-.138	.54

Table H-2

Seemingly Unrelated Regression Results
for Detroit Edison Company

Region	Ordinary Least Squares Estimates: Price of Electricity Coeff.	t-stat	Price of Gas Coeff.	t-stat	Income Coeff.	t-stat	Seemingly Unrelated Regression Estimates: Price of Electricity Elas.	Coeff.	t-stat	Price of Gas Coeff.	t-stat	Income Coeff.	t-stat
Lapeer	-4608	10.17	964	0.98	0.09	0.27	-2.16	-4425	22.60	361	0.63	0.08	0.92
Tuscola	-3740	7.08	1926	1.80	0.59	1.57	-1.87	-3720	17.57	840	1.59	0.41	3.73
Huron	-3138	8.91	2183	2.44	0.19	0.76	-1.70	-3108	18.75	1491	3.45	0.10	1.09
Sanilac	-3552	3.98	273	0.19	0.17	0.30	-1.88	-4469	11.94	1245	2.21	-0.38	1.73
St. Clair	-3466	7.16	1043	1.18	0.09	0.39	-2.23	-3863	21.67	1390	5.57	0.16	1.75
Macomb	-2491	8.90	1366	1.88	0.87	4.02	-1.59	-2457	16.81	792	2.01	0.74	8.84
Oakland	-3531	6.79	3087	2.31	0.70	3.05	-2.24	-3487	13.55	1922	2.71	0.52	7.27
Ingham	-4686	9.55	2851	2.20	0.97	2.67	-1.87	-4561	20.99	1779	3.05	0.78	7.85
Livingston	-4239	13.79	971	1.01	0.08	0.43	-2.20	-3944	22.73	335	0.59	0.18	3.54
Washtenaw	-2954	5.82	2872	2.29	0.68	3.26	-1.64	-2887	14.97	2388	5.48	0.54	5.90
Lenawee	-5075	12.18	2288	2.04	0.52	1.65	-1.79	-4970	19.50	1123	1.67	0.32	1.97
Monroe	-2457	10.02	107	0.42	0.79	5.31	-1.52	-2517	22.23	86	0.93	0.71	11.22
Wayne	-1954	5.78	467	0.48	0.62	4.49	-1.68	-1977	17.16	481	2.00	0.57	12.89

The results for Detroit Edison did not contain so many surprises. The electricity price coefficients were little changed, and the gas price variable had the proper sign. The income coefficients also seemed a little more reasonable than the OLS estimates, though not greatly changed.

The software limitation and lack of identifiable benefits limited use of this comparatively expensive procedure. Because nothing in it changes greatly from the OLS estimates this is not considered a major shortcoming. The standard error of the residuals in the OLS procedure is so small it is unlikely that a combined approach will significantly alter coefficients or decrease the standard error.

APPENDIX I

INDIVIDUAL CUSTOMER CROSS SECTION REGRESSIONS

APPENDIX I

INDIVIDUAL CUSTOMER CROSS-SECTION REGRESSIONS

This appendix contains detailed results of cross-sectional regressions using individual customer data with annual kilowatthour consumption as the dependent variable. The first group of 36 tables does not include average price per kilowatthour as an independent variable; the next group of 36 does. The final 9 tables present the regression results of an attempt to use price variables in the manner described in the Taylor article in the literature review.

The first seventy two tables in this appendix provide empirical verification of two expectations relating to the use of average price of electricity — the two being the reversal of cause-and-effect and the biasing of the income coefficient. As detailed in the text, average price is not a viable variable because it reverses cause-and-effect. The group of regressions including it as an explanatory variable demonstrate the degree to which it merely reflects the slope of the supply curve. Two data bases are used — one for each company. The Detroit Edison data, based on a 1973 appliance survey, was collected when Detroit had a traditional declining block rate structure. In contrast the Consumers Power data, based on a 1976 appliance survey, was collected when Consumers Power customers were facing a flat rate structure. The differences in the electricity price elasticity are striking. The time series regressions previously indicated that the Consumers Power customers tended to be somewhat more elastic in their responses to price changes than the Detroit Edison customers. However, in these individual customer regressions the price elasticity estimates are negative, and sometimes elastic, for the Detroit Edison data but very inelastic or even positive for the Consumers Power data. This difference is attributable to the difference in rate structure.

Another expectation that is verified by these regressions is that deleting the average price variable would increase the importance of the income variable. This expectation applies in the instance of the traditional declining block rate structure. Thus, comparison of the results of including and not including average price in regressions utilizing the Detroit Edison appliance ownership data, with particular emphasis on the income variable, reveals the truth of this expectation. The income elasticity is doubled in most cases, and definitely is more important when the average price variable is not present.

As mentioned earlier, the major portion of this appendix is divided into two subsets — one that includes average price and one that does not. Each of these two categories is further divided into regressions that do not explicitly include appliance ownership variables (Tables I-1 to I-9, I-19 to I-27, I-37 to I-45, and I-55 to I-63) and those that do (Tables I-10 to I-18, I-28 to I-36, I-46 to I-54, and I-64 to I-72). This separates long-term appliance-buying decisions from short-term usage decisions. The equations that include appliance variables also indicate average annual electricity usage by an appliance.

These groupings are also ordered by company. The data for each company survey was partitioned by income and consumption and individual regressions were run for each usage block and each income block as well as for the sample as a whole. The following table will clarify the breakdown of the first 72 tables.

	Regressions Including Average Price		Regressions Excluding Average Price	
	CPC	DEC	CPC	DEC
Including Appliance Variables				
Total sample	46	64	10	28
Usage block	47-49	65-67	11-13	29-31
Income block	50-54	68-72	14-18	32-36
Excluding Appliance Variables				
Total sample	37	55	1	19
Usage block	38-40	56-58	2-4	20-22
Income block	41-45	59-63	5-9	23-27

As discussed in the literature review section, one method, suggested by Taylor, to overcome the problems associated with selecting a proper electricity price variable is to include both an average and a marginal price variable. Specifically, average price is to be calculated based on consumption up to, but not including, that in the last block consumed in. Marginal price is then the price from the rate schedule that corresponds to the block at the actual level of consumption. Thus, if a hypothetical consumer uses 609 kWh per month, and the rate schedule is as follows:

0-100 kWh	5.0¢/kWh
101-250 kWh	4.0¢/kWh
251-500 kWh	3.0¢/kWh
> 500 kWh	2.5¢/kWh

average price is calculated as 3.74¢/kWh = (.05*100 + .04 * 150 + .03 * 250)/500, and marginal price is 2.5¢/kWh. In this manner the pure price effect,* represented by the coefficient of the marginal price variable, is supposed to be separated from the income effect,* represented by the coefficient of the average price variable. Thus Taylor hypothesizes that inclusion of both prices will eliminate the likely upward bias in the elasticity estimate if only one price variable is included. Furthermore, he indicates that the coefficient of the average price variable should be equal in magnitude, but opposite in sign to the coefficient of the income variable.

"TAYLOR PRICES"

Detroit Edison	"Average Price"	"Marginal Price"
0-15	$ 1.50	0
15-100	10.0¢	3.2¢
100-200	4.22¢	2.8¢
over 200	3.51¢	2.6¢

As a test of the methodology, individual customer data from the 1973 Detroit Edison saturation survey were utilized. This resulted in a sample of 711 customers. All equations were estimated in linear fashion with ten independent variables: 1) marginal price, 2) average price, 3) income, 4) presence of an air conditioner, 5) size of the family, 6) age of the head

---

* Any price change has associated with it a pure price (or substitution) effect and an income effect. For details, see any intermediate price theory text.

of the family, 7) presence of a freezer, 8) number of rooms in the domicile, 9) presence of a dryers, and 10) presence of a stove. Of the above, variables 4, 7, 9, and 10 were binary variables. In addition, the income variable was an ordinal type variable.

Several regressions were run, including one for the overall sample, five for the data partitioned by income levels, and three for the data partitioned by usage level. Table I-73 presents the results for the overall sample; Tables I-74 through I-78 for income partitions of $0 to $5,000 per year, $5,001 to $10,000 per year, $10,001 to $15,000 per year, $15,001 to $25,000 per year, and greater than $25,000 per year, respectively; Tables I-79 through I-81 for monthly usage partition of 0 to 500 kWh per month, 501 to 1,000 kWh per month, and greater than 1,000 kWh per month, respectively.

Examination of these tables reveals rather disappointing results. First, the elasticities obtained in all cases are extremely large, ranging from approximately -8 to -34. Furthermore, the sign associated with the average price variable coefficient is consistently the opposite of *a priori* expectations. In addition, in several instances the signs associated with several appliance's coefficients are also opposite to what one would logically expect.

The above aspects of these results seem to indicate the inappropriateness of Taylor's methodology to individual customer data, especially within a single service area. Indeed, Taylor implies in his article that the methodology is best suited for a national study with the state as the observational unit. For all of the above reasons, not much confidence is put in the results obtained from this approach, and hence the reporting of results has been relegated to this appendix.

Table I-1

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Total Sample

EQUATION
KWH = - 28.925 + 356.7*INCOME + 684.67*ROOMS + 511.72*FAMILY

R-SQUARED = .094574

1533 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .092797
STANDARD ERROR = 6,012.8
DEPENDENT MEAN = 6,914.7
STANDARD ERROR AS % MEAN KWH = 86.957

RESIDUAL SUM SQUARE = 5.5279E+10
F-RATIO = 53.236
DEGREES OF FREEDOM = 1529

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
INCOME	356.70	93.379	.10029	.19780	3.8199	14.592
ROOMS	684.67	91.823	.18993	.57356	7.4564	55.598
FAMILY	511.72	93.283	.14069	.23283	5.4856	30.092

Table I-2

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Consumption Less Than 500 Kilowatthours/Month

EQUATION
KWH = 2,028.3 + 317.13*ROOMS - 121.62*FAMILY

R-SQUARED = .1198

783 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .11754
STANDARD ERROR = 1,552.6
DEPENDENT MEAN = 3,370.9
STANDARD ERROR AS % MEAN KWH = 46.060

RESIDUAL SUM SQUARE = 1.8804E+09
F-RATIO = 53.082
DEGREES OF FREEDOM = 780

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	317.13	32.569	.32774	.49778	9.7370	94.809
FAMILY	-121.62	30.605	-.13376	-.99463E-01	-3.9739	15.792

Table I-3

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Consumption 500-1,000 Kilowatthours/Month

EQUATION
KWH = 7,745 + 194.43*FAMILY

R-SQUARED = .03048

581 OBSERVATIONS, 1 VARIABLE

CORRECTED R-SQUARED = .028805
STANDARD ERROR = 1,653.4
DEPENDENT MEAN = 8,401.3
STANDARD ERROR AS % MEAN KWH = 19.680

RESIDUAL SUM SQUARE = 1.5828E+09
F-RATIO = 18.203
DEGREES OF FREEDOM = 579

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	194.43	45.573	.17459	.78114E-01	4.2665	18.203

Table I-4

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Consumption Over 1,000 Kilowatthours/Month

PROCEDURE SUMMARY

NO INDEPENDENT VARIABLE QUALIFIED FOR ENTRY

PROCEDURE ENDED WHEN

MAXIMUM F TO ENTER = 1.92 for "ROOMS"

FAILED TO MEET "F ACCEPT = 3.90"

Table I-5

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income Less Than $4,000

PROCEDURE SUMMARY

NO INDEPENDENT VARIABLE QUALIFIED FOR ENTRY

PROCEDURE ENDED WHEN

MAXIMUM F TO ENTER = .20 FOR "ROOMS"

FAILED TO MEET "F ACCEPT = 3.90"

Table I-6

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income $[illegible],000-10,000

EQUATION
KWH = 1,[illegible]20.4 + 496.65*ROOMS + 761.29*FAMILY

R-SQUARED = .043741

451 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .039472
STANDARD ERROR = 7,426.9
DEPENDENT MEAN = 6,190.1
STANDARD ERROR AS % MEAN KWH = 119.98

RESIDUAL SUM SQUARE = 2.4711E+10
F-RATIO = 10.246
DEGREES OF FREEDOM = 448

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	496.65	215.33	.10687	.43354	2.3065	5.3200
FAMILY	761.29	205.28	.17184	.35314	3.7086	13.753

Table I-7

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income $10,000-15,000

EQUATION
KWH = 1,738.5 + 530.68*ROOMS + 753.31*FAMILY

R-SQUARED = .074387

387 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .069566
STANDARD ERROR = 5,530.5
DEPENDENT MEAN = 7,189.1
STANDARD ERROR AS % MEAN KWH = 76.929

RESIDUAL SUM SQUARE = 1.1745E+10
F-RATIO = 15.43
DEGREES OF FREEDOM = 384

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	530.68	181.84	.14704	.42459	2.9185	8.5174
FAMILY	753.31	190.67	.19905	.33358	3.9508	15.609

Table I-8

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income $15,000-25,000

EQUATION
KWH = 974.75 + 889.33*ROOMS + 376.33*FAMILY

R-SQUARED = .11638

387 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .11178
STANDARD ERROR = 4,973.2
DEPENDENT MEAN = 7,772.8
STANDARD ERROR AS % MEAN KWH = 63.982

RESIDUAL SUM SQUARE = 9.4972E+09
F-RATIO = 25.288
DEGREES OF FREEDOM = 384

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	889.33	141.63	.30424	.69832	6.2792	39.428
FAMILY	376.33	155.38	.11735	.17627	2.4219	5.8658

Table I-9

Consumers Power Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income Over $25,000

EQUATION
KWH = - 2,414.7 + 1,642.9*ROOMS

R-SQUARED = .14255

138 OBSERVATIONS, 1 VARIABLE

CORRECTED R-SQUARED = .13624
STANDARD ERROR = 7,246.8
DEPENDENT MEAN = 9,133.5
STANDARD ERROR AS % MEAN KWH = 79.343

RESIDUAL SUM SQUARE = 7.1421E+09
F-RATIO = 22.609
DEGREES OF FREEDOM = 136

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	1642.9	345.52	.37755	1.2644	4.7549	22.609

Table I-10

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Total Sample

EQUATION

KWH = - 10,388 + 227.3*INCOME + 432.87*ROOMS + 493.24*FAMILY + 728.74*FREEZER + 2,547.5*DRYER + 394.31*STOVE + 2,0249.9*AC + 2,696.1*WATER

R-SQUARED = .28013

1310 OBSERVATIONS, 8 VARIABLES

CORRECTED R-SQUARED = .2757
STANDARD ERROR = 5,624.7
DEPENDENT MEAN = 7,142.3
STANDARD ERROR AS % MEAN KWH = 78.752

RESIDUAL SUM SQUARE = 4.1160E+10
F-RATIO = 63.283
DEGREES OF FREEDOM = 1301

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
INCOME	227.30	97.899	.60195E-01	.12436	2.3218	5.3908
ROOMS	432.87	98.603	.11322	.35629	4.3901	19.273
FAMILY	493.24	96.113	.12801	.21814	5.1319	26.338
FREEZER	728.74	93.729	.19512	.27299	7.7750	60.451
DRYER	2547.5	338.76	.19113	.51161	7.5203	56.554
STOVE	394.31	189.20	.56104E-01	.12790	2.0841	4.3436
AC	2024.9	324.49	.14938	.32008	6.2401	38.939
WATER	2696.1	358.57	.19863	.52301	7.5191	56.537

Table I-11

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Consumption Less Than 500 Kilowatthours/Month

EQUATION

KWH = 2,251.9 + 206.61*ROOMS - 89.84*FAMILY + 229.95*FREEZER + 420.45*DRYER - 503.74*WATER

R-SQUARED = .1801

648 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .17371
STANDARD ERROR = 1,464.8
DEPENDENT MEAN = 3,456.3
STANDARD ERROR AS % MEAN KWH = 42.380

RESIDUAL SUM SQUARE = 1.3775E+09
F-RATIO = 28.204
DEGREES OF FREEDOM = 642

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	206.61	35.891	.21581	.32176	5.7565	33.138
FAMILY	-89.840	33.058	-.98205E-01	-.71480E-01	-2.7177	7.3857
FREEZER	229.95	39.239	.21710	.12988	5.8603	34.343
DRYER	420.45	133.30	.11572	.15431	3.1541	9.9485
WATER	-503.74	132.09	-.13988	-.18600	-3.8135	14.543

Table I-12

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Consumption 500-1,000 Kilowatthours/Month

EQUATION

KWH = 2,679.8 + 107*ROOMS + 315.16*FAMILY + 132.95*FREEZER + 439.46*DRYER + 197.43*STOVE + 546.98*AC + 1,228.6*WATER

R-SQUARED = .24281

509 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .23223
STANDARD ERROR = 1,480
DEPENDENT MEAN = 8,370.3
STANDARD ERROR AS % MEAN KWH = 17.681

RESIDUAL SUM SQUARE = 1.0973E+09
F-RATIO = 22.951
DEGREES OF FREEDOM = 501

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	107.00	44.111	.98636E-01	.79260E-01	2.4257	5.8838
FAMILY	315.16	45.583	.28449	.12642	6.9140	47.803
FREEZER	132.95	38.627	.13638	.51986E-01	3.4418	11.846
DRYER	439.46	136.64	.13011	.79836E-01	3.2161	10.343
STOVE	197.43	82.178	.99359E-01	.59455E-01	2.4025	5.7720
AC	546.98	121.80	.17838	.76132E-01	4.4907	20.167
WATER	1228.4	149.78	.35792	.20676	8.2026	67.282

Table I-13

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Consumption Over 1,000 Kilowatthours/Month

PROCEDURE SUMMARY

NO INDEPENDENT VARIABLE QUALIFIED FOR ENTRY

PROCEDURE ENDED WHEN

MAXIMUM F TO ENTER = 3.22 FOR "WATER"

FAILED TO MEET "F ACCEPT = 3.90"

Table I-14

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income Under $4,000

EQUATION
KWH = - 26.957 + 425.96*FREEZER + 1,252.1*DRYER + 1,342.9*WATER

R-SQUARED = .2805

125 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .26266
STANDARD ERROR = 2,225.8
DEPENDENT MEAN = 4,520.6
STANDARD ERROR AS % MEAN KWH = 49.235

RESIDUAL SUM SQUARE = 599,429.760
F-RATIO = 15.724
DEGREES OF FREEDOM = 121

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTICS	PARTIAL F
FREEZER	425.96	127.86	.27523	.21257	3.3316	11.099
DRYER	1252.1	459.83	.22625	.36562	2.7230	7.4149
WATER	1342.9	410.14	.25821	.42777	3.2743	10.721

Table I-15

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income $4,000-10,000

EQUATION

KWH = - 10,195 + 554.48*FAMILY + 876.78*FREEZER + 2,233.8*DRYER + 4,599.7*AC + 3,257*WATER

R-SQUARED = .2167

382 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .20629
STANDARD ERROR = 7,201.4
DEPENDENT MEAN = 6,400
STANDARD ERROR AS % MEAN KWH = 112.52

RESIDUAL SUM SQUARE = 1.9499E+10
F-RATIO = 20.805
DEGREES OF FREEDOM = 376

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	554.48	220.28	.11795	.24948	2.5171	6.3360
FREEZER	876.78	216.81	.19250	.35110	4.0441	16.355
DRYER	2233.8	798.32	.13573	.48974	2.7981	7.8293
AC	4599.7	841.55	.25046	.79396	5.4657	29.874
WATER	3257.0	777.00	.19703	.70875	4.1918	17.571

Table I-16

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income $10,000-15,000

EQUATION
KWH = - 5,230.2 + 630.82*FAMILY + 630.3*FREEZER + 2,246*DRYER + 723.55*STOVE + 2,782.8*WATER

R-SQUARED = .28325

338 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .27245
STANDARD ERROR = 5,059.5
DEPENDENT MEAN = 7,339
STANDARD ERROR AS % MEAN KWH = 68.940

RESIDUAL SUM SQUARE = 8.4988E+09
F-RATIO = 26.24
DEGREES OF FREEDOM = 332

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	630.82	194.05	.15858	.27083	3.2508	10.568
FREEZER	630.30	164.23	.18782	.22767	3.8379	14.730
DRYER	2246.0	592.30	.18939	.45181	3.7920	14.379
STOVE	723.55	325.17	.11578	.22722	2.2251	4.9513
WATER	2782.8	638.12	.23119	.53512	4.3610	19.018

Table I-17

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income $15,000-25,000

EQUATION
KWH = - 7,724 + 688.77*ROOMS + 358.98*FAMILY + 782.85*FREEZER + 2,858.8*DRYER + 2,769.9*WATER

R-SQUARED = .37414

343 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .36485
STANDARD ERROR = 4,296.2
DEPENDENT MEAN = 7,846.7
STANDARD ERROR AS % MEAN KWH = 54.752

RESIDUAL SUM QUARE = 6.2202E+09
F-RATIO = 40.291
DEGREES OF FREEDOM = 337

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	688.77	138.70	.22604	.53793	4.9660	24.661
FAMILY	358.98	143.93	.10990	.16632	2.4940	6.2202
FREEZER	782.85	137.50	.25745	.28709	5.6933	32.414
DRYER	2858.8	494.57	.26382	.52578	5.7804	33.413
WATER	2769.9	515.50	.24075	.46724	5.3732	28.871

Table I-18

Consumers Power Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income Over $25,000

EQUATION

KWH = - 8,854.4 + 802.69*FAMILY + 1,068.2*FREEZER + 6,009.8*DRYER + 2,449.4*AC

R-SQUARED = .32822

122 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .30525
STANDARD ERROR = 6,626.3
DEPENDENT MEAN = 9,627.5
STANDARD ERROR AS % MEAN KWH = 68.827

RESIDUAL SUM SQUARE = 5,1372E+09
F-RATIO = 14.291
DEGREES OF FREEDOM = 117

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	802.69	336.53	.18431	.32667	2.3852	5.6892
FREEZER	1068.2	358.16	.23586	.32832	2.9825	8.8955
DRYER	6009.8	1275.0	.37949	.94147	4.7136	22.218
AC	2449.4	901.13	.20975	.32324	2.7182	7.3886

Table I-19

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price
and Excluding Appliance Variables
Total Sample

EQUATION
KWH = - 4,309.2 + 654.71*INCOME + 750.57*ROOMS + 701.03*FAMILY + 271.37*AGE HEAD

R-SQUARED = .28403

711 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .27997
STANDARD ERROR = 4,292.6
DEPENDENT MEAN = 7,044
STANDARD ERROR AS % MEAN KWH = 60.940

RESIDUAL SUM SQUARE = 1.3009E+10
F-RATIO = 70.017
DEGREES OF FREEDOM = 706

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
INCOME	654.71	94.955	.25848	.49832	6.8950	47.541
ROOMS	750.57	126.89	.21753	.61984	5.9151	34.988
FAMILY	701.03	111.70	.25155	.34280	6.2758	39.385
AGE HEAD	271.37	130.97	.78533E-01	.15079	2.0720	4.2932

Table I-20

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price
and Excluding Appliance Variables
Consumption Less Than 500 Kilowatthours/Month

EQUATION

KWH = 1,387.6 + 202.73*INCOME + 147.82*ROOMS + 280.22*FAMILY

R-SQUARED = .32868

342 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .32273
STANDARD ERROR = 1,122.2
DEPENDENT MEAN = 3,780
STANDARD ERROR AS % MEAN KWH = 29.688

RESIDUAL SUM SQUARE = 425,658,707
F-RATIO = 55.163
DEGREES OF FREEDOM = 338

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
INCOME	202.73	31.734	.31138	.23759	6.3884	40.812
ROOMS	147.82	49.879	.14049	.20457	2.9636	8.7830
FAMILY	280.22	46.373	.30225	.19075	6.0428	36.515

Table I-21

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price
and Excluding Appliance Variables
Consumption 500-1,000 Kilowatthours/Month

EQUATION

KWH = 5,943.2 + 217.3*INCOME + 134.36*ROOMS

R-SQUARED = .057275

294 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .050796
STANDARD ERROR = 1,521.5
DEPENDENT MEAN = 8,110.8
STANDARD ERROR AS % MEAN KWH = 18.759

RESIDUAL SUM SQUARE = 673,664,034
F-RATIO = 8.8399
DEGREES OF FREEDOM = 291

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
INCOME	217.30	61.419	.20206	.16431	3.5381	12.518
ROOMS	134.36	68.035	.11278	.10294	1.9748	3.8998

Table I-22

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price
and Excluding Appliance Variables
Consumption Over 1,000 Kilowatthours/Month

PROCEDURE SUMMARY

NO INDEPENDENT VARIABLE QUALIFIED FOR ENTRY

PROCEDURE ENDED WHEN

MAXIMUM F TO ENTER = 3.86 FOR "ROOMS"

FAILED TO MEET "F ACCEPT = 3.97"

Table I-23

Detroit Edison Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income Under $5,000

EQUATION
KWH = 1,541.6 + 1,038.3*FAMILY

R-SQUARED = .26484

122 OBSERVATIONS, 1 VARIABLE

CORRECTED R-SQUARED = .25871
STANDARD ERROR = 2,272.9
DEPENDENT MEAN = 3,745.8
STANDARD ERROR AS % MEAN KWH = 60.678

RESIDUAL SUM SQUARE = 619,915,214
F-RATIO = 43.229
DEGREES OF FREEDOM = 120

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	1038.3	157.92	.51462	.58845	6.5749	43.229

Table I-24

Detroit Edison Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income $5,000-10,000

EQUATION
KWH = 1,527.3 + 507.65*ROOMS + 421.73*FAMILY

R-SQUARED = .12357

141 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .11087
STANDARD ERROR = 2,762.8
DEPENDENT MEAN = 5,360.4
STANDARD ERROR AS % MEAN KWH = 51.541

RESIDUAL SUM SQUARE = 1.0534E+09
F-RATIO = 9.7282
DEGREES OF FREEDOM = 138

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	507.65	210.48	.20595	.49636	2.4119	5.8174
FAMILY	421.73	163.40	.22037	.21873	2.5809	6.6611

Table I-25

Detroit Edison Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income $10,000-15,000

EQUATION
KWH = - 1,289.4 + 1,227.7*ROOMS + 442.39*FAMILY

R-SQUARED = .12942

216 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .12124
STANDARD ERROR = 5,146
DEPENDENT MEAN = 7,684.7
STANDARD ERROR AS % MEAN KWH = 66.964

RESIDUAL SUM SQUARE = 5.6405E+09
F-RATIO = 15.832
DEGREES OF FREEDOM = 213

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	1227.7	301.84	.27875	.93193	4.0674	16.544
FAMILY	442.39	204.60	.14818	.23586	2.1623	4.6753

Table I-26

Detroit Edison Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income $15,000-25,000

EQUATION
KWH = 5,412.5 + 815.6*FAMILY

R-SQUARED = .083549

170 OBSERVATIONS, 1 VARIABLE

CORRECTED R-SQUARED = .078094
STANDARD ERROR = 4,548.2
DEPENDENT MEAN = 8,622.1
STANDARD ERROR AS % MEAN KWH = 52.750

RESIDUAL SUM SQUARE = 3.4753E+09
F-RATIO = 15.316
DEGREES OF FREEDOM = 168

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	815.60	208.40	.28905	.37225	3.9135	15.316

Table I-27

Detroit Edison Individual Customer Cross-Section Model
Regression Excluding Average Price
and Excluding Appliance Variables
Income Over $25,000

EQUATION

KWH = - 1,577.9 + 965.28*ROOMS + 1,460.9*FAMILY

R-SQUARED = .30627

62 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .28275
STANDARD ERROR = 5,674.4
DEPENDENT MEAN = 10,804
STANDARD ERROR AS % MEAN KWH = 52.522

RESIDUAL SUM SQUARE = 1.8997E+09
F-RATIO = 13.023
DEGREES OF FREEDOM = 59

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ROOMS	965.28	453.24	.26537	.61389	2.1298	4.5358
FAMILY	1460.9	489.08	.37219	.53216	2.9870	8.9224

Table I-28

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Total Sample

EQUATION

KWH = - 9,814.8 + 309.07*INCOME + 733.56*AC + 685.69*FAMILY + 1,932.7*FREEZER + 468.45*ROOMS + 2,423.4*DRYER + 2,279.9*STOVE

R-SQUARED = .4566

711 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .45119
STANDARD ERROR = 3,747.6
DEPENDENT MEAN = 7,044
STANDARD ERROR AS % MEAN KWH = 53.203

RESIDUAL SUM SQUARE = 9.8735E+09
F-RATIO = 84.387
DEGREES OF FREEDOM = 703

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
INCOME	309.07	82.328	.12202	.23524	3.7541	14.093
AC	733.56	150.89	.14156	.17415	4.8617	23.636
FAMILY	685.69	91.645	.24605	.33529	7.4820	55.980
FREEZER	1932.7	317.85	.17650	.35888	6.0804	36.972
ROOMS	468.45	111.14	.13577	.38686	4.2148	17.765
DRYER	2423.4	342.18	.21069	.43403	7.0822	50.158
STOVE	2279.9	299.96	.22431	.46888	7.6006	57.770

Table I-29

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Consumption Less Than 500 Kilowatthours/Month

EQUATION

KWH = - 551.03 + 170.4*INCOME + 262.39*AC + 328.05*FAMILY + 548.58*FREEZER + 129.78*ROOMS + 522.38*DRYER + 349.4*STOVE

R-SQUARED = .40504

342 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .39257
STANDARD ERROR = 1,062.8
DEPENDENT MEAN = 3,780
STANDARD ERROR AS % MEAN KWH = 28.116

RESIDUAL SUM SQUARE = 377,242,154
F-RATIO = 32.484
DEGREES OF FREEDOM = 334

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
INCOME	170.40	31.117	.26172	.19969	5.4761	29.988
AC	262.39	83.295	.13851	.97833E-01	3.1502	9.9236
FAMILY	328.05	44.899	.35383	.22331	7.3063	53.382
FREEZER	548.58	161.85	.14466	.16719	3.3894	11.488
ROOMS	129.78	47.971	.12335	.17960	2.7054	7.3193
DRYER	522.38	174.93	.12845	.15598	2.9863	8.9178
STOVE	349.40	125.75	.11986	.12217	2.7785	7.7201

Table I-30

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Consumption 500-1,000 Kilowatthours/Month

EQUATION
KWH = 3,290.3 + 142.81*INCOME + 303.61*AC + 178.57*FAMILY + 384.08*FREEZER + 758.13 *DRYER + 755.56*STOVE

R-SQUARED = .2091

294 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED	= .19256	RESIDUAL SUM SQUARE	= 565,172,145
STANDARD ERROR	= 1,403.3	F-RATIO	= 12.646
DEPENDENT MEAN	= 8,110.8	DEGREES OF FREEDOM	= 287

STANDARD ERROR AS % MEAN KWH = 17.302

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
INCOME	142.81	58.011	.13279	.10798	2.4617	6.0600
AC	303.61	81.331	.20067	.68754E-01	3.7330	13.935
FAMILY	178.57	50.858	.19439	.90685E-01	3.5111	12.328
FREEZER	384.08	167.39	.12108	.66683E-01	2.2945	5.2649
DRYER	758.13	183.48	.22481	.12240	4.1319	17.072
STOVE	755.56	176.66	.24211	.13783	4.2769	18.292

Table I-31

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Consumption Over 1,000 Kilowatthours/Month

PROCEDURE SUMMARY

NO INDEPENDENT VARIABLE QUALIFIED FOR ENTRY

PROCEDURE ENDED WHEN

MAXIMUM F TO ENTER = 3.86 FOR "ROOMS"

FAILED TO MEET "F ACCEPT = 3.97"

Table I-32

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income Less Than $5,000

EQUATION

KWH = - 4,131.4 + 891.57*FAMILY + 1,603*FREEZER + 2,725*DRYER + 735.03*STOVE

R-SQUARED = .50166

122 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .48462
STANDARD ERROR = 1,895.2
DEPENDENT MEAN = 3,745.8
STANDARD ERROR AS % MEAN KWH = 50.594

RESIDUAL SUM SQUARE = 420,222,266
F-RATIO = 29.444
DEGREES OF FREEDOM = 117

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	891.57	137.92	.44191	.50530	6.4643	41.787
FREEZER	1603.0	458.25	.24238	.51213	3.4981	12.237
DRYER	2725.0	535.92	.34036	.81691	5.0847	25.854
STOVE	735.03	362.49	.13490	.26860	2.0277	4.1117

Table I-33

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income $5,000-10,000

EQUATION

KWH = - 5,405.5 + 470.27*AC + 483.2*FAMILY + 2,199.9*FREEZER + 382.05*ROOMS + 1,491.9*DRYER + 1,471.1*STOVE

R-SQUARED = .4472

141 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .42245
STANDARD ERROR = 2,226.7
DEPENDENT MEAN = 5,360.4
STANDARD ERROR AS % MEAN KWH = 41.540

RESIDUAL SUM SQUARE = 664,392,644
F-RATIO = 18.067
DEGREES OF FREEDOM = 134

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
AC	470.27	220.37	.13907	.13440	2.1340	4.5541
FAMILY	483.20	132.72	.25250	.25061	3.6406	13.254
FREEZER	2199.9	434.32	.33967	.52683	5.0652	25.656
ROOMS	382.05	172.95	.15499	.37355	2.2090	4.8797
DRYER	1491.9	467.89	.21859	.34543	3.1886	10.167
STOVE	1471.1	402.41	.24405	.37759	3.6557	13.364

Table I-34

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income $10,000-15,000

EQUATION
KWH = - 10,803 + 586.39*FAMILY + 2,891.8*FREEZER + 578.73*ROOMS + 3,799.2*DRYER + 2,931*STOVE

R-SQUARED = .39049

216 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .37598
STANDARD ERROR = 4,336.4
DEPENDENT MEAN = 7,684.7
STANDARD ERROR AS % MEAN KWH = 56.429

RESIDUAL SUM SQUARE = 3.9490E+09
F-RATIO = 26.908
DEGREES OF FREEDOM = 210

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	586.39	177.55	.19642	.31264	3.3026	10.907
FREEZER	2891.8	647.56	.24713	.49826	4.4657	19.943
ROOMS	578.73	263.84	.13140	.43930	2.1935	4.8113
DRYER	3799.2	722.38	.30909	.62943	5.2593	27.660
STOVE	2931.0	658.99	.25971	.52620	4.4477	19.782

Table I-35

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income $15,000-25,000

EQUATION
KWH = - 3,423.1 + 692.28*FAMILY + 1,856.7*FREEZER + 2,024.5*DRYER + 2,785.4*STOVE

R-SQUARED = .28578

170 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .26847
STANDARD ERROR = 4,051.5
DEPENDENT MEAN = 8,622.1
STANDARD ERROR AS % MEAN KWH = 46.989

RESIDUAL SUM SQUARE = 2,7084E+09
F-RATIO = 16.505
DEGREES OF FREEDOM = 165

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
FAMILY	692.28	188.64	.24534	.31597	3.6698	13.467
FREEZER	1856.7	671.86	.18638	.28881	2.7635	7.6370
DRYER	2024.5	714.22	.19531	.30386	2.8345	8.0345
STOVE	2785.4	645.58	.29480	.48838	4.3146	18.615

Table I-36

Detroit Edison Individual Customer Cross-Section Model
Regressions Excluding Average Price and
Including Appliance Variables
Income Over $25,000

EQUATION
KWH = - 5,834.8 + 1,846.8*AC + 1,420.9*FAMILY + 1,000.8*ROOMS

R-SQUARED = .43304

62 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .40372
STANDARD ERROR = 5,173.8
DEPENDENT MEAN = 10,804
STANDARD ERROR AS % MEAN KWH = 47.888

RESIDUAL SUM SQUARE = 1.5525E+09
F-RATIO = 14.767
DEGREES OF FREEDOM = 58

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
AC	1846.8	512.81	.35620	.38599	3.6013	12.970
FAMILY	1420.9	446.07	.36200	.51759	3.1854	10.147
ROOMS	1000.8	413.37	.27514	.63649	2.4211	5.8618

Table I-37

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Total Sample

EQUATION

KWH = 29.215 - 2.4467*CENTS KWH + 357.78*INCOME + 676.56*ROOMS + 511.66*FAMILY

R-SQUARED = .095327

1533 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .092959
STANDARD ERROR = 6,012.3
DEPENDENT MEAN = 6,914.7
STANDARD ERROR AS % MEAN KWH = 86.949

RESIDUAL SUM SQUARE = 5.5233E+10
F-RATIO = 40.252
DEGREES OF FREEDOM = 1528

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS KWH	-2.4467	2.1696	-.27527E-01	-.21864E-02	-1.1277	1.2717
INCOME	357.78	93.375	.10059	.19839	3.8316	14.681
ROOMS	676.56	92.096	.18768	.56677	7.3463	53.968
FAMILY	511.66	93.275	.14068	.23280	5.4855	30.091

Table I-38

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Consumption Less Than 500 Kilowatthours/Month

EQUATION
KWH = 2,080.4 - 1.3634*CENTS/KWH + 309.53*ROOMS - 121.43*FAMILY

R-SQUARED = .12645

783 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .12309
STANDARD ERROR = 1,547.8
DEPENDENT MEAN = 3,370.9
STANDARD ERROR AS % MEAN KWH = 45.915

RESIDUAL SUM SQUARE = 1.8661E+09
F-RATIO = 37.589
DEGREES OF FREEDOM = 779

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-1.3636	.55982	-.81943E-01	-.36725E-02	-2.4358	5.9331
ROOMS	309.53	32.516	.31988	.48585	9.4899	90.057
FAMILY	-121.43	30.509	-.13355	-.99327E-01	-3.9802	15.842

Table I-39

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Consumption 500-1,000 Kilowatthours/Month

EQUATION
KWH = 11,113 - 1,087.5*CENTS/KWH + 219.15*FAMILY

R-SQUARED = .03953

581 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .036207
STANDARD ERROR = 1,647
DEPENDENT MEAN = 8,401.3
STANDARD ERROR AS % MEAN KWH = 19.605

RESIDUAL SUM SQUARE = 1.5680E+09
F-RATIO = 11.894
DEGREES OF FREEDOM = 578

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-1087.5	466.01	-.97686E-01	-.41087	-2.3337	5.4462
FAMILY	219.15	46.618	.19678	.88045E-01	4.7010	22.100

Table I-40

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Consumption Greater Than 1,000 Kilowatthours/Month

EQUATION
KWH = 642,779 - 201,894*CENTS/KWH - 773.52*INCOME

R-SQUARED = .58658

169 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .5816
STANDARD ERROR = 7,820.4
DEPENDENT MEAN = 18,223
STANDARD ERROR AS % MEAN KWH = 42.916

RESIDUAL SUM SQUARE = 1.0152E+10
F-RATIO = 117.77
DEGREES OF FREEDOM = 166

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-.20189E+06	13161.	-.77017	-34.064	-15.341	235.34
INCOME	-773.52	367.41	-.10570	-.20998	-2.1053	4.4325

Table I-41

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income Less Than $4,000

EQUATION
KWH = 4,754.8 - 55.498*CENTS/KWH

R-SQUARED = .070153

170 OBSERVATIONS, 1 VARIABLE

CORRECTED R-SQUARED = .064618
STANDARD ERROR = 2,565
DEPENDENT MEAN = 4,457.7
STANDARD ERROR AS % MEAN KWH = 57.541

RESIDUAL SUM SQUARE = 1.1053E+09
F-RATIO = 12.675
DEGREES OF FREEDOM = 168

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-55.498	15.588	-.26486	-.66647E-01	-3.5602	12.675

Table I-42

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income $4,000-10,000

EQUATION
KWH = 1,420.2 - 1.4427*CENTS KWH + 481.68*ROOMS + 759.74*FAMILY

R-SQUARED = .044342

451 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .037929
STANDARD ERROR = 7,432.8
DEPENDENT MEAN = 6,190.1
STANDARD ERROR AS % MEAN KWH = 120.08

RESIDUAL SUM SQUARE = 2.4695E+10
F-RATIO = 6.9136
DEGREES OF FREEDOM = 447

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS KWH	-1.4427	2.7198	-.24743E-01	-.23325E-02	-.53045	.28137
ROOMS	481.68	217.34	.10365	.42048	2.2163	4.9119
FAMILY	759.74	205.47	.17148	.35242	3.6976	13.673

Table I-43

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income $10,000-15,000

EQUATION
KWH = 3,928.3 - 375.67*CENTS/KWH + 367.08*ROOMS + 827.1*FAMILY

R-SQUARED = .12812

387 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .12129
STANDARD ERROR = 5,374.6
DEPENDENT MEAN = 7,189.1
STANDARD ERROR AS % MEAN KWH = 74.760

RESIDUAL SUM SQUARE = 1.1063E+10
F-RATIO = 18.76
DEGREES OF FREEDOM = 383

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-375.67	77.324	-.23616	-.20636	-4.8584	23.604
ROOMS	367.08	179.89	.10171	.29369	2.0406	4.1639
FAMILY	827.10	185.92	.21855	.36625	4.4487	19.791

Table I-44

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income $15,000-25,000

EQUATION
KWH = 1,287.2 - 63.582*CENTS/KWH + 889.28*ROOMS + 376.58*FAMILY

R-SQUARED = .14635

387 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .13966
STANDARD ERROR = 4,894.5
DEPENDENT MEAN = 7,772.8
STANDARD ERROR AS % MEAN KWH = 62.969

RESIDUAL SUM SQUARE = 9.1751E+09
F-RATIO = 21.886
DEGREES OF FREEDOM = 383

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-63.582	17.341	-.17310	-.40280E-01	-3.6665	13.443
ROOMS	889.28	139.39	.30422	.69828	6.3798	40.702
FAMILY	376.58	152.92	.11743	.17639	2.4625	6.0641

Table I-45

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income Over $25,000

EQUATION
KWH = - 475.49 - 168.15*CENTS KWH + 1,473.6*ROOMS

R-SQUARED = .16031

138 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .14787
STANDARD ERROR = 7,197.8
DEPENDENT MEAN = 9,133.5
STANDARD ERROR AS % MEAN KWH = 78.807

RESIDUAL SUM SQUARE = 6.9942E+09
F-RATIO = 12.887
DEGREES OF FREEDOM = 135

VARIABLE VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS KWH	-168.15	99.497	-.13885	-.82003E-01	-1.6900	2.8563
ROOMS	1473.6	357.51	.33864	1.1341	4.1218	16.989

Table I-46

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Total Sample

EQUATION

KWH = -22,123 - 104.97*CENTS/KWH + 358.22*ROOMS + 560.56*FAMILY + 942.39*FRIDGE2 + 842.07*FRIDGE

+ 670.31*WASHER + 679.13*FREEZER + 1,797.2*DRYER + 2,398.3*AC + 3,156.3*WATER + 8,156.1*SPACE

R-SQUARED = .34467

1000 OBSERVATIONS, 11 VARIABLES

CORRECTED R-SQUARED	= .33737	RESIDUAL SUM SQUARE	= 3.285E+10
STANDARD ERROR	= 5,766.3	F-RATIO	= 47.239
DEPENDENT MEAN	= 7,395.5	DEGREES OF FREEDOM	= 988
STANDARD ERROR AS % MEAN KWH = 77.971			

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTITICTY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-104.97	19.179	-.14296	-.61336E-01	-5.4733	29.958
ROOMS	358.22	118.04	.86806E-01	.28786	3.0346	9.2088
FAMILY	560.56	112.18	.13220	.24467	4.9969	24.969
FRIDGE 2	942.39	454.02	.55227E-01	.15559	2.0757	4.3084
FRIDGE	824.07	220.48	.10039	.36270	3.7376	13.970
WASHER	670.31	192.14	.11320	.30092	3.4886	12.170
FREEZER	679.13	113.05	.17006	.24812	6.0072	36.087
DRYER	1797.2	432.44	.12644	.35406	4.1559	17.271
AC	2398.3	398.99	.15633	.36126	6.0110	36.132
WATER	3156.3	415.27	.21857	.59835	7.6005	57.768
SPACE	8156.1	1058.3	.20578	1.1392	7.7070	59.398

Table I-47

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Consumption Less Than 500 Kilowatthours/Month

EQUATION
KWH = -179.5 - 38.992*CENTS/KWH + 112.85*ROOMS + 769.52*MICRO-OVEN + 356.46*FRIDGE + 360.25*WASHER + 193.26*FREEZER

R-SQUARED = .3685

474 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .36038
STANDARD ERROR = 1,308.3
DEPENDENT MEAN = 3,485
STANDARD ERROR AS % MEAN KWH = 37.542

RESIDUAL SUM SQUARE = 799,392,222
F-RATIO = 45.417
DEGREES OF FREEDOM = 467

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-38.992	4.4740	-.33142	-.62865E-01	-8.7152	75.954
ROOMS	112.85	37.742	.11802	.17605	2.9900	8.9399
MICRO OVEN	769.52	371.31	.79723E-01	.22733	2.0724	4.2950
FRIDGE	356.46	69.441	.19631	.30815	5.1333	26.350
WASHER	360.25	48.527	.30252	.29638	7.4239	55.114
FREEZER	193.26	42.676	.17693	.10646	4.5285	20.507

Table I-48

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Consumption 500-1000 Kilowatthours/Month

EQUATION

KWH = -4,524.7 + 1,633.6*CENTS/KWH + 103.92*ROOMS + 296.43*FAMILY + 305.61*FRIDGE + 212.51*WASHER + 137.2*FREEZER + 236.42*STOVE + 449.97*AC + 1,875.3*WATER

R-SQUARED = .28217

400 OBSERVATIONS, 9 VARIABLES

CORRECTED R-SQUARED = .2656
STANDARD ERROR = 1,467.2
DEPENDENT MEAN = 8,382.5
STANDARD ERROR AS % MEAN KWH = 17.504

RESIDUAL SUM SQUARE = 938,596,226
F-RATIO = 17.033
DEGREES OF FREEDOM = 390

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	1633.6	664.88	.14242	.61923	2.4570	6.0370
ROOMS	103.92	50.302	.93418E-01	.77141E-01	2.0659	4.2679
FAMILY	296.43	53.316	.25525	.11917	5.5598	30.911
FRIDGE	305.61	98.122	.13655	.12633	3.1146	9.7005
WASHER	212.51	88.735	.11082	.93104E-01	2.3949	5.7354
FREEZER	137.20	43.056	.13997	.53564E-01	3.1866	10.154
STOVE	236.42	94.100	.11320	.72413E-01	2.5124	6.3121
AC	449.97	139.11	.14278	.62269E-01	3.2347	10.463
WATER	1875.3	208.50	.54035	.31656	8.9942	80.896

Table I-49

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Consumption over 1000 Kilowatthours per Month

EQUATION
KWH = 757.606 - 238,303*CENTS/KWH - 5,881.3*SPACE

R-SQUARED = .59803

126 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .59149
STANDARD ERROR = 8,700.9
DEPENDENT MEAN = 18,974
STANDARD ERROR AS % MEAN KWH = 45.858

RESIDUAL SUM SQUARE = 9.3119E+09
F-RATIO = 91.946
DEGREES OF FREEDOM = 123

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-.23830E+06	18355.	-.83037	-38.573	-12.983	168.57
SPACE	-5881.3	2423.4	-.15521	-.35671	-2.4269	5.8896

Table I -50

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income Less Than $4,000

EQUATION

KWH = - 3,092 - 164.06*CENTS/KWH + 863.15*FRIDGE + 1,684.4*DISHWASHER + 420.5*FREEZER + 2,012.7*WATER

R-SQUARED = .55751

89 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .53085
STANDARD ERROR = 1,654.8
DEPENDENT MEAN = 4,208.9
STANDARD ERROR AS % MEAN KWH = 39.316

RESIDUAL SUM SQUARE = 227,275,988
F-RATIO = 20.915
DEGREES OF FREEDOM = 83

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-164.06	29.696	-.40727	-.17626	-5.5247	30.523
FRIDGE	863.15	200.72	.31515	.58067	4.3003	18.492
DISHWASHER	1684.4	539.95	.23023	.42718	3.1196	9.7319
FREEZER	420.50	115.10	.28388	.20992	3.6534	13.347
WATER	2012.7	375.66	.41676	.69312	5.3577	28.705

Table I-51

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income $4,000-10,000

EQUATION

KWH = - 22,403 - 91.249*CENTS KWH + 741.57*FAMILY + 9,037*MICRO OVEN + 1,026.3*FREEZER + 2,165.9*DRYER + 7,229.8*AC + 3,183.5*WATER

R-SQUARED = .26764

266 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .24777
STANDARD ERROR = 8,116.1
DEPENDENT MEAN = 6,739.7
STANDARD ERROR AS % MEAN KWH = 120.33

RESIDUAL SUM SQUARE = 1.6995E+10
F-RATIO = 13.47
DEGREES OF FREEDOM = 258

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS KWH	-91.249	119.19	-.41500E-01	-.52418E-01	-.76557	.58610
FAMILY	741.57	304.17	.13237	.32140	2.4380	5.9437
MICRO OVEN	9037.0	3386.3	.14366	1.3711	2.6687	7.1220
FREEZER	1026.3	288.11	.19678	.39155	3.5621	12.688
DRYER	2165.9	1065.6	.11463	.45788	2.0326	4.1315
AC	7229.8	1252.9	.30824	1.1614	5.7705	33.299
WATER	3183.5	1036.6	.16848	.67302	3.0712	9.4323

Table I-52

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income $10,000-15,000

EQUATION

KWH = - 14,061 - 1,170.7*CENTS/KWH + 676.83*FAMILY + 2,798.7*MICRO-OVEN + 836.33*FRIDGE + 583.21*FREEZER + 1,616.8*DRYER + 3,115.4*WATER + 9,199.3*SPACE

R-SQUARED = .42303

263 OBSERVATIONS, 8 VARIABLES

CORRECTED R-SQUARED = .40486
STANDARD ERROR = 4,711.2
DEPENDENT MEAN = 7,623.7
STANDARD ERROR AS % MEAN KWH = 61.796

RESIDUAL SUM SQUARE = 5.6376E+09
F-RATIO = 23.279
DEGREES OF FREEDOM = 254

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-1170.7	256.65	-.23714	-.54728	-4.5614	20.807
FAMILY	676.83	211.48	.16004	.28659	3.2005	10.243
MICRO OVEN	2798.7	1418.9	.95817E-01	.38386	1.9725	3.8909
FRIDGE	836.33	369.85	.11252	.36164	2.2613	5.1133
FREEZER	583.21	177.34	.17007	.20943	3.2887	10.815
DRYER	1616.8	641.99	.13258	.32093	2.5184	6.3423
WATER	3115.4	632.68	.25329	.58578	4.9242	23.248
SPACE	9199.3	1734.0	.25919	1.2434	5.3052	28.145

Table I-53

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income $15,000-25,000

EQUATION
KWH = - 22,218 - 96.16*CENTS/KWH + 533.11*ROOMS + 474.75*FAMILY + 1,113.7*FRIDGE + 1,223.1*WASHER

+ 677.34*FREEZER + 1,493.2*DRYER + 3,246.5*WATER + 8,695.1*SPACE

R-SQUARED = .59378

285 OBSERVATIONS, 9 VARIABLES

CORRECTED R-SQUARED = .58049
STANDARD ERROR = 3,602.1
DEPENDENT MEAN = 7,988.8
STANDARD ERROR AS % MEAN KWH = 45.089

RESIDUAL SUM SQUARE = 3.5681E+09
F-RATIO = 44.665
DEGREES OF FREEDOM = 275

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-96.160	13.294	-.28838	-.64283E-01	-7.2334	52.322
ROOMS	533.11	138.04	.16860	.41117	3.8620	14.915
FAMILY	474.75	132.67	.14118	.22228	3.5784	12.805
FRIDGE	1113.7	272.03	.17172	.47055	4.0940	16.761
WASHER	1223.1	265.48	.23666	.54148	4.6070	21.224
FREEZER	677.34	133.59	.21415	.24573	5.0705	25.710
DRYER	1493.2	497.69	.13404	.27282	3.0002	9.0015
WATER	3246.5	535.86	.27639	.54327	6.0585	36.706
SPACE	8695.1	1115.6	.32679	1.1381	7.7939	60.745

Table I-54

Consumers Power Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income Greater Than $25,000

EQUATION

KWH = - 25,779 - 106.18*CENTS KWH + 799.39*FAMILY + 3,891.1*FRIDGE2 + 1,337.7*WASHER + 3,757*DRYER

+ 2,268.8*AC + 13,508*SPACE

R-SQUARED = .48621

97 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .4458
STANDARD ERROR = 5,974.5
DEPENDENT MEAN = 9,755.9
STANDARD ERROR AS % MEAN KWH = 61.240

RESIDUAL SUM SQUARE = 3.1768E+09
F-RATIO = 12.032
DEGREES OF FREEDOM = 89

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS KWH	-106.18	92.006	-.96520E-01	-.48190E-01	-1.1540	1.3318
FAMILY	799.39	372.17	.17208	.31762	2.1480	4.6137
FRIDGE2	3891.1	1281.7	.23674	.55099	3.0360	9.2171
WASHER	1337.7	659.57	.18804	.47636	2.0281	4.1131
DRYER	3757.0	1430.1	.23497	.58757	2.6271	6.9015
AC	2268.8	875.79	.20058	.30208	2.5905	6.7109
SPACE	13508.	2761.8	.37409	1.4560	4.8909	23.921

Table I-55

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Total Sample

EQUATION

KWH = 15,776 - 5,095.2*CENTS/KWH + 265.52*INCOME + 502.49*ROOMS + 464.88*FAMILY + 304.13*AGE HEAD

R-SQUARED = .44834

711 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .44442
STANDARD ERROR = 3,770.7
DEPENDENT MEAN = 7,044
STANDARD ERROR AS % MEAN KWH = 53.530

RESIDUAL SUM SQUARE = 1.0024E+10
F-RATIO = 114.59
DEGREES OF FREEDOM = 705

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-5095.2	351.61	-.47501	-2.2529	-14.491	209.98
INCOME	265.52	87.626	.10483	.20210	3.0301	9.1817
ROOMS	502.49	112.77	.14563	.41497	4.4559	19.855
FAMILY	464.88	99.466	.16681	.22732	4.6738	21.844
AGE HEAD	304.13	115.06	.88015E-01	.16900	2.6431	6.9860

Table I-56

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Consumption Less Than 500 Kilowatthours/Month

EQUATION
KWH = 10,428 - 2,276.4*CENTS/KWH + 92.47*INCOME + 173.12*FAMILY + 66.339*AGE HEAD

R-SQUARED = .79137

342 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .78889
STANDARD ERROR = 626.53
DEPENDENT MEAN = 3,780
STANDARD ERROR AS % MEAN KWH = 16.575

RESIDUAL SUM SQUARE = 132,286,595
F-RATIO = 319.57
DEGREES OF FREEDOM = 337

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-2276.4	81.989	-.76426	-2.0594	-27.765	770.90
INCOME	92.470	19.260	.14203	.10837	4.8010	23.050
FAMILY	173.12	27.302	.18673	.11785	6.3409	40.207
AGE HEAD	66.339	25.442	.77411E-01	.74512E-01	2.6075	6.7791

Table I-57

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Consumption 500-1000 Kilowatthours/Month

EQUATION
KWH = 12,015 - 2,219.9*CENTS/KWH + 222.74*INCOME + 178.56*ROOMS

R-SQUARED = .18438

294 OBSERVATIONS, 3 VARIABLES

CORRECTED R-SQUARED = .17594
STANDARD ERROR = 1,417.7
DEPENDENT MEAN = 8,110.8
STANDARD ERROR AS % MEAN KWH = 17.479

RESIDUAL SUM SQUARE = 582,835,242
F-RATIO = 21.853
DEGREES OF FREEDOM = 290

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-2219.9	330.22	-.35852	-.78658	-6.7226	45.193
INCOME	222.74	57.233	.20711	.16842	3.8919	15.147
ROOMS	178.56	63.732	.14988	.13680	2.8017	7.8493

Table I-58

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Consumption Over 1,000 Kilowatthours/Month

EQUATION
KWH = 46,958 - 10,947*CENTS/KWH

R-SQUARED = .11381

75 OBSERVATIONS, 1 VARIABLES

CORRECTED R-SQUARED = .10167
STANDARD ERROR = 7,184.6
DEPENDENT MEAN = 17,747
STANDARD ERROR AS % MEAN KWH = 40.484

RESIDUAL SUM SQUARE = 3,7682E+09
F-RATIO = 9.375
DEGREES OF FREEDOM = 73

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-10947	3575.3	-.33735	-1.6460	-3.0619	9.3750

Table I-59

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income $0-5,000

EQUATION
KWH = 13,535 - 3,031.4*CENTS/KWH + 470.19*FAMILY

R-SQUARED = .64033

122 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .63428
STANDARD ERROR = 1,596.4
DEPENDENT MEAN = 3,745.8
STANDARD ERROR AS % MEAN KWH = 42.620

RESIDUAL SUM SQUARE = 303,288,575
F-RATIO = 105.93
DEGREES OF FREEDOM = 119

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-3031.4	271.97	-.67437	-2.8798	-11.146	124.23
FAMILY	470.19	122.07	.23305	.26648	3.8518	14.837

Table I-60

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income $5,000-10,000

EQUATION
KWH = 16,575 - 3,885.2*CENTS/KWH + 364.12*FAMILY

R-SQUARED = .54581

141 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .53923
STANDARD ERROR = 1,988.9
DEPENDENT MEAN = 5,360.4
STANDARD ERROR AS % MEAN KWH = 37.103

RESIDUAL SUM SQUARE = 545,877,882
F-RATIO = 82.919
DEGREES OF FREEDOM = 138

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-3885.2	328.92	-.68558	-2.2810	-11.812	139.52
FAMILY	364.12	111.07	.19027	.18885	3.2782	10.747

Table I-61

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income $10,000-15,000

EQUATION
KWH = 30,531 - 9,231.1*CENTS/KWH + 893.09*ROOMS

R-SQUARED = .38602

216 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .38025
STANDARD ERROR = 4,321.6
DEPENDENT MEAN = 7,684.7
STANDARD ERROR AS % MEAN KWH = 56.236

RESIDUAL SUM SQUARE = 3.9780E+09
F-RATIO = 65.958
DEGREES OF FREEDOM = 213

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-9231.1	943.88	-.54078	-3.6509	-9.7800	95.648
ROOMS	893.09	243.54	.20278	.67793	3.6672	13.448

Table I-62

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income $15,000-25,000

EQUATION
KWH = 30,991 - 8,061.9*CENTS/KWH + 355.34*FAMILY

R-SQUARED = .38043

170 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .37301
STANDARD ERROR = 3,750.8
DEPENDENT MEAN = 8,622.1
STANDARD ERROR AS % MEAN KWH = 43.502

RESIDUAL SUM SQUARE = 2.3495E+09
F-RATIO = 51.271
DEGREES OF FREEDOM = 167

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-8061.9	901.22	-.56876	-2.7566	-8.9455	80.023
FAMILY	355.34	179.40	.12593	.16219	1.9807	3.9232

Table I -63

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Excluding Appliance Variables
Income Over $25,000

EQUATION
KWH = 40,061 - 12,541*CENTS/KWH + 1,010.7*ROOMS

R-SQUARED = .41958

62 OBSERVATIONS, 2 VARIABLES

CORRECTED R-SQUARED = .39991
STANDARD ERROR = 5,190.3
DEPENDENT MEAN = 10,804
STANDARD ERROR AS % MEAN KWH = 48.041

RESIDUAL SUM SQUARE = 1.5894E+09
F-RATIO = 21.326
DEGREES OF FREEDOM = 59

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-12541	2662.7	-.49741	-3.3508	-4.7099	22.183
ROOMS	1010.7	384.15	.27787	.64281	2.6311	6.9229

Table I-64

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Total Sample

EQUATION
KWH = -22,278 - 1,243.4*CENTS/KWH + 279.28*INCOME + 481.53*ROOMS + 645.16*FAMILY + 1,127.6*FREEZER

+ 942.99*DRYER + 1,166.9*STOVE + 936.86*AC + 4,340.9*WATER + 15,695*SPACE

R-SQUARED = .68091

711 OBSERVATIONS, 10 VARIABLES

CORRECTED R-SQUARED = .67635
STANDARD ERROR = 2,877.9
DEPENDENT MEAN = 7,044
STANDARD ERROR AS % MEAN KWH = 40.587

RESIDUAL SUM SQUARE = 5.7978E+09
F-RATIO = 149.37
DEGREES OF FREEDOM = 700

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-1243.4	330.96	-.11592	-.54979	-3.7569	14.114
INCOME	279.28	66.276	.11026	.21257	4.2138	17.756
ROOMS	481.53	85.947	.13956	.39766	5.6027	31.390
FAMILY	645.16	72.663	.23150	.31548	8.8788	78.834
FREEZER	1127.6	248.66	.10298	.20939	4.5348	20.565
DRYER	942.99	273.41	.81984E-01	.16889	3.4490	11.896
STOVE	1166.9	237.66	.11481	.23999	4.9101	24.109
AC	936.86	118.90	.18079	.22241	7.8796	62.089
WATER	4340.9	401.42	.28821	.69599	10.814	116.94
SPACE	15695.	1131.6	.30653	2.2500	13.870	192.37

Table I-65

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Consumption Less Than 500 Kilowatthours/Month

EQUATION
KWH = -12,246 - 2,506*CENTS/KWH + 81.685*INCOME + 135.12*FAMILY + 70.167*AGE HEAD + 281.88*FREEZER
- 1,186.9*WATER

R-SQUARED = .81703

342 OBSERVATIONS, 6 VARIABLES

CORRECTED R-SQUARED = .81375
STANDARD ERROR = 588.48
DEPENDENT MEAN = 3,780
STANDARD ERROR AS % MEAN KWH = 15.568

RESIDUAL SUM SQUARE = 116,014,389
F-RATIO = 249.32
DEGREES OF FREEDOM = 335

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-2506.0	89.223	-.84135	-2.2671	-28.087	788.89
INCOME	81.685	18.172	.12546	.95729E-01	4.4952	20.207
FAMILY	135.12	26.286	.14574	.91976E-01	5.1401	26.421
AGE HEAD	70.167	24.125	.81878E-01	.78811E-01	2.9085	8.4594
FREEZER	281.88	89.994	.74334E-01	.85911E-01	3.1322	9.8107
WATER	-1186.9	200.89	-.16040	-.32503	-5.9085	34.911

Table I-66

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Consumption 500-1000 Kilowatthours/Month

EQUATION

KWH = 8,865.8 - 1,827.1*CENTS/KWH + 158.67*INCOME + 202.44*FAMILY + 325.19*FREEZER + 636.37 *DRYER + 576.86*STOVE + 296.2*AC

R-SQUARED = .28881

294 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .2714
STANDARD ERROR = 1,333
DEPENDENT MEAN = 8,110.8
STANDARD ERROR AS % MEAN KWH = 16.435

RESIDUAL SUM SQUARE = 508,210,487
F-RATIO = 16.592
DEGREES OF FREEDOM = 286

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-1827.1	322.71	-.29508	-.64738	-5.6618	32.056
INCOME	158.67	55.177	.14753	.11997	2.8756	8.2691
FAMILY	202.44	48.495	.22038	.10281	4.1745	17.427
FREEZER	325.19	159.35	.10252	.56458E-01	2.0407	4.1646
DRYER	636.37	175.62	.18870	.10275	3.6237	13.131
STOVE	576.86	170.75	.18485	.10523	3.3783	11.413
AC	296.20	77.270	.19577	.67076E-01	3.8333	14.694

Table I-67

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Consumption Greater Than 1000 Kilowatthours/Month

EQUATION
KWH = -30,494 + 1,529.9*INCOME + 1,709.4*ROOMS + 7,563.2*WATER + 13,438*SPACE

R-SQUARED = .50702

75 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .47885
STANDARD ERROR = 5,472.3
DEPENDENT MEAN = 17,747
STANDARD ERROR AS % MEAN KWH = 30.836

RESIDUAL SUM SQUARE = 2.0962E+09
F-RATIO = 17.998
DEGREES OF FREEDOM = 70

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
INCOME	1529.9	566.62	.27178	.56783	2.7001	7.2905
ROOMS	1709.4	451.60	.36387	.66784	3.7852	14.328
WATER	7563.2	1567.3	.49861	.66484	4.8256	23.286
SPACE	13438.	2467.7	.48417	.81778	5.4454	29.653

Table I-68

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income $0-5,000

EQUATION
KWH = 215.02 - 1,908.8*CENTS/KWH + 669.2*FAMILY + 1,503.7*DRYER + 2,920.1*WATER + 4,012.8*SPACE

R-SQUARED = .81056

122 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .8024
STANDARD ERROR = 1,173.5
DEPENDENT MEAN = 3,745.8
STANDARD ERROR AS % MEAN KWH = 31.328

RESIDUAL SUM SQUARE = 159,742,153
F-RATIO = 99.267
DEGREES OF FREEDOM = 116

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-1908.8	230.29	-.42466	-1.8134	-8.2887	68.703
FAMILY	669.20	92.154	.33169	.37927	7.2618	52.733
DRYER	1503.7	342.93	.18783	.45080	4.3849	19.228
WATER	2920.1	468.31	.29034	.83707	6.2354	38.880
SPACE	4012.8	869.52	.19382	1.0888	4.6149	21.297

Table I-69

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income $5,000-10,000

EQUATION

KWH = -4,7128 - 2,792.2*CENTS/KWH + 297.22*ROOMS + 388.55*FAMILY + 1,426*FREEZER + 886.77*STOVE

+ 317.48*AC + 12,597*SPACE

R-SQUARED = .77441

141 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .76253
STANDARD ERROR = 1,427.8
DEPENDENT MEAN = 5,360.4
STANDARD ERROR AS % MEAN KWH = 26.636

RESIDUAL SUM SQUARE = 271,136,978
F-RATIO = 65.222
DEGREES OF FREEDOM = 133

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL- F
CENTS/KWH	-2792.2	260.03	-.49272	-1.6394	-10.738	115.30
ROOMS	297.22	110.85	.12058	.29061	2.6814	7.1897
FAMILY	388.55	85.786	.20304	.20152	4.5292	20.514
FREEZER	1426.0	282.84	.22017	.34149	5.0552	25.555
STOVE	886.77	259.84	.14711	.22761	3.4127	11.647
AC	317.48	142.67	.93887E-01	.90731E-01	2.2252	4.9517
SPACE	12597.	1471.1	.36206	2.3666	8.5626	73.318

Table I-70

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income $10,000-15,000

EQUATION

KWH = -23,001 - 2,847.4*CENTS/KWH + 519*ROOMS + 373.08*FAMILY + 1.056.5*FREEZER + 1,730*DRYER + 741.97*AC + 5,598*WATER + 23,332*SPACE

R-SQUARED = .73663

216 OBSERVATIONS, 8 VARIABLES

CORRECTED R-SQUARED = .72645
STANDARD ERROR = 2,871.1
DEPENDENT MEAN = 7,684.7
STANDARD ERROR AS % MEAN KWH = 37.361

RESIDUAL SUM SQUARE = 1.7064E+09
F-RATIO = 72.371
DEGREES OF FREEDOM = 207

VARIABLE	COEFFICIENTS	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-2847.4	775.07	-.16681	-1.1261	-3.6738	13.497
ROOMS	519.00	175.55	.11784	.39396	2.9564	8.7403
FAMILY	373.08	119.64	.12497	.19891	3.1183	9.7239
FREEZER	1056.5	441.53	.90287E-01	.18204	2.3929	5.7259
DRYER	1730.0	498.59	.14075	.28661	3.4697	12.039
AC	741.97	225.58	.12181	.15690	3.2891	10.818
WATER	5598.5	700.97	.36314	.83646	7.9869	63.790
SPACE	23332.	2137.8	.40803	3.0643	10.914	119.12

Table I-71

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income $15,000-25,000

EQUATION

KWH = -21,238 - 1,839.7*CENTS/KWH + 736.18*FAMILY + 1,578.1*FREEZER + 1,449.8*STOVE + 815.58*AC

+ 4,074.2*WATER + 21,621*SPACE

R-SQUARED = .71978

170 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .70767
STANDARD ERROR = 2,561.1
DEPENDENT MEAN = 8,622.1
STANDARD ERROR AS % MEAN KWH = 29.704

RESIDUAL SUM SQUARE = 1.0626E+09
F-RATIO = 59.445
DEGREES OF FREEDOM = 162

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS/KWH	-1839.7	829.88	-.12979	-.62905	-2.2169	4.9145
FAMILY	736.18	127.15	.26090	.33601	5.7898	33.522
FREEZER	1578.1	439.80	.15841	.24547	3.5881	12.875
STOVE	1449.8	432.02	.15344	.25420	3.3559	11.262
AC	815.58	189.85	.18744	.18306	4.2959	18.455
WATER	4074.2	721.55	.29506	.53646	5.6465	31.883
STOVE	21621.	1952.4	.49360	2.5371	11.074	122.64

Table I-72

Detroit Edison Individual Customer Cross-Section Model
Regressions Including Average Price
and Including Appliance Variables
Income Greater Than $25,000

EQUATION

KWH = 12,244 - 6,972.6*CENTS/KWH + 870.26*ROOMS + 904.33*FAMILY + 1,169.7*AC + 5,007.2*WATER

R-SQUARED = .56465

62 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .52578
STANDARD ERROR = 4,613.9
DEPENDENT MEAN = 10,804
STANDARD ERROR AS % MEAN KWH = 42.706

RESIDUAL SUM SQUARE = 1.1922E+09
F-RATIO = 14.526
DEGREES OF FREEDOM = 56

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
CENTS KWH	-6972.6	2745.2	-.27655	-1.8630	-2.5399	6.4512
ROOMS	870.26	373.58	.23925	.55346	2.3295	5.4265
FAMILY	904.33	431.44	.23040	.32942	2.0961	4.3935
AC	1619.7	476.16	.31241	.33853	3.4016	11.571
WATER	5007.2	2072.1	.22275	.50832	2.4165	5.8393

Table I-73

Cross Sectional Regressions for Detroit Edison Customers Using Both a Marginal and an Average Price for Electricity
Total Sample

[illegible]

[illegible] = 47,8[illegible] [illegible]*MAR PRICE + 2,993.[illegible]*AVG PRICE
+ [illegible] INCOME + 431.[illegible]*AC + 396.26*FA[illegible]
+ 60.8[illegible] AGE HEAD + 1,7[illegible].6*FREEZER + 3[illegible].08*ROOMS
+ [illegible]*DRYER + 1,79[illegible]*STOVE

R-SQUARED = .517[illegible]

71[illegible] OBSERVATIONS - 10 VARIABLES

CORRE[illegible] R-SQUARED	= [illegible]	RESIDUAL SUM SQUARE	= 8.7[illegible]E+09
STANDARD ERROR	= 3,537.7	F-RATIO	= 75.131
DEPENDENT MEAN	= 7,[illegible]44	DEGREES OF FREEDOM	= 700
STANDARD ERROR AS % MEAN KWH	= 50.223		

COEFFICIENTS TABLE

VARIABLE	COEFFICIENT	STANDARD ERROR	95.00% CONFIDENCE LOWER	95.00% CONFIDENCE UPPER	BETA
MAR P[illegible]	[illegible]	3730.5	-2905[illegible].	-17434.	-.78861
AVG P[illegible]	[illegible]	5[illegible].7[illegible]	1994.	4013.[illegible]	.51[illegible]
INCOM[illegible]	1[illegible].91	85.512	-54.134	281.7[illegible]	.44733E-01
AC	[illegible]	[illegible]	1[illegible]	765.[illegible]	.92035[illegible]
FAMI[illegible]	[illegible]	96.25[illegible]	203.1[illegible]	58[illegible].3[illegible]	.1421[illegible]
AGE H[illegible]	[illegible]	110.92	156.75	276.[illegible]	.17597E-01
FREEZ[illegible]	[illegible]	307.84	714.[illegible]	1921.0	.12079
ROOMS	[illegible]	[illegible].57	119.92	542.16	.95758E-01
DRYER	1[illegible].7	327.15	1302.4	2585.0	.16916
STOVE	[illegible]	291.78	1222.3	2368.0	.17462

VARIABLE	ELASTICITY	T-STATISTIC	PARTIAL F
MAR PRI[illegible]	-[illegible]	-8.0270	64.432
AVG PRICE	1.4[illegible]	5.8037	33.683
INCOME	[illegible]	[illegible].2305	1.7702
AC	.114[illegible]	[illegible].3199	11.022
FAMILY	.19[illegible]	4.0291	16.234
AGE HEAD	[illegible]	.54822	.30055
FREEZER	[illegible]	[illegible].2606	[illegible]
ROOMS	.27[illegible]	3.0792	9.4[illegible]
DRYER	.34[illegible]	5.9[illegible]	35.2[illegible]
STOVE	.3[illegible]	6.1524	[illegible]

Table I-73 (Cont.)

	[illegible]	[illegible]	INCOME	[illegible]	FAMILY	AGE HEAD
[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	1.0000			
AC	[illegible]	[illegible]	.2747	[illegible]		
FAMILY	[illegible]	[illegible]	.4039	[illegible]	1.0000	
AGE HEAD	[illegible]	[illegible]	-.4133	[illegible]	-.4442	1.0000
[illegible]	[illegible]	[illegible]	.1476	[illegible]	[illegible]	.0245
[illegible]	[illegible]	[illegible]	.3376	.0020	.4317	[illegible]
[illegible]	[illegible]	[illegible]	.1084	[illegible]	.0370	[illegible]
[illegible]	[illegible]	[illegible]	.1583	[illegible]	-.0215	.1120
[illegible]	[illegible]	[illegible]	.4011	[illegible]	.4148	[illegible]

	[illegible]	[illegible]	[illegible]	[illegible]	KWH
[illegible]					
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	1.0000	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

SOURCE	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible] AT .05 LEVEL

Table I-74

Cross Sectional Regressions for Detroit Edison Customers Using Both a Marginal and an Average Price for Electricity Income $0 to 5,000 Per Year

[illegible]

Table I-74 (Cont.)

	[illegible]	[illegible]	AC	FAMILY	AGE HEAD	FREEZER
[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]				
AC	[illegible]	.1108	[illegible]			
[illegible]	[illegible]	.7024	.1919	1.0000		
AGE HEAD	[illegible]	.1034	.0155	.3401	1.0000	
FREEZER	[illegible]	[illegible]	[illegible]	.2699	.0797	1.0000
ROOMS	[illegible]	[illegible]	[illegible]	.4013	.0265	.3562
DRYER	[illegible]	[illegible]	[illegible]	.0600	[illegible]	.1717
[illegible]	[illegible]	.0124	[illegible]	.0982	[illegible]	[illegible]
KWH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] KWH

[illegible] 1.0000

[illegible]

	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	9	[illegible]
[illegible]	[illegible]	111	[illegible]
TOTAL	[illegible]	[illegible]	[illegible]

F-RATIO [illegible]

Table I-75

Cross Sectional Regressions for Detroit Edison Customers Using
Both a Marginal and an Average Price for Electricity
Income $5,001 to 10,000 Per Year

[illegible]

F-RATIO = 33.172

[illegible]

VARIABLE	[illegible]	STD. ERROR	LOWER	UPPER	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

VARIABLE	[illegible]	T-STATISTIC	PARTIAL
MARG [illegible]	-12.019	-7.7813	60.60[illegible]
AVG [illegible]	[illegible]	4.9354	24.348
AC	[illegible]E-01	.46111	.21262
FAM [illegible]	[illegible]E-01	1.4677	2.1542
AGE [illegible]	[illegible]E-01	.41810	.1748
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	.185872	.347[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

Table I-75 (Cont.)

[illegible] CORRELATION MATRIX

	[illegible]	[illegible]	[illegible]	FAMILY	[illegible]	FREEZER
[illegible]	[illegible]					
AVG [illegible]	.7432	[illegible]				
R[illegible]	[illegible]	[illegible]	[illegible]			
F[illegible]	[illegible]	.2615	[illegible]	[illegible]		
A[illegible]	[illegible]	.1440	[illegible]	[illegible]	[illegible]	
FREE[illegible]	[illegible]	[illegible]	[illegible]	.0220	.0751	[illegible]
ROOM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DA[illegible]	[illegible]	-.2042	[illegible]	.0389	.0971	[illegible]
STO[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.2950	[illegible]
KW[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.0075	[illegible]

[illegible]

ANALYSIS OF VARIANCE [illegible]

SOURCE	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
REGRESSION	[illegible]	[illegible]	[illegible]
RESIDUAL	.3645[illegible]109	131	[illegible]
TOTAL	.1201[illegible]10	140	[illegible]

F-RATIO [illegible] SIGNIFICANT AT .05 LEVEL

Table I-76

Cross Sectional Regressions for Detroit Edison Customers Using Both a Marginal and an Average Price for Electricity Income $10,000 to 15,000 Per Year

[illegible]

Table I-76 (Cont.)

	[illegible]	[illegible]	AC	FAMILY	AGE HEAD	FREEZER
[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	.1953	1.0000			
FAM[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
AGE HEAD	[illegible]	[illegible]	.0021	[illegible]	1.0000	
FREEZER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.0000
ROOMS	[illegible]	[illegible]	.0211	[illegible]	.0441	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
STO[illegible]	[illegible]	[illegible]	.0310	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table I-77

Cross Sectional Regressions for Detroit Edison Customers Using Both a Marginal and an Average Price for Electricity Income $15,001 to 25,000 Per Year

[illegible]

Table I-77

[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	1.0000			
[illegible]	[illegible]	[illegible]	[illegible]	1.0000		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.0000	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.0000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]REGRESSION	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
TOTAL	[illegible]	[illegible]	[illegible]

Table I-78

Cross Sectional Regressions for Detroit Edison Customers Using Both a Marginal and an Average Price for Electricity Income Greater Than $25,000 Per Year

[illegible]

Table I-78 (Cont.)

VARI[illegible] SIMPLE CORRELATIONS

	MAR PRICE	AVG PRICE	AC	FAMILY	AGE HEAD	FREEZER
MAR PRICE	[illegible]					
AVG PRICE	[illegible]	[illegible]				
AC	-[illegible]	-.0892	[illegible]			
FAMILY	[illegible]	[illegible]	.0151	[illegible]		
AGE HEAD	[illegible]	[illegible]	.0092	-.2702	1.0000	
FREEZER	[illegible]	[illegible]	.0262	[illegible]	.1192	[illegible]
HOURS	[illegible]	.0511	.0137	[illegible]	.1052	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0900	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1654	-.0871
[illegible]	[illegible]	.604	[illegible]	[illegible]	.0129	[illegible]

[illegible]

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE
REGRESSION	[illegible]	[illegible]	[illegible]
RESIDUAL	[illegible]	[illegible]	[illegible]
TOTAL	[illegible]	[illegible]	[illegible]

[illegible] LEVEL

Table I-79

Cross Sectional Regressions for Detroit Edison Customers Using Both a Marginal and an Average Price for Electricity Usage Less Than 500 kWh Per Month

[illegible]

Table I-79 (Cont.)

[illegible]

Table I-80

Cross Sectional Regressions for Detroit Edison Customers Using Both a Marginal and an Average Price for Electricity Usage 501 to 1,000 kWh Per Month

[illegible] PRICE [illegible] INCOME
[illegible] AGE HEAD
[illegible] INCOME [illegible]
[illegible]

R-SQUARED = [illegible]

[illegible]

[illegible] RESIDUAL SUM SQUARE = [illegible]1,711.884
[illegible] F-RATIO = 7.7024
[illegible] DEGREES OF FREEDOM = [illegible]
STANDARD ERROR AS % MEAN KWH = [illegible]

[illegible] TABLE

VARIABLE	COEFFICIENT	STD. ERROR	95.0% CONFIDENCE LOWER	UPPER	BETA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.67[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.76[illegible]
[illegible]	[illegible]	[illegible]	27.152	[illegible]	.13[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.20[illegible]
[illegible]	[illegible]	58.762	[illegible]	[illegible]	.1751[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]E-01
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]E-01
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.21813
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.24[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	1.00[illegible]
[illegible]	[illegible]	[illegible]	1.0[illegible]
[illegible]	[illegible]	[illegible]	5.0[illegible]
[illegible]	[illegible]E-02	[illegible]	13.[illegible]
[illegible]	[illegible]	[illegible]	7.[illegible]
[illegible]	[illegible]	[illegible]	.936[illegible]E-01
[illegible]	[illegible]	[illegible]	5.4[illegible]
[illegible]	[illegible]	[illegible]	.4[illegible]
[illegible]	[illegible]	[illegible]	16.[illegible]
[illegible]	[illegible]	[illegible]	17.[illegible]

Table I-80 (Cont.)

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	AGE HEAD
[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	1.0000		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.3612	1.0000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1602
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
REGRESSION	[illegible]	10	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
TOTAL	[illegible]	[illegible]	[illegible]

[illegible]

Table 81

Cross Sectional Regressions for Detroit Edison Customers Using Both a Marginal and an Average Price for Electricity Usage Greater Than 1,000 kWh Per Month

[illegible]
[illegible]
[illegible]
[illegible]

APPENDIX J

<u>APPLIANCE SATURATION REGRESSIONS</u>

APPENDIX J

APPLIANCE SATURATION REGRESSIONS

Detailed output from regressions using either appliance saturation levels or appliance ownership variables as dependent variables are reported. The first set of seventy two tables are concerned with regional time-series regressions for electric space heating, electric water heating, and air conditioning. The second grouping of twelve tables report regression results utilizing individual customer data for Detroit Edison where dummy variables indicating appliance ownership are used as dependent variables.

The time-series regressions use the percentage of customers owning the particular appliance as the dependent variable. When these regressions were run they were meant to be the first part of an analysis aimed at separating appliance ownership and electricity use decisions. However, the results that were obtained, especially for water heating, were of such a nature as to cast serious doubt on the accuracy of the procedure. The best regression results obtained leave a lot to be explained as to why the saturation level is what it is. Relying on these specifications to appropriately separate the appliance buying decision from other electricity usage does not seem justifiable. To simplify interregional comparison, the identical set of independent variables was used for all regressions reported, regardless of the statistical significance of the coefficients. Income and the price of electricity (based on marginal price at average consumption) were included because they are the focus of this study. Degree days were included because the three appliances for which regressions were run are expected to be weather sensitive -- less so with water heating than with the other two. Price variables for natural gas and fuel oil were also included as representing competitive fuels. Fuel oil is especially appropriate for space heating, but not so much so for the other two. Its inclusion in the other appliance equations does not present a serious problem in interpretation. These equations could be made to have somewhat better statistical properties by deleting some variables, but the changes would not be major. Including too many variables can only increase the R^2 and decrease the standard error. Large favorable changes in both of these statistics would be required to justify continuing investigation along these lines. Deleting variables will not bring about such changes.

The equations utilizing individual customer data, reported in Tables J-73 through J-84, are further divided into two types of specifications -- linear and logarithmic. The independent variables used for a given appliance are the same so the linear and logarithmic specification can be directly compared, except for FREEZERS. One of the variables used for that equation, TEENS, can take a value of zero, for which the logarithm is $-\infty$. All these observations were excluded so the logarithmic case has only 298 observations and therefore is not readily comparable. The choice of independent variables for each appliance was based upon our opinion as to which variables might be important. Other regressions deleting some of the less significant variables have been run, but no great improvements in the equation statistics were noted. The most telling statistic in this case is the standard error as a percent of mean of the dependent variable. In all cases this number is large. The usefulness of these equations with such large problems is very small. Therefore the equations reported include all variables so that it is clear what has been considered. The definitions of two of the variables are not obvious. CENTS/KWH is average price calculated by dividing total dollars billed for the year by total consumption for the year. TYPE HOUSE relates to home, condiminium, or mobile homes, etc. The other variables are all self-explanatory. The tables in this appendix are indexed below.

In addition to the regression analysis concerning appliance saturation levels, a simple comparison was done between 1970 census data and the 1970 Consumers Power appliance survey. This comparison, given in Table J-85, indicates the census data and Consumers Power data are compatible. Division 4 data represents Pontiac and measurement difference accounts for the disparity.

Table J-1

Appliance Saturation Time Series
Electric Space Heating

CENTRAL

EQUATION
SPACE HEAT = 2.7887 - .22205*ELECTRICITY - 7.2328*GAS + .34493*FUEL OIL + .0022542*INCOME - .00015507*DEGREE DAYS

R-SQUARED = .81264

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .76334
STANDARD ERROR = .71109
DEPENDENT MEAN = 1.192
STANDARD ERROR AS % MEAN SPACE HEAT = 59.655

RESIDUAL SUM SQUARE = 9.6073
F-RATIO = 16.482
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.22205	1.9396	-.50674E-01	-.40003	-.11448	.13106E-01
GAS	-7.2328	2.5590	-.549415	-7.5809	-2.8264	7.9887
FUEL OIL	.34493	.21645	.41631	3.3662	1.5936	2.5395
INCOME	.22542E-02	.12333E-02	.61990	4.1675	1.8277	3.3406
DEGREE DAYS	-.15507E-03	.53006E-03	-.30588E-01	-.89232	.29255	.85584E-01

Table J-2

Appliance Saturation Time Series
Electric Space Heating

BATTLE CREEK

EQUATION
SPACE HEAT = - 3.4121 + .90274*ELECTRICITY - 3.5039*GAS + .14679*FUEL OIL + .0023149*INCOME - .00016856*DEGREE DAYS

R-SQUARED = .92575

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .90621
STANDARD ERROR = .35551
DEPENDENT MEAN = 1.02
STANDARD ERROR AS % MEAN SPACE HEAT = 34.853

RESIDUAL SUM SQUARE = 2.4013
F-RATIO = 47.377
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.90274	.87935	.25941	1.9006	1.0266	1.0539
GAS	-3.5039	1.3505	-.36244	-4.2919	-2.5946	6.7319
FUEL OIL	.14679	.11461	.22309	1.6741	1.2808	1.6404
INCOME	.23149E-02	.40634E-03	1.0307	6.1705	5.6968	32.454
DEGREE DAYS	-.16856E-03	.26348E-03	-.45368E-01	-1.1081	-.63975	.40928

Table J-3

Appliance Saturation Time Series
Electric Space Heating

NORTHEAST

EQUATION
SPACE HEAT = -1.27 + 1.0038*ELECTRICITY - 5.3626*GAS + .20114*FUEL OIL + .0024278*INCOME - .00026656*DEGREE DAYS

R-SQUARED = .86605

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .8308
STANDARD ERROR = .54414
DEPENDENT MEAN = 1.036
STANDARD ERROR AS % MEAN SPACE HEAT = 52.523

RESIDUAL SUM SQUARE = 5.6257
F-RATIO = 24.568
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	1.0038	1.5120	.25313	2.0807	.66387	.44073
GAS	-5.3626	2.0120	-.48676	-6.4670	-2.6653	7.1036
FUEL OIL	.20114	.18136	.26825	2.2585	1.1091	1.2301
INCOME	.24278E-02	.77621E-03	.94909	6.1197	3.1277	9.7826
DEGREE DAYS	-.26656E-03	.35788E-03	-.89176E-01	-1.7660	-.74482	.55476

Table J-4

Appliance Saturation Time Series
Electric Space Heating

FLINT

EQUATION
SPACE HEAT = .87802 - .68548*ELECTRICITY - 1.9117*GAS + .1679*FUEL OIL + .00076445*INCOME - .0001128*DEGREE DAYS

R-SQUARED = .90943

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .8856
STANDARD ERROR = .20842
DEPENDENT MEAN = .584
STANDARD ERROR AS % MEAN SPACE HEAT = 35.689

RESIDUAL SUM SQUARE = .82538
F-RATIO = 38.159
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.68548	.51725	-.37107	-2.5206	-1.3252	1.7562
GAS	-1.9117	.72230	-.37251	-4.0899	-2.6467	7.0052
FUEL OIL	.16790	.61763E-01	.48069	3.3444	2.7185	7.3900
INCOME	.76445E-03	.25576E-03	.63708	4.1248	2.9890	8.9340
DEGREE DAYS	-.11280E-03	.14915E-03	-.60452E-01	-1.3622	-.75625	.57191

Table J-5

Appliance Saturation Time Series
Electric Space Heating

GRAND RAPIDS

EQUATION

SPACE HEAT = - .43425 - .38432*ELECTRICITY - .50209*GAS + .14912*FUEL OIL + .0006379*INCOME - .00017586*DEGREE DAYS

R-SQUARED = .84323

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .80198
STANDARD ERROR = .14797
DEPENDENT MEAN = .484
STANDARD ERROR AS % MEAN SPACE HEAT = 30.572

RESIDUAL SUM SQUARE = .41599
F-RATIO = 20.44
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.38432	.41977	-.38555	-1.7052	-.91554	.83821
GAS	-.50209	.60663	-.27859	-1.3425	-.82768	.68505
FUEL OIL	.14912	.48111E-01	.79121	3.5841	3.0996	9.6075
INCOME	.63790E-03	.21404E-03	.90533	3.8232	2.9803	8.8821
DEGREE DAYS	-.17586E-03	.91765E-04	-.22231	-2.4625	-1.9164	3.6725

Table J-6

Appliance Saturation Time Series
Electric Space Heating

JACKSON

EQUATION

SPACE HEAT = - 3.5144 + .58429*ELECTRICITY - 2.9109*GAS + .15593*FUEL OIL + .0016332*INCOME + .000072207*DEGREE DAYS

R-SQUARED = .91644

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .89445
STANDARD ERROR = .3066
DEPENDENT MEAN = .832
STANDARD ERROR AS % MEAN SPACE HEAT = 36.851

RESIDUAL SUM SQUARE = 1.7861
F-RATIO = 41.676
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.58429	.75318	.20653	1.5081	.77577	.60181
GAS	-2.9109	1.1335	-.37038	-4.3712	-2.5682	6.5957
FUEL OIL	.15593	.95757E-01	.29150	2.1801	1.6284	2.6516
INCOME	.16332E-02	.31926E-03	1.0248	5.3142	5.1156	26.169
DEGREE DAYS	.72207E-04	.20728E-03	.25159E-01	.59286	.34836	.12135

Table J-7

Appliance Saturation Time Series
Electric Space Heating

KALAMAZOO

EQUATION
SPACE HEAT = - 2.778 + .084904*ELECTRICITY - 1.1037*GAS + .15429*FUEL OIL + .0011717*INCOME - .000073116*DEGREE DAYS

R-SQUARED = .87893

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .84707
STANDARD ERROR = .21445
DEPENDENT MEAN = .636
STANDARD ERROR AS % MEAN SPACE HEAT = 33.719

RESIDUAL SUM SQUARE = .87382
F-RATIO = 27.587
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.84904E-01	.55758	.51646E-01			
GAS	-1.1037	.83224	-.24167	-2.1682	-1.3262	1.7589
FUEL OIL	.15429	.66322E-01	.49637	2.8221	2.3264	5.4121
INCOME	.11717E-02	.29397E-03	1.1129	5.1454	3.9857	15.886
DEGREE DAYS	-.73116E-04	.17746E-03	-.37654E-01	-.71797	-.41203	.16977

Table J-8

Appliance Saturation Time Series
Electric Space Heating

LANSING

EQUATION
SPACE HEAT = .65065 - .6923*ELECTRICITY - 6.2096*GAS + .32013*FUEL OIL + .0019427*INCOME + .0001788*DEGREE DAYS

R-SQUARED = .89162

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .8631
STANDARD ERROR = .63332
DEPENDENT MEAN = 1.584
STANDARD ERROR AS % MEAN SPACE HEAT = 39.982

RESIDUAL SUM SQUARE = 7.6208
F-RATIO = 31.261
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.69230	1.7144	-.13492	-.93855	-.40382	.16307
GAS	-6.2096	2.4213	-.43561	-4.8978	-2.5645	6.5768
FUEL OIL	.32013	.21012	.32997	2.3510	1.5236	2.3214
INCOME	.19427E-02	.73485E-02	.66693	3.2904	2.6437	6.9893
DEGREE DAYS	.17888E-03	.46973E-03	.38754E-01	.78411	.38081	.14502

Table J-9

Appliance Saturation Time Series
Electric Space Heating

MUSKEGON

EQUATION

SPACE HEAT = - .26284 + .39926*ELECTRICITY - 2.8645*GAS + .053004*FUEL OIL + .0012879*INCOME + .000015684*DEGREE DAYS

R-SQUARED = .91511

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .89277
STANDARD ERROR = .29103
DEPENDENT MEAN = .836
STANDARD ERROR AS % MEAN SPACE HEAT = 34.812

RESIDUAL SUM SQUARE = 1.6093
F-RATIO = 40.965
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.39926	.87256	.14985	1.0256	.45757	.20937
GAS	-2.8645	1.0537	-.59464	-4.4340	-2.7186	7.3906
FUEL OIL	.53004E-01	.94489E-01	.10522	.73754	.56096	.31468
INCOME	.12879E-02	.47736E-03	.59609	3.8582	2.6979	7.2788
DEGREE DAYS	.15684E-04	.18065E-03	.74178E-02	.12715	.86817E-01	.75372E-02

Table J-10

Appliance Saturation Time Series
Electric Space Heating

SAGINAW

EQUATION
SPACE HEAT = - 3.1303 + .039452*ELECTRICITY - 1.5131*GAS + .18653*FUEL OIL + .0011586*INCOME + 4.7488E-06*DEGREE DAYS

R-SQUARED = .92477

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .90497
STANDARD ERROR = .19295
DEPENDENT MEAN = .548
STANDARD ERROR AS % MEAN SPACE HEAT = 35.210

RESIDUAL SUM SQUARE = .70739
F-RATIO = 46.709
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.39452E-01	.45305	.21026E-91	.15460	.87081E-01	.75830E-02
GAS	-1.5131	.70184	-.29028	-3.4497	-2.1559	4.6481
FUEL OIL	.18653	.58056E-01	.52577	3.9597	3.2130	10.323
INCOME	.11586E-02	.17918E-03	1.0936	5.9859	6.4663	41.813
DEGREE DAYS	.47488E-05	.13266E-03	.23670E-02	.61797E-01	.35798E-01	.12815E-02

Table J-11

Appliance Saturation Time Series
Electric Space Heating

NORTHWEST

EQUATION

SPACE HEAT = - 9.3768 + 4.5949*ELECTRICITY - 12.706*GAS + .25181*FUEL OIL + .0050193*INCOME + .00059271*DEGREE DAYS

R-SQUARED = .94578

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .93151
STANDARD ERROR = .8013
DEPENDENT MEAN = 2.64
STANDARD ERROR AS % MEAN SPACE HEAT = 30.352

RESIDUAL SUM SQUARE = 12.2
F-RATIO = 66.284
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	4.5949	2.5351	.50059	3.7376	1.812	3.2851
GAS	-12.706	3.3955	-.76562	-6.2281	-3.7419	14.001
FUEL OIL	.25181	.26500	.14509	1.1096	.95024	9.0295
INCOME	.50193E-02	.15558E-02	.78238	4.1152	3.2261	10.408
DEGREE DAYS	.59271E-03	.50122E-03	.66066E-01	1.8176	1.1825	1.3984

Table J-12

Appliance Saturation Time Series
Electric Space Heating

HURON

EQUATION
SPACE HEAT = 2.8167 - .94142*ELECTRICITY - 2.636*GAS + .34688*FUEL OIL + .0012604*INCOME - .00037463*DEGREE DAYS

R-SQUARED = .91734

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .89559
STANDARD ERROR = .40742
DEPENDENT MEAN = 1.032
STANDARD ERROR AS % MEAN SPACE HEAT = 39.479

RESIDUAL SUM SQUARE = 3.1539
F-RATIO = 42.171
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.94142	.69498	-.50326	-2.4855	-1.3546	1.8349
GAS	-2.6360	1.6636	-.25104	-3.1913	-1.5846	2.5108
FUEL OIL	.34688	.16407	.48536	3.9100	2.1142	4.4698
INCOME	.12604E-02	.49327E-03	.67120	2.5289	2.5553	6.5294
DEGREE DAYS	-.37463E-03	.26411E-03	-.13149	-2.4916	-1.4184	2.0120

Table J-13

Appliance Saturation Time Series
Electric Space Heating

LAPEER

EQUATION
SPACE HEAT = 19.009 - 4.2576*ELECTRICITY - 7.1624*GAS + 1.0784*FUEL OIL - .00082055*INCOME - .0010637*DEGREE DAYS

R-SQUARED = .88147

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .85027
STANDARD ERROR = .71551
DEPENDENT MEAN = 1.456
STANDARD ERROR AS % MEAN SPACE HEAT = 49.142

RESIDUAL SUM SQUARE = 9.7271
F-RATIO = 28.258
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-4.2576	1.2143	-1.5519	-7.9671	-3.5061	12.292
GAS	-7.1624	2.4314	-.46510	-6.1459	-2.9458	8.6778
FUEL OIL	1.0784	.23990	1.0289	8.6160	4.4953	20.208
INCOME	-.82055E-03	.10588E-02	-.22887	-1.4062	-.77498	.60060
DEGREE DAYS	-.10637E-02	.48113E-03	-.18999	-5.1526	-2.2109	4.8881

Table J-14

Appliance Saturation Time Series
Electric Space Heating

SANILAC

EQUATION

SPACE HEAT = - 1.1017 + .018002*ELECTRICITY - 5.424*GAS + .57207*FUEL OIL + .0025233*INCOME - .00023968*DEGREE DAYS

R-SQUARED = .88559

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .85548
STANDARD ERROR = .60607
DEPENDENT MEAN = 1.64
STANDARD ERROR AS % MEAN SPACE HEAT = 36.955

RESIDUAL SUM SQUARE = 6.979
F-RATIO = 29.414
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.18002E-01	1.5269	.76111E-02	.29908E-01	.11790E-01	.13901E-03
GAS	-5.4240	2.6209	-.68458	-4.7906	-2.0695	4.2830
FUEL OIL	.57207	.22863	.63306	4.0578	2.5021	6.2606
INCOME	.25233E-02	.11343E-02	.80849	3.3975	2.2246	4.9488
DEGREE DAYS	-.23968E-03	.44887E-03	-.50595E-01	-1.0227	-.53396	.28511

Table J-15

Appliance Saturation Time Series
Electric Space Heating

ST. CLAIR

EQUATION
SPACE HEAT = .29787 - .41493*ELECTRICITY - 3.9246*GAS + .59666*FUEL OIL + .0013496*INCOME - .00044955*DEGREE DAYS

R-SQUARED = .80488

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .75354
STANDARD ERROR = .5564
DEPENDENT MEAN = 1.088
STANDARD ERROR AS % MEAN SPACE HEAT = 51.140

RESIDUAL SUM SQUARE = 5.8821
F-RATIO = 15.675
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.41493	1.3216	-.24954	-1.0391	-.31396	.98574E-01
GAS	-3.9246	2.5011	-.70462	-5.2250	-1.5692	2.4623
FUEL OIL	.59666	.20754	.93923	6.3794	2.8749	8.2652
INCOME	.13496E-02	.79629E-03	.70375	3.2630	1.6948	2.8725
DEGREE DAYS	-.44955E-03	.44074E-03	-.11497	-2.6521	-1.0200	1.0404

Table J-16

Appliance Saturation Time Series
Electric Space Heating

TUSCOLA

EQUATION
SPACE HEAT = 1.0413 - .10173*ELECTRICITY - 4.6803*GAS + .3625*FUEL OIL + .0020988*INCOME - .00036599*DEGREE DAYS

R-SQUARED = .93601

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .91917
STANDARD ERROR = .39145
DEPENDENT MEAN = 1.208
STANDARD ERROR AS % MEAN SPACE HEAT = 32.404

RESIDUAL SUM SQUARE = 2.9114
F-RATIO = 55.586
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.10173	.76640	-.49801E-01	-.22945	-.13274	.17620E-01
GAS	-4.6803	1.4458	-.40816	-4.8406	-3.2371	10.479
FUEL OIL	.36250	.15888	.46449	3.4908	2.2816	5.2058
INCOME	.20988E-02	.58154E-03	.92664	3.7967	3.6090	13.025
DEGREE DAYS	-.36599E-03	.25653E-03	-.11764	-2.0795	-1.4267	2.0354

Table J-17

Appliance Saturation Time Series
Electric Space Heating

OAKLAND

EQUATION
SPACE HEAT = 5.8342 - 1.0999*ELECTRICITY - 2.2036*GAS + .24477*FUEL OIL - .00021523*INCOME - .00023412*DEGREE DAYS

R-SQUARED = .84294

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .80161
STANDARD ERROR = .21592
DEPENDENT MEAN = .5
STANDARD ERROR AS % MEAN SPACE HEAT = 43.184

RESIDUAL SUM SQUARE = .8858
F-RATIO = 20.395
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-1.0999	.32024	-1.4809	-5.9585	-3.4346	11.796
GAS	-2.2036	.75028	-.52453	-5.4797	-2.9370	8.6263
FUEL OIL	.24477	.74860E-01	.82803	5.6614	3.2698	10.691
INCOME	-.21523E-03	.20431E-03	-.34630	-1.7908	-1.0535	1.1098
DEGREE DAYS	-.23412E-03	.15174E-03	-.15770	-3.1008	-1.5429	2.3806

Table J-19

Appliance Saturation Time Series
Electric Space Heating

MACOMB

EQUATION
SPACE HEAT = .97858 - .80984*ELECTRICITY - 1.5199*GAS + .2595*FUEL OIL + .00061305*INCOME - .00017297*DEGREE DAYS

R-SQUARED = .90815

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .88398
STANDARD ERROR = .23081
DEPENDENT MEAN = .82
STANDARD ERROR AS % MEAN SPACE HEAT = 28.147

RESIDUAL SUM SQUARE = 1.0122
F-RATIO = 37.573
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.80984	.38725	-.80555	-2.6908	-2.0912	4.3733
GAS	-1.5199	.82938	-.26933	-2.3158	-1.8326	3.3585
FUEL OIL	.25950	.85414E-01	.67563	3.6813	3.0381	9.2303
INCOME	.61305E-03	.31717E-03	.47457	2.4859	1.9329	3.7360
DEGREE DAYS	-.17297E-03	.17318E-03	-.73166E-01	-1.3539	-.99879	.99758

Table J-19

Appliance Saturation Time Series
Electric Space Heating

WASHTENAW

EQUATION

SPACE HEAT = 1.1067 + .55678*ELECTRICITY - 4.9268*GAS + .035457*FUEL OIL + .00077638*INCOME + .00027454*DEGREE DAYS

R-SQUARED = .94724

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .93335
STANDARD ERROR = .26021
DEPENDENT MEAN = .948
STANDARD ERROR AS % MEAN SPACE HEAT = 27.448

RESIDUAL SUM SQUARE = 1.2864
F-RATIO = 68.222
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.55678	.65420	.37233	1.6002	.85108	.72434
GAS	-4.9268	1.2454	-.90185	-6.7254	-3.9560	15.650
FUEL OIL	.35457E-01	.11618	.62062E-01	.43509	.30518	.93137E-01
INCOME	.77638E-03	.38092E-03	.46922	2.6474	2.0382	4.1541
DEGREE DAYS	.27454E-03	.23490E-03	.85393E-01	1.8754	1.1688	1.3660

Table J-20

Appliance Saturation Time Series
Electric Space Heating

LENAWEE

EQUATION
SPACE HEAT = - 1.7483 - 1.0431*ELECTRICITY - 3.5971*GAS + .5745*FUEL OIL + .001674*INCOME - .00013836*DEGREE DAYS

R-SQUARED = .84543

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .80475
STANDARD ERROR = .60787
DEPENDENT MEAN = .98
STANDARD ERROR AS % MEAN SPACE HEAT = 62.028

RESIDUAL SUM SQUARE = 7.0206
F-RATIO = 20.784
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-1.0431	1.0729	-.51109	-2.9001	-.97228	.94532
GAS	-3.5971	2.1829	-.31397	-4.5858	-1.6478	2.7154
FUEL OIL	.57450	.22851	.73676	6.8193	2.5141	6.3205
INCOME	.16740E-02	.85448E-03	.69417	4.4149	1.9591	3.8379
DEGREE DAYS	-.13836E-03	.42121E-03	-.33070E-01	-.96442	-.32847	.10789

Table J-21

Appliance Saturation Time Series
Electric Space Heating

LIVINGSTON

EQUATION
SPACE HEAT = 9.5904 - 2.2325*ELECTRICITY - 3.6228*GAS + .44112*FUEL OIL - .00043304*INCOME - .00028161*DEGREE DAYS

R-SQUARED = .92165

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .90103
STANDARD ERROR = .31709
DEPENDENT MEAN = .948
STANDARD ERROR AS % MEAN SPACE HEAT = 33.449

RESIDUAL SUM SQUARE = 1.9104
F-RATIO = 44.699
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-2.2325	.42693	-1.4929	-6.4163	-5.2293	27.345
GAS	-3.6228	1.1249	-.43158	-4.7748	-3.2206	10.372
FUEL OIL	.44112	.10111	.77211	5.4129	4.3627	19.033
INCOME	-.43304E-03	.30771E-03	-.25568	-1.3236	-1.4073	1.9805
DEGREE DAYS	-.28161E-03	.22961E-03	-.93531E-01	-2.0149	-1.2264	1.5041

Table J-22

Appliance Saturation Time Series
Electric Space Heating

INGHAM

EQUATION

SPACE HEAT = - .27093 - .75514*ELECTRICITY - 2.5004*GAS + .27699*FUEL OIL + .0010566*INCOME - 5.0135E-06*DEGREE DAYS

R-SQUARED = .93788

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .92153
STANDARD ERROR = .28235
DEPENDENT MEAN = .948
STANDARD ERROR AS % MEAN SPACE HEAT = 29.783

RESIDUAL SUM SQUARE = 1.5147
F-RATIO = 57.37
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	-.75514	.49591	-.50498	-2.1703	-1.5227	2.3187
GAS	-2.5004	1.0240	-.29787	-3.2953	-2.4418	5.9622
FUEL OIL	.27699	.10361	.48482	3.3989	2.6733	7.1465
INCOME	.10565E-02	.39831E-03	.60348	3.3889	2.6524	7.0352
DEGREE DAYS	-.50135E-05	.21175E-03	-.16275E-02	-.36425E-01	-.23677E-01	.56059E-03

Table J-23

Appliance Saturation Time Series
Electric Space Heating

MONROE

EQUATION

SPACE HEAT = - 8.9436 - 1.6482*ELECTRICITY + 4.7982*GAS + .19411*FUEL OIL + .0024279*INCOME - .000081021*DEGREE DAYS

R-SQUARED = .9012

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .8752
STANDARD ERROR = .48598
DEPENDENT MEAN = .98
STANDARD ERROR AS % MEAN SPACE HEAT = 49.590

RESIDUAL SUM SQUARE = 4.4873
F-RATIO = 34.663
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-1.6482	.94529	-.78202	-4.5556	-1.7436	3.0401
GAS	4.7982	1.6459	.89523	6.2039	2.9152	8.4983
FUEL OIL	.19411	.22332	.23139	2.2906	.86919	.75550
INCOME	.24279E-02	.66948E-03	1.0979	6.7248	3.6266	13.152
DEGREE DAYS	-.81021E-04	.36780E-03	-.18061E-01	-.53745	-.22029	.48526E-01

Table J-24

Appliance Saturation Time Series
Electric Space Heating

WAYNE

EQUATION
SPACE HEAT = - .13138 + .20413*ELECTRICITY - 1.658*GAS + .025027*FUEL OIL + .00022685*INCOME + .000098844*DEGREE DAYS

R-SQUARED = .79614

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .74249
STANDARD ERROR = .1126
DEPENDENT MEAN = .244
STANDARD ERROR AS % MEAN SPACE HEAT = 46.146

RESIDUAL SUM SQUARE = .24088
F-RATIO = 14.84
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.20413	.27970	.60048	2.2661	.72982	.53264
GAS	-1.6580	.65219	-.97360	-7.5073	-2.5422	6.4627
FUEL OIL	.25027E-01	.56589E-01	.18496	1.1862	.44226	.19559
INCOME	.22685E-03	.13151E-03	.62921	3.0180	1.7249	2.9753
DEGREE DAYS	.98844E-04	.10700E-03	.12137	2.5755	.92379	.85338

Table J-25

Appliance Saturation Time Series
Electric Water Heating

CENTRAL

EQUATION
WATER HEAT = 74.008 + 12.191*ELECTRICITY + .0074316*INCOME - 28.434*GAS - 2.7907*FUEL OIL - .0016043*DEGREE DAYS

R-SQUARED = .93162

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .90719
STANDARD ERROR = 2.1026
DEPENDENT MEAN = 39.095
STANDARD ERROR AS % MEAN WATER HEAT = 5.3782

RESIDUAL SUM SQUARE = 61.893
F-RATIO = 38.145
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	12.191	6.6328	.49730	.63681	1.8380	3.3781
INCOME	.74316E-02	.39960E-02	.39479	.43964	1.8598	3.4587
GAS	-28.434	11.285	-.48235	-.89111	-2.5197	6.3489
FUEL OIL	-2.7907	.66019	-.65923	-.79572	-4.2272	17.869
DEGREE DAYS	-.16043E-02	.19438E-02	-.58577E-01	-.28264	-.82536	.68122

Table J-26

Appliance Saturation Time Series
Electric Water Heating

BATTLE CREEK

EQUATION
WATER HEAT = 56.543 + 6.3039*ELECTRICITY + .0017648*INCOME - 18.185*GAS - .61107*FUEL OIL - .0015034*DEGREE DAYS

R-SQUARED = .8345

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .7754
STANDARD ERROR = 1.0984
DEPENDENT MEAN = 35.26
STANDARD ERROR AS % MEAN WATER HEAT = 3.1153

RESIDUAL SUM SQUARE = 16.892
F-RATIO = 14.119
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	6.3039	3.5055	.76578	.36511	1.7983	3.2338
INCOME	.17648E-02	.15291E-02	.38236	.14237	1.1541	1.3321
GAS	-18.185	5.9206	-.91861	-.63189	-3.0715	9.4341
FUEL OIL	-.61107	.37815	-.42985	-.19319	-1.6160	2.6113
DEGREE DAYS	-.15034E-02	.10130E-02	-.18534	-.28601	-1.4841	2.2025

Table J-27

Appliance Saturation Time Series
Electric Water Heating

NORTHEAST

EQUATION

WATER HEAT = 73.68 + 13.748*ELECTRICITY + .0050592*INCOME - 35.338*GAS - 2.6222*FUEL OIL - .001012*DEGREE DAYS

R-SQUARED = .90394

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .86964
STANDARD ERROR = 2.3955
DEPENDENT MEAN = 36.06
STANDARD ERROR AS % MEAN WATER HEAT = 6.6430

RESIDUAL SUM SQUARE = 80.337
F-RATIO = 26.35
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	13.748	8.2105	.58344	.77862	1.6745	2.8039
INCOME	.50592E-02	.38322E-02	.37101	.38523	1.3202	1.7428
GAS	-35.338	12.896	-.62360	-1.2007	-2.7402	7.5089
FUEL OIL	-2.6222	.90668	-.64437	-.81059	-2.8920	8.3639
DEGREE DAYS	-.10120E-02	.21148E-02	- 55955E-01	-.19586	-.47855	.22901

Table J-28

Appliance Saturation Time Series
Electric Water Heater

FLINT

EQUATION
WATER HEAT = 63.508 + 15.709*ELECTRICITY - .0036497*INCOME - 20.249*GAS - 2.7065*FUEL OIL + .00031409*DEGREE DAYS

R-SQUARED = .70992

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .60632
STANDARD ERROR = 1.8569
DEPENDENT MEAN = 30.85
STANDARD ERROR AS % MEAN WATER HEAT = 6.0191

RESIDUAL SUM SQUARE = 48.272
F-RATIO = 6.8525
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	15.709	5.4771	1.4944	1.0399	2.8680	8.2256
INCOME	-.36497E-02	.24799E-02	-.59519	-.38862	-1.4717	2.1660
GAS	-20.249	9.6267	-.80107	-.80418	-2.1034	4.4243
FUEL OIL	-2.7065	.56772	-1.4910	-.97794	-4.7673	22.727
DEGREE DAYS	.31409E-03	.16740E-02	.32643E-01	.72264E-01	.18762	.35203E-01

Table J-29

GRAND RAPIDS

EQUATION

WATER HEAT = 1.3267 + 13.026*ELECTRICITY + .0041249*INCOME + 1.5954*GAS - 1.6254*FUEL OIL - .00060269*DEGREE DAYS

R-SQUARED = .65491

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .53167
STANDARD ERROR = 1.0636
DEPENDENT MEAN = 20.075
STANDARD ERROR AS % MEAN WATER HEAT = 5.2983

RESIDUAL SUM SQUARE = 15.839
F-RATIO = 5.3139
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	13.026	3.4258	2.3597	1.3251	3.8023	14.457
INCOME	.41249E-02	.18255E-02	1.2109	.61991	2.2597	5.1061
GAS	1.5954	4.6255	.17439	.98861E-01	.34492	.11897
FUEL OIL	-1.6254	.35660	-1.7050	-.90255	-4.5580	20.775
DEGREE DAYS	-.60269E-03	.89481E-03	-.12412	-.20742	-.67353	.45365

Table J-30

Appliance Saturation Time Series
Electric Water Heating

JACKSON

EQUATION
WATER HEAT = 79.962 + 3.4312*ELECTRICITY + .00029896*INCOME - 13.214*GAS - 2.3304*FUEL OIL - .00013775*DEGREE DAYS

R-SQUARED = .95427

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .93794
STANDARD ERROR = 1.1066
DEPENDENT MEAN = 44.71
STANDARD ERROR AS % MEAN WATER HEAT = 2.4750

RESIDUAL SUM SQUARE = 17.143
F-RATIO = 58.433
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	3.4312	3.6270	.21748	.15673	.94602	.89496
INCOME	.29896E-03	.14022E-02	.38637E-01	.19072E-01	.21320	.45454E-01
GAS	-13.214	5.8801	-.34829	-.36211	-2.2472	5.0500
FUEL OIL	-2.3304	.36888	-.85535	-.58102	-6.3175	39.910
DEGREE DAYS	-.13775E-03	.92698E-03	-.94258E-02	-.21129E-01	-.14860	.22083E-01

Table J-31

Appliance Saturation Time Series
Electric Water Heating

KALAMAZOO

EQUATION
WATER HEAT = 104.12 + 4.7985*ELECTRICITY - .0079664*INCOME - 27.752*GAS - 1.2764*FUEL OIL - .00052118*DEGREE DAYS

R-SQUARED = .74182

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .64961
STANDARD ERROR = 1.3683
DEPENDENT MEAN = 39.115
STANDARD ERROR AS % MEAN WATER HEAT = 3.4982

RESIDUAL SUM SQUARE = 26.212
F-RATIO = 8.0452
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	4.7985	4.4523	.58446	.25053	1.0778	1.1616
INCOME	-.79664E-02	.22387E-02	-1.7123	-.59580	-3.5585	12.663
GAS	-27.752	7.9167	-1.4056	-.86929	-3.5056	12.289
FUEL OIL	-1.2764	.44977	-.90023	-.36374	-2.8378	8.0533
DEGREE DAYS	-.52118E-03	.14936E-02	-.56141E-01	-.83687E-01	-.34895	.12176

Table J-32

Appliance Saturation Time Series
Electric Water Heating

LANSING

EQUATION

WATER HEAT = 81.888 - .81674*ELECTRICITY - .004367*INCOME - 18.891*GAS - .99443*FUEL OIL + .0010491*DEGREE DAYS

R-SQUARED = .83009

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .76941
STANDARD ERROR = 1.2027
DEPENDENT MEAN = 40.92
STANDARD ERROR AS % MEAN WATER HEAT = 2.9392

RESIDUAL SUM SQUARE = 20.252
F-RATIO = 13.679
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	-.81674	3.8598	-.91811E-01	-.40761E-01	-.21160	.44774E-01
INCOME	-.43670E-02	.15113E-02	-.94602	-.30313	-2.8895	8.3495
GAS	-18.891	6.4166	-.88306	-.56562	-2.9441	8.6675
FUEL OIL	-.99443	.42121	-.64732	-.27090	-2.3609	5.5739
DEGREE DAYS	.10491E-02	.10219E-02	.14944	.17924	1.0266	1.0538

Table J-33

Appliance Saturation Time Series
Electric Water Heating

MUSKEGON

EQUATION
WATER HEAT = 39.566 + 9.6543*ELECTRICITY + .00036006*INCOME - 11.701*GAS - 1.5212*FUEL OIL - .00015454*DEGREE DAYS

R-SQUARED = .79541

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .72234
STANDARD ERROR = 1.0133
DEPENDENT MEAN = 27.64
STANDARD ERROR AS % MEAN WATER HEAT = 3.6662

RESIDUAL SUM SQUARE = 14.376
F-RATIO = 10.886
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	9.6543	3.5197	1.4134	.71332	2.7429	7.5236
INCOME	.36006E-03	.18598E-02	.73961E-01	.33960E-01	.19360	.37482E-01
GAS	-11.701	3.7255	-1.0337	-.52663	-3.1409	9.8654
FUEL OIL	-1.5212	.34311	-1.2897	-.61350	-4.4335	19.656
DEGREE DAYS	-.15454E-03	.83132E-03	-.25722E-01	-.38628E-01	-.18589	.34557E-01

Table J-34

Appliance Saturation Time Series
Electric Water Heating

SAGINAW

EQUATION

WATER HEAT = 37.42 + 2.5211*ELECTRICITY - .0028407*INCOME - 13.532*GAS + .10707*FUEL OIL + .00079339*DEGREE DAYS

R-SQUARED = .56319

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .40719
STANDARD ERROR = 1.2272
DEPENDENT MEAN = 24.385
STANDARD ERROR AS % MEAN WATER HEAT = 5.0324

RESIDUAL SUM SQUARE = 21.083
F-RATIO = 3.6101
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	2.5211	3.7274	.44535	.21113	.67635	.45745
INCOME	-.28407E-02	.13197E-02	-1.0175	-.34683	-2.1525	4.6336
GAS	-13.532	6.4716	-.99408	-.67992	-2.0910	4.3725
FUEL OIL	.10707	.38729	.10952	.48944E-01	.27645	.76424E-01
DEGREE DAYS	.79339E-03	.10272E-02	.14311	.23213	.77239	.59659

Table J-35

Appliance Saturation Time Series
Electric Water Heating

NORTHWEST

EQUATION
WATER HEAT = 140.47 + .024564*ELECTRICITY - .008193*INCOME - 29.507*GAS - 3.2666*FUEL OIL + .00061544*DEGREE DAYS

R-SQUARED = .93236

20 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .90821
STANDARD ERROR = 1.9341
DEPENDENT MEAN = 53.635
STANDARD ERROR AS % MEAN WATER HEAT = 3.6060

RESIDUAL SUM SQUARE = 52.369
F-RATIO = 38.598
DEGREES OF FREEDOM = 14

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL-F
ELECTRICITY	.24564E-01	7.1856	.10834E-02	.93531E-03	.34185E-02	.11686E-04
INCOME	-.81930E-02	.41345E-02	-.57158	-.34992	-1.9816	3.9268
GAS	-29.507	8.4065	-.78527	-.68436	-3.5101	12.321
FUEL OIL	-3.2666	.67194	-.83430	-.67892	-4.8614	23.634
DEGREE DAYS	.61544E-03	.14547E-02	.31080E-01	.93191E-01	.42306	.17898

Table J-36

Appliance Saturation Time Series
Electric Water Heating

HURON

EQUATION
WATER HEAT = 51.806 - 10.47*ELECTRICITY + 26.538*GAS - 1.6694*FUEL OIL - .00053996*INCOME + .0016105*DEGREE DAYS

R-SQUARED = .79749

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .74419
STANDARD ERROR = 4.2378
DEPENDENT MEAN = 46.952
STANDARD ERROR AS % MEAN WATER HEAT = 9.0258

RESIDUAL SUM SQUARE = 341.22
F-RATIO = 14.964
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-10.470	7.2288	-.84223	-.60756	-1.4483	2.0977
GAS	26.538	17.304	.38031	.70616	1.5337	2.3521
FUEL OIL	-1.6694	1.7066	-.35151	-.41361	-.97822	.95691
INCOME	-.53996E-03	.51308E-02	-.43269E-01	-.23812E-01	-.10524	.11075E-01
DEGREE DAYS	.16105E-02	.27472E-02	.85065E-01	.23543	.58625	.34369

Table J-37

Appliance Saturation Time Series
Electric Water Heating

LAPEER

EQUATION

WATER HEAT = - 5.0939 - 4.3324*ELECTRICITY + 19.795*GAS - 2.6876*FUEL OIL + .0079006*INCOME + .0059491*DEGREE DAYS

R-SQUARED = .87247

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .83891
STANDARD ERROR = 4.1026
DEPENDENT MEAN = 38.24
STANDARD ERROR AS % MEAN WATER HEAT = 10.729

RESIDUAL SUM SQUARE = 319.8
F-RATIO = 25.997
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-4.3324	6.9629	-.28568	-.30869	-.62222	.38716
GAS	19.795	13.941	.23253	.64674	1.4199	2.0161
FUEL OIL	-2.6876	1.3755	-.46386	-.81756	-1.9538	3.8175
INCOME	.79006E-02	.60710E-02	.39864	.51552	1.3014	1.6936
DEGREE DAYS	.59491E-02	.27587E-02	.19221	1.0972	2.1565	4.6503

Table J-38

Appliance Saturation Time Series
Electric Water Heating

SANILAC

EQUATION

WATER HEAT = 72.369 - 11.748*ELECTRICITY + 19.864*GAS - 3.0061*FUEL OIL - .0013046*INCOME + .0021641*DEGREE DAYS

R-SQUARED = .77052

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .71013
STANDARD ERROR = 5.4581
DEPENDENT MEAN = 46.428
STANDARD ERROR AS % MEAN WATER HEAT = 11.756

RESIDUAL SUM SQUARE = 566.03
F-RATIO = 12.759
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-11.748	13.751	-.78107	-.68941	-.85434	.72990
GAS	19.864	23.603	.39426	.61972	.84157	.70825
FUEL OIL	-3.0061	2.0590	-.52313	-.75318	-1.4600	2.1315
INCOME	-.13046E-02	.10215E-01	-.65737E-01	-.62049E-01	-.12772	.16311E-01
DEGREE DAYS	.21641E-02	.40425E-02	.71841E-01	.32618	.53535	.28660

Table J-39

Appliance Saturation Time Series
Electric Water Heating

ST. CLAIR

EQUATION

WATER HEAT = 99.031 - 18.821*ELECTRICITY + 17.273*GAS - .51695*FUEL OIL - .0092548*INCOME - .0013962 *DEGREE DAYS

R-SQUARED = .67936

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .59499
STANDARD ERROR = 4.116
DEPENDENT MEAN = 33.452
STANDARD ERROR AS % MEAN WATER HEAT = 12.304

RESIDUAL SUM SQUARE = 321.89
F-RATIO = 8.0515
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-18.821	9.7765	-1.9614	-1.5329	-1.9251	3.7060
GAS	17.273	18.502	.53739	.74794	.93357	.87156
FUEL OIL	-.51695	1.5353	-.14101	-.17977	-.33671	.11337
INCOME	-.92548E-02	.58906E-02	-.83628	-.72776	-1.5711	2.4684
DEGREE DAYS	-.13962E-02	.32604E-02	-.61874E-01	-.26788	-.42811	.18337

Table J-40

Appliance Saturation Time Series
Electric Water Heating

TUSCOLA

EQUATION
WATER HEAT = 44.009 - 10.174*ELECTRICITY + 25.073*GAS - 2.4479*FUEL OIL - .00049733*INCOME + .003217*DEGREE DAYS

R-SQUARED = .82867

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .78358
STANDARD ERROR = 4.7404
DEPENDENT MEAN = 40.132
STANDARD ERROR AS % MEAN WATER HEAT = 11.812

RESIDUAL SUM SQUARE = 426.97
F-RATIO = 18.379
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-10.174	9.2812	-.67296	-.69071	-1.0962	1.2016
GAS	25.073	17.509	.29545	.78055	1.4320	2.0506
FUEL OIL	-2.4479	1.9241	-.42382	-.70957	-1.2723	1.6187
INCOME	-.49733E-03	.70425E-02	-.29669E-01	-.27080E-01	-.70618E-01	.49869E-02
DEGREE DAYS	.32170E-02	.31067E-02	.13972	.55020	1.0355	1.0723

Table J-41

Appliance Saturation Time Series
Electric Water Heating

OAKLAND

EQUATION

WATER HEAT = -23.114 + 2.6271*ELECTRICITY + 30.382*GAS - 2.3477*FUEL OIL + .0040195*INCOME + .0016139*DEGREE DAYS

R-SQUARED = .60179

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .49699
STANDARD ERROR = 3.0351
DEPENDENT MEAN = 22.036
STANDARD ERROR AS % MEAN WATER HEAT = 13.773

RESIDUAL SUM SQUARE = 175.02
F-RATIO = 5.7426
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	2.6271	4.5014	.40069	.32293	.58361	.34060
GAS	30.382	10.546	.81922	1.7142	2.8808	8.2989
FUEL OIL	-2.3477	1.0523	-.89964	-1.2321	-2.2311	4.9777
INCOME	.40195E-02	.28719E-02	.73261	.75883	1.3996	1.9589
DEGREE DAYS	.16139E-02	.21329E-02	.12315	.48501	.75667	.57255

Table J-42

Appliance Saturation Time Series
Electric Water Heating

MACOMB

EQUATION

WATER HEAT = 34.451 - 2.7034*ELECTRICITY + 8.1786*GAS - .62846*FUEL OIL - .0034756*INCOME - .0006987*DEGREE DAYS

R-SQUARED = .55816

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .44188
STANDARD ERROR = 1.21
DEPENDENT MEAN = 13.952
STANDARD ERROR AS % MEAN WATER HEAT = 8.6728

RESIDUAL SUM SQUARE = 27.819
F-RATIO = 4.8004
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-2.7034	2.0302	-1.1250	-.52792	-1.3316	1.7731
GAS	8.1786	4.3481	.60631	.73237	1.8809	3.5379
FUEL OIL	-.62846	.44779	-.68454	-.52399	-1.4035	1.9697
INCOME	-.34756E-02	.16628E-02	-1.1256	-.82831	-2.0902	4.3691
DEGREE DAYS	-.69870E-03	.90793E-03	-.12364	-.32143	-.76955	.59220

Table J-43

Appliance Saturation Time Series
Electric Water Heating

WASHTENAW

EQUATION
WATER HEAT = 63.334 - 6.4504*ELECTRICITY + 3.8157*GAS - .54561*FUEL OIL - .003847*INCOME - .001153*DEGREE DAYS

R-SQUARED = .48793

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .35317
STANDARD ERROR = 2.8582
DEPENDENT MEAN = 24.448
STANDARD ERROR AS % MEAN WATER HEAT = 11.691

RESIDUAL SUM SQUARE = 155.22
F-RATIO = 3.6208
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-6.4504	7.1860	-1.2234	-.71886	-.89763	.80574
GAS	3.8157	13.680	.19809	.20197	.27893	.77799E-01
FUEL OIL	-.54561	1.2762	-.27085	-.25961	-.42753	.18278
INCOME	-.38470E-02	.41842E-02	-.65941	-.50865	-.91940	.84530
DEGREE DAYS	-.11530E-02	.25802E-02	-.10172	-.30542	-.44688	.19970

Table J-44

Appliance Saturation Time Series
Electric Water Heating

LENAWEE

EQUATION
WATER HEAT = 74.851 - 12.029*ELECTRICITY + 6.5246*GAS + .067702*FUEL OIL - .0049692*INCOME - .0019758*DEGREE DAYS

R-SQUARED = .90151

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .8756
STANDARD ERROR = 1.7659
DEPENDENT MEAN = 24.676
STANDARD ERROR AS % MEAN WATER HEAT = 7.1565

RESIDUAL SUM SQUARE = 59.252
F-RATIO = 34.784
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-12.029	3.1168	-1.6194	-1.3282	-3.8594	14.895
GAS	6.5246	6.3416	.15648	.33035	1.0289	1.0586
FUEL OIL	.67702E-01	.66385	.23856E-01	.31916E-01	.10198	.10401E-01
INCOME	-.49692E-02	.24824E-02	.56619	-.52049	-2.0018	4.0072
DEGREE DAYS	-.19758E-02	.12237E-02	-.12976	-.54696	-1.6146	2.6070

Table J-45

Appliance Saturation Time Series
Electric Water Heating

LIVINGSTON

EQUATION

WATER HEAT = 21.92 - 2.9806*ELECTRICITY + 20.351*GAS - 1.1952*FUEL OIL + .00084154*INCOME - .00048839*DEGREE DAYS

R-SQUARED = .58949

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .48146
STANDARD ERROR = 2.5591
DEPENDENT MEAN = 24.448
STANDARD ERROR AS % MEAN WATER HEAT = 10.468

RESIDUAL SUM SQUARE = 124.43
F-RATIO = 5.4568
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-2.9806	3.4455	-.56530	-.33217	-.86506	.74833
GAS	20.351	9.0786	.68761	1.0400	2.2417	5.0251
FUEL OIL	-1.1952	.81604	-.59332	-.56869	-1.4646	2.1451
INCOME	.84154E-03	.24834E-02	.14092	.99739E-01	.33887	.11483
DEGREE DAYS	-.48839E-03	.18531E-02	-.46006E-01	-.13550	-.26355	.69459E-01

Table J-46

Appliance Saturation Time Series
Electric Water Heating

INGHAM

EQUATION
WATER HEAT = 61.448 - 8.834*ELECTRICITY + 16.33*GAS - .53743*FUEL OIL - .005012*INCOME - .0017191*DEGREE DAYS

R-SQUARED = .62869

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .53097
STANDARD ERROR = 2.4339
DEPENDENT MEAN = 24.448
STANDARD ERROR AS % MEAN WATER HEAT = 9.9554

RESIDUAL SUM SQUARE = 112.55
F-RATIO = 6.4339
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-8.8340	4.2749	-1.6755	-.98450	-2.0665	4.2704
GAS	16.330	8.8272	.55175	.83453	1.8500	3.4225
FUEL OIL	-.53743	.89317	-.26679	-.25572	-.60171	.36206
INCOME	-.50120E-02	.34336E-02	-.81197	-.62341	-1.4597	2.1308
DEGREE DAYS	-.17191E-02	.18253E-02	-.15828	-.48432	-.94181	.88701

Table J-47

Appliance Saturation Time Series
Electric Water Heating

MONROE

EQUATION
WATER HEAT = 63.006 - 4.2057*ELECTRICITY - 19.623*GAS + .88051*FUEL OIL - .0025789*INCOME - .00080854*DEGREE DAYS

R-SQUARED = .91952

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .89835
STANDARD ERROR = 1.5963
DEPENDENT MEAN = 24.676
STANDARD ERROR AS % MEAN WATER HEAT = 6.4691

RESIDUAL SUM SQUARE = 48.417
F-RATIO = 43.419
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-4.2057	3.1051	-.54828	-.46167	-1.3545	1.8346
GAS	-19.623	5.4065	-1.0060	-1.0076	-3.6296	13.174
FUEL OIL	.88051	.73356	.28840	.41266	1.2003	1.4408
INCOME	-.25789E-02	.21991E-02	-.32042	-.28369	-1.1727	1.3753
DEGREE DAYS	-.80854E-03	.12081E-02	-.49523E-01	-.21301	-.66925	.44790

Table J-48

Appliance Saturation Time Series
Electric Water Heating

WAYNE

EQUATION
WATER HEAT = 10.367 - 1.9386*ELECTRICITY + 1.3236*GAS - .07428*FUEL OIL - .0004027*INCOME - .000072367*DEGREE DAYS

R-SQUARED = .93908

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .92305
STANDARD ERROR = .28583
DEPENDENT MEAN = 3.952
STANDARD ERROR AS % MEAN WATER HEAT = 7.2326

RESIDUAL SUM SQUARE = 1.5523
F-RATIO = 58.58
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-1.9386	.71003	-1.2280	-1.3288	-2.7304	7.4550
GAS	1.3236	1.6556	.16736	.37002	.79944	.63910
FUEL OIL	-.74283E-01	.14365	-.11822	-.21737	-.51710	.26739
INCOME	-.40270E-03	.33386E-03	-.24052	-.33078	-1.2062	1.4549
DEGREE DAYS	-.72367E-04	.27162E-03	-.19135E-01	-.11642	-.26643	.70983E-01

Table J-49

Appliance Saturation Time Series
Air Conditioning

CENTRAL

EQUATION

AC = 13.007 - 6.1128*ELECTRICITY - 8.2712*GAS + .44376*FUEL OIL + .0037566*INCOME + .00023343*DEGREE DAYS

R-SQUARED = .93704

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .92048
STANDARD ERROR = 1.0827
DEPENDENT MEAN = 4.588
STANDARD ERROR AS % MEAN AC = 23.598

RESIDUAL SUM SQUARE = 22.271
F-RATIO = 56.56
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-5.1128	2.9532	-.53111	-2.8611	-2.0699	4.2846
GAS	-8.2712	3.8962	-.25868	-2.2524	-2.1229	4.5067
FUEL OIL	.44376	.32955	.20392	1.1252	1.3466	1.8132
INCOME	.37566E-02	.18778E-02	.39330	1.8044	2.0005	4.0021
DEGREE DAYS	.23343E-03	.80705E-03	.17531E-01	.34899	.28924	.83659E-01

Table J-50

Appliance Saturation Time Series
Air Conditioning

BATTLE CREEK

EQUATION

AC = 2.8529 - 4.0503*ELECTRICITY - 13.377*GAS + .72292*FUEL OIL + .010008*INCOME - .00087778*DEGREE DAYS

R-SQUARED = .95578

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .94414
STANDARD ERROR = 1.6554
DEPENDENT MEAN = 7.176
STANDARD ERROR AS % MEAN AC = 23.068

RESIDUAL SUM SQUARE = 52.064
F-RATIO = 82.128
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-4.0503	4.0946	-.19291	-1.2121	-.98920	.97852
GAS	-13.377	6.2883	-.22934	-2.3291	-2.1274	4.5256
FUEL OIL	.72292	.53366	.18210	1.1719	1.3547	1.8351
INCOME	.10008E-01	.18921E-02	.73857	3.7919	5.2894	27.978
DEGREE DAYS	-.87778E-03	.12269E-02	-.39156E-01	-.82021	-.71546	.51188

Table J-51

Appliance Saturation Time Series
Air Conditioning

NORTHEAST

EQUATION

AC = 6.2584 - 4.4874*ELECTRICITY - 10.155*GAS + .65726*FUEL OIL + .0058151*INCOME - .000262*DEGREE DAYS

R-SQUARED = .93138

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .91333
STANDARD ERROR = 1.3839
DEPENDENT MEAN = 4.968
STANDARD ERROR AS % MEAN AC = 27.856

RESIDUAL SUM SQUARE = 36.386
F-RATIO = 51.581
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-4.4874	3.8455	-.31845	-1.9397	-1.1669	1.3618
GAS	-10.155	5.1170	-.25940	-2.5538	-1.9845	3.9384
FUEL OIL	.65726	.46123	.24668	1.5390	1.4250	2.0307
INCOME	.58151E-02	.19741E-02	.63975	3.0567	2.9457	8.6773
DEGREE DAYS	-.26200E-03	.91017E-03	-.24667E-01	-.36197	-.28786	.82863E-01

Table J-52

Appliance Saturation Time Series
Air Conditioning

FLINT

EQUATION
AC = 4.0191 - 3.9195*ELECTRICITY - 21.004*GAS + .79117*FUEL OIL + .010033*INCOME - .00031761*DEGREE DAYS

R-SQUARED = .93801

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .9217
STANDARD ERROR = 2.1699
DEPENDENT MEAN = 7.94
STANDARD ERROR AS % MEAN AC = 27.328

RESIDUAL SUM SQUARE = 89.457
F-RATIO = 57.499
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-3.9195	5.3850	-.16861	-1.0601	-.72785	.52977
GAS	-21.004	7.5197	-.32525	-3.3051	-2.7932	7.8021
FUEL OIL	.79117	.64299	.18001	1.1591	1.2304	1.5140
INCOME	.10033E-01	.26626E-02	.66450	3.9819	3.7683	14.200
DEGREE DAYS	-.31761E-03	.15528E-02	-.13527E-01	-.28212	-.20454	.41837E-01

Table J-53

Appliance Saturation Time Series
Air Conditioning

GRAND RAPIDS

EQUATION

AC = 16.029 + 8.5211*ELECTRICITY - 35.945*GAS - .10693*FUEL OIL + .0070035*INCOME + .00017288*DEGREE DAYS

R-SQUARED = .98625

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .98263
STANDARD ERROR = .98687
DEPENDENT MEAN = 8.056
STANDARD ERROR AS % MEAN AC = 12.250

RESIDUAL SUM SQUARE = 18.504
F-RATIO = 272.57
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	8.5211	2.7997	.37958	2.2714	3.0436	9.2635
GAS	-35.945	4.0459	-.88562	-5.7740	-8.8842	78.930
FUEL OIL	-.10693	.32087	-.25192E-01	-.15440	-.33324	.11105
INCOME	.70035E-02	.14275E-02	.44136	2.5218	4.9060	24.069
DEGREE DAYS	.17288E-03	.61203E-03	.97041E-02	.14544	.28246	.79786E-01

Table J-54

Appliance Saturation Time Series
Air Conditioning

JACKSON

EQUATION

AC = - 16.174 + .59427*ELECTRICITY - 12.928*GAS + .51687*FUEL OIL + .011013*INCOME + .00033282*DEGREE DAYS

R-SQUARED = .95405

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .94195
STANDARD ERROR = 1.7277
DEPENDENT MEAN = 7.052
STANDARD ERROR AS % MEAN AC = 24.500

RESIDUAL SUM SQUARE = 56.716
F-RATIO = 78.894
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.59427	4.2443	.27644E-01	.18097	.14002	.19605E-01
GAS	-12.928	6.3871	-.21646	-2.2904	-2.0240	4.0968
FUEL OIL	.51687	.53960	.12716	.85262	.95788	.91754
INCOME	.11013E-01	.17991E-02	.90942	4.2280	6.1218	37.476
DEGREE DAYS	.33282E-03	.11680E-02	.15260E-01	.32239	.28494	.81191E-01

Table J-55

Appliance Saturation Time Series
Air Conditioning

KALAMAZOO

EQUATION

AC = - 11.681 - 2.43*ELECTRICITY - 18.179*GAS + .77064*FUEL OIL + .012534*INCOME + .00064535*DEGREE DAYS

R-SQUARED = .92925

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .91063
STANDARD ERROR = 2.529
DEPENDENT MEAN = 8.392
STANDARD ERROR AS % MEAN AC = 30.135

RESIDUAL SUM SQUARE = 121.52
F-RATIO = 49.912
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-2.4300	6.5753	-.95817E-01	-.62180	-.36956	.13657
GAS	-18.179	9.8142	-.25803	-2.7065	-1.8523	3.4312
FUEL OIL	.77064	.78210	.16071	1.0682	.98535	.97092
INCOME	.12534E-01	.34667E-02	.77174	4.1716	3.6157	13.073
DEGREE DAYS	.64535E-03	.20926E-02	.21544E-01	.48026	.30839	.95104E-01

Table J-56

Appliance Saturation Time Series
Air Conditioning

LANSING

EQUATION

AC = - 5.7071 - .93071*ELECTRICITY - 17.494*GAS + .81648*FUEL OIL + .0093405*INCOME + .00023866*DEGREE DAYS

R-SQUARED = .92309

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .90285
STANDARD ERROR = 2.1222
DEPENDENT MEAN = 6.652
STANDARD ERROR AS % MEAN AC = 31.904

RESIDUAL SUM SQUARE = 85.575
F-RATIO = 45.608
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-.93071	5.7449	-.45597E-01	-.30046	-.16201	.26246E-01
GAS	-17.494	8.1139	-.30850	-3.2856	-2.1560	4.6484
FUEL OIL	.81648	.70409	.21156	1.4278	1.1596	1.3447
INCOME	.93405E-02	.24625E-02	.80607	3.7671	3.7931	14.388
DEGREE DAYS	.23866E-03	.15741E-02	.12998E-01	.24911	.15162	.22988E-01

Table J-57

Appliance Saturation Time Series
Air Conditioning

MUSKEGON

EQUATION

AC = 12.832 + 6.9738*ELECTRICITY - 20.932*GAS - .24254*FUEL OIL + .0018199*INCOME + .000086122*DEGREE DAYS

R-SQUARED = .97255

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .96532
STANDARD ERROR = .53723
DEPENDENT MEAN = 3.04
STANDARD ERROR AS % MEAN AC = 17.672

RESIDUAL SUM SQUARE = 5.4837
F-RATIO = 134.63
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	6.9738	1.6107	.80634	4.9263	4.3296	18.746
GAS	-20.932	1.9450	-1.3387	-8.9107	-10.762	115.82
FUEL OIL	-.24254	.17442	-.14832	-.92810	-1.3905	1.9336
INCOME	.18199E-02	.88118E-03	.25950	1.4993	2.0653	4.2655
DEGREE DAYS	.86122E-04	.33348E-03	.12548E-01	.19200	.25825	.66696E-01

Table J-58

Appliance Saturation Time Series
Air Conditioning

SAGINAW

EQUATION

AC = - 14.236 - 7.9414*ELECTRICITY - 11.845*GAS + 1.5786*FUEL OIL + .010975*INCOME + .00078427*DEGREE DAYS

R-SQUARED = .95884

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .94801
STANDARD ERROR = 1.8536
DEPENDENT MEAN = 8.94
STANDARD ERROR AS % MEAN AC = 20.733

RESIDUAL SUM SQUARE = 65.279
F-RATIO = 88.522
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-7.9414	4.3521	-.32588	-1.9076	-1.8247	3.3296
GAS	-11.845	6.7421	-.17496	-1.6553	-1.7569	3.0866
FUEL OIL	1.5786	.55771	.34260	2.0541	2.8305	8.0118
INCOME	.10975E-01	.17212E-02	.79760	3.4756	6.3762	40.656
DEGREE DAYS	.78427E-03	.12744E-02	.30099E-01	.62559	.61542	.37875

Table J-59

Appliance Saturation Time Series
Air Conditioning

NORTHWEST

EQUATION

AC = 6.9169 + 6.6584*ELECTRICITY - 14.143*GAS - .3586*FUEL OIL + .0013137*INCOME + 1.0479E-06*DEGREE DAYS

R-SQUARED = .94172

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .92638
STANDARD ERROR = .48458
DEPENDENT MEAN = 1.572
STANDARD ERROR AS % MEAN AC = 30.826

RESIDUAL SUM SQUARE = 4.4615
F-RATIO = 61.401
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	6.6584	1.5331	1.2437	9.0958	4.3432	18.863
GAS	-14.143	2.0534	-1.4611	-11.643	-6.8875	47.437
FUEL OIL	-.35860	.16025	-.35424	-2.6537	-2.2377	5.0075
INCOME	.13037E-02	.94086E-03	.34838	1.7950	1.3856	1.9199
DEGREE DAYS	.10479E-05	.30311E-03	.20025E-03	.53967E-02	.34572E-02	.11952E-04

Table J-60

Appliance Saturation Time Series
Air Conditioning

HURON

EQUATION
AC = - 26.721 + .35436*ELECTRICITY + 29.098*GAS - 1.757*FUEL OIL - .00034303*INCOME + .0033555*DEGREE DAYS

R-SQUARED = .21303

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .0059319
STANDARD ERROR = 5.9944
DEPENDENT MEAN = 12.48
STANDARD ERROR AS % MEAN AC = 48.032

RESIDUAL SUM SQUARE = 682.73
F-RATIO = 1.0286
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	.35436	10.225	.39727E-01	.77363E-01	.34655E-01	.12010E-02
GAS	29.098	24.476	.58112	2.9130	1.1888	1.4133
FUEL OIL	-1.7570	2.4140	-.51558	-1.6378	-.72787	.52979
INCOME	-.34303E-03	.72575E-02	-.38308E-01	-.56913E-01	-.47265E-01	.22340E-02
DEGREE DAYS	.33555E-02	.38859E-02	.24699	1.8454	.86351	.74565

Table J-61

Appliance Saturation Time Series
Air Conditioning

LAPEER

EQUATION

AC = - 74.338 + 6.4976*ELECTRICITY + 28.154*GAS - 2.5674*FUEL OIL + .00693*INCOME + .0065953*DEGREE DAYS

R-SQUARED = .29168

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .10528
STANDARD ERROR = 5.687
DEPENDENT MEAN = 12.48
STANDARD ERROR AS % MEAN AC = 45.569

RESIDUAL SUM SQUARE = 614.49
F-RATIO = 1.5648
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	6.4976	9.6518	.72843	1.4185	.67319	.45319
GAS	28.154	19.325	.56227	2.8185	1.4568	2.1224
FUEL OIL	-2.5674	1.9067	-.75336	-2.3931	-1.3465	1.8130
INCOME	.69300E-02	.84155E-02	.59448	1.3855	.82348	.67811
DEGREE DAYS	.65953E-02	.38241E-02	.36229	3.7271	1.7247	2.9745

Table J-62

Appliance Saturation Time Series
Air Conditioning

SANILAC

EQUATION

AC = 43.962 - 8.9645*ELECTRICITY + 15.555*GAS - 1.3616*FUEL OIL - .010453*INCOME + .0013335*DEGREE DAYS

R-SQUARED = .16103

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = -.059747
STANDARD ERROR = 6.1893
DEPENDENT MEAN = 12.48
STANDARD ERROR AS % MEAN AC = 49.594

RESIDUAL SUM SQUARE = 727.84
F-RATIO = .72938
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-8.9645	15.593	-1.0050	-1.9571	-.57492	.33053
GAS	15.555	26.765	.52059	1.8054	.58117	.33775
FUEL OIL	-1.3616	2.3348	-.39953	-1.2691	-.58315	.34006
INCOME	-.10453E-01	.11583E-01	-.88807	-1.8494	-.90237	.81426
DEGREE DAYS	.13335E-02	.45840E-02	.74641E-01	.74770	.29090	.84623E-01

Table J-63

Appliance Saturation Time Series
Air Conditioning

ST. CLAIR

EQUATION

AC = 111.76 - 21.313*ELECTRICITY + 15.181*GAS + .092747*FUEL OIL - .019628*INCOME - .001971*DEGREE DAYS

R-SQUARED = .32074

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .14198
STANDARD ERROR = 5.5691
DEPENDENT MEAN = 12.48
STANDARD ERROR AS % MEAN AC = 44.624

RESIDUAL SUM SQUARE = 589.29
F-RATIO = 1.7943
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-21.313	13.228	-2.3894	-4.6531	-1.6113	2.5961
GAS	15.181	25.034	.50808	1.7620	.60642	.36774
FUEL OIL	.92747E-01	2.0773	.27215E-01	.86451E-01	.44648E-01	.19934E-02
INCOME	-.19628E-01	.79702E-02	-1.9079	-4.1371	-2.4626	6.0646
DEGREE DAYS	-.19710E-02	.44114E-02	-.93964E-01	-1.0137	-.44680	.19963

Table J-64

Appliance Saturation Time Series
Air Conditioning

TUSCOLA

EQUATION

AC = - 30.986 + 1.1678*ELECTRICITY + 30.09*GAS - 1.8783*FUEL OIL + .00037374*INCOME + .0034564*DEGREE DAYS

R-SQUARED = .21301

25 OBSERVATIONS, 5 VARIABLE

CORRECTED R-SQUARED = .0059072
STANDARD ERROR = 5.9945
DEPENDENT MEAN = 12.48
STANDARD ERROR AS % MEAN AC = 48.033

RESIDUAL SUM SQUARE = 682.75
F-RATIO = 1.0285
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	1.1678	11.736	.13092	.25495	.99502E-01	.99006E-02
GAS	30.090	22.141	.60095	3.0123	1.3590	1.8470
FUEL OIL	-1.8783	2.4330	-.55116	-1.7508	-.77199	.59597
INCOME	.37374E-03	.89056E-02	.377790E-01	.65443E-01	.41967E-01	.17613E-02
DEGREE DAYS	.34564E-02	.39285E-02	.25442	1.9009	.87982	.77408

Table J-65

Appliance Saturation Time Series
Air Conditioning

OAKLAND

EQUATION

AC = 73.81 - 20.093*ELECTRICITY - 17.645*GAS + 1.9219*FUEL OIL + .0021836*INCOME - .0013202*DEGREE DAYS

R-SQUARED = .93675

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .92011
STANDARD ERROR = 3.9649
DEPENDENT MEAN = 20.012
STANDARD ERROR AS % MEAN AC = 19.813

RESIDUAL SUM SQUARE = 298.69
F-RATIO = 56.283
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-20.093	5.8805	-.93494	-2.7197	-3.4169	11.675
GAS	-17.645	13.777	-.14515	-1.0963	-1.2807	1.6403
FUEL OIL	1.9219	1.3746	.22468	1.1107	1.3981	1.9548
INCOME	.21836E-02	.37517E-02	.12141	.45393	.58203	.33875
DEGREE DAYS	-.13202E-02	.27864E-02	-.30730E-01	-.43686	-.47379	.22448

Table J-66

Appliance Saturation Time Series
Air Conditioning

MACOMB

EQUATION

AC = 48.449 - 13.852*ELECTRICITY - 16.082*GAS + 1.5379*FUEL OIL + .0049742*INCOME - .0015059*DEGREE DAYS

R-SQUARED = .96143

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .95128
STANDARD ERROR = 2.4977
DEPENDENT MEAN = 15.38
STANDARD ERROR AS % MEAN AC = 16.240

RESIDUAL SUM SQUARE = 118.53
F-RATIO = 94.724
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-13.852	4.1907	-.82508	-2.4539	-3.3054	10.926
GAS	-16.082	8.9752	-.17065	-1.3064	-1.7918	3.2107
FUEL OIL	1.5379	.92431	.23977	1.1632	1.6639	2.7684
INCOME	.49742E-02	.34322E-02	.23058	1.0754	1.4493	2.1004
DEGREE DAYS	-.15059E-02	.18741E-02	-.38143E-01	-.62844	-.80351	.64563

Table J-67

Appliance Saturation Time Series
Air Conditioning

WASHTENAW

EQUATION

AC = 71.946 + 3.8069*ELECTRICITY - 48.766*GAS - 1.8884*FUEL OIL - .0013455*INCOME + .0037885*DEGREE DAYS

R-SQUARED = .89149

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .86294
STANDARD ERROR = 3.4448
DEPENDENT MEAN = 17.428
STANDARD ERROR AS % MEAN AC = 19.766

RESIDUAL SUM SQUARE = 225.47
F-RATIO = 31.22
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	3.8069	8.6608	.27576	.59514	.43955	.19320
GAS	-48.766	16.488	-.96696	-3.6211	-2.9577	8.7482
FUEL OIL	-1.8884	1.5381	-.35805	-1.2605	-1.2277	1.5073
INCOME	-.13455E-02	.50430E-02	-.88087E-01	-.24956	-.26681	.71186E-01
DEGREE DAYS	.37885E-02	.31098E-02	.12765	1.4077	1.2183	1.4842

Table J-68

Appliance Saturation Time Series
Air Conditioning

LENAWEE

EQUATION

AC = 101.41 - 20.988*ELECTRICITY - 7.8676*GAS + 1.6982*FUEL OIL - .0067731*INCOME - .0028123*DEGREE DAYS

R-SQUARED = .85424

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .81589
STANDARD ERROR = 3.9926
DEPENDENT MEAN = 17.428
STANDARD ERROR AS % MEAN AC = 22.909

RESIDUAL SUM SQUARE = 302.87
F-RATIO = 22.271
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-20.988	7.0467	-1.5204	-3.2812	-2.9785	8.8714
GAS	-7.8676	14.337	-.10153	-.56401	-.54874	.30112
FUEL OIL	1.6982	1.5009	.32198	1.1335	1.1314	1.2801
INCOME	-.67731E-02	.56123E-02	-.41525	-1.0045	-1.2068	1.4564
DEGREE DAYS	-.28123E-02	.27666E-02	-.99381E-01	-1.1023	-1.0165	1.0333

Table J-69

Appliance Saturation Time Series
Air Conditioning

LIVINGSTON

EQUATION

AC = 117.41 - 21.351*ELECTRICITY - 7.2747*GAS + 1.0476*FUEL OIL - .0082601*INCOME - .0030918*DEGREE DAYS

R-SQUARED = .87718

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .84486
STANDARD ERROR = 3.665
DEPENDENT MEAN = 17.428
STANDARD ERROR AS % MEAN AC = 21.029

RESIDUAL SUM SQUARE = 255.21
F-RATIO = 27.14
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-21.351	4.9344	-1.5467	-3.3380	-4.3271	18.723
GAS	-7.2747	13.002	-.93877E-01	-.52151	-.55953	.31307
FUEL OIL	1.0476	1.1687	.19864	.69927	.89645	.80362
INCOME	-.82601E-02	.35565E-02	-.52830	-1.3733	-2.3225	5.3941
DEGREE DAYS	-.30918E-02	.26539E-02	-.11124	-1.2033	-1.1650	1.3572

Table J-70

Appliance Saturation Time Series
Air Conditioning

INGHAM

EQUATION

AC = 65.516 - 14.799*ELECTRICITY - 3.881*GAS + .76916*FUEL OIL - .00088558*INCOME - .0013318*DEGREE DAYS

R-SQUARED = .84205

25 OBSERVATIONS, 5 Variables

CORRECTED R-SQUARED = .80048
STANDARD ERROR = 4.1562
DEPENDENT MEAN = 17.428
STANDARD ERROR AS % MEAN AC = 23.848

RESIDUAL SUM SQUARE = 328.21
F-RATIO = 20.258
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-14.799	7.3000	-1.0720	-2.3136	-2.0272	4.1097
GAS	-3.8810	15.074	-.50083E-01	-.27822	-.25747	.66290E-01
FUEL OIL	.76916	1.5252	.14584	.51340	.50430	.25432
INCOME	-.88558E-03	.58633E-02	-.54796E-01	-.15452	-.15104	.22812E-01
DEGREE DAYS	-.13318E-02	.31170E-02	-.46831E-01	-.52631	-.42726	.18255

Table J-71

Appliance Saturation Time Series
Air Conditioning

MONROE

EQUATION

AC = - 2.756 - 2.8697*ELECTRICITY - 18.754*GAS + 1.4967*FUEL OIL + .0069007*INCOME + .002412*DEGREE DAYS

R-SQUARED = .8543

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .81596
STANDARD ERROR = 3.9918
DEPENDENT MEAN = 17.428
STANDARD ERROR AS % MEAN AC = 22.904

RESIDUAL SUM SQUARE = 302.75
F-RATIO = 22.281
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-2.8697	7.7645	-.20130	-.44602	-.36959	.13660
GAS	-18.754	13.519	-.51731	-1.3635	-1.3872	1.9242
FUEL OIL	1.4967	1.8343	.26377	.99313	.81592	.66573
INCOME	.69007E-02	.54990E-02	.46134	1.0748	1.2549	1.5748
DEGREE DAYS	.24120E-02	.30210E-02	.79494E-01	.89971	.79841	.63745

Table J-72

Appliance Saturation Time Series
Air Conditioning

WAYNE

EQUATION

AC = 20.204 - 9.5*ELECTRICITY - 1.9672*GAS - .056349*FUEL OIL + .0044694*INCOME + .0013932*DEGREE DAYS

R-SQUARED = .95049

25 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .93746
STANDARD ERROR = 2.3627
DEPENDENT MEAN = 15.012
STANDARD ERROR AS % MEAN AC = 15.739

RESIDUAL SUM SQUARE = 106.07
F-RATIO = 72.948
DEGREES OF FREEDOM = 19

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
ELECTRICITY	-9.5000	5.8691	-.65633	-1.7141	-1.6186	2.6200
GAS	-1.9672	13.686	-.27129E-01	-.14477	-.14374	.20661E-01
FUEL OIL	-.56349E-01	1.1875	-.97808E-02	-.43409E-01	-.47454E-01	.22518E-02
INCOME	.44694E-02	.27597E-02	.29115	.96645	1.6195	2.6229
DEGREE DAYS	.13932E-02	.22452E-02	.40178E-01	.59005	.62053	.38506

Table J-73

Detroit Edison Individual Customer Appliance Model
Linear Specification

EQUATION

SPACE SAT = 1.1688 - .049175*CENTS/KWH - .005469*INCOME + .0031941*AGE HEAD + .00052043*ROOMS + .0054121*TYPE HOUSE

R-SQUARED = .042596

712 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .035816
STANDARD ERROR = .09695
DEPENDENT MEAN = 1.0098
STANDARD ERROR AS % MEAN SPACE SAT = 9.6006

RESIDUAL SUM SQUARE = 6.6359
F-RATIO = 6.2822
DEGREES OF FREEDOM = 706

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-.49175E-01	.91016E-02	-.23491	-.15164	-5.4029	29.191
INCOME	-.54691E-02	.22444E-02	-.11069	-.29057E-01	-2.4368	5.9378
AGE HEAD	.31941E-02	.27539E-02	.47328E-01	.12381E-01	1.1598	1.3452
ROOMS	.52043E-03	.28474E-03	.77483E-02	.30003E-02	.18278	.33408E-01
TYPE HOUSE	.54121E-02	.35661E-02	.62276E-01	.79337E-02	1.5176	2.3032

Table J-74

Detroit Edison Individual Customer Appliance Model
Linear Specification

EQUATION
WATER SAT = 2.7981 - .43938*CENTS/KWH - .028482*INCOME - .026374*FAMILY - .0097349*ROOMS

R-SQUARED = .28077

711 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .2767
STANDARD ERROR = .28565
DEPENDENT MEAN = 1.1294
STANDARD ERROR AS % MEAN WATER SAT = 25.292

RESIDUAL SUM SQUARE = 57.607
F-RATIO = 68.902
DEGREES OF FREEDOM = 706

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-.43938	.26632E-01	-.61696	-1.2117	-16.498	272.19
INCOME	-.28482E-01	.63351E-02	-.16936	-.13521	-4.4959	20.213
FAMILY	-.26374E-01	.69927E-02	-.14254	-.80436E-01	-3.7717	14.225
ROOMS	-.97349E-02	.83655E-02	-.42495E-01	-.50142E-01	-1.1637	1.3542

Table J-75

Detroit Edison Individual Customer Appliance Model
Linear Specification

EQUATION
AC SAT = 1.8251 - .19315*CENTS/KWH + .045684*INCOME - .11013*RATE + .051047*TYPE HOUSE

R-SQUARED = .094472

717 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .089385
STANDARD ERROR = .46967
DEPENDENT MEAN = 1.41
STANDARD ERROR AS % MEAN AC SAT = 33.309

RESIDUAL SUM SQUARE = 157.06
F-RATIO = 18.57
DEGREES OF FREEDOM = 712

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-.19315	.46592E-01	-.18539	-.42637	-4.1455	17.185
INCOME	.45684E-01	.99442E-02	.18621	.17374	4.5940	21.105
RATE	-.11013	.29055E-01	-.14670	-.95425E-01	-3.7905	14.368
TYPE HOUSE	.51047E-01	.16260E-01	.11827	.53673E-01	3.1394	9.8555

Table J-76

Detroit Edison Individual Customer Appliance Model
Linear Specification

EQUATION

STOVE = 1.6617 - .23877*CENTS/KWH + .042592*INCOME - .026705*FAMILY + .062865*AGE HEAD + .12054*RATE

R-SQUARED = .15345

716 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .14749
STANDARD ERROR = .45951
DEPENDENT MEAN = 1.4483
STANDARD ERROR AS % MEAN STOVE = 31.727

RESIDUAL SUM SQUARE = 149.91
F-RATIO = 25.739
DEGREES OF FREEDOM = 710

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-.23877	.45686E-01	-.22665	-.51326	-5.2263	27.314
INCOME	.42592E-01	.10458E-01	.17160	.15759	4.0726	16.586
FAMILY	-.26705E-01	.11329E-01	-.97417E-01	-.63454E-01	-2.3572	5.5565
AGE HEAD	.62865E-01	.13755E-01	.18474	.17011	4.5704	20.888
RATE	.12054	.28597E-01	.15889	.10171	4.2151	17.767

Table J-77

Detroit Edison Individual Customer Appliance Model
Linear Specification

EQUATION

FREEZER = 1.5241 - .21738*CENTS/KWH + .054102*TEENS + .042709*AGE HEAD + .050733*RATE + .031407*ROOMS

R-SQUARED = .13335

712 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .12721
STANDARD ERROR = .43199
DEPENDENT MEAN = 1.309
STANDARD ERROR AS % MEAN FREEZER = 33.002

RESIDUAL SUM SQUARE = 131.75
F-RATIO = 21.727
DEGREES OF FREEDOM = 706

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-.21738	.40841E-01	-.22173	-.51714	-5.3227	28.331
TEENS	.54102E-01	.13540E-01	.15667	.38138E-01	3.9957	15.965
AGE HEAD	.42709E-01	.12014E-01	.13513	.12772	3.5550	12.638
RATE	.50733E-01	.26896E-01	.71720E-01	.47249E-01	1.8862	3.5578
ROOMS	.31407E-01	.12189E-01	.99843E-01	.13968	2.5766	6.6388

Table J-78

Detroit Edison Individual Customer Appliance Model
Linear Specification

EQUATION

DRYER = 1.4243 - .17803*CENTS/KWH + .01093*INCOME - .019731*FAMILY + .0029947*AGE HEAD + .16018*RATE

+ .039104*ROOMS - .019864*TYPE HOUSE

R-SQUARED = .17421

711 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .16598
STANDARD ERROR = .40166
DEPENDENT MEAN = 1.2616
STANDARD ERROR AS % MEAN DRYER = 31.837

RESIDUAL SUM SQUARE = 113.42
F-RATIO = 21.186
DEGREES OF FREEDOM = 703

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	ELASTICITY	T-STATISTIC	PARTIAL F
CENTS/KWH	-.17803	.41307E-01	-.19091	-.43953	-4.3100	18.576
INCOME	.10193E-01	.93820E-02	.46287E-01	.43318E-01	1.0865	1.1804
FAMILY	-.19731E-01	.10685E-01	-.81435E-01	-.53869E-01	-1.8465	3.4097
AGE HEAD	.29947E-02	.12389E-01	.99686E-02	.92914E-02	.24172	.58427E-01
RATE	.16018	.25157E-01	.23822	.15482	6.3672	40.542
ROOMS	.39104E-01	.12423E-01	.13036	.18031	3.1477	9.9080
TYPE HOUSE	-.19864E-01	.14900E-01	-.51342E-01	-.23319E-01	-1.3332	1.7774

Table J-79

Detroit Edison Individual Customer Appliance Model
Logarithmic Specification

EQUATION

$$\text{AC SAT} = 1.978*\text{CENTS/KWH}^{-.48671}*\text{INCOME}^{.10039}*\text{RATE}^{-.18342}*\text{TYPE HOUSE}^{.065978}$$

R-SQUARED = .088553

717 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED = .083432
STANDARD ERROR = .32661
DEPENDENT MEAN = .28422
STANDARD ERROR AS % MEAN AC SAT = 114.92

RESIDUAL SUM SQUARE = 75.954
F-RATIO = 17.294
DEGREES OF FREEDOM = 712

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL F
CENTS/KWH	-.48671	.10856	-.21076	-4.4833	20.100
INCOME	.10039	.25381E-01	.16008	3.9552	15.644
RATE	-.18342	.41736E-01	-.18004	-4.3947	19.313
TYPE HOUSE	.65978E-01	.26002E-01	.96020E-01	2.5374	6.4386

Table J-80

Detroit Edison Individual Customer Appliance Model
Logarithmic Specification

EQUATION

$$\text{WATER SAT} = 4.803*\text{CENTS/KWH}^{-1.0897}*\text{INCOME}^{-.060057}*\text{FAMILY}^{-.07216}*\text{ROOMS}^{-.046921}$$

R-SQUARED = .3568

711 OBSERVATIONS, 4 VARIABLES

CORRECTED R-SQUARED - .35315
STANDARD ERROR = .18724
DEPENDENT MEAN = .08969
STANDARD ERROR AS % MEAN WATER SAT = 208.77

RESIDUAL SUM SQUARE = 24.752
F-RATIO = 97.907
DEGREES OF FREEDOM = 706

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL F
CENTS/KWH	-1.0897	.55553E-01	-.68945	-19.615	384.74
INCOME	-.60057E-01	.15563E-01	-.13958	-3.8589	14.891
FAMILY	-.72160E-01	.15266E-01	-.17746	-4.7269	22.343
ROOMS	-.46921E-01	.29686E-01	-.54666E-01	-1.5806	2.4982

Table J-81

Detroit Edison Individual Customer Appliance Model
Logarithmic Specification

EQUATION

$$\text{SPACE SAT} = 1.186*\text{CENTS/KWH}^{-.12288}*\text{INCOME}^{-.017124}*\text{AGE HEAD}^{.0025645}*\text{ROOMS}^{-.0023088}*\text{TYPE HOUSE}^{.007916}$$

R-SQUARED = .053167

712 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .046461
STANDARD ERROR = .066829
DEPENDENT MEAN = .0068146
STANDARD ERROR AS % MEAN SPACE SAT = 980.66

RESIDUAL SUM SQUARE = 3.1531
F-RATIO = 7.9287
DEGREES OF FREEDOM = 706

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL F
CENTS/KWH	-.12288	.19912E-01	-.26451	-6.1709	38.080
INCOME	-.17124E-01	.55431E-02	-.13538	-3.0893	9.5437
AGE HEAD	.25645E-02	.62067E-02	.16235E-01	.41318	.17072
ROOMS	-.23088E-02	.10769E-01	-.91633E-02	-.21439	.45964E-01
TYPE HOUSE	.79160E-02	.57517E-02	.57283E-01	1.3763	1.8942

Table J-82

Detroit Edison Individual Customer Appliance Model
Logarithmic Specification

EQUATION
$$STOVE = 2.178*CENTS/KWH^{-.60799}*INCOME^{.070826}*FAMILY^{-.069404}*AGE\ HEAD^{.12697}*RATE^{.14308}$$

R-SQUARED = .15137

716 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .14539
STANDARD ERROR = .3189
DEPENDENT MEAN = .31075
STANDARD ERROR AS % MEAN STOVE = 102.62

RESIDUAL SUM SQUARE = 72.204
F-RATIO = 25.328
DEGREES OF FREEDOM = 710

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL F
CENTS/KWH	-.60799	.10673	-.26035	-5.6964	32.449
INCOME	.70826E-01	.26905E-01	.11170	2.6325	6.9299
FAMILY	-.69404E-01	.25773E-01	-.11530	-2.6929	7.2518
AGE HEAD	.12697	.30709E-01	.15932	4.1347	17.096
RATE	.14308	.41167E-01	.13898	3.4757	12.081

Table J-83

Detroit Edison Individual Customer Appliance Model
Logarithmic Specification

EQUATION

$$FREEZER = 1.852*CENTS/KWH^{-.73133}*TEENS^{0.77774}*AGE\ HEAD^{.20373}*RATE^{.053548}*ROOMS^{.089174}$$

R-SQUARED = .10422

298 OBSERVATIONS, 5 VARIABLES

CORRECTED R-SQUARED = .088884
STANDARD ERROR = .32547
DEPENDENT MEAN = .28145
STANDARD ERROR AS % MEAN FREEZER = 115.64

RESIDUAL SUM SQUARE = 30.931
F-RATIO = 6.7948
DEGREES OF FREEDOM = 292

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL F
CENTS/KWH	-.73133	.25387	-.17523	-2.8808	8.2989
TEENS	.77774E-01	.35709E-01	.12311	2.1780	4.7436
AGE HEAD	.20373	.63224E-01	.18044	3.2223	10.383
RATE	.53548E-01	.60155E-01	.53464E-01	.89017	.79240
ROOMS	.89174E-01	.94141E-01	.54344E-01	.94724	.89727

Table J-84

Detroit Edison Individual Customer Appliance Model
Logarithmic Specification

EQUATION

$$DRYER = 1.436*CENTS/KWH^{-.39137}*INCOME^{.025569}*FAMILY^{-.044056}*AGE\ HEAD^{.0011362}*RATE^{.21107}*ROOMS^{.14319}*TYPE\ HOUSE^{-.033283}$$

R-SQUARED = .17454

711 OBSERVATIONS, 7 VARIABLES

CORRECTED R-SQUARED = .16632
STANDARD ERROR = .27835
DEPENDENT MEAN = .18133
STANDARD ERROR AS % MEAN DRYER = 153.51

RESIDUAL SUM SQUARE = 54.469
F-RATIO = 21.235
DEGREES OF FREEDOM = 703

VARIABLE	COEFFICIENT	STANDARD ERROR	BETA	T-STATISTIC	PARTIAL F
CENTS/KWH	-.39137	.96342E-01	-.18911	-4.0623	16.502
INCOME	.25569E-01	.23868E-01	.45382E-01	1.0713	1.1477
FAMILY	-.44056E-01	.24491E-01	-.82742E-01	-1.7989	3.2359
AGE HEAD	.11362E-02	.27661E-01	.16158E-02	.41076E-01	.16872E-02
RATE	.21107	.36253E-01	.23088	5.8220	33.896
ROOMS	.14319	.47116E-01	.12740	3.0392	9.2366
TYPE HOUSE	-.33283E-01	.24295E-01	-.54099E-01	-1.3700	1.8768