IMPACT EVALUATION OF THE CALIFORNIA STATEWIDE PRICING PILOT

APPENDICES

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Final Report

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Appendix 1

Sample Tariff, Sample Bill Insert, and Sample Shadow Bill

The sample tariff is for the PG&E CPP-F rate. The sample bill insert is for the SDGE residential CPP-F high Summer rate. The sample shadow bill is for the SDG&E CPP-F rate.

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE

APPLICABILITY: This schedule is applicable to residential bundled service customers who have been selected by PG&E to participate in the Statewide Pricing Pilot (SPP) as directed by the California Public Utilities Commission (CPUC) in Decision 03-03-036. Customers have the option to decline to participate and return to their applicable tariff schedule. This is an experimental schedule and shall remain in effect until December 31, 2004 or until cancelled by the CPUC. (N)

The experimental rates applicable under this schedule have been designed to test customer response to different prices than are applicable under PG&E's standard residential tariff, Schedule E-1. The SPP is constructed as a statistical experiment, with an experimental design with sample groups of customers paying different types of experimental time-of-use prices. PG&E will randomly assign selected customers to either Rate A or Rate B of this schedule. Depending on how customers use their energy, their bills under this rate schedule may be higher or lower than the bills they would have had under Schedule E-1. Customers who remain in the SPP and on this rate for specified time periods will be eligible to receive a Participation Appreciation Payment, as described under Special Condition 2.

A customer taking service under this schedule may be eligible for a 20 percent California Alternative Rates for Energy (CARE) discount on their bill, if all terms and conditions of PG&E's low income residential tariff are met.

TERRITORY: PG&E's entire service territory. (N)

(Continued)

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE

(Continued)

RATES: RATE A

	Trans-mission	Distribu-tion	Public Purpose Programs	Genera-tion	Nuclear Decom-missioning	DWR Bond	FTA	Reliability Services	Total Rate
1. ENERGY CHARGE: ($ per kWh per SUMMER Month)									
Super Peak	0.00503	0.05267	0.00432	0.65734(R)	0.00048	0.00513(N)	0.00969	0.00355	0.73821
Peak	0.00503	0.05267	0.00432	0.16464(R)	0.00048	0.00513(N)	0.00969	0.00355	0.24551
Off-Peak	0.00503	0.05267	0.00432	(0.00266)(R)	0.00048	0.00513(N)	0.00969	0.00355	0.07821
Baseline Credit, deduction per kWh of baseline use	–	0.01732	–	–	–	–	–	–	0.01732
ENERGY CHARGE: ($ per kWh per WINTER Month)									
Super Peak	0.00503	0.05267	0.00432	0.47465	0.00048	0.00513(N)	0.00969	0.00355	0.55552
Peak	0.00503	0.05267	0.00432	0.25465	0.00048	0.00513(N)	0.00969	0.00355	0.33552
Off-Peak	0.00503	0.05267	0.00432	0.02465	0.00048	0.00513(N)	0.00969	0.00355	0.10552
Baseline Credit, deduction per kWh of baseline use	–	0.01732	–	–	–	–	–	–	0.01732
MINIMUM ENERGY CHARGE: ($/Meter/Day)	0.00756	0.12009	0.00188	0.03205	0.00021			0.00248	0.16427
TRANSMISSION REVENUE BALANCING ACCOUNT ADJUSTMENT RATE: (per kWh per Month)	(0.00230)	–	–	0.00230	–	–	–	–	0.00000
2. ENERGY PROCUREMENT SURCHARGE: (per kWh, applies to all usage)	–	–	–	0.01000	–	–	–	–	0.01000
3. ADDITIONAL ENERGY PROCUREMENT SURCHARGES: (per kWh, usage in specified tiers)									
Tier 3–131%-200% of baseline	–	–	–	0.05124	–	–	–	–	0.05124
Tier 4–201%-300% of baseline	–	–	–	0.09517	–	–	–	–	0.09517
Tier 5–over 300% of baseline	–	–	–	0.11505	–	–	–	–	0.11505

(Continued)

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE
(Continued)

RATES: RATE B

	Trans-mission	Distribu-tion	Public Purpose Programs	Genera-tion	Nuclear Decom-missioning	DWR Bond	FTA	Reliability Services	Total Rate	
1. ENERGY CHARGE: ($ per kWh per SUMMER Month)										
Super Peak	0.00503	0.05267	0.00432	0.46634(R)	0.00048	0.00513(N)	0.00969	0.00355	0.54721	(T)
Peak	0.00503	0.05267	0.00432	0.14634(R)	0.00048	0.00513(N)	0.00969	0.00355	0.22721	
Off-Peak	0.00503	0.05267	0.00432	0.03634(R)	0.00048	0.00513(N)	0.00969	0.00355	0.11721	
Baseline Credit, deduction per kWh of baseline use	–	0.01732	–	–	–	–	–	–	0.01732	
ENERGY CHARGE: ($ per kWh per WINTER Month)										
Super Peak	0.00503	0.05267	0.00432	0.65065(R)	0.00048	0.00513(N)	0.00969	0.00355	0.73152	(T)
Peak	0.00503	0.05267	0.00432	0.04065(R)	0.00048	0.00513(N)	0.00969	0.00355	0.12152	
Off-Peak	0.00503	0.05267	0.00432	0.03565(R)	0.00048	0.00513(N)	0.00969	0.00355	0.11652	
Baseline Credit, deduction per kWh of baseline use	–	0.01732	–	–	–	–	–	–	0.01732	
MINIMUM ENERGY CHARGE: ($/Meter/Day)	0.00756	0.12009	0.00188	0.03205	0.00021			0.00248	0.16427	
TRANSMISSION REVENUE BALANCING ACCOUNT ADJUSTMENT RATE: (per kWh per Month)	(0.00230)	–	–	0.00230	–	–	–	–	0.00000	
2. ENERGY PROCUREMENT SURCHARGE: (per kWh, applies to all usage)	–	–	–	0.01000	–	–	–	–	0.01000	
3. ADDITIONAL ENERGY PROCUREMENT SURCHARGES: (per kWh, usage in specified tiers)										
Tier 3–131%-200% of baseline	–	–	–	0.05124	–	–	–	–	0.05124	
Tier 4–201%-300% of baseline	–	–	–	0.09517	–	–	–	–	0.09517	
Tier 5–over 300% of baseline	–	–	–	0.11505	–	–	–	–	0.11505	

(Continued)

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE
(Continued)

RATES: 4. RATE APPLICABILITY

Generation is calculated residually based on the total rate less the sum of the following: Transmission, Distribution, Public Purpose Programs, Nuclear Decommissioning, Department of Water Resources Bond ("DWR Bond"), FTA, and Reliability Services.

Energy Procurement Surcharges are calculated as specified in Schedule E-EPS. They provide an increase in revenues, subject to refund or adjustment, for the purpose of improving utility recovery of the costs of procuring future energy costs in the wholesale market. This energy procurement surcharge applies everywhere PG&E provides electric service. The $0.01 per kWh Energy Procurement Surcharge is charged to all electric service customers (including direct access customers), except customers taking service on the California Alternative Rates for Energy (CARE) program, and customers taking service on Schedule E-DEPART. The Additional Energy Procurement Surcharge is charged to all bundled service customers, except customers taking service on the California Alternative Rates for Energy (CARE) program or who receive a medical baseline allowance.

Where the minimum charge applies with no usage, the generation charge is calculated residually based on the total minimum charge less the sum of: Transmission, Distribution, Public Purpose Programs, Nuclear Decommissioning, and Reliability Services. Where the minimum charge applies with usage, the total charge will be equal to the total minimum charge above, plus the Energy Procurement Surcharges in Schedule E-EPS. The generation charge for bills with usage is calculated residually based on the total charge less the sum of the following charges: Transmission, Distribution, Public Purpose Programs, Nuclear Decommissioning, DWR Bond, FTA, and Reliability Services.

TIME PERIODS:	Super Peak	As defined below	(T)
	Peak	All hours between 2 p.m. and 7 p.m. Weekdays	
	Off-Peak	All other Weekday hours plus Weekends and Holidays	

SUPER PEAK PERIODS: Super Peak shall be all hours between 2 p.m. and 7 p.m. for no more than fifteen (15) days (T)
per calendar year and no more than three (3) consecutive days. Up to twelve (12)
Critical-Peak pricing periods will be scheduled during the summer billing season, and up to
three (3) during the winter billing season. Each customer shall be notified that the Super
Peak is effective, by 5:00 p.m. the day prior to implementation of the Super Peak day. (T)

The Super Peak period shall be triggered by one or more of the following:

a. ISO emergencies, as defined as a stage 1 event or higher;

b. Extreme or unusual temperature conditions impacting system demand;

c. PG&E procurement requirements; and/or

d. PG&E discretionary events for test purposes, program evaluation or system contingencies.

(Continued)

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE
(Continued)

HOLIDAYS: “Holidays” for the purposes of this rate schedule are New Year’s Day, President’s Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, and Christmas Day. The dates will be those on which the holidays are legally observed. (N)

SEASONS: The summer season is May 1 through October 31 and the winter season is November 1 through April 30. Bills that include May 1 and November 1 seasonal changeover dates will be calculated by multiplying the applicable daily baseline quantity and rates for each season by the number of days in each season for the billing period.

NOTIFICATION OF A CPP EVENT: If a CPP event occurs, PG&E will notify all customers via a dedicated phone line. If the customer elects, PG&E will also notify the customer via an alphanumeric pager that is capable of receiving a text message sent via the Internet, e-mail, or fax.

Receipt of such notice is the responsibility of the participating customer. PG&E does not guarantee the reliability of the pager system, e-mail system, Internet site, or fax by which the customer may receive a notification. (N)

(Continued)

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE

(Continued)

SPECIAL CONDITIONS:

1. TERMS OF SERVICE: Customer meeting the SPP program criteria shall be randomly selected by PG&E to receive service under this schedule and participate in the SPP. A customer may elect to change to another applicable rate. (N)

2. PARTICIPATION APPRECIATION PAYMENT: A customer Participation Appreciation Payment of $25 will be paid to each participant upon successful competion of the program enrollment process, including provision of necessary demographic survey information. Those customers who continuously remain on their assigned pilot tariff through October 31, 2003, will receive an additional Participation Appreciation Payment of $75, and those who continue to participate through April 30, 2004 will receive a further additional Participation Appreciation Payment of $75.

3. LIMITATION ON AVAILABILITY: Service under this schedule is restricted to customers randomly selected by PG&E, as specified by the CPUC in Decision 03-03-036. This schedule shall be available subject to metering availability and communications signal strength. Customer must have telephone service.

4. INFORMATION TREATMENTS: Customer shall receive information regarding the SPP, as well as energy cost management information. Customer shall be requested to provide demographic information for the purposes of the SPP by filling out a survey. The survey information may include, but will not be limited to questions about number of members in the household, income, end-uses, dwelling size, and age of dwelling. Customer may receive energy usage and cost information throughout the duration of the SPP. This information may be provided via multiple channels including, but not limited to: PG&E bill inserts, printed literature, fax, e-mail, pager, radio and/or web based content accessed via the Internet.

5. METERING: PG&E will supply, own, and maintain all necessary meters and associated equipment utilized for billings. In addition, and for purposes of monitoring customer load, PG&E may install, at its expense, load research metering. The customer shall supply, at no expense to PG&E, a suitable location for meters and associated equipment used for billing and load research.

6. BASELINE RATES: Baseline rates are applicable only to separately metered residential use. PG&E may require the customer to file with it a Declaration of Eligibility for Baseline Quantities for Residential Rates. (N)

(Continued)

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE
(Continued)

SPECIAL CONDITIONS: (Cont'd.)

7. BASELINE (TIER 1) QUANTITIES: The following quantities of electricity are to be billed at the rates for baseline use (also see Rule 19 for additional allowances for medical needs): (N)

BASELINE QUANTITIES (kWh PER DAY)

	Code B – Basic Quantities		Code H – All-Electric Quantities	
Baseline	Summer	Winter	Summer	Winter
Territory*	Tier I	Tier I	Tier I	Tier I
P	15.8 (C)	12.9 (C)	19.5 (C)	31.1 (C)
Q	8.5 |	13.0 |	10.4	21.9 |
R	17.5 |	12.7 |	22.1 (C)	29.7 |
S	15.8 |	12.8 |	19.5 (C)	31.2 |
T	8.5 |	10.2 |	10.4	19.1 |
V	8.7 |	10.4 |	15.3	24.4 (C)
W	18.7 |	11.9 |	23.8 (C)	29.2
X	12.2 |	13.0 |	11.4 (C)	21.9 (C)
Y	10.8 |	12.9 |	14.5	31.1 |
Z	0.7 (C)	11.2 (C)	11.3	31.7 (C)

8. ALL-ELECTRIC QUANTITIES (Code H): All-electric quantities are applicable to service to customers with permanently-installed electric heating as the primary heat source. All-electric quantities are also applicable to service to customers of record as of November 15, 1984, to whom the former Code W (Basic plus Water Heating) lifeline allowance was applicable on May 15, 1984, and who thereafter maintain continuous service at the same location under this schedule.

   If more than one electric meter services a residential dwelling unit, the all-electric quantities, if applicable, will be allocated only to the primary meter.

9. ADDITIONAL METERS: If a residential dwelling unit is served by more than one electric meter, the customer must designate which meter is the primary meter and which is (are) the additional meter(s). Only the basic baseline quantities or basic plus medical allowances, if applicable, will be available for the additional meter(s). (N)

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* The applicable baseline territory is described in Part A of the Preliminary Statement.

(Continued)

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE
(Continued)

SPECIAL CONDITIONS: (Cont'd.)

10. BILLING: A customer's bill is first calculated according to the total rates and conditions above. The following adjustments are made:

    BUNDLED SERVICE CUSTOMERS receive supply and delivery services solely from PG&E. The customer's bill is based on the Total Rate and Conditions set forth above and the Energy Procurement Surcharge (EPS) as provided in Schedule E-EPS. The energy charge is a portion of the customer's total bill determined by multiplying the average price from Schedule EC for Schedule E-1 by the customer's total usage.

11. RATE REDUCTION BOND CREDIT: Pursuant to Public Utilities Code 368.5, customers will continue to receive their 10 percent credit originally mandated by Assembly Bill 1890 and implemented through Public Utilities Code 368(a), by way of a reduction to Generation. The 10 percent credit applies to the Energy Charge rates applicable under this tariff, which is the portion of the total bill representing rates in effect on January 3, 2001, for Bundled Service Customers. The 10 percent bill credit does not apply to increases in the total rates implemented after January 3, 2001.

    Additionally, customers eligible for the credit are obligated to pay a Fixed Transition Amount (FTA), also referred to as a Trust Transfer Amount (TTA), as described in Schedule E-RRB and defined in Preliminary Statement Part AS.

12. CALIFORNIA ALTERNATIVE RATES FOR ENERGY (CARE) DISCOUNTS: Customers eligible for PG&E's low income residential tariffs who are assigned to this rate schedule will pay the following charges. CARE customers do not pay the Energy Procurement Surcharge and Additional Energy Procurement Surcharge rates shown elsewhere in this tariff. The Baseline Credit shown below is applicable to all usage up to the total baseline quantity determined as specified under Special Condition 7 of this schedule.

RATES: RATE A

	Trans-mission	Distribu-tion	Public Purpose Programs	Genera-tion	Nuclear Decom-missioning	FTA	Reliability Services	Total Rate	
1. ENERGY CHARGE: (per kWh per SUMMER Month)									(T) |
Super Peak	0.00503	0.02696	0.00314	0.54133	0.00048	0.00969	0.00355	0.59018	|
Peak	0.00503	0.02696	0.00314	0.14717	0.00048	0.00969	0.00355	0.19602	(T)
Off-Peak	0.00503	0.02696	0.00314	0.01333	0.00048	0.00969	0.00355	0.06218	
Baseline Credit, deduction per KWh of baseline use	–	0.01386	–	–	–	–	–	0.01386	
ENERGY CHARGE: (per kWh per WINTER Month)									(T) |
Super Peak	0.00503	0.02696	0.00314	0.39518	0.00048	0.00969	0.00355	0.44403	|
Peak	0.00503	0.02696	0.00314	0.21918	0.00048	0.00969	0.00355	0.26803	(T)
Off-Peak	0.00503	0.02696	0.00314	0.03518	0.00048	0.00969	0.00355	0.08403	
Baseline Credit, deduction per KWh of baseline use	–	0.01386	–	–	–	–	–	- 0.01386	
MINIMUM ENERGY CHARGE per meter per day	0.00756	0.08707	0.00136	0.03356	0.00020		0.00167	0.13142	
TRANSMISSION REVENUE BALANCING ACCOUNT ADJUSTMENT RATE per kWh per Month	(0.00230)	–	–	0.00230	–	–	–	0.00000	

SCHEDULE E-3—EXPERIMENTAL RESIDENTIAL CRITICAL PEAK PRICING SERVICE

(Continued)

SPECIAL CONDITIONS:

RATES: (Cont'd) RATE B

	Trans-mission	Distribu-tion	Public Purpose Programs	Genera-tion	Nuclear Decom-missioning	FTA	Reliability Services	Total Rate	
1. ENERGY CHARGE: (per kWh per SUMMER Month)									(T)
Super Peak	0.00503	0.02696	0.00314	0.38853	0.00048	0.00969	0.00355	0.43738	|
Peak	0.00503	0.02696	0.00314	0.13253	0.00048	0.00969	0.00355	0.18138	(T)
Off-Peak	0.00503	0.02696	0.00314	0.04453	0.00048	0.00969	0.00355	0.09338	
Baseline Credit, deduction per KWh of baseline use	–	0.01386	–	–	–	–	–	0.01386	
ENERGY CHARGE: (per kWh per WINTER Month)									(T)
Super Peak	0.00503	0.02696	0.00314	0.53598	0.00048	0.00969	0.00355	0.58483	|
Peak	0.00503	0.02696	0.00314	0.04798	0.00048	0.00969	0.00355	0.09683	(T)
Off-Peak	0.00503	0.02696	0.00314		0.00048	0.00969	0.00355	0.09283	
Baseline Credit, deduction per KWh of baseline use	–	0.01386	–	–	–	–	–	- 0.01386	
MINIMUM ENERGY CHARGE per meter per day	0.00756	0.08707	0.00136	0.03356	0.00020		0.00167	0.13142	
TRANSMISSION REVENUE BALANCING ACCOUNT ADJUSTMENT RATE per kWh per Month	(0.00230)	–	–	0.00230	–	–	–	0.00000	

DWR BOND CHARGE:

The Department of Water Resources (DWR) Bond Charge was imposed by California (T)
Public Utilities Commission Decision 02-01-063, as modified by Decision 02-12-082, |
and is property of DWR for all purposes under California law. The Bond Charge applies |
to all retail bundled sales, excluding CARE and Medical Baseline sales. The DWR |
Bond Charge (where applicable) is included in customers' total billed amounts. (T)

For Medical Baseline Customers, no portion of the rates in this schedule shall be used (N)
to pay the DWR Bond Charge. For these customers, Generation will be calculated |
residually based on the total rate less the sum of: Transmission, Reliability Services, |
Distribution, Public Purpose Programs, Nuclear Decommissioning, and FTA. (N)

C

Account Number Cycle
2206 938 590 2
[redacted]
Date Mailed: September 4, 2003

Questions? ¿Preguntas?
Please Call: Por Favor Llame
1-800-411-SDGE (7343)
Web Address: www.sdge.com
email: info@sdge.com

Statewide Pricing Pilot Customer Information Sheet
Rate EECC DRCPPFA

Account Summary	**kWh**	**Effective Price**	**Total Costs**
Super Peak	17	$0.78303	$13.31
On Peak	117	$0.29055	$33.99
Off Peak	1540	$0.12324	$189.79
Total	1674		$237.10

The effective rates shown above are your average cost of electricity during each Time-of-Use period during the current billing period. The effective rate will change month-to-month based on your changing usage patterns. These effective rates are intended to offer you a more refined method to encourage conservation during particular time periods when energy is more costly to deliver. SDG&E hopes this simplified rate presentation makes your energy use choices and their cost impacts more clear than they would be otherwise.

Shift & Save Program

Seasonal Cost Comparison

Customer: Tor Garman
Account: 123456789
Rate: DRCPPV

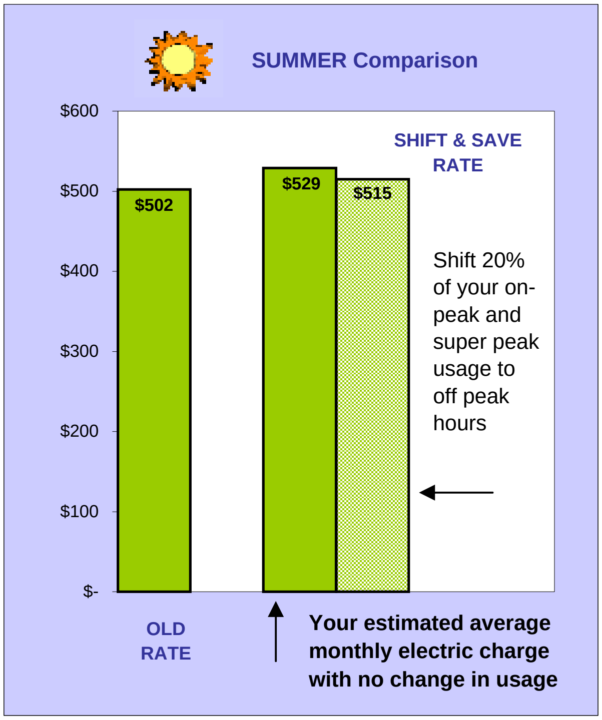
The Shift & Save Pricing Plan has higher electric rates during on peak periods from 2 p.m. - 7 p.m. on weekdays and lower rates during off peak periods, weekends and holidays. Up to 15 days a year are "super peak" days, with the highest electric rates. The comparisons show how your bills may change, using your seasonal usage over the past year and your on peak usage, recorded after the installation of your advanced electric meter. Please note that your on peak usage has been recorded for a short time and may vary during the year. You'll receive appreciation payments totaling $175 for being on the program through April 30, 2004.

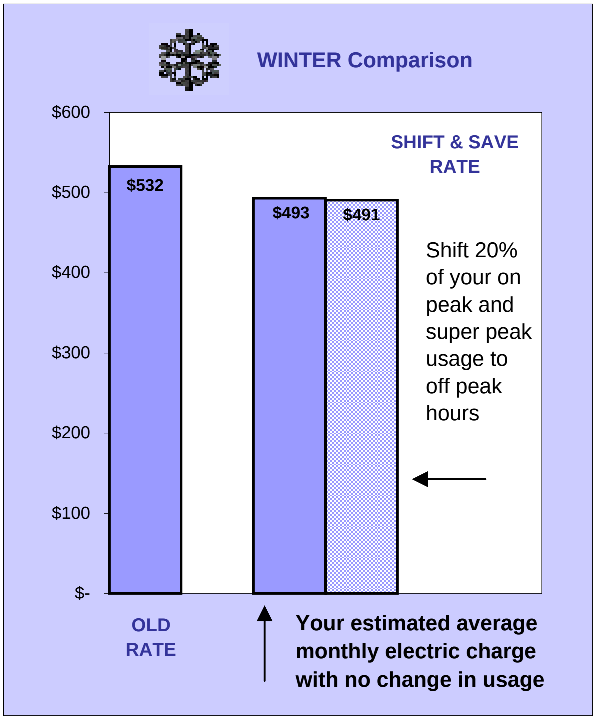
Your Estimated Summer and Winter Electric Cost

Note that Shift & Save rates change from summer to winter

Your average **summer** (May-Oct) monthly usage:	**2731 kWh**
Your average **winter** (Nov-Apr) monthly usage:	**2965 kWh**
Your actual **on peak** (2 p.m.-7 p.m.) usage percentage, since meter installation:	**16%** *Note: this may be before you have reduced on peak use.*

➩The average residential customer's on peak usage is 16%.





Factors Affecting On Peak Usage (2 p.m. to 7 p.m. Weekdays)

The following activities typically cause higher charges when performed during on peak periods:

- Central and room air conditioning
- Laundry (washer, electric dryer)
- Dishwasher
- Extensive cooking (electric range, electric oven)
- Electric space heating
- Electric water heating
- Incandescent lights
- Pool pump or spa

The following appliances typically have a much smaller effect:

- Television
- Stereo
- Electronic gadgets
- Ceiling fans
- Fluorescent lights

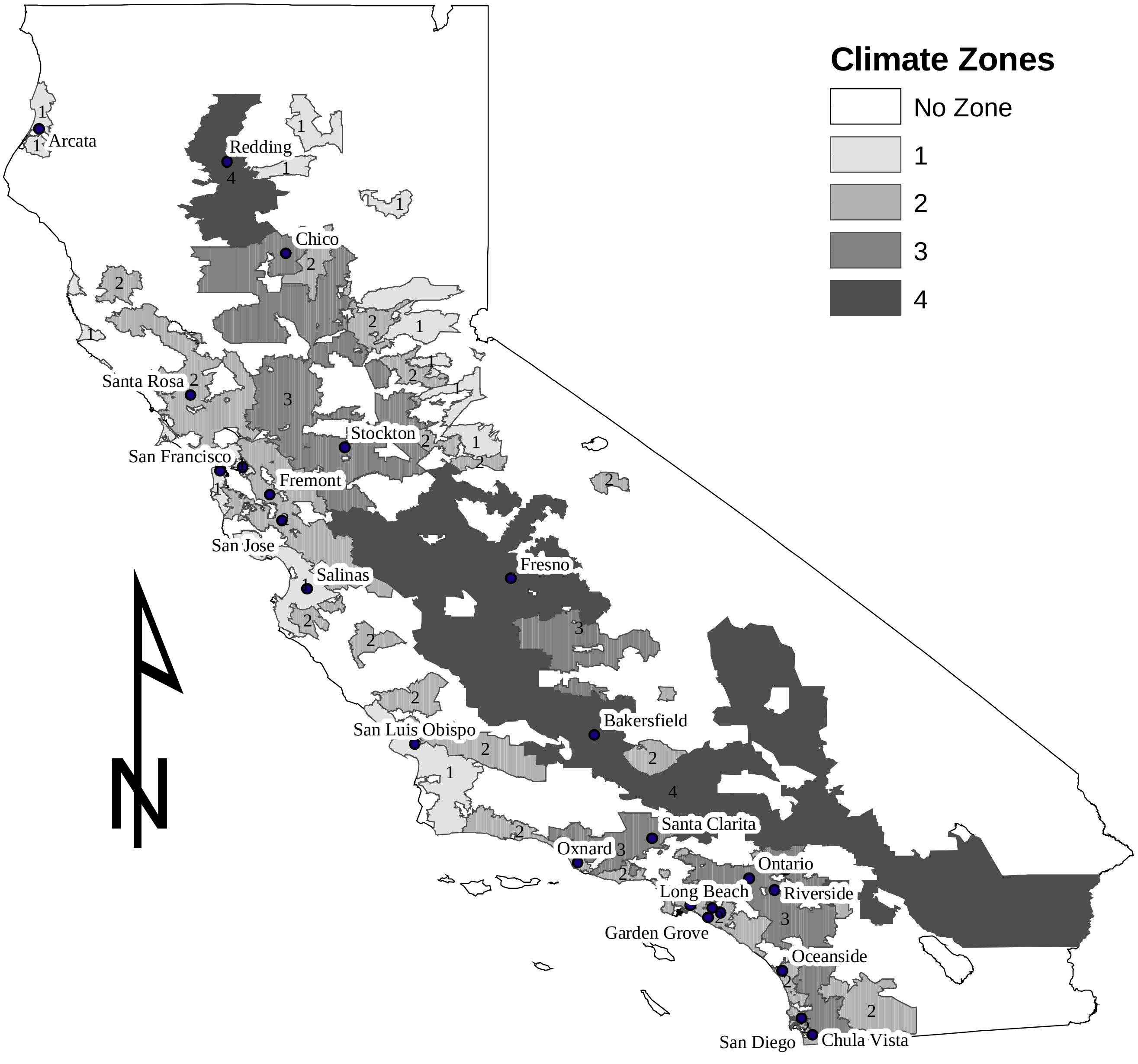
Remember: You'll receive appreciation payments totaling $175 if you stay on Shift & Save through April 30, 2004

Appendix 2

Map of SPP Sample Distribution by Climate Zone

The sample customer map uses zip codes of customers in the sample. Selected cities are shown.

SPP Sample Customer Map



Prepared by Charles River Associates
Draft -- Not Audited

Appendix 3

Population by Weather Station Used to Create Weather Variables by Climate Zone

APPENDIX 3: POPULATION BY WEATHER STATION USED TO CREATE WEATHER VARIABLES BY CLIMATE ZONE

Weather is an important determinant of energy use and a key explanatory variable in the regression models. Consequently, each control and treatment customer in the experiment was assigned by the relevant utility to a specific weather station located in close proximity to the customer, and weather data was gathered for that station. Data from 58 weather stations was used in the analysis. Table 3-1 lists the weather stations that were used and the corresponding customer population associated with each station. The population values were used to calculate climate-zone-specific, weighted averages for the weather variables. When a weather station was included in more than one climate zone, the distribution of control group customers in the experiment assigned to that weather station was used to allocate the station population to each climate zone.

Table 3-1
Population By Weather Station Used To Calculate
Weather Variables by Climate Zone

Utility	Station ID	Weather Area	Population	Zone 1	Zone 2	Zone 3	Zone 4
PG&E	P05	Concord	236,416		X	X	
PG&E	P06	Oakland	280,055	X	X		
PG&E	P07	San Ramon	81,199		X		
PG&E	P08	Colma	94,604	X	X		
PG&E	P09	Potrero	295,343	X			
PG&E	P10	Ukiah	44,668	X	X		
PG&E	P11	San Rafael	186,424	X	X		
PG&E	P12	Santa Rosa	161,644	X	X		
PG&E	P13	Sacramento	162,848			X	
PG&E	P14	Belmont	144,699	X	X		
PG&E	P15	Milpitas	491,164		X		
PG&E	P16	Santa Cruz	82,392	X			
PG&E	P17	Chico	84,998	X	X	X	X
PG&E	P18	Marysville	50,534		X	X	
PG&E	P19	Red Bluff	48,078	X			X
PG&E	P20	Auburn	124,617	X	X	X	
PG&E	P21	Angels Camp	65,661	X	X	X	X
PG&E	P22	Stockton	235,473			X	X
PG&E	P23	Paso Robles	31,116		X		
PG&E	P24	Salinas	114,703	X	X		
PG&E	P25	Santa Maria	107,566	X	X		
PG&E	P26	Eureka	57,284	X	X		
PG&E	P27	Bakersfield	159,010				X
PG&E	P28	Fresno	327,599	X			X
PG&E	P29	Cupertino	210,199	X	X		
SCE	E01	Tulare	124,357		X	X	

Table 3-1
Population By Weather Station Used To Calculate Weather Variables by Climate Zone

Utility	Station ID	Weather Area	Population	Zone 1	Zone 2	Zone 3	Zone 4
SCE	E02	Mammoth Lakes	10,797		X		
SCE	E03	San Dimas	211,541			X	
SCE	E04	Monterey Park	415,914		X	X	
SCE	E05	Ventura	115,460		X	X	
SCE	E06	Romoland	292,609			X	
SCE	E07	Rialto	353,505			X	
SCE	E08	Moorpark	141,237		X	X	
SCE	E09	Rimforest	44,072		X		X
SCE	E10	Valencia	77,528		X	X	
SCE	E12	Bishop	14,271		X		
SCE	E13	Goleta	66,229		X		
SCE	E14	El Segundo	206,231		X	X	
SCE	E15	Long Beach	321,292		X		
SCE	E16	Westminster	244,534		X		
SCE	E17	Santa Ana	713,691		X	X	
SCE	E18	Cathedral Cit	91,506				X
SCE	E19	Blythe	7,965				X
SCE	E20	Ridgecrest	25,362				X
SCE	E21	Barstow	14,645				X
SCE	E22	Lancaster	90,922				X
SCE	E23	Victorville	80,287				X
SCE	E24	Yucca Valley	23,239				X
SDG&E	S01	Lindbergh Field	254,600		X		
SDG&E	S02	Miramar	190,376		X	X	
SDG&E	S03	Montgomery Field	160,157		X	X	
SDG&E	S04	Oceanside Airport	74,951		X		
SDG&E	S05	Gillespie Field	162,609			X	
SDG&E	S06	Brown Field	40,693			X	
SDG&E	S07	Campo	2,930			X	
SDG&E	S08	Ramona	73,202		X	X	
SDG&E	S09	Carlsbad	123,367		X		

Appendix 4

Sample Stratification and Allocation

APPENDIX 4: SAMPLE STRATIFICATION AND ALLOCATION

Section 2.3 of the main report provided a high level summary of the sample design for the SPP. This appendix summarizes the detailed allocation of samples by treatment, size strata, customer segment and service territory.

4.1 RESIDENTIAL SAMPLE ALLOCATION

Within each treatment cell, the samples were optimized to provide the greatest level of accuracy for the pre-specified Bayesian allocations. After stratifying by housing type, the Dalenius-Hodges method[1] was used to determine optimal usage cut points, and the Neyman allocation method[2], which allocates more sample points to strata with greater variance, was applied to increase the explanatory capability of the final sample. For multi-family strata, the allocated sample sizes were small, so these cells were not segmented further based on the Neyman allocation method. Table 4-1 summarizes the allocation of samples within each cell for the residential CPP-F and TOU rate treatments based on the Dalenius-Hodges and Neyman processes.

Table 4-2 summarizes the shares represented by each strata in the sample and control group populations. As indicated in the table, the primary outcome of the sample allocation process described above is that high usage customers constitute a larger share of the SPP sample than they do in the population at large. The impact estimates and demand models presented in sections 4 through 7 of the main report have been adjusted to reflect differences between the sample and population shares based on the stratification variables.

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[1] The Dalenius-Hodges procedure generates optimal stratification boundaries for a fixed number of strata within a homogenous population. Boundaries are optimal in the sense that the variance of the estimate for a given population parameter is minimized. In this instance, the technique was used to define a set of homogeneous sub-populations. Usually the stratifying variable (as is the case for this sample design) is a proxy value for the population parameter of interest. Peak-peiod demand is not known for residential customers, so summer average daily usage was used as a proxy.

[2] The Neyman Optimal allocation technique assigns sampling points to each stratum based on the percentage of the total population standard deviation of the parameter of interest represented by the stratum. Neyman allocation optimizes the fixed sample size (i.e. maximizes the precision). In practice, this technique tends to disproportionately allocate sample units to the high energy users because the variance in these strata is large compared to other strata. Daily average energy use was used as a proxy for the parameter of interest (i.e., energy use during the peak period).

Table 4-1
Sample Allocation for Residential Track A CPP-F , TOU, and Control*
By Climate Zone, Dwelling Type, and Usage Level

				Control				CPP-F				TOU			
Climate Zone	**Dwelling Type**	**Usage**	**Population Count**	**Total**	**PG&E**	**SCE**	**SDG&E**	**Total**	**PG&E**	**SCE**	**SDG&E**	**Total**	**PG&E**	**SCE**	**SDG&E**
1	Single	Low	432,173	17	17	0	0	14	14	0	0	13	13	0	0
		High	188,621	21	21	0	0	18	18	0	0	17	17	0	0
	Multiple	All	406,722	25	25	0	0	20	20	0	0	20	20	0	0
			1,027,516	***63***	***63***	***0***	***0***	***52***	***52***	***0***	***0***	***50***	***50***	***0***	***0***
2	Single	Low	1,848,301	27	10	11	6	51	19	21	11	13	6	7	0
		High	814,877	45	23	16	6	85	44	29	11	22	13	9	0
	Multiple	All	1,259,417	28	10	12	6	53	19	23	11	14	6	8	0
			3,922,595	***100***	***43***	***39***	***18***	***188***	***82***	***73***	***33***	***50***	***25***	***25***	***0***
3	Single	Low	1,249,106	32	7	21	4	60	13	40	7	16	4	12	0
		High	675,729	46	14	29	3	87	26	55	6	23	8	15	0
	Multiple	All	533,557	22	5	14	3	41	9	26	7	11	3	8	0
			2,458,392	***100***	***26***	***64***	***10***	***188***	***48***	***120***	***20***	***50***	***15***	***35***	***0***
4	Single	Low	433,556	30	20	11	0	35	22	12	0	15	10	5	0
		High	257,864	49	31	18	0	56	36	20	0	25	16	9	0
	Multiple	All	173,943	20	13	7	0	23	15	8	0	10	7	3	0
			865,363	***100***	***64***	***36***	***0***	***114***	***73***	***41***	***0***	***50***	***33***	***17***	***0***
Total			***8,273,866***	***363***	***196***	***139***	***28***	***542***	***255***	***234***	***53***	***200***	***123***	***77***	***0***

Table 4-2
Sample And Population Shares For CPP-F And TOU Control Groups
(Shares add to 100% across rows, for sample and population separately)

Zone	**Single Family Low Use**		**Single Family High Use**		**Multiple Family**	
	Sample (%)	**Population (%)**	**Sample (%)**	**Population (%)**	**Sample (%)**	**Population (%)**
1	27.0	42.1	33.3	18.4	39.7	39.6
2	27.0	47.1	45.0	20.8	28.0	32.1
3	32.0	50.8	46.0	27.5	22.0	21.7
4	30.0	50.1	49.0	29.8	20.0	20.1
All	29.2	47.9	44.3	23.4	26.2	28.7

For each stratum, a series of potential samples were selected at random and without replacement. The final sample was chosen so that it most closely resembles the population in terms of summer average daily usage. Several types of customers were excluded from the sampling frame, including those who (a) live in master-metered dwellings and therefore cannot be sent a time-varying price signal, (b) are on a medical baseline rate and may not be able to engage in load shifting without endangering their condition, (c) are on an existing time-of-use (TOU) rate or an air conditioner cycling program, which they have chosen on a voluntary basis, (d) are a direct access customer, who buy power from third party suppliers, (e) are a net metering customer, producing their own power, or (f) get power on standby rates or special contract rates.

Sample allocations for Track B and for the Information Only cells in Track A are contained in Tables 4-3 and 4-4.

Table 4-3
Sample Allocation for Track B
(All Customers Are Located in Climate Zone 1)

Rate Group	Location	Dwelling Type	Usage Level	Pop Count	Info Only		CPP-F			
					Cell ID	Sample Size	Cell ID	Sample Size		
								Total	Rate Treatment	
									High	Low
E-1	Hunter's Point	MF	Low	2,580	B01	10				
		MF	High	1,574	B01	13				
		SF	Low	4,588	B01	25				
		SF	High	1,723	B01	15				
				10,465		**63**				
E-3	Hunter's Point	MF	Low	2,580			B02	20	10	10
		MF	High	1,574			B02	26	13	13
		SF	Low	4,588			B02	50	25	25
		SF	High	1,723			B02	30	15	15
				10,465				**126**	**63**	**63**
E-3	Richmond	MF	Low	5,827			B03	18	9	9
		MF	High	2,311			B03	6	3	3
		SF	Low	10,946			B03	32	16	16
		SF	High	2,685			B03	8	4	4
				21,769				**64**	**32**	**32**

Table 4-4
Sample Allocation for Information Only Treatment

Rate Group	Climate Zone	Dwelling Type	Usage Level	Population Count	Cell ID	Sample Size
E-1	2	MF	All	407,559	A11	15
		SF	Low	661,508		15
			High	408,776		33
				1,477,843		**63**
	3	MF	All	100,956	A12	11
		SF	Low	248,319		18
			High	195,122		34
				544,397		**63**

The CPP-V treatment was offered to two different populations, the general population (Track A) and the population of consumers who had already volunteered for the AB970 Smart Thermostat pilot program (Track C). The Track A sample design called for the selection of 125 customers split between climate zones 2 and 3. The selection criterion was that a customer's usage during the summer months must exceed 600 kWh a month. This resulted in a pool of approximately 240,000 customers. Participants in the AB970 pilot were excluded from Track A. Note that the Track A CPP-V target population included approximately 80,000 customers that were originally solicited for the Smart Thermostat program (climate zone 3 only) and that had decided not to join that program. The Track A CPP-V rate was offered only to single-family residences that exceeded the threshold of 600 kWh a month.

SDG&E performed an optimal allocation using the Dalenius-Hodges procedure with stratification boundaries based on high and low summer average daily usage. The procedure was applied to the target population frame of approximately 240,000 customers. The treatment group consisted of 125 primary sample sites with 20 like replacements for each primary sample site. SDG&E anticipated that recruitment for the CPP-V technology treatment customers would require extensive sample replacements.

For the residential Track C CPP-V treatment group, a random sample of 125 primary sites was selected from SDG&E's population of 3,650 AB970 Smart Thermostat Program Participants. The treatment group customers were placed on a CPP-V rate, with the group being split evenly between the high and low rate differentials. Nearly all of the existing Smart Thermostat participants were located in SDG&E's inland climate zone. SDG&E's inland climate zone is in the statewide climate zone 3, although the weather in San Diego is milder than the average statewide weather in zone 3.

SDG&E utilized an existing sample of 100 Smart Thermostat participants with interval data recorders for its CPP-V Control Group 1. This group of 100 customers was split into two groups of 50. On any given curtailment day, 50 had their technology dispatched and 50 did not. SDG&E made these 100 interval metered customers aware that they would be asked to curtail on days other than an ISO stage 2 alert. SDG&E modified the curtailment criteria for its existing smart thermostat control group so that direct comparisons to the treatment group could be made.

SDG&E was able to utilize a control sub-sample from Track A CPP-V. This sub-sample was selected from SDG&E's inland customers (climate zone 3) with summer monthly usage aexceeding 600 kWh. This second control group sample was selected using the Dalenius-Hodges method with a Neyman allocation as described in the prior section. The second control group had initially received the Smart Thermostat Program marketing materials and chose not to participate. Both control group customers were required to have the ability to utilize an enabling technology such as 1-way or 2-way paging.[3]

Table 4-5 summarizes the CPP-V sample allocation.

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[3] Initially, the smart thermostat program was offered only to customers in SDG&E's inland climate zone whose monthly summer consumption was at least 700 kWh. This resulted in a marketing list of approximately 60,000 customers. SDG&E estimates that 50% of its inland customers have the use of a central air conditioner. Though SDG&E only directly marketed to its inland customers, any residential customer was able to participate if they had central air conditioning. Because initial participation rates were lower than expected, SDG&E reduced the required monthly summer consumption level down to 600 kWh. Lowering the summer monthly kWh threshold resulted in a target-marketing list of approximately 80,000 customers.

Table 4-5
Sample Allocation for Residential CPP-V Treatment

Climate Zone	Dwelling Type	Usage	Sample	Sample Description	Population	Total	Rate Differential	
							High	Low
2	All	Low	CPP-V- Track A	*Treatment Group* (> 600 kWh)	78,335	19	10	9
	All	High			26,014	43	22	21
3	All	Low	CPP-V- Track A	*Treatment Group* (> 600 kWh)	81,865	21	11	10
	All	High			30,046	42	21	21
					216,260	***125***	***64***	***61***
2	All	Low	CPP-V- Track A	*Control Group1* (> 600 kWh)	78,335	8	-	-
	All	High			26,014	18	-	-
3	All	Low	CPP-V- Track A	*Control Group1* (> 600 kWh)	81,865	6	-	-
	All	High		Also Control 2 for C02	30,046	12	-	-
					216,260	***44***		
2	All	Low	CPP-V- Track A	*Control Group* 2	289,892	8	-	-
	All	Med		Entire Population Sample Frame	262,788	11	-	-
	All	High			73,168	17	-	-
3	All	Low	CPP-V- Track A	*Control Group* 2	200,467	7	-	-
	All	Med		Entire Population Sample Frame	189,059	9	-	-
	All	High			59,507	11	-	-
					1,074,881	***63***		
3	All	All	CPP-V- Track C	*Treatment Group* - Smart Therm Part	*3,650*	126	62	63
				Target population > 600 kWh a month				
					3,650	***126***	***62***	***63***
3	All	All	CPP-V- Track C	*Control Group 1* (> 600 kWh)	*3,650*	70	-	-
				Smart Thermostat Participants **				
					3,650	***70***		
				Total CPP-V Residential Sample	***3,650***	***428***	***126***	***124***

*** This control group utilizes the existing control group for the residential smart thermostat program. 20 Additional sites were selected to complement the existing control group.*

4.2 C&I SAMPLE DESIGN

For the C&I customer segment, two treatments were tested, TOU rates and CPP-V rates. As with the residential sector, the CPP-V rate was tested among two populations, Track A and Track C.

The target population for the TOU treatment sample consisted of the general population of C&I customers below 200 kW in the SCE service territory who were likely to have some economic incentive to respond to TOU rates. Very small customers (e.g., daily average usage < 5 kWh) and those who clearly had little or no economic incentive to respond to TOU rates (e.g., bus stops, ATM machines, billboards) were excluded.

The target population for the Track A, CPP-V sample was the general population of C&I customers below 200 kW in the SCE service territory who were likely to have air conditioning and for whom an enabling technology was feasible. When developing the sample, customers were excluded if they did not live in areas with 2-way paging coverage or they did not have enough load to account for air conditioning.[4]

In addition to the treatment groups, two separate control samples were also selected, one from the target population for the CPP-V treatment and one from the target population for the TOU treatment. As with the residential samples, several types of customers were excluded from the sampling frame, including direct access customers, those on existing TOU rates, those on the air conditioning cycling program, net energy metering customers, and those on standby or special contract rates.

The target population for the Track C sample was C&I customers in SCE's service territory who had already volunteered to participate in the AB970 smart thermostat program.[5] A stratified random sample from this population was selected to recruit for CPP-V rates. A separate blind control sample was also randomly selected from the same population. It is important to keep in mind that the population frame for this sample is by no means representative of the general C&I customer population.

In each sample, the total size was first allocated between the two rate groups GS-1 (< 20 kW) and GS-2 (20-200 kW) and then between the treatment rates and control samples using the results from the Bayesian model adjusted to allow for a minimum number in each cell. Stratified random sampling was then applied using size (kW) as the only stratification variable and using standard load research sample design and section methods such as Dalenius-Hodges technique, Neyman optimal allocation, and sample validation. Table 4-6 summarizes the allocation of C&I sample for treatment and control for both tracks A and C.

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[4] Those with summer daily usage less than 10 kWh (not enough load for having A/C), pumping and lighting SIC codes were excluded.

[5] The Smart thermostat program had been offered to about 68,000 customers with commercial SIC codes excluding government accounts, schools, all chain-affiliated customers, customers without 13 months of billing history, and those not meeting the summer/winter ratio of 1.2. Because of this and the opt-in nature of this program, this sample is not a representative sample of small C&I population.

Table 4-6
Sample Allocation for Small Commercial & Industrial (Tracks A and C: TOU, CPP-V, and Controls)
By Rate Group and Usage Level

General Population				TOU						CPP-Variable						
SPP Track	Rate Group	Usage Level	Population Count	Control (A)		TOU Treatment				Populatio Count **	Control (B)		CPP-V Treatment			
				Cell ID	Sampl Size	Cell ID	Sample Size				Cell ID	Sampl Size	Cell ID	Sample Size		
							Total	Rate						Total	Rate	
								High	Low						High	Low
A	GS-1	Low	229,423	A17	19	A21	22	11	11	142,724	A27	19	A19	24	12	12
		High	84,096	A17	25	A21	28	14	14	56,233	A27	25	A19	34	17	17
			313,519		44		50	25	25	198,957		44		58	29	29
	GS-2	Low	73,788	A18	17	A22	20	10	10	60,994	A28	17	A20	32	16	16
		High	28,539	A18	27	A22	30	15	15	23,389	A28	27	A20	48	24	24
			102,327		44		50	25	25	84,383		44		80	40	40
			415,846		88		100			283,340		88		138		

Smart Thermost (AB970) Program				CPP-Variable						
SPP Track	Rate Group	Usage Level		Populatio Count	Control (3)		CPP-V Treatment			
					Cell ID	Sampl Size	Cell ID	Sample Size		
								Total	Rate	
									High	Low
C	GS-1	Low		836	C03	17	C05	22	11	11
		High		408	C03	25	C05	34	17	17
				1244		42		56	28	28
	GS-2	LOW		398	C04	21	C06	38	19	19
		High		381	C04	21	C06	38	19	19
				779		42		76	38	38
				2,023		84		132	66	66

Appendix 5

Sample Enrollment Package

Sample enrollment package is for the SDGE residential CPP-F rate.

SDGE
A Sempra Energy utility℠

San Diego Gas & Electric
PO Box 129831
San Diego, CA 92112-9831

April 10, 2003

XXXX
XXXX
XXXX

Dear XXXX:

You have been randomly chosen by San Diego Gas & Electric Company to participate in the statewide Electricity Pricing Research Project. As a participant, you will be offered new information and capabilities designed to help you better manage your electricity costs.

For this project, you have been chosen to participate in our Shift & Save Pricing Plan. Plan details and more information about your role in this project are included on the enclosed sheet titled *Questions and Answers*.

As a participant in this project, you will have an important role in influencing how electricity is priced for millions of California customers in the future. You will be contributing to a statewide research effort to help create a more secure energy future for California.

San Diego Gas & Electric Company is working together with the California Public Utilities Commission, the California Energy Commission, the California Power Authority and other California utilities on this project.

To thank you for your help with this critically important research project we are offering you **appreciation payments totaling $175**.

Please respond to the Research Support Center by April 25, 2003 as the first step to become eligible for the first installment of your appreciation payments. Either:

1. **Fill out and mail the enclosed reply card** in the pre-paid envelope today, or
2. **Call us toll free at 1-800-289-2440.**

Thank you in advance for your support. Participation is voluntary. At the end of this research project, you will return to your current rate (or you may choose another available pricing plan). If you have questions or concerns about this research project, call the Research Support Center at 1-800-289-2440.

If you would like information about SDG&E programs or services, please call us at 1-800-411-SDGE (7343). We are committed to providing exceptional customer service.

Sincerely,

Sandra Williams

Sandra Williams
Residential Information and Audit Programs Manager

Shift & Save Pricing Plan Information

After reading *Questions and Answers*, please fill out the information below and return in the pre-paid envelope. If you have questions or concerns about this research project, please call our Research Support Center toll free at 1-800-289-2440.

Primary Notification Phone Number: Please provide your home phone number or another direct dial number – *other than a cell phone* – where you can be reached during the day. This primary phone number will be the main way we will notify you the day before a Super Peak Day.

__(________)____

Area Code Please note – Cell Phones cannot be Primary Notification Numbers

Secondary Notification: You may select one or more additional notification methods:

☐ E-mail address: ____

☐ Pager (must be alphanumeric): ______________________________

☐ Other phone (can be a cellular phone): _________________________

If we need to contact you, when would be the best time to reach you?

____

Do you occupy this residence (referenced above)?

___Yes, I occupy this residence
___No, I do not occupy this residence

Do you have plans to move in the next 6 months?

___ Yes, I am moving in the next 6 months
___ No, I have no plans of moving in the next 6 months

Questions and Answers

Shift & Save Pricing Plan

How does this project help California?

The Electricity Pricing Research Project will examine new rates that can help create a more secure energy future for California. The new rates in this experiment will allow prices to rise when the demand for electricity on hot afternoons is high and fall when demand is low. The state will use the results of this project to determine if these new rates encourage customers to lower their electric use during high demand periods. If these rates are found to be effective, they can reduce our need to use older and less efficient power plants to meet peak demands.

This research project is scheduled to run between 12 and 18 months, with review by the California Public Utilities Commission on an ongoing basis.

How does this pricing plan work?

Your Shift & Save Pricing Plan will provide you with the information and capabilities you need to better manage your electricity costs. On your new pricing plan, the price you pay for electricity will depend on the time of day, season, and day of the week. The charts on the right show the average rates for this pricing plan.

Your Shift & Save Pricing Plan has the following features:

▶ 85% of the time you will be charged an "Off-Peak" rate that is lower than the average rate you pay now. The Off-Peak period includes: all day on Saturday, Sunday and on holidays, and all times except 2 p.m. to 7 p.m. Monday through Friday.

▶ 14% of the time you will be charged at a "Peak" rate that is higher than your current average rate. The Peak period includes: 2 p.m. to 7 p.m Monday through Friday.

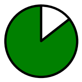
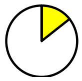
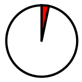
▶ Less than 1% of the time, 15 days or fewer per year, will be declared "Super Peak Days."

- On these days, you will be charged at the "Super Peak" rate from 2 p.m. to 7 p.m. For all other hours on these days, you will be charged at the lower Off-Peak rate.
- You will be notified one day prior to a Super Peak Day, when the cost of electricity is expected to be high due to summer heat storms or local reliability problems.
- You will be notified by phone and additionally by e-mail, cell phone or pager if you choose.

Look for more information about your Shift & Save Pricing Plan in your Welcome Package in June.

Shift & Save Pricing Plan

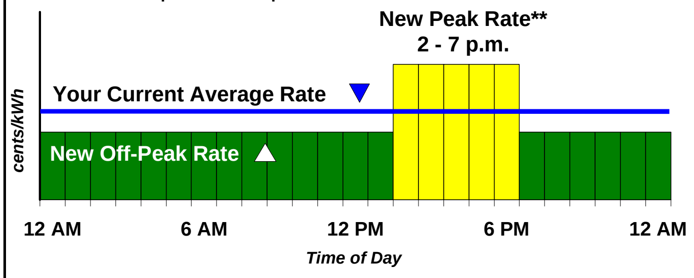
Your Shift & Save Pricing Plan will have three rate periods. The chart below compares current average rates with new average rates for each period. Also, the chart shows how much of the time each rate will be charged under your new pricing plan.

Rate Period	Current Rate* cents/kWh	New Rate* cents/kWh	% of Annual Time on Each Shift & Save Rate
Off Peak	16 cents	13 cents	**85%** 
Peak	16 cents	25 cents	**14%** 
Super Peak	16 cents	66 cents	**1%** 

* These are illustrative rates based on statewide averages. Your actual rates during the experiment will be somewhat different.

Example Rates: Monday - Friday

On weekdays, your rates will increase from 2 p.m. to 7 p.m. The lower, Off-Peak rate will be charged during all other hours, including weekends and holidays. On Super Peak Days, you will be charged the Super Peak rate from 2 p.m. to 7 p.m.



** The price you pay for electricity from 2 p.m. to 7 p.m. Monday through Friday will vary depending on whether or not a Super Peak Day has been declared.

Please contact our Research Support Center today!

Call toll free, at 1-800-289-2440 Monday through Friday, 8 a.m. to 8 p.m. or Saturday 9 a.m. to 12 noon OR return the enclosed enrollment card. We must hear from you by the enrollment date in the enclosed letter for you to be eligible for your appreciation payments.

What Happens When?

- **Within a few weeks**, your old electric meter will be replaced with a new advanced digital electric meter, free of charge. This new meter will measure your electricity use every 15 minutes.
- **In May**, we will send you a survey to assist with our research. You will receive your first appreciation payment of $25 after you complete and return the survey.
- **During the project**, you may also be contacted by phone so we can get your feedback on how the Shift & Save Pricing Plan is working for you.
- **In June**, look for a Welcome Package in the mail with tips on how to reduce your electricity costs and directions on how to use our website to review your electricity use. Information comparing your electric bill on your new Shift & Save Pricing Plan with your current pricing plan will also be included in this package.
- **Starting in July**, you will be charged for electricity based on the Shift & Save Pricing Plan.
- **The day before** a Super Peak Day is declared, you will get a notification phone call.
- **At the end of October 2003**, you will be eligible for a second appreciation payment of $75 if you have remained on the Shift & Save Pricing Plan.
- **At the end of April 2004**, you will be eligible for the final $75 if you have remained on the Shift & Save Pricing Plan.

What is my role in the program?

Your role will be to provide feedback on your new rate, bills, and information you receive, as well as to adjust your electricity use if you choose. By participating in this experiment, you will be contributing to a statewide effort to create a more secure energy future for California.

Terms and Conditions

Participation in this project is voluntary.

Customers can remove themselves from the Shift & Save Pricing Plan at any time, but you must stay on the rate through the end of October 2003 to receive a $75 appreciation payment. In order to qualify for the Shift & Save Pricing Plan:

- The person whose name appears on the enclosed letter must occupy the home;
- You must not be planning to move within the next six months;
- You must provide us with a notification phone number, not a cell phone, to be used for Super Peak Day notification. Details on how notification works will be included in your Welcome Package in June;
- Your utility must successfully install the advanced meter at your home.

When do I get $175?

To thank you for participating in this research project, we are offering you $175.

Your $175 appreciation payments will come in three checks. The first $25 will be sent to you after you return a completed survey that we will mail out in May. You will receive two additional $75 checks: one in Fall of 2003 and the other in the Spring of 2004 (as long as you continue to participate).

Will I save on my electric bill?

The savings you can achieve on your electric bill will depend on how much electricity you currently use during the Peak period and your ability to shift your electricity use to Off-Peak periods or lower your electricity use. Under the Shift & Save Pricing Plan, if you take no steps to lower your electricity use from 2 p.m. to 7 p.m. Monday through Friday, your bill may go up or down compared to what it would have been at your current rate. If you do take steps to reduce your electricity use during the Peak period, your bill is more likely to go down.

An average customer uses about 18% of their electricity during Peak and Super Peak periods. If you use less electricity during that time than the average customer, your bills will go down. If you do not reduce your usage during the Peak period and you use more electricity during that time than the average customer, your bills will go up.

A new digital meter will be installed at your home at no charge to you. This new meter will allow us to measure your electric use every 15 minutes. During this project, you will be given information on your electricity use and how much your bill has gone up or down relative to your old rates. This information will be available to you through a secured website or by contacting us. **We will also provide helpful tips on how to shift or save during the Peak and Super Peak periods.**

Thanks for your help!

Pricing plans similar to the Shift & Save Pricing Plan are being used or tested in many areas of California, as well as in other states. Your participation in this research project is a crucial element in our statewide effort to create a more secure energy future for California.

If you have questions or concerns about participating in the Electricity Pricing Research Project, please call our research staff toll free at

1-800-289-2440

Research Project Sponsors:

- **The California Public Utilities Commission**
- **The California Energy Commission**
- **The California Power Authority**
- **Pacific Gas & Electric Company**
- **Southern California Edison**
- **San Diego Gas & Electric**

Appendix 6

Sample Welcome Package

Sample welcome package is for the SDGE residential CPP-F high Summer rate.

Welcome Package Contents

Your Welcome Package gives you the information you need to better manage your home's electricity costs using your new Shift & Save Pricing Plan.

Quick and Important Facts Just got a minute or two? Read this first.	**Page 2**
Taking Advantage of Your New Pricing Plan See three examples of customers' electricity use decisions and savings on the Shift & Save Pricing Plan.	**Page 3**
Shift & Save Pricing Plan Details Your new rates are lower during mornings, early afternoons, nights and weekends.	**Page 9**
Tips for Saving Money Check out no-cost and low-cost ways to save on your new rates.	**Page 11**
Appliance Electricity Cost Tables Find out which of your appliances use the most and the least electricity.	**Page 13**
Electricity Savings Calculations Learn how to calculate appliance electricity costs and savings.	**Page 16**
New Billing Information See an example of your new electric bill.	**Page 18**
Calendar Note when you will be eligible for appreciation payment checks and other key events.	**Page 21**
More Information and Resources	**Page 22**

TIP

Keep this Welcome Package handy so you can check for tips and find out where to get more information as you get used to your new pricing plan. There's even a pocket in the back so you can easily keep track of your bills and other information about your electricity use.

Quick and Important Facts

T I P

Check out the examples on the following pages for suggestions about how you can better manage your electricity use and costs on your new pricing plan. Look on our Web site at www.sdge.com/eprp or call us at 1-800-411-SDGE (7343) to find out more!

Off-Peak Rates: Your new Off-Peak rate is lower than your current rate on weekdays before 2 p.m. and after 7 p.m., as well as all hours on weekends and holidays (about 85% of the time).

Peak Rates: From 2 p.m. to 7 p.m. Monday through Friday, excluding holidays, you will be charged a Peak rate that is higher than your current rate (about 14% of the time).

Winter and Summer Rates: Your rates will be different in the summer than in the winter.

Annual Bill: Depending on how you use electricity, your bills could go up or down even if you do not shift or reduce your electricity use.

Shift and Reduce Your Use to Save Money: If you shift your electricity use from Peak times to your new lower Off-Peak times, your bills will be lower than if you do not shift your use. Reducing your electricity use at any time can help your bills go down even more.

Super Peak Rates: When a Super Peak Day has been declared, you will be notified the day before. You will be charged a Super Peak rate for the electricity you use during this period (about 1% of the year). This Super Peak rate is four to five times higher than your current rate.

Super Peak Days: There will be 15 or fewer Super Peak Days in a calendar year. You will only be charged Super Peak rates between 2 p.m. and 7 p.m. on weekdays when a Super Peak Day has been declared. A Super Peak Day will never be declared on a weekend or a holiday.

Will your electricity bill go up or down on your new Shift & Save Pricing Plan? That depends on how much electricity you use during the Peak period, weekdays from 2 p.m. to 7 p.m., and your ability to reduce your electricity use or shift your use to Off-Peak periods.

Peak Electricity Use Drives Your Bill

An average customer uses 18% of their electricity during the Peak period, Monday through Friday, 2 p.m. to 7 p.m. Under the Shift & Save Pricing Plan, the proportion of electricity you use during the Peak period is important.

Customers who take no action to reduce or shift their electricity use away from the Peak period should see their bills remain about the same as their current electric bills. Customers who use more than 18% of their electricity during the Peak period will see their bills go up. Customers who use less than 18% of their electricity during the Peak period will see their bills go down.

Reducing Peak Electricity Use Saves Money

In general, reducing your use or shifting your electricity use away from the Peak period will lower your bill compared to taking no action. Your bill savings may be higher in the summer or the winter, so it is important to consider your total electricity costs over the course of a year.

Without knowing how you use electricity today, what kind of heating and cooling you have or what other appliances you use, it is hard to predict whether your bill will go up or down on your new pricing plan. To help you determine how your new pricing plan might help you better manage your electricity costs, three examples follow to show how some customers might make decisions to change their electricity choices based on their new pricing plan. None of these will be a perfect match for your home, but look for one that is a good fit. Which example is most like your home?

- Sheri and Mike have three kids and use electricity all day long.
- Dan and Maria are retired and use air conditioning in the afternoon.
- Patty and John both work and don't have air conditioning.

More Information and Resources

Each example offers specific ideas about how you can reduce your annual electric bills using your new pricing plan. Also, you can see what kind of daily bill savings these customers could have if they chose to shift or reduce their electricity use during Peak periods. If your electricity use seems different than described in these examples, we can help you identify savings opportunities in your own home. Call us toll-free at 1-800-411-SDGE (7343) or visit our Web site at www.sdge.com/eprp for more information about ways you can save money on your electric bill.

TIP

Check out examples of three different families on your new pricing plan on the next few pages. These examples offer you some ideas about what kind of actions you might take to lower your bills. Call us toll-free at 1-800-411-SDGE (7343) if you have questions or visit our Web site at www.sdge.com/eprp for more tips to help you take advantage of your new pricing plan.

Example 1. All Day Electricity Use: Family with Young Children

CHART 1

Routine Electricity Cost

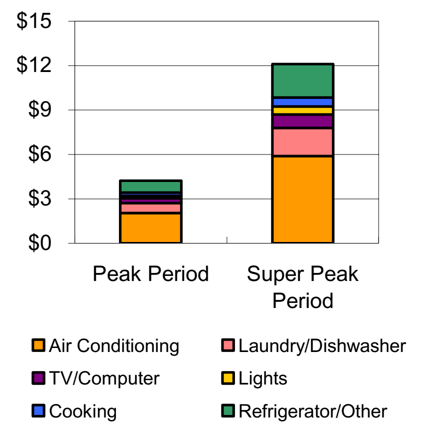
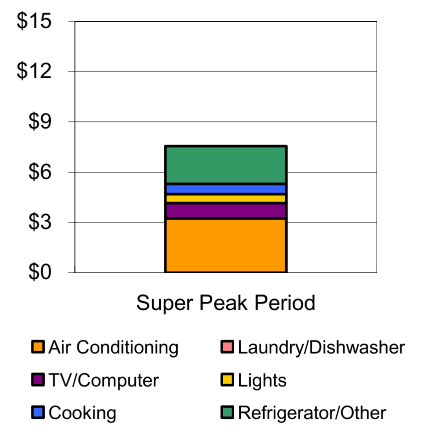


CHART 2

Shift & Reduce Electricity Cost



Weekday Electricity Use Habits

Sheri and Mike have three young children, one in school and two at home. They live inland and use their air conditioning in the summer during the afternoon and into the evening. They fix dinner for their family between 5 p.m. and 6 p.m. and run the dishwasher twice a day, once right after dinner. They also do one load of laundry each day, after 2 p.m.

This family uses more electricity than average during the Peak period, Monday through Friday, 2 p.m. to 7 p.m. If they take no action to shift or reduce their electricity use, their bills will go up on average compared to their current bills.

Chart 1: Electricity use between 2 p.m. to 7 p.m. on Super Peak Days is about three times more expensive than on other weekdays.

Reducing Peak Electricity Costs

Sheri and Mike have several options to lower their bills on their new Shift & Save Pricing Plan. Their biggest Peak electricity use is air conditioning, followed by doing laundry and using their dishwasher. Their electric clothes dryer and dishwasher are more expensive to operate during Peak and Super Peak periods. Sheri and Mike can shift their use of these appliances to Off-Peak times. Lighting, cooking and other electricity uses are all lower cost items.

Chart 1 and **Chart 2** show the cost of Sheri and Mike's electricity use between 2 p.m. and 7 p.m. on different days. Even though they are using the same amount of electricity during the 2 p.m. to 7 p.m. period, **Chart 1** shows that they will pay more to use their appliances during this time on Super Peak Days, compared to what they will pay for the same electricity use during the Peak period on a regular weekday.

On most weekdays in the summer or winter, the cost of Sheri and Mike's electricity use between 2 p.m. and 7 p.m. will be between $3 and $5 per day. However, because of their high electricity use during the Peak period, when a Super Peak Day is declared, their electricity use between 2 p.m. to 7 p.m. could cost as much as $12 if they take no action to shift or reduce their use.

Chart 2: If Sheri and Mike shift and reduce their electricity use from 2 p.m. to 7 p.m. on Super Peak Days, their electricity costs for the Super Peak period could drop by about a third.

Example 1. All Day Electricity Use: Family with Young Children

Cost Saving Ideas: Shift & Save

One way for Sheri and Mike to reduce their family's everyday electricity costs would be to move their laundry and dishwasher use away from the Peak period of 2 p.m. to 7 p.m. Monday through Friday.

Chart 3 shows Sheri and Mike's hourly electric use on a Super Peak Day, assuming they take no action to shift or reduce their use.

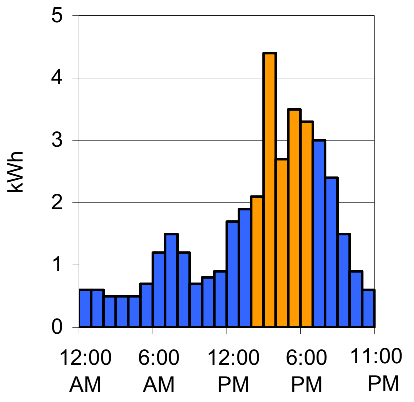
Chart 4 shows their hourly electricity use on the same day, assuming laundry is done in the morning, they pre-cool their home before 2 p.m. and run the dishwasher after 7 p.m.

> **Chart 3 and Chart 4: By shifting and reducing their electricity use during Peak hours, Sheri and Mike can save as much as $4 each Super Peak Day.**

On Super Peak Days, Sheri and Mike could pre-cool their home by lowering their thermostat setting by two or three degrees before 2 p.m. when their rates are lower. By pre-cooling their home, Sheri and Mike's air conditioner will run about two hours less while keeping their home comfortable during the more expensive Peak period from 2 p.m. to 7 p.m. Pre-cooling can reduce Sheri and Mike's cost for using electricity that day by a couple of dollars.

CHART 3

Hot Summer Day
Routine Electricity Use = $14



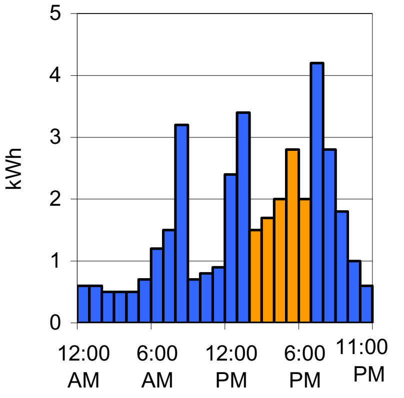
More Cost Saving Ideas

If they wanted to reduce their Super Peak use and further lower their electricity costs on those days, they might consider keeping the blinds or curtains closed and preparing a microwave dinner. Using a gas oven or an electric stove in the summer heats up Sheri and Mike's home, increasing the electricity used by their refrigerator and air conditioner.

In areas where lights are usually on in the evening, compact fluorescent lamps will pay for themselves with electricity cost savings in about a year. Also, because of the amount of laundry and dishwashing Mike and Sheri typically do, they might consider, when it is time to replace these appliances, purchasing a new ENERGY STAR® model to increase their electricity cost savings.

CHART 4

Hot Summer Day
Shift and Reduce Use = $10



Example 2. Afternoon Electricity Use: Customers At Home

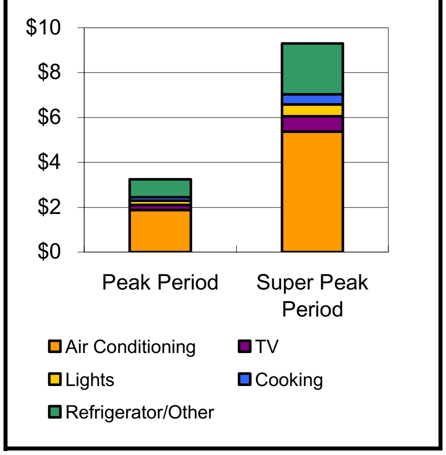
Weekday Electricity Use Habits

Dan and Maria are retired, active and live in the desert. They are often away from their home in the morning and early afternoon. They eat dinner at home at about 6 p.m. most evenings. They draw their curtains when they leave home since the sunlight increases air conditioning use.

Dan and Maria generally use electricity during the Peak period, Monday through Friday, 2 p.m. to 7 p.m. If they take no action under the Shift and Save Pricing Plan, their bills will go up compared to their current bills.

CHART 5

Routine Electricity Cost



Reducing Peak Electricity Costs

As **Chart 5** and **Chart 6** show, the biggest factor in Dan and Maria's electricity use is air conditioning.

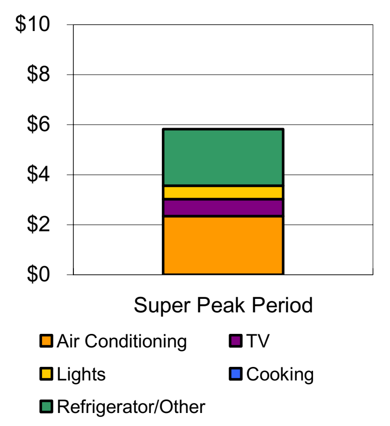
> **Chart 5: Electricity use between 2 p.m. to 7 p.m. on Super Peak Days is about three times more expensive than on other weekdays.**

Most weekdays in the summer or winter, the cost of their electricity use between 2 p.m. and 7 p.m. is about $3 per day. However, because of their high electricity use during the Peak period, when a Super Peak Day is declared, their electricity use between 2 p.m. to 7 p.m. could be as much as $9.

> **Chart 6: If Dan and Maria shift and reduce their electricity use from 2 p.m. to 7 p.m. on Super Peak Days, their electricity costs for the Super Peak period could drop by about a third.**

CHART 6

Shift & Reduce Electricity Cost



Example 2. Afternoon Electricity Use: Customers At Home

Cost Saving Ideas: Shift & Save

One of the ways Dan and Maria could reduce their electricity use would be to raise their thermostat's temperature setting a couple of degrees during the Peak period. Also, they could keep their curtains closed on the south and west sides of their home in the afternoon. During Super Peak periods, if they do this and also pre-cool their home before 2 p.m., they could lower their cost for electricity that day by as much as $3.

Chart 7 shows Dan and Maria's hourly electricity use on a Super Peak Day, assuming they take no action to shift or reduce their use.

Chart 8 shows their hourly electricity use on the same day, assuming they pre-cool their home before 2 p.m. and decide to prepare a no-cook dinner or eat out that evening.

> **Chart 7 and Chart 8: By shifting and reducing their electricity use during Peak hours, Dan and Maria can save as much as $3 each Super Peak Day.**

On Super Peak Days, they could pre-cool their home by lowering their thermostat setting by two or three degrees before 2 p.m. when their rates are lower. By pre-cooling their home, Dan and Maria's air conditioner will run about two hours less while keeping their home comfortable during the more expensive Peak period from 2 p.m. to 7 p.m. Pre-cooling can reduce their cost for using electricity that day by a couple of dollars.

More Cost Saving Ideas

In areas where lights are usually on in the evening, compact fluorescent lamps will pay for themselves with electricity cost savings in about a year. If Dan and Maria are working on their landscaping, adding well-placed shade trees and bushes, particularly on the south and west sides of their home, can provide them with electricity savings while providing Dan and Maria the same level of cooling in their home.

CHART 7

Hot Summer Day
Routine Electricity Use = $11

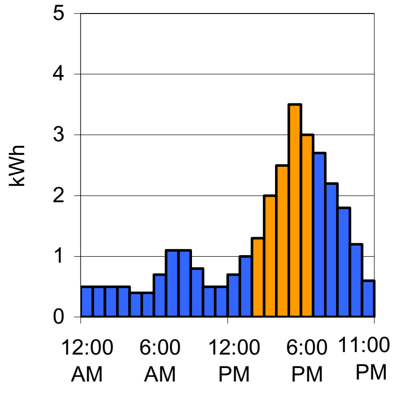
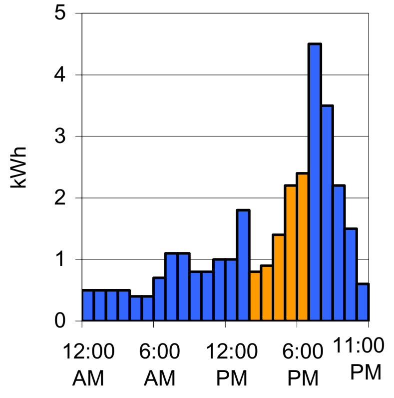


CHART 8

Hot Summer Day
Shift and Reduce Use = $8



Example 3. No Air Conditioning: Customers At Work

Weekday Electricity Use Habits

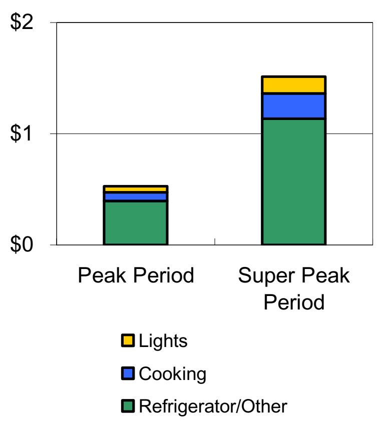
Patty and John both work away from home and usually return to their apartment between 6:30 p.m. and 7:30 p.m. They live on the coast and do not have air conditioning. Because of their work schedule, they use their dishwasher after 7 p.m. and do laundry on the weekends.

Patty and John use less electricity during the Peak period, Monday through Friday, 2 p.m. to 7 p.m., than the average customer. Since most of their electricity will be charged at the new, lower Off-Peak rate, their bill is likely to go down without shifting or reducing their electricity use.

> **Chart 9: Electricity use between 2 p.m. to 7 p.m. on Super Peak Days is about three times more expensive than on other weekdays. However, since Patty and John are not home in the afternoon, their Super Peak costs are under a dollar more than on other weekday afternoons.**

CHART 9

Routine Electricity Cost



On most days, the cost of their electricity use is between about $1 and $2. Because they are not home during most of the Peak period and don't have air conditioning, Patty and John's cost on a Super Peak Day is about $2. As shown in **Chart 9**, they do not have many options to shift or reduce their use during a Super Peak period because most of their electricity use is for appliances that are always on, like their refrigerator.

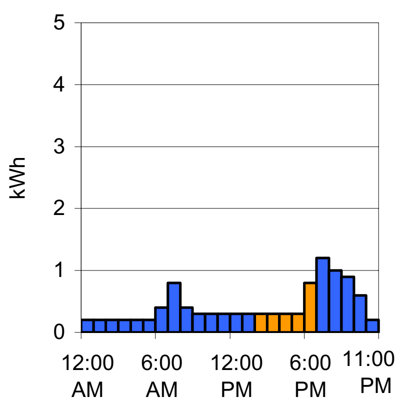
Cost Saving Ideas: Shift & Save

However, even Patty and John can lower their monthly bills. In areas where lights are usually on in the evening, compact fluorescent lamps will pay for themselves with electricity cost savings in about a year. This is an investment that will be easy to take with them if Patty and John move in the future.

Chart 10 shows Patty and John's hourly electricity use on a Super Peak Day, assuming that they take no action to shift or reduce their use. Shifting what they can control after 6 p.m. will save them under $0.20 that day.

CHART 10

Hot Summer Day
Routine Electricity Use = $2



Shift & Save Pricing Plan Rates

Your new rates are detailed on the next page. About 85% of the time, you will be charged your new Off-Peak rate, which is 10% to 20% lower than your current average rate today. Your new Peak rate is higher than your current average rate for five hours per day on weekdays, excluding holidays. No more than 15 days annually, or about 1% of the year, you will be charged a Super Peak rate that is significantly higher than your current average rate. You will receive a notification call the day before a Super Peak Day is declared, as well as notification by any other method you selected in your program enrollment.

Rates vary by season:

- May through October, you will pay summer rates;
- November through April you will pay winter rates.

Rates vary by time of day and day of the week:

- All weekends and holidays, you will be charged an Off-Peak rate;
- Weekdays from 2 p.m. to 7 p.m. you will be charged a Peak rate;
- Weekdays at all other times, you will be charged an Off-Peak rate;
- Up to 15 weekdays per year, after you have been notified that a Super Peak Day has been declared, you will be charged a Super Peak rate from 2 p.m. to 7 p.m.

Super Peak Period Notification

You will be notified the day before a Super Peak Day. A Super Peak Day may be declared when the weather is especially hot, demand for electricity is high, or a technical problem creates high prices for electricity. We will call your Primary Notification phone number to notify you of a Super Peak Day, as well as attempt to contact you by any secondary notification method you have chosen. If you would like to change your notification methods or contact information, please give us a call at 1-800-411-SDGE (7343).

Save Money on Your New Shift & Save Pricing Plan

Will your electric bill go up or down on your new Shift & Save Pricing Plan? That depends on how much electricity you use during the Peak period, weekdays from 2 p.m. to 7 p.m., and your ability to reduce your electricity use or shift your use to Off-Peak periods. For more information, check out *Taking Advantage of the Shift & Save Pricing Plan* beginning on page 3. For cost-saving tips, see page 11.

TIP

You now have three rates on your new pricing plan:

- Your **Off-Peak rate** is lower than your current rate all weekend, and weekdays except from 2 p.m. to 7 p.m.
- Your **Peak rate** is higher than your current rate Monday through Friday from 2 p.m. to 7 p.m.
- Your **Super Peak rate** is the highest rate, but is only charged from 2 p.m. to 7 p.m. up to 15 days per year, about 1% of the time.

Check out the next page for rate details and charts.

Shift & Save Pricing Plan Details[1]

On your new Shift & Save Pricing Plan, you will be charged lower rates on mornings, early afternoons, nights and weekends. The price you pay for electricity will depend on the season, time of day and day of the week.

Chart 11

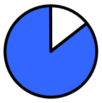
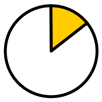
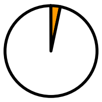
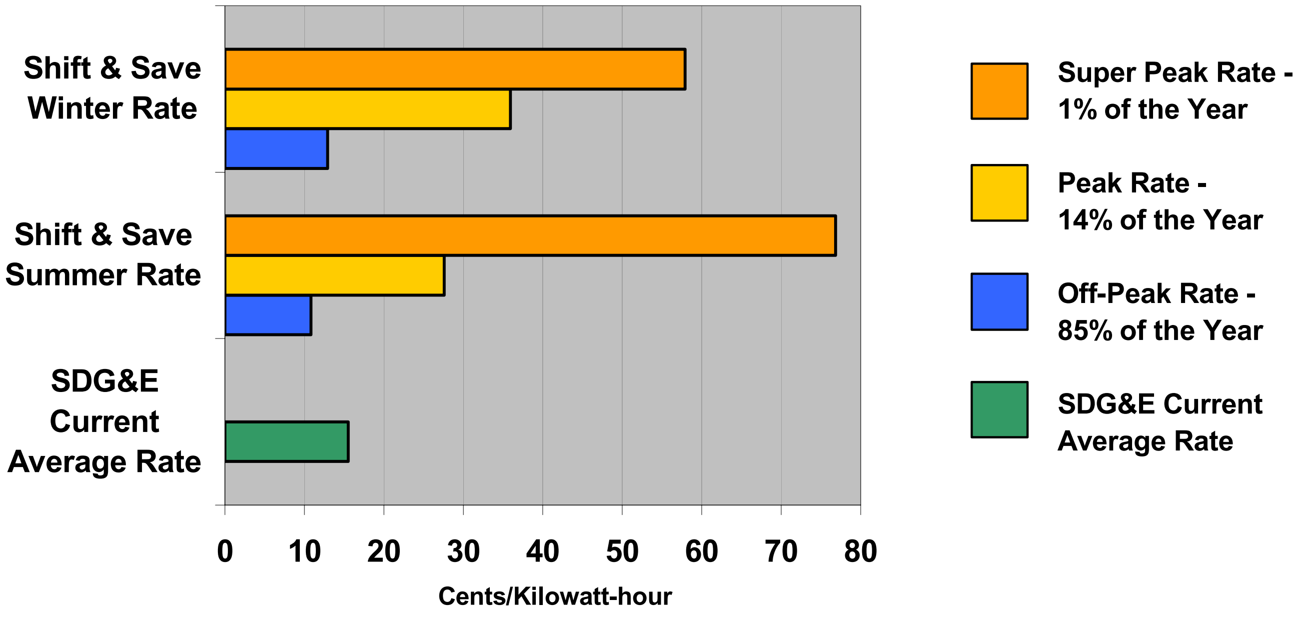
Rate Period	Rate Time	% of Annual Time on Each Shift & Save Rate	New Winter Rate	New Summer Rate	Current Rate (SDG&E Average)
Off-Peak	Weekends, Holidays and Monday-Friday before 2 p.m. and after 7 p.m.	**85% of the time** 	12.9 cents/kWh	10.8 cents/kWh	15.5 cents/kWh
Peak	Monday-Friday 2 p.m. to 7 p.m. except holidays	**14% of the time** 	35.9 cents/kWh	27.6 cents/kWh	15.5 cents/kWh
Super Peak	When declared: Monday-Friday 2 p.m. to 7 p.m. except holidays	**1% of the time** 	57.9 cents/kWh	76.8 cents/kWh	15.5 cents/kWh

Chart 12

Shift & Save Pricing Plan Rates in Summer and Winter Compared to Average Current Rate



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[1] These rates represent the part of your electric bill that changes under your new Shift & Save Pricing Plan. You will be charged the same surcharges, receive the same discounts and pay the same taxes that you would pay on your current rate. Your new rates may be adjusted from time-to-time with Public Utility Commission approval, just as your current rate is. You will receive information if a rate change adjustment is planned.

Money Saving Information Sources

During this project, you will be offered detailed information on your home's electricity use as well as bill examples under your current rate and your new Shift & Save Pricing Plan. This new information will be available to you online at www.sdge.com/eprp or by calling us at 1-800-411-SDGE (7343).

SDG&E's Web site offers extensive information about no-cost and low-cost ways to save on your electric bill, including information about rebates offered today. This information is also available by calling SDG&E and requesting it by mail. You can use this information to check and see if the actions you are taking to shift or reduce your electricity use are having an impact on your overall bill.

TIP

Shifting your electricity use to your new, lower Off-Peak periods on mornings, evenings and weekends can save you money on your electric bills. Need more tip ideas? Call us toll free at 1-800-411-SDGE (7343) or visit our Web site at www.sdge.com/eprp

Shift and Reduce Peak Use to Save Money

Reducing your electricity use anytime will help to lower your electric bill, but reducing use during the Peak rate times on Monday through Friday between 2 p.m. to 7 p.m. will have the most impact on your bill because your new rates will be higher then. Shifting your use away from this time to mornings, early afternoons, nights and weekends will also reduce your bill compared to taking no action. Reducing your electricity use or shifting your use away from Peak hours on Super Peak Days is especially important if you aim to lower your total bill.

Maximum Impact Money Savers

Air Conditioning, Electric Heating and Pool Pumps

- **No-cost:** If you have air conditioning, raise your thermostat setting a few degrees between 2 p.m. and 7 p.m. Monday through Friday.
- **No-cost:** If you have electric heat, lower your thermostat setting a few degrees between 2 p.m. and 7 p.m. Monday through Friday.
- **No-cost:** If you have a swimming pool or a spa, set your timer to filter Off-Peak and, if possible, consider reducing your filtering time. Pool maintenance companies recommend your filter be on a minimum of 4-6 hours a day in the summer and 2-4 hours a day in the winter. If you have a pool maintenance service, be sure to check with them before shifting or reducing the hours of filtration.
- **Smart Investment:** A whole house fan can help by pulling the cool outdoor air inside and pushing warm indoor air outside. It can be an efficient cooling alternative during all but the hottest times each day.

Tips for Saving Money

TIP

Little things add up if you do them on a regular basis. Save over $40 a year by turning off just six standard 60 Watt light bulbs for an hour during the Peak period from 2 p.m. to 7 p.m. Monday through Friday.

Easy Shift Tips

Electric Dryers, Air Conditioning, Dishwashers, Pool Pumps

- **No-cost:** Shift your electricity use to weekday mornings, early afternoons, evenings after 7 p.m. or weekends.
- **No-cost:** Use your programmable thermostat to lower your thermostat setting to pre-cool your home at Off-Peak times when your rate is lower if you expect to use air conditioning during the Peak period. You'll use less electricity than cooling your home down at Peak times.

Easy Reduce-Your-Use Tips

Save money, especially during Peak and Super Peak periods

- **No-cost:** Turn off your lights, television, computer and monitor when you're not using them.
- **Low-cost:** Make your next light bulb a compact fluorescent lamp (CFL) for high use fixtures. A CFL uses up to 75% less electricity, lasts 10 times longer than a conventional incandescent light bulb and will pay for itself with electricity savings in about a year.

Smart Investments

If you plan on making any of the following investments, consider the high efficiency option, it will save you money all day and all year

- **New appliance:** Make sure it is an ENERGY STAR® model. After you've identified these models, check the EnergyGuide Labels for additional energy saving choices.
- **Landscaping:** Consider shading the southern and western sides of your home from the summer afternoon sun. It may lower the amount of electricity used by your air conditioner.
- **New windows:** Consider high efficiency windows, as well as shades, awnings or curtains to keep your home warmer in the winter and cooler in the summer. All of these investments can help lower the amount of electricity used by your air conditioner.
- **Outdoor lighting:** Use photosensors or motion detectors so outdoor lights are only on when you need them to be. If you leave any lights on overnight, these devices can pay for themselves through electricity savings within a year.

Shifting Electricity Use Off-Peak Saves Money

The five tables on pages 14 and 15 are a handy reference so you can see what it costs at different times to use different appliances in your home. Look for the appliances you have in your home and compare the electricity cost to operate those appliances at different times on your new pricing plan.[2]

Table 1. Cost of Operating Common Major Appliances

You can shift the time of day when you use many of these appliances to take advantage of your new, lower Off-Peak rate.

Table 2. Cost of Operating Heating and Cooling Equipment

Pre-cooling your home in hot weather and using curtains and blinds are ways to lower some of your most expensive electricity use.

Table 3. Cost of Operating Other Large Appliances

If you have any of these appliances, consider shifting some of your use to weekends, mornings and evenings after 7 p.m.

Table 4. Cost of Operating Light bulbs and Fixtures

Using compact fluorescent lamps and fixtures will pay for themselves through electricity savings in about a year.

Table 5. Cost of Operating Other Small Appliances

These appliances use the least amount of electricity around your home.

These tables can help you find opportunities to shift or reduce your electricity use. Our goal is to give you the information you need so you can make wise choices about when and how much electricity you use.

Even though the costs may look small in the tables, they can add up. Check out *Electricity Savings Calculations* on page 16 to see examples of how you can save money by shifting or reducing your electricity use.

TIP

How much does it cost to use the appliances around your house? The tables on the next two pages show you how much it costs you to use each appliance on each of your new rates.

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[2] The costs presented to operate the appliances shown in these tables are based on your new rates. Individual costs may vary depending on the model, age and efficiency of your own appliances.

Appliance Electricity Cost Tables

Table 1. Cost of Operating Common Major Appliances

Common Major Appliances	Use Time	Cost Per Use					
		Summer Prices (May-October)			**Winter Prices** (November-April)		
		Off-Peak	**Peak**	**Super Peak**	**Off-Peak**	**Peak**	**Super Peak**
Dryer (Electric heat)	1 load	$0.30	$0.80	$2.28	$0.36	$1.05	$1.71
Oven (electric)	1 hour at 400 degrees	$0.15	$0.40	$1.14	$0.18	$0.53	$0.86
Dishwasher	1 load	$0.10	$0.27	$0.76	$0.12	$0.35	$0.57
Range/stove (electric)	15 min. per burner	$0.03	$0.08	$0.23	$0.04	$0.11	$0.17
Washing Machine	1 load	$0.03	$0.09	$0.24	$0.04	$0.11	$0.18
Dryer (Gas heat--excludes gas charges)	1 load	$0.04	$0.11	$0.30	$0.05	$0.14	$0.23
Desktop computer (monitor & printer)	1 hour	$0.02	$0.06	$0.17	$0.03	$0.08	$0.13
Television	1 hour	$0.02	$0.04	$0.12	$0.02	$0.06	$0.09

Table 2. Cost of Operating Heating and Cooling Equipment

Common Major Appliances	Use Time	Cost Per Use					
		Summer Prices (May-October)			**Winter Prices** (November-April)		
		Off-Peak	**Peak**	**Super Peak**	**Off-Peak**	**Peak**	**Super Peak**
Whole House Fan *	1 hour	$0.03	$0.09	$0.24	$0.04	$0.11	$0.18
Portable Fan *	1 hour	$0.02	$0.04	$0.11	$0.02	$0.05	$0.09
Ceiling Fan *	1 hour	$0.01	$0.03	$0.08	$0.01	$0.04	$0.06
Portable Space Heater (1500 Watts)	1 hour (50% cycling factor)**	--	--	--	$0.09	$0.26	$0.43
Electric Baseboard Heater (3000 Watts)	1 hour (50% cycling factor)**	--	--	--	$0.18	$0.53	$0.86
Central AC (3 ton)	1 hour (50% cycling factor)**	$0.20	$0.54	$1.52	--	--	--
Room/Wall AC Unit (1 ton)	1 hour (50% cycling factor)**	$0.08	$0.20	$0.57	--	--	--

* Using a fan can result in lower air conditioning and heating usage.

** The cycling factor is the amount of time equipment is running during an hour of operation. The cycling time can vary greatly depending on the thermostat setting, outside temperature and the characteristics of your home.

Appliance Electricity Cost Tables

Table 3. Cost of Operating Other Large Appliances

Common Major Appliances	Use Time	Cost Per Use					
		Summer Prices (May-October)			**Winter Prices** (November-April)		
		Off-Peak	**Peak**	**Super Peak**	**Off-Peak**	**Peak**	**Super Peak**
Electric Spa Heater	30 min.	$0.25	$0.67	$1.90	$0.30	$0.88	$1.43
Pool Filter	1 hour	$0.18	$0.48	$1.37	$0.22	$0.63	$1.03
Electric Water Heater	1 warm water wash load	$0.15	$0.39	$1.12	$0.18	$0.52	$0.84
Electric Water Heater	6 min. shower	$0.12	$0.32	$0.91	$0.15	$0.42	$0.69
Spa Filter	1 hour	$0.06	$0.17	$0.48	$0.08	$0.22	$0.36
Water Bed Heater	5 hours	$0.05	$0.12	$0.34	$0.05	$0.16	$0.26

Table 4. Cost of Operating Light Bulbs and Fixtures

Common Major Appliances	Use Time	Cost Per Use					
		Summer Prices (May-October)			**Winter Prices** (November-April)		
		Off-Peak	**Peak**	**Super Peak**	**Off-Peak**	**Peak**	**Super Peak**
Standard Incandescent Lamp Fixture (Four 60 Watt bulbs)	1 hour	$0.02	$0.06	$0.18	$0.03	$0.08	$0.14
Two 34 Watt Fluorescent Tubes	1 hour	$0.01	$0.02	$0.05	$0.01	$0.03	$0.04
Four 13 Watt Compact Fluorescent Lamps	1 hour	$0.01	$0.02	$0.05	$0.01	$0.02	$0.03

Table 5. Cost of Operating Other Smaller Appliances

Common Major Appliances	Use Time	Cost Per Use					
		Summer Prices (May-October)			**Winter Prices** (November-April)		
		Off-Peak	**Peak**	**Super Peak**	**Off-Peak**	**Peak**	**Super Peak**
Hair Dryer	10 min.	$0.03	$0.07	$0.20	$0.03	$0.09	$0.15
Coffee Maker	Brewing	$0.03	$0.07	$0.19	$0.03	$0.09	$0.14
Iron	15 min.	$0.01	$0.04	$0.11	$0.02	$0.05	$0.08
Vacuum Cleaner	15 min.	$0.02	$0.05	$0.15	$0.02	$0.07	$0.11
Microwave Oven	5 min.	$0.01	$0.02	$0.07	$0.01	$0.03	$0.05

Electricity Savings Calculations

To understand where you can make the biggest impacts by reducing or shifting your electricity use, check out *Tips for Saving Money* on pages 11 and 12.

TIP

Need some help figuring out how to shift and reduce your use to lower your bill? Call us toll free at 1-800-411-SDGE (7343) or visit our Web site: www.sdge.com/eprp

Small Adjustments Lead to Real Savings

Using your pricing plan rates, we can show you a few examples of how even small adjustments can add up to savings for you. While these situations might not exactly fit the way you use electricity in your home, they show that you have many choices to shift or reduce your electricity use to take advantage of savings opportunities on your new pricing plan.

- **To save as much as $100 a year, you could shift the time you do laundry.** If you typically do three loads of laundry each week on weekday afternoons, just shifting the time you do laundry to Off-Peak times can save you money. You may save as much as $2 for every load of laundry you do not do on a Super Peak Day.
- **You could save about $40 a year by replacing six standard incandescent light bulbs in your home with energy efficient compact fluorescent lamps (CFLs).** If these six lighting fixtures are on for between a half hour and up to three hours during the day, you can still save money even if you decide that you cannot reduce the time these lights are on (for example, if these lights are on timers or if you prefer to have your porch light on at night). While it is always a good idea to turn off unnecessary lights when you leave a room, you can save money by choosing more energy efficient light bulbs, even if you still need to use them for the same period of time.
- **You could save as much as $50 per year, if you take steps to pre-cool your home and keep your air conditioning set at a constant moderate temperature.** If you typically keep your thermostat set at about 76 degrees in the summer, lowering your thermostat setting to 74 degrees for only two hours—before the Peak period when your rate is lower—can help you save on your electric bill.

  By shifting some of your air conditioning use to Off-Peak times when your rate is lower, you are also pre-cooling your home so your air conditioner does not have to work as hard to maintain your 76 degree setting when it gets hotter outside. You will also be reducing the amount of time your air conditioner will cycle on your higher Peak rate to reach the same set point cooling temperature you have chosen.

If you would like to learn more about how to calculate your electricity use and costs, we offer you an example below. For examples using other appliances or questions, call us toll-free at 1-800-411-SDGE (7343).

Example: A Central Air Conditioner

How much can you save on your monthly electricity bill by raising the temperature setting a few degrees? Here's how to do the math.

Step 1: Find the Watts indicated on your air conditioner or in the owner's manual.

Air conditioning units typically use 1,250 Watts per ton. For a 3-ton air conditioner, for example, the wattage would be about 3,750 Watts.

Step 2: Multiply the wattage by the number of hours used each day.

For example, between the Peak hours of 2 p.m. and 7 p.m. on weekdays, this air conditioner typically cycles on and off, running for about 2 1/2 hours during that five hour Peak period each summer day.

3,750 Watts x 2.5 hours = 9,375 Watt hours.

Step 3: Usage Level: Divide the total by 1000 to convert to kilowatt-hours.

9,375 Watt hours / 1000 = 9.375 kWh.

Step 4: Cost Per Day: Multiply per day usage by your Peak rate.

9.375 kWh x $0.276/kWh = $2.58 per day

How much could you save if you still ran your air conditioner the same number of hours, but raised your temperature setting three degrees?

Step 5: Savings Per Day:

You get roughly 5% savings each time you raise your thermostat setting one degree. If you decided to raise your set point temperature in the afternoons by three degrees, here's what you would save:

3 degrees = 15% savings

15% of your daily cost ($2.58) = $0.39

Step 6: Monthly Savings:

20 weekdays per month x $0.39 = **You can save about $8 per month** by simply raising your thermostat temperature three degrees on weekday afternoons.

TIP

Air conditioning is the single largest household electric use on summer afternoons. If you use air conditioning, it is one of the first things you should consider shifting and reducing. Just raising your air conditioner's thermostat setting a few degrees can lower your bills. Need some tips on pre-cooling your home? Call us at 1-800-411-SDGE (7343) or visit our Web site: www.sdge.com/eprp

New Electricity Use Information On Your Bill

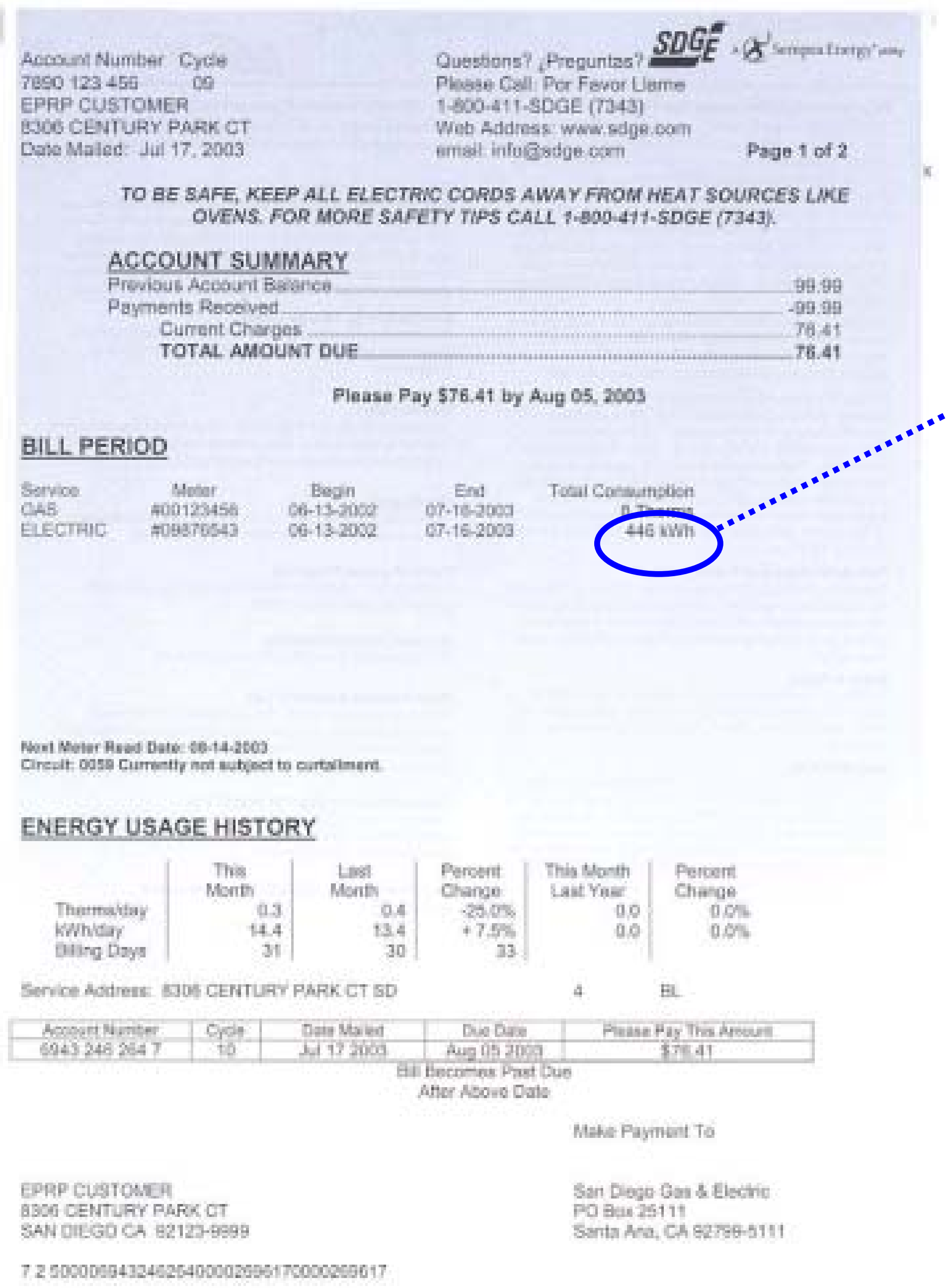
On the next two pages, you can see a picture of what your new SDG&E bill will look like. Your new SDG&E bill will look very similar to your current bill but will offer you better information about when you use electricity. You will now be able to see your monthly energy use, in kWh, used during Off-Peak periods, Peak periods, and Super Peak periods. Each period has its own rate. Also, you will be charged the same surcharges, receive the same discounts and pay the same taxes that you would pay on your current rate. The rates shown are for illustration only. Your actual rate will appear on your bill.

Soon we will send you a sample of what your average monthly electric bills might look like using an estimate of your home's electricity use. Although your actual electricity use will be different, this sample will help you understand what to expect on your new pricing plan.

After you have participated in the Shift & Save Pricing Plan for one year, we will also send you a "shadow bill." This shadow bill will compare your monthly electric bills on the Shift & Save Pricing Plan with what your bills would have been on your old rate. If you would like to request a summary of your electric bills on your new pricing plan compared with your old rate at any time, call us at 1-800-411-SDGE (7343) and we will prepare a customized analysis for you.

TIP

Your new electric bill will have your electricity use, measured in kWh, broken down so you can see how much is getting charged to each of your new rates. Shifting any of your electricity use from the Peak to the Off-Peak times can save you money on your bill.



Account Number Cycle
7890 123 456 09
EPRP CUSTOMER
8306 CENTURY PARK CT
Date Mailed: Jul 17, 2003

Questions? ¿Preguntas?
Please Call: Por Favor Llame
1-800-411-SDGE (7343)
Web Address: www.sdge.com
email: info@sdge.com

Page 1 of 2

TO BE SAFE, KEEP ALL ELECTRIC CORDS AWAY FROM HEAT SOURCES LIKE OVENS. FOR MORE SAFETY TIPS CALL 1-800-411-SDGE (7343).

ACCOUNT SUMMARY

Previous Account Balance	99.99
Payments Received	-99.99
Current Charges	76.41
TOTAL AMOUNT DUE	**76.41**

Please Pay $76.41 by Aug 05, 2003

BILL PERIOD

Service	Meter	Begin	End	Total Consumption
GAS	#00123456	06-13-2002	07-16-2003	8 Therms
ELECTRIC	#09876543	06-13-2002	07-16-2003	446 kWh

Next Meter Read Date: 08-14-2003
Circuit: 0059 Currently not subject to curtailment.

ENERGY USAGE HISTORY

	This Month	Last Month	Percent Change	This Month Last Year	Percent Change
Therms/day	0.3	0.4	-25.0%	0.0	0.0%
kWh/day	14.4	13.4	+ 7.5%	0.0	0.0%
Billing Days	31	30	33		

Service Address: 8306 CENTURY PARK CT SD 4 BL

Account Number	Cycle	Date Mailed	Due Date	Please Pay This Amount
6943 246 264 7	10	Jul 17 2003	Aug 05 2003	$76.41

Bill Becomes Past Due
After Above Date

Make Payment To

EPRP CUSTOMER
8306 CENTURY PARK CT
SAN DIEGO CA 92123-9999

San Diego Gas & Electric
PO Box 25111
Santa Ana, CA 92799-5111

7 2 5000069432462640000269617000026961 7

Total Electricity Use

PAGE 1

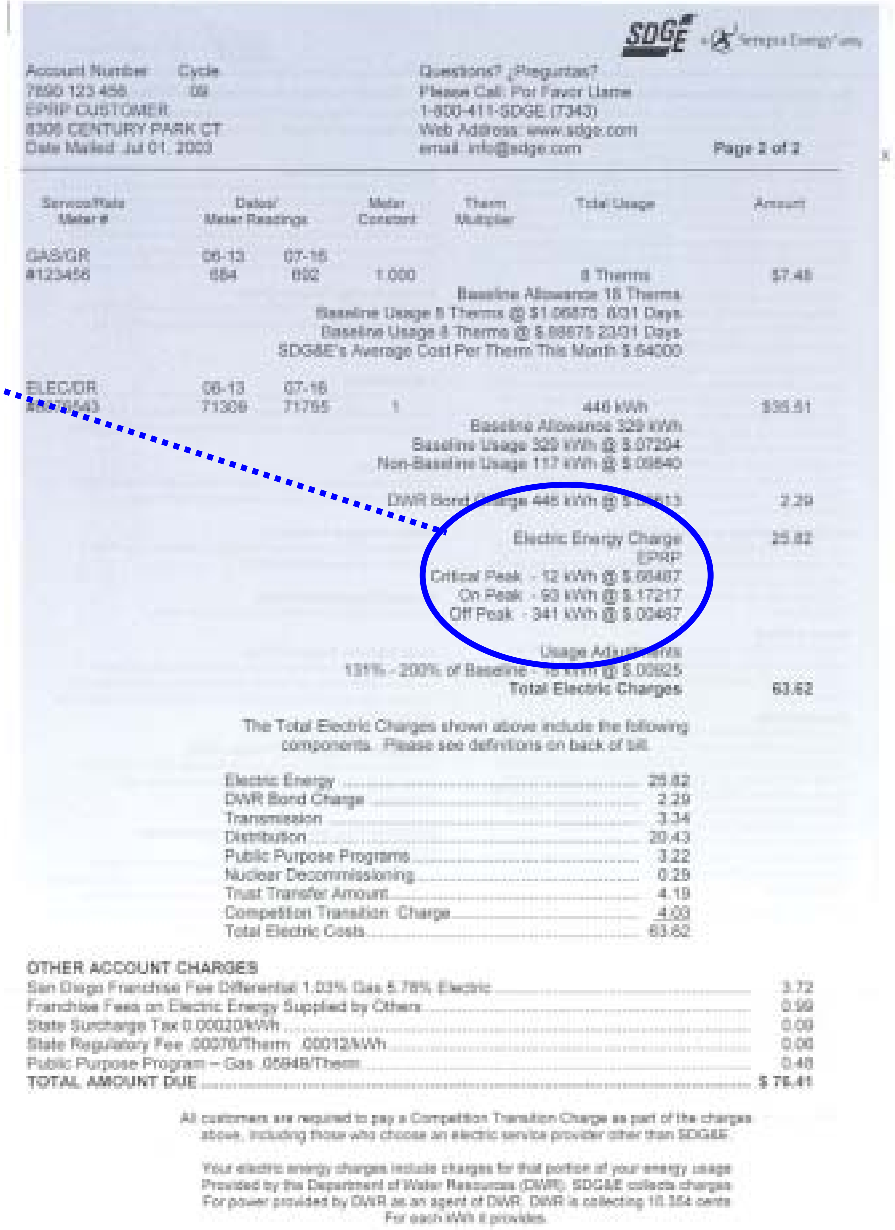
On the first page of your new electric bill, you will see your total electricity use, measured in kWh, and total electricity charges for the month. If you have any questions about how to read your new bill, call us toll-free at 1-800-411-SDGE (7343).

New Billing Information

New Rate Categories

PAGE 2

On Page 2 of your new electric bill, you will see your electricity use by rate period. You will see a breakdown of how much your electricity use cost at each rate over the course of the past month. Shifting any of your electric use from the Peak or Super Peak to Off-Peak times can save you money on your bill.



SDG&E a Sempra Energy company

Account Number 7890 123 456
Cycle 09
EPRP CUSTOMER
8306 CENTURY PARK CT
Date Mailed: Jul 01, 2003

Questions? ¿Preguntas?
Please Call: Por Favor Llame
1-800-411-SDGE (7343)
Web Address: www.sdge.com
email: info@sdge.com

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Service/Rate Meter #	Dates/ Meter Readings		Meter Constant	Therm Multiplier	Total Usage	Amount
GAS/GR #123456	06-13 684	07-16 692	1.000		8 Therms	$7.48
ELEC/DR #[illegible]6543	06-13 71309	07-16 71755	1		446 kWh	$35.51

Gas details:
Baseline Allowance 18 Therms
Baseline Usage 8 Therms @ $1.06875 8/31 Days
Baseline Usage 8 Therms @ $.88875 23/31 Days
SDG&E's Average Cost Per Therm This Month $.64000

Electric details:
Baseline Allowance 329 kWh
Baseline Usage 329 kWh @ $.07204
Non-Baseline Usage 117 kWh @ $.09840

DWR Bond Charge 446 kWh @ $.00513	2.29
Electric Energy Charge EPRP Critical Peak - 12 kWh @ $.66487 On Peak - 93 kWh @ $.17217 Off Peak - 341 kWh @ $.03487	25.82
Usage Adjustments 131% - 200% of Baseline - [illegible] kWh @ $.00925	
Total Electric Charges	63.62

The Total Electric Charges shown above include the following components. Please see definitions on back of bill.

Electric Energy	25.82
DWR Bond Charge	2.29
Transmission	3.34
Distribution	20.43
Public Purpose Programs	3.22
Nuclear Decommissioning	0.29
Trust Transfer Amount	4.19
Competition Transition Charge	4.03
Total Electric Costs	63.62

OTHER ACCOUNT CHARGES

San Diego Franchise Fee Differential 1.03% Gas 5.78% Electric	3.72
Franchise Fees on Electric Energy Supplied by Others	0.99
State Surcharge Tax 0.00020/kWh	0.09
State Regulatory Fee .00076/Therm .00012/kWh	0.06
Public Purpose Program – Gas .05948/Therm	0.48
TOTAL AMOUNT DUE	**$ 76.41**

All customers are required to pay a Competition Transition Charge as part of the charges above, including those who choose an electric service provider other than SDG&E.

Your electric energy charges include charges for that portion of your energy usage Provided by the Department of Water Resources (DWR). SDG&E collects charges For power provided by DWR as an agent of DWR. DWR is collecting 10.354 cents For each kWh it provides.

Calendar

Date	Event
Beginning in July 2003	**New Meter.** A new advanced meter is installed at your home.
	Survey Mailed. A survey is sent to you to support this research project.
	$25 Appreciation Payment. The $25 first appreciation payment will be sent to you when the July survey is returned to us.
	System Test. We will call you one day in July to make sure we have the correct notification phone number. We will do this as a test of our system so we can be sure that you will get a notification call one day before we declare a Super Peak Day.
	Rates Change. The next time your meter is read, after your new digital meter is installed, you will be charged for electricity based on your new pricing plan.
	Web site Available. You can check out your utility's new pricing plan Web site at: www.sdge.com/eprp
	Sign-in Code Mailed. We will mail your personal sign-in code so you can view your electricity use information anytime on our secure Web site.
October 31, 2003	**Second Appreciation Payment.** If you remain on the pricing plan through October 31, 2003, you are eligible for the second appreciation payment of $75.
April 30, 2004	**Third Appreciation Payment.** If you remain on the pricing plan through April 30, 2004, you are eligible for the final appreciation payment of $75.
During this research project	**Your Feedback.** You may be contacted by phone so we can get your feedback on how your new pricing plan is working for you.
At the end of this research project	**Project Completion.** You will return to your current rate, or you may choose another available pricing plan.
Winter 2004-2005	**Research Results.** The research results will be made available to all participants.

TIP

To thank you for your support of this important research project, we offer you $175 if you stay on your new pricing plan through April 2004.

More Information and Resources

There are three ways to get more information about your specific electricity use, the percentage of your use during Peak periods, and what you can do to lower your bills:

Your SDG&E Bill

Your bill will show you how much electricity you used in total for the previous billing period during each Shift & Save Pricing Plan rate period.

SDG&E's Web site

On SDG&E's Web site www.sdge.com/eprp you will be able to find more detail about your electricity use. You will be able to view your weekly electricity use on this Web site and be able to see your electricity use since your new pricing plan began on July 1. Also, you will get tips about reducing your electricity use and shifting your use away from Peak and Super Peak periods.

SDG&E's Customer Service Center

Call 1-800-411-SDGE (7343) if you would prefer to get information about your electricity use over the phone or by mail. Any information you can view on SDG&E's secure Web site will also be available to you if you call our toll free number. Please also call us at this number with general questions about the Shift & Save Pricing Plan and this research project.

TIP

We will be sending you regular information about your electricity use along with your regular bill from us. Keep track of that information in the pocket at the back of this Welcome Package so you can see how your electricity use changes month to month, when you shift and reduce your use, or when you don't.

Appendix 7

Theory of Consumer Demand

APPENDIX 7: THEORY OF CONSUMER DEMAND

This appendix discusses the theory of consumer demand, elasticities of demand and substitution and functional forms for estimating demand models.

7.1 OVERVIEW OF CONSUMER DEMAND THEORY

In the modern theory of consumer behavior, the individual is assumed to consume goods and services in order to maximize the "utility" he or she derives from the act of consumption, subject to a budget constraint that the sum of all expenses (including savings) cannot exceed the consumer's income.[1] Conceptually, each consumer faces the following optimization problem:

> *Maximize **utility**, which is a function of the quantities consumed of the various goods and services, subject to a **budget constraint**.*

For reasons discussed below, the utility function is called the **direct utility function, U**. If U is continuous and twice differentiable, a solution to the consumer's optimization problem can be obtained by using the well-known techniques of the calculus. Otherwise, a solution can be obtained by using the Kuhn-Tucker conditions of mathematical programming. In general, the "first order conditions" of optimization suggest that the consumer should "demand" quantities of each good and service until the ratio of the marginal utilities for goods i and j equal the corresponding price ratios. The "second order condition" of optimization suggests that the underlying U function be concave to the origin, and that the consumer's marginal rate of substitution between goods i and j diminish with increasing j.

Solving this optimization problem yields **demand functions, D,** that express the quantity a consumer will purchase of a particular good, such as electricity, as a function of the price of electricity, the prices of all other goods and services, and the consumer's income. A University of Cambridge economist, Alfred Marshall, first put forth a graphical way of summarizing the nature of demand functions. Called a demand curve, this shows how the quantity demanded varies with price.[2] Along a Marshallian demand curve, the consumer's income is held constant, along with the prices of all other goods and services. The consumer's utility varies along the Marshallian demand curve. A few decades later, another English economist, Sir John Hicks of Oxford University, put forth a set of demand curves that hold the utility constant along the curve.[3] They are called Hicksian (or compensated) demand curves.

The SPP has collected detailed data on electricity consumption by pricing period, but, like most electricity pricing experiments, it has collected minimal information on non-electricity goods and services. To operationalize the theory of demand summarized above, it is necessary to separate the U function into electricity and non-electricity goods and services. This is a fairly common procedure in empirical work.

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[1] See Deaton, Angus S. and John Muellbauer. *Economics and Consumer Behavior*. Cambridge University Press, 1980 and Pollak, Robert A. and Terence J. Wales. *Demand System Specification and Estimation*. Oxford University Press, 1992.

[2] Marshall, Alfred. *Principles of Economics*. 8th edition, Macmillan & Co. Ltd., 1922.

[3] Hicks, John R. *Value and Capital.* 2nd edition, Oxford University Press, 1946.

The U function is assumed to be separable into two subfunctions, one dealing with electricity (call it U_1) and the other dealing with non-electricity (U_2). U_1 can be thought of as being an index of aggregate electricity consumption. Optimization of U_1 yields a set of electricity-related demand functions, D_1, that relate electricity consumed in the various pricing periods to electricity prices in each of the periods and total expenditures on electricity (rather than consumer income). In addition, recognizing that consumers who differ in socio-demographic characteristics and appliance holdings are likely to use electricity differently, it is common practice to include explanatory variables on the right hand side that reflect customer characteristics and other determining variables. Finally, since weather conditions have a major impact on electricity consumption, it is useful to include weather variables as explanatory variables.

In empirical work, it is often more convenient to work with the **indirect utility function**, **V**, rather than with the direct utility function, U. The V function is obtained by inserting the demand functions, **D**, back into the direct utility function, **U**. The **indirect utility function, V,** expresses consumer well being as a function of prices and income. It is possible to derive the Marshallian demand functions from V by using Roy's identity, which says that the demand functions are equal to the ratio of the differential of V with respect to a good's price to the differential of V with respect to income. Just as the U function was separated into electricity (U_1) and non-electricity (U_2) sub-functions, V can also be separated into electricity (V_1) and non-electricity (V_2) sub-functions. V_1 can be thought as an aggregate price index for electricity.

Finally, it is appropriate to mention the **expenditure (or cost) function, E.** This function is often used to examine changes in consumer welfare, and it plays a key role in cost-benefit analysis. **E** is obtained by solving the "dual" problem of minimizing the budget, subject to a given direct utility function. Solving this problem yields a set of Hicksian demand functions that express the quantity consumed as a function of prices and utility. Substituting these demand functions into the budget constraint yields the expenditure function, which expresses demand as a function of prices and utility. According to Shepard's lemma, the Hicksian demand functions can be obtained by differentiating the expenditure function with respect to prices.

7.2 ELASTICITIES OF DEMAND AND SUBSTITUTION

Elasticities relate changes in consumer demand to changes in explanatory variables such as prices and income. In the case of electricity, the most frequently used elasticities are the own price and cross-price elasticities of demand. A related concept is the elasticity of substitution (ES). Another concept is the income elasticity of demand.

The own-price elasticity of demand expresses the percent change in demand that occurs in response to a one percent change in a commodity's price, while the cross-price elasticity of demand relates the change in demand in response to a one-percent change in the price of a related commodity.[4] This definition yields a point elasticitiy of demand, since it deals with small changes at a single point along a demand curve. When the price changes being considered are large, say on the order of 100 percent or higher, it is best to not rely on a point elasticity and instead to compute an "arc elasticity" through model simulation. (See Section 4.1.4 of the main report for a definition and derivation of arc elasticities.)

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[4] For a general discussion of price elasticities and related concepts, consult Paul A. Samuelson and William D. Nordhaus, *Economics*, Sixteenth Edition, Irwin McGraw-Hill, 1998.

Own-price elasticities are always negative, while cross-price elasticities can be positive if two goods are substitutes in consumption or negative if the goods are complements in consumption.

Price elasticities are partial concepts that are calculated with all other variables in the demand function being held constant. They can be calculated for either Marshallian or Hicksian demand functions. In the former case, they are called uncompensated elasticities and in the latter case they are called compensated elasticities.

The elasticity of substitution pertains to the shape of the indifference curves that underlie the U function. Closely related to the own-price and cross-price elasticities of demand, the elasticity of substitution was first put forth by R. G. D. Allen, a British economist who taught at the London School of Economics.

The income elasticity of demand expresses the change in demand that occurs in response to a one-percent change in income.

When the price of a commodity increases, a consumer uses less of that commodity if nothing else changes. There are two reasons for this. First, since the commodity has become more expensive relative to its substitutes, a consumer will use less of it. This is a “pure” price effect, and is measured as a movement along the Hicksian demand curve. The reduction of consumption is called the substitution effect, and it can be estimated by using the Hicksian own-price elasticity of demand. The second reason a consumer will reduce consumption of a commodity is that his or her income has diminished in purchasing power. This reduction in consumption is called the income effect, and it can be estimated by the income elasticity of demand, weighted with the share of this commodity in a consumer’s budget.

A Russian economist, E. E. Slutsky, derived a relationship between these effects in an equation named after him. The equation states that the own-price elasticity of demand equals the compensated own-price elasticity of demand plus the product of the income elasticity of demand and the budget share of the commodity in question.

7.3 FUNCTIONAL FORMS AND DEMAND SYSTEMS

Having reviewed key theoretical concepts, we now lay out a series of steps for estimating demand functions for electricity consumption by time period. The ultimate objective is to determine consumer preferences (or utility) associated with consuming electricity by TOU period. However, since preferences cannot be measured directly, we must estimate demand functions in order to infer preferences. In the earlier discussion, we showed that demand functions were derived by differentiating either the direct utility function (U), the indirect utility function (V) or the expenditure function (E). If the demand functions satisfy what Paul Samuelson has called the integrability conditions, we can infer preferences from them.[5]

So far the discussion has addressed general concepts. For a system of demand equations to be estimated with real data, a mathematical functional form must be specified. There is no universally accepted functional form in the economics literature that dominates all others, since

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[5] Samuelson, Paul A. *Foundations of Economic Analysis*. Harvard University Press, 1947.

various functional forms have specific strengths and weaknesses and all are approximations to an underlying but unknown functional form.

Four functional forms are commonly used in the literature dealing with TOU pricing:

- Double-Logarithmic (DL)
- Quadratic
- Constant-elasticity-of-substitution (CES)
- Generalized Leontief (GL)

7.4.1 Double-Logarithmic (DL) Functional Form

Th DL model specification has been used to estimate demand systems for all types of consumer goods and services, largely because of its simplicity of interpretation and ease of estimation. The coefficients on the price terms are the (point) elasticities, and can be directly read off the estimation printouts. In addition, the equations can often be estimated using ordinary least squares (OLS).[6]

Purists regard the double-logarithmic functional form as an ad hoc specification, since its demand equations are not strictly consistent with the economic theory outlined earlier in this appendix. That is, they cannot be obtained from the process of utility maximization. A DL functional form can accommodate the homogeneity restrictions due to Euler (demands should be unchanged if all prices rise by the same amount as income) but not the Engel or Cournot aggregation restrictions discussed earlier.

With the DL model, the natural logarithm of electricity use is a function of the natural logarithm of peak and off-peak prices and other variables such as socio-demographic and economic characteristics and weather. This functional form has the advantage of instantly yielding (point) price elasticities of demand. For example, the coefficient of the peak-period price in the equation for peak-period energy use is the (point) own-price elasticity of demand for peak energy use, and the coefficient of the off-peak price in the same equation is the (point) cross-price elasticity of peak-period energy use given a change in the off-peak price.

With the DL specification, all own-price and cross-price elasticities are constant across various price levels. Some analysts find this fact disconcerting, citing anecdotal evidence that price elasticities vary with the level of price. At very low prices, customers do not respond to price changes. At very high levels, they have exhausted their ability to respond. Most of the "average" response occurs at moderate price levels. The DL functional form can be modified to capture such non-linearities in customer response to price changes. The easiest way to accomplish this is to introduce cross-product variables on the right hand side, consisting of the product of the various price terms and the socio-demographic, economic and weather terms.

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[6] For a discussion of OLS and other estimation methods, see Johnston, Jack and John DiNardo. *Econometric Methods*. Mc-Graw Hill, 1997.

7.4.2 Quadratic Functional Form

Like the DL functional form, the quadratic functional form is not derived from the theory of utility maximization. However, it is widely used in the empirical literature, since it overcomes one of the weaknesses of the DL functional form, namely constant price elasticities. Peak-period usage is expressed as a linear combination of peak and off-peak prices, of the squares of these prices, and of all non-price terms mentioned above. The price elasticities are not constant in this functional form, but vary with price. If the coefficients on the squared terms are zero, or statistically indistinguishable from zero, this functional form reduces to a linear demand system.

7.4.3 Constant-Elasticity-of-Substitution (CES) Functional Form

The CES functional form was developed jointly in 1961 by four economists, Kenneth Arrow, Hollis Chenery, Bagicha Minhas, and Robert Solow. Arrow and Solow were subsequently awarded the Nobel Prize, partly for their research on the CES functional form. The CES has been widely used in the empirical literature, on both the producer and consumer fronts.

For a two-part TOU rate, he CES functional form expresses the ratio of peak and off-peak energy use as a function of an intercept term, the ratio of peak and off-peak prices and the non-price terms mentioned above. The coefficient on the price ratio is the elasticity of substitution, which is related to the own-price and cross-price elasticities of demand, as shown in Appendix 9. The intercept term is the ratio of peak and off-peak energy use.

The CES functional form has been widely used in the analysis of TOU experiments.[7] The CES function has the advantage of being fully consistent with the neoclassical theory of utility maximization discussed earlier. It is valid for any non-negative value of the elasticity of substitution (ES), and it satisfies globally the second-order (concavity) conditions associated with utility maximization.

The CES function includes as a special case two popular functional forms, the Cobb-Douglas functional form, which features a constant ES of one, and the Leontief functional form, which features an ES of zero. The Leontief functional form, due to Nobel laureate Wassily Leontief, is also called the fixed-coefficients functional form, since it asserts that consumers use products in a fixed proportion to each other and there is therefore no potential for substituting one for the other when their relative prices change.

Researchers have used both functional forms on a stand-alone basis for estimating consumer demand systems for a variety of products such as food, clothing and housing. However, since prior electricity pricing experiments have shown that consumers do respond to TOU pricing in a statistically significant but small fashion, the Cobb-Douglas form has not been used for estimating response to TOU pricing.

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[7] Aigner, Dennis (editor). "Welfare Economics of Peak-load Pricing of Electricity. *Journal of Econometrics*, *Annals* 1984-3. North-Holland, 1984.

7.4.4 Generalized Leontief (GL) Functional Form

The GL functional form, due to Erwin Diewert, is a generalization of Leontief's fixed-coefficient functional form discussed above. The direct utility function expresses customer satisfaction (utility) as a function of the square root of the quantities consumed. The associated demand functions express the logarithms of the quantity ratios as functions of the logarithms of the ratios of the square root of prices.

Like the CES function, the GL function is consistent with the neoclassical theory of utility maximization. It does not constrain the ES to be constant, and is therefore called a "flexible" functional form. However, this flexibility comes at a price. Unlike the CES, the GL is not valid for all possible values of the true ES. It is well suited to modeling demand systems with "small" price elasticities, such as those found in most TOU studies.[8]

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[8] Another flexible functional form, the Translog, is well suited to modeling demand systems with "large" price elasticities. This functional form was used by a variety of researchers in a variety of TOU pricing experiments, and found to be unstable, since the underlying price elasticities are small.

Appendix 8

Derivation of Equations for Predicting Rate Impacts

APPENDIX 8: DERIVATION OF EQUATIONS FOR PREDICTING RATE IMPACTS

One of the primary objectives of the SPP is to develop demand models that can be used to predict the impact not only of the rates tested in the SPP but also of alternative rate levels. In doing so, it is not appropriate to use point elasticities that are estimated for each model, since they are only accurate for measuring the impact of small price changes. It is essential to use the full demand models when making impact predictions.

The following three sections show the derivation of the equations for predicting energy use given a change in prices using the CES demand models derived as part of the SPP analysis. Section 8.1 shows the derivation for the basic CES model. Section 8.2 shows the derivation for a model that includes the combined impact of a change in energy use based on technology dispatch and the impact due to price-induced behavioral changes. Section 8.3 shows how to isolate the effect of price change for customers whose usage decreases in response to prices and smart thermostat technology.

8.1 PREDICTING RATE IMPACTS USING THE BASIC CES MODEL SPECIFICATION

This section presents an example of the derivation of the equations that can be used to predict changes in electricity use by time period given time-varying rates. The derivation is done for a three-period tariff (such as the CPP-V rate on CPP days when the control period is less than the full peak period). A three-period rate would include a peak period, an off-peak period and a shoulder period.[1] The derivation presented here describes how a customer responds to a price signal given starting values for energy use by rate period, weather, and CAC saturations.

In the baseline case with constant prices (which apply to the control group in either the pre-treatment period or the treatment period and the treatment group in the pre-treatment period), the following relationships hold:

$$\ln\left(\frac{K_1}{K_2}\right) = a_{12} + b_{12}\ln\left(\frac{P_1}{P_2}\right) \tag{1.1}$$

where K_i is electricity use in period i in kilowatt hours per hour (number of kilowatts used in period i divided by the number of hours in period 1), a_{12} is the intercept and all the variables in the regression model that do not change with price, and b_{12} is the elasticity of substitution between rate periods 1 and 2.

Similarly,

$$\ln\left(\frac{K_2}{K_3}\right) = a_{23} + b_{23}\ln\left(\frac{P_2}{P_3}\right) \tag{1.2}$$

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[1] As a practical matter, since the SPP only used two time periods (peak and off-peak), only the elasticity of substitution between peak and off-peak usage was estimated. Thus, when applying the formulas noted below, we have to assume that $b_{12} = b_{32}$.

Daily energy use equals the sum of the quantity used in each rate period. Expressed in terms of kWh/hour, daily energy use is as follows:

$$\overline{K} = \frac{h_1 K_1 + h_2 K_2 + h_3 K_3}{24} \tag{1.3}$$

where h_i = the number of hours in period *i*.

The same equations hold for treatment quantities:

$$\ln\left(\frac{K_1^{'}}{K_2^{'}}\right) = a_{12} + b_{12}\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) \tag{1.4}$$

where *K'i* is the predicted usage in period one at the treatment price, and P'_i is the treatment price.

$$\ln\left(\frac{K_2^{'}}{K_3^{'}}\right) = a_{23} + b_{23}\ln\left(\frac{P_2^{'}}{P_3^{'}}\right) \tag{1.5}$$

and,

$$\overline{K}' = \frac{h_1 K'_1 + h_2 K'_2 + h_3 K'_3}{24} \tag{1.6}$$

Start by subtracting equation (0.1) from (0.4):

$$\left(\ln\left(\frac{K_1^{'}}{K_2^{'}}\right) = a_{12} + b_{12}\ln\left(\frac{P_1^{'}}{P_2^{'}}\right)\right) - \left(\ln\left(\frac{K_1}{K_2}\right) = a_{12} + b_{12}\ln\left(\frac{P_1}{P_2}\right)\right) \tag{1.7}$$

Equation 1.7 reduces to:

$$\ln\left(\frac{K_1^{'}}{K_2^{'}}\right) = \ln\left(\frac{K_1}{K_2}\right) + b_{12}\left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) \tag{1.8}$$

Let the right hand side of equation 1.8 equal A_{12}:

$$A_{12} = \ln\left(\frac{K_1}{K_2}\right) + b_{12}\left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) \tag{1.9}$$

Thus:

$$\ln\left(\frac{K_1^{'}}{K_2^{'}}\right) = A_{12} \qquad (1.10)$$

$$\ln\left(K_1{'}\right) = A_{12} + \ln\left(K_2{'}\right)$$

Exponentiating equation 1.10, we have:

$$\exp\ln(K_1{'}) = \exp(A_{12} + \ln(K_2^{'})) \qquad (1.11)$$

$$\Rightarrow K_1^{'} = e^{A_{12}} K_2^{'}$$

Through a similar process, we can derive an expression for *K'₃* as follows:

$$\ln\left(\frac{K_2^{'}}{K_3^{'}}\right) = A_{23} \qquad (1.12)$$

where

$$A_{23} = \ln\left(\frac{K_2}{K_3}\right) + b_{23}\left(\ln\left(\frac{P_2^{'}}{P_3^{'}}\right) - \ln\left(\frac{P_2}{P_3}\right)\right) \qquad (1.13)$$

Exponentiating, we have:

$$\ln K_3^{'} = \ln K_2^{'} - A_{23}$$

$$\exp\ln(K_3^{'}) = \exp(\ln K_2^{'} - A_{23}) \qquad (1.14)$$

$$\Rightarrow K_3^{'} = K_2^{'} / e^{A_{23}}$$

Inserting equations 1.11 and 1.14 into equation 1.6, we get the following:

$$\overline{K}{'} = \frac{h_1 K{'}_2\, e^{A_{12}} + h_2 K{'}_2 + h_3 K{'}_2\, e^{-A_{23}}}{24} \qquad (1.15)$$

$$\overline{K}{'} = K{'}_2\left(\frac{h_1 e^{A_{12}} + h_2 + h_3 e^{-A_{23}}}{24}\right)$$

$$K_2^{'} = \frac{24\overline{K{'}}}{e^{A_{12}} h_1 + h_2 + e^{-A_{23}} h_3} \qquad (1.16)$$

In sum, the predicted values for electricity use per hour given prices P'₁,: P'₂ and P'₃ are expressed as follows:

$$K_1^{'} = e^{A_{12}} K_2^{'}$$

$$K_2^{'} = \frac{24\overline{K{'}}}{e^{A_{12}} h_1 + h_2 + e^{-A_{23}} h_3} \qquad (1.17)$$

$$K_3^{'} = e^{-A_{23}} K_2^{'}$$

The two-period rate is a special case of this set of relationships where A_{23}= 0.

The formula for daily electricity use per hour is calculated below:

$$\overline{K} = a + d\ln\left(\overline{P}\right) \tag{1.18}$$

For the treatment group, average daily electricity use per hour is expressed as follows:

$$\overline{K}' = a + d\ln\left(\overline{P}'\right) \tag{1.19}$$

Subtracting (1.18) from (1.19), we get:

$$\begin{aligned}
&\left(\ln\overline{K}' = a + d\ln\left(\overline{P}'\right)\right) - \left(\ln\overline{K} = a + d\ln\left(\overline{P}\right)\right)\\
&\ln\overline{K}' = \ln\overline{K} + d\ln\left(\frac{\overline{P}'}{\overline{P}}\right)\\
&\overline{K}' = e^{\ln\overline{K}} e^{d\ln\left(\frac{\overline{P}'}{\overline{P}}\right)}\\
&\overline{K}' = \overline{K} * \left(\frac{\overline{P}'}{\overline{P}}\right)^{d}
\end{aligned} \tag{1.20}$$

8.2 PREDICTING RATE IMPACTS IN THE SPECIAL CASE INVOLVING THE TECHNOLOGY RESPONSE COEFFICIENT

As described in the main report, all Track C customers had smart thermostats automated peak-period load reductions on CPP days. The cumulative impacts due to smart thermostats and price change are explained below. The impact of technology alone and price change alone is also discussed.

For the Track C analysis, an equation similar to (1.1) is modified by adding a technology response variable *(dispatch)*. In the exercise of the pilot for Track C customers, there were two control groups. One CPP days, the enabling technology was dispatched for one group and not for the other. For each CPP day, for control customers whose technology was dispatched, the value of the dispatch variable was equal to 1 where as for control customers whose technology was not dispatched, the value of the technology coefficient equals 0. The following equations represent these two instances:

$$\ln\left(\frac{K_1}{K_3}\right) = a_{13} + b_{13}\ln\left(\frac{P_1}{P_3}\right) + f_{13} * dispatch$$
$$or \qquad (2.1)$$
$$\ln\left(\frac{K_1}{K_3}\right) = a_{13} + b_{13}\ln\left(\frac{P_1}{P_3}\right) + f_{13} * 0$$

where K_i = energy use per hour in period *i*, and P_i = price per unit of energy in period *i.*
Also,

$$\ln\left(\frac{K_2}{K_3}\right) = a_{23} + b_{23}\ln\left(\frac{P_2}{P_3}\right) \qquad (2.2)$$

$$\overline{K} = \frac{K_1 h_1 + K_2 h_2 + K_3 h_3}{24} \qquad (2.3)$$

where h_i is the number of hours in period *i*. The same equations hold for the treatment customers, except that *dispatch* is now equal to one on all CPP days. Note that *dispatch* only affects the formula containing period 1 (peak-period):

$$\ln\left(\frac{K_1'}{K_3'}\right) = a_{13} + b_{13}\ln\left(\frac{P_1'}{P_3'}\right) + f_{13} * dispatch$$
$$or \qquad (2.4)$$
$$\ln\left(\frac{K_1'}{K_3'}\right) = a_{13} + b_{13}\ln\left(\frac{P_1'}{P_3'}\right) + 1 * f_{13}$$

$$\ln\left(\frac{K_2'}{K_3'}\right) = a_{23} + b_{23}\ln\left(\frac{P_2'}{P_3'}\right) \tag{2.5}$$

and,

$$\overline{K}' = \frac{K_1'h_1 + K_2'h_2 + K_3'h_3}{24} \tag{2.6}$$

First, start by subtracting (2.1) from (2.4):

$$\left(\ln\left(\frac{K_1'}{K_3'}\right) = a_{13} + b_{13}\ln\left(\frac{P_1'}{P_3'}\right) + 1 * f_{13}\right) - \left(\ln\left(\frac{K_1}{K_3}\right) = a_{13} + b_{13}\ln\left(\frac{P_1}{P_3}\right) + 0 * f_{13}\right) \tag{2.7}$$

giving us:

$$\ln\left(\frac{K_1'}{K_3'}\right) = \ln\left(\frac{K_1}{K_3}\right) + b_{13}\left(\ln\left(\frac{P_1'}{P_3'}\right) - \ln\left(\frac{P_1}{P_3}\right)\right) + f_{13} \tag{2.8}$$

Now, set the following quantity to A:

$$A_{13} = \ln\left(\frac{K_1}{K_3}\right) + b_{13}\left(\ln\left(\frac{P_1'}{P_3'}\right) - \ln\left(\frac{P_1}{P_3}\right)\right) + f_{13} \tag{2.9}$$

leaving us with:

$$\ln\left(\frac{K_1'}{K_3'}\right) = A_{13} \qquad \text{or} \qquad \ln(K_1') = A_{13} + \ln(K_3') \tag{2.10}$$

Exponentiating, we have:

$$\begin{gathered} e^{\ln(K_1')} = e^{(A_{13} + \ln(K_3'))} \\ \Rightarrow K_1' = e^{A_{13}} K_3' \end{gathered} \tag{2.11}$$

Through a similar process, we can arrive at

$$\ln\left(\frac{K_2'}{K_3'}\right) = A_{23} \tag{2.12}$$

where

$$A_{23} = \ln\left(\frac{K_2}{K_3}\right) + b_{23}\left(\ln\left(\frac{P_2'}{P_3'}\right) - \ln\left(\frac{P_2}{P_3}\right)\right) \tag{2.13}$$

Exponentiating, we have:

$$\Rightarrow K_2' = e^{A_{23}} K_3' \tag{2.14}$$

This leaves us with:

$$K_1^{'} = e^{A_{13}} K_3^{'}$$

and

$$K_2^{'} = e^{A_{23}} K_3^{'}$$

Inserting both of these into eq. (2.3):

$$\overline{K}^{'} = \frac{h_1 e^{A_{13}} K_3^{'} + h_2 K_3^{'} e^{A_{23}} + h_3 K_3^{'}}{24} \tag{2.15}$$

$$\overline{K}^{'} = \frac{K_3^{'}(h_1 e^{A_{13}} + h_2 e^{A_{23}} + h_3)}{24} \tag{2.16}$$

$$K_3^{'} = \frac{24\overline{K}^{'}}{(h_1 e^{A_{13}} + h_2 e^{A_{23}} + h_3)} \tag{2.17}$$

Finishing up, we have:

$$\begin{aligned} K_1^{'} &= e^{A_{13}} K_3^{'} \\ K_2^{'} &= e^{A_{23}} K_3^{'} \\ K_3^{'} &= \frac{24\overline{K}^{'}}{(h_1 e^{A_{13}} + h_2 e^{A_{23}} + h_3)} \end{aligned} \tag{2.18}$$

In the impact simulators, these equations appear in a different, but equivalent form. In the impact simulator, the term A_{12} is defined instead of A_{13}. Let A_{12} be defined as:

$$A_{12} = \ln\left(\frac{K_1}{K_2}\right) + f_{13} + b_{12}\left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) \tag{2.19}$$

Then the following is true:

$$\begin{aligned}
A_{13}-A_{23} &= \ln\left(\frac{K_1}{K_3}\right)+b_{13}\left(\ln\left(\frac{P_1'}{P_3'}\right)-\ln\left(\frac{P_1}{P_3}\right)\right)+f_{13}-\left(\ln\left(\frac{K_2}{K_3}\right)+b_{23}\left(\ln\left(\frac{P_2'}{P_3'}\right)-\ln\left(\frac{P_2}{P_3}\right)\right)\right)\\
&note: b_{13}=b_{23}=b_{12}\\
&=\ln\left(\frac{K_1K_3}{K_3K_2}\right)+f_{13}+b_{12}\left(\ln\left(\frac{P_1'}{P_3'}\right)-\ln\left(\frac{P_1}{P_3}\right)-\ln\left(\frac{P_2'}{P_3'}\right)+\ln\left(\frac{P_2}{P_3}\right)\right)\\
&=\ln\left(\frac{K_1}{K_2}\right)+f_{13}+b_{12}\left(\ln\left(\frac{P_1'P_3'}{P_3'P_2'}\right)-\ln\left(\frac{P_1P_3}{P_3P_2}\right)\right)\\
&=A_{12}
\end{aligned} \tag{2.20}$$

Redefine K_2' in terms of A_{12}. This is the formula that appears in the impact simulator:

$$\begin{aligned}
K_2' &= \frac{24\overline{K}'}{\left(h_1e^{A_{13}-A_{23}}+h_2+\frac{h_3}{e^{A_{23}}}\right)}\\
K_2' &= \frac{24\overline{K}'}{\left(h_1e^{A_{12}}+h_2+\frac{h_3}{e^{A_{23}}}\right)}
\end{aligned} \tag{2.21}$$

Redefine K_1 and K_3 in terms of K_2 and A_{12}. These are the formulas that appear in the impact simulator:

$$
\begin{aligned}
&K_1^{'} = e^{A_{13}} K_3^{'}\\
&K_3^{'} = K_1^{'} / e^{A_{13}}\\
\\
&K_2^{'} = e^{A_{23}} K_3^{'}\\
&K_2^{'} = e^{A_{23}} K_1^{'} / e^{A_{13}}\\
&K_1^{'} = K_2^{'} e^{A_{13} - A_{23}}\\
&K_1^{'} = K_2^{'} e^{A_{12}} \qquad (2.22)\\
&then\\
&K_3' = K_2^{'} e^{A_{12}} \; / e^{A_{13}}\\
&K_3' = K_2^{'} e^{A_{12} - A_{13}}\\
&note: A_{13} - A_{23} = A_{12}\\
&-A_{23} = A_{12} - A_{13}\\
&K_3' = K_2^{'} e^{-A_{23}}
\end{aligned}
$$

The formula for the new daily usage resulting from price change is calculated below. For the control group:

$$
\begin{aligned}
&\overline{K} = a + d \ln\left(\overline{P}\right) + u * dispatch,\\
&or \qquad (2.23)\\
&\overline{K} = a + d \ln\left(\overline{P}\right) + u * 0
\end{aligned}
$$

For the treatment average daily usage:

$$
\begin{aligned}
&\overline{K}' = a + d \ln\left(\overline{P'}\right) + u * dispatch,\\
&or \qquad (2.24)\\
&\overline{K}' = a + d \ln\left(\overline{P'}\right) + u * 1
\end{aligned}
$$

Subtracting (2.23) from (2.24):

$$\begin{aligned}
&\left(\ln \overline{K}' = a + d\ln\left(\overline{P}'\right) + u\right) - \left(\ln \overline{K} = a + d\ln\left(\overline{P}\right)\right)\\
&\ln \overline{K}' = \ln \overline{K} + d\ln\left(\frac{\overline{P}'}{\overline{P}}\right) + u\\
&\overline{K}' = e^{\ln \overline{K}} e^{d\ln\left(\frac{\overline{P}'}{\overline{P}}\right)} e^{u}\\
&\overline{K}' = \overline{K} * e^{u} * \left(\frac{\overline{P}'}{\overline{P}}\right)^{d}
\end{aligned} \tag{2.25}$$

To determine the effect of technology only, *dispatch*=1 and P'_I is equal to the control group prices in period i. The effect of the CES is zeroed, as zero price change results in $\ln\frac{P_1'}{P_2'}$ and $\ln\frac{\overline{P}'}{\overline{P}}$ equal to 0 (as appears in (2.19) and (2.25), respectively). To determine the effect of price only, *dispatch*=0 and P'_i is equal to the treatment group prices in period i.

8.3 PREDICTING BEGINNING USAGE F IN THE SPECIAL CASE INVOLVING THE TECHNOLOGY RESPONSE COEFFICIENT

For Residential CPPV Track C customers, there were three customer groups: no smart thermostat dispatch and no price change; smart thermostat dispatch and no price change; and smart thermostat dispatch and price change. The aggregate impact of price change and technology was calculated using the beginning usage of the first group. For Commercial and Industrial Track C customers, control customer thermostats were always dispatched along with treatment customers (that is, no customers fell into the first group above). Thus, the beginning usage without smart thermostats is unobserved. However, using the econometric model and algebra, we can predict the beginning usage without smart thermostats. This memo details how we solve for the energy use on CPP days in the absence of the technology effect.

Let K_1 be the quantity used by a track C C&I customer on a CPP-day if there was no smart-meter technology dispatched.

$$\ln\left(\frac{K_1}{K_3}\right) = a_{13} + b_{13}\ln\left(\frac{P_1}{P_3}\right) + 0 * f \tag{3.1}$$

Also,

$$\ln\left(\frac{K_2}{K_3}\right) = a_{23} + b_{23}\ln\left(\frac{P_2}{P_3}\right) \tag{3.2}$$

where K_1 is usage in kWh/hr in period 1. Also,

$$\overline{K} = \frac{K_1 h_1 + K_2 h_2 + K_3 h_3}{24} \tag{3.3}$$

Let *K'* be the quantity used with smart meter technology. These equations are the same as (3.1) and (3.2), except now *f* is multiplied by 1:

$$\ln\left(\frac{K_1^{'}}{K_3^{'}}\right) = a_{13} + b_{13}\ln\left(\frac{P_1^{'}}{P_3^{'}}\right) + 1 * f \tag{3.4}$$

$$\ln\left(\frac{K_2^{'}}{K_3^{'}}\right) = a_{23} + b_{23}\ln\left(\frac{P_2^{'}}{P_3^{'}}\right) \tag{3.5}$$

and,

$$\overline{K}^{'} = \frac{K_1^{'}h_1 + K_2^{'}h_2 + K_3^{'}h_3}{24} \tag{3.6}$$

First, note that our treatment group experiences the effect of smart thermostats but not any price change. Thus, $\ln\left(\frac{P_1^{'}}{P_3^{'}}\right)$ = ln(1) = 0. The price ratios drop out of equations (3.1), (3.2), (3.4), and (3.5). Subtract equation (3.1) from (3.4):

$$\left(\ln\left(\frac{K_1^{'}}{K_3^{'}}\right) = a_{13} + f\right) - \left(\ln\left(\frac{K_1}{K_3}\right) = a_{13}\right) \tag{3.7}$$

Exponentiating, we arrive at:

$$\begin{gathered}\left(\frac{K_1^{'}}{K_3^{'}}\right) = e^f * \left(\frac{K_1}{K_3}\right) \\ or \\ K_1 = \frac{K_1{'} * K_3}{e^f * K_3{'}}\end{gathered} \tag{3.8}$$

Subtracting (3.2) from(3.5):

(3.9)

$$
\begin{aligned}
&\left(\ln\left(\frac{K_2^{'}}{K_3^{'}}\right)=a_{23}\right)-\left(\ln\left(\frac{K_2}{K_3}\right)=a_{23}\right)\\
&\ln\left(\frac{K_2^{'}}{K_3^{'}}\right)=\ln\left(\frac{K_2}{K_3}\right)\\
&or\\
&K_2=\frac{K_3K_2{'}}{K_3{'}}
\end{aligned}
$$

For the daily equation, we have the simple equation with no daily price elasticity:

$$
\begin{aligned}
&\ln\left(\overline{K}\right)=a\\
&\text{and}\\
&\ln\left(\overline{K}{'}\right)=a+u
\end{aligned}
\tag{3.10}
$$

where *u* is the effect of smart technology on average daily usage.

Subtracting these two equations and exponentiating, we get:

$$
\begin{aligned}
&\ln\overline{K}=\ln\left(\overline{K}{'}\right)-u\\
&\overline{K}=e^{\ln(\overline{K}{'})-u}\\
&\overline{K}=\frac{\overline{K}{'}}{e^{u}}
\end{aligned}
\tag{3.11}
$$

Substituting (3.8), (3.9), (3.10), and (3.11) into (3.3), we can solve for K_3 in terms of observed values:

$$\overline{K} = \frac{K_1h_1 + K_2h_2 + K_3h_3}{24}$$

$$K_1 = \frac{K_1'*K_3}{e^f * K_3'}$$

$$K_2 = \frac{K_3K_2'}{K_3'}$$

$$\overline{K} = \frac{\overline{K}'}{e^u}$$

$$\frac{\overline{K}'}{e^u} = \frac{\frac{K_1'*K_3}{e^f * K_3'}h_1 + \frac{K_3K_2'}{K_3'}h_2 + K_3h_3}{24}$$

$$\frac{24*\overline{K}'}{e^u} = K_3\left(\frac{K_1'h_1e^{-f}}{K_3'} + \frac{h_2K_2'}{K_3'} + h_3\right)$$

$$\frac{24*\overline{K}'}{e^u} = K_3\left(\frac{K_1'h_1e^{-f} + h_2K_2' + K_3'h_3}{K_3'}\right)$$

$$K_3 = \frac{24*\overline{K}'*K_3'}{\left(K_1'h_1e^{-f} + h_2K_2' + K_3'h_3\right)*e^u}$$

Appendix 9

Derivation of Own and Cross-Price Elasticities from the CES Model

APPENDIX 9: DERIVATION OF OWN AND CROSS-PRICE ELASTICITIES FROM THE CES MODEL

The CES functional form includes the elasticity of substitution and the daily price elasticity. Corresponding to these two elasticities are the conventional (Marshallian) own and cross-price elasticities discussed in Appendix 7. Point estimates of the own-price and cross-price elasticities of demand for the CES demand model can be derived analytically.[1] For large price changes, it is best to derive them through model simulation.

To recap, the CES demand model comprises two equations. The first equation expresses the ratio of energy use in each rate period as a function of the ratio of prices in each period, is specified by the following equation (where the weather term, fixed effects and the other interaction terms have been dropped for simplicity):

$$\ln\left(\frac{Q_p}{Q_{op}}\right) = a + b\ln\left(\frac{P_p}{P_{op}}\right)$$

where

Q_p = the quantity of energy used in the peak period

Q_{op} = the quantity of energy used in the off-peak period

P_p = the price of energy in the peak period

P_{op} = the price of energy the off-peak period.

When there are only two usage periods, the following identity holds:

$$Q_d = Q_p + Q_{op}$$

where Q_d = daily energy use.

The second CES equation pertains to daily electricity consumption and has the following specification:

$$\ln(Q_d) = c + d\ln(P_d) \quad (1)$$

---

[1] The equations presented in this Appendix are based on energy use for each rate period, rather than energy use per hour.

where P_d = average daily price (e.g., a usage weighted average of the peak and off-peak prices for the day),

$$P_d = w_p P_p + w_{op} P_{op} \qquad (2)$$

where w_p = total peak period electricity use and w_{op} is similarly defined.

To further simplify, we define the following budget shares:

$$z_p = \left(\frac{w_p P_p}{w_p P_p + w_{op} P_{op}} \right) \quad (3)$$

$$z_{op} = \left(\frac{w_{op} P_{op}}{w_p P_p + w_{op} P_{op}} \right) \qquad (4)$$

Combining relevant equations and terms, and applying the chain rule, we get the following expressions for the own- and cross-price elasticities of demand:

$$\frac{\partial \ln Q_p}{\partial \ln P_p} = \eta_p = w_{op} b + d z_p \qquad (5)$$

$$\frac{\partial \ln Q_p}{\partial \ln P_{op}} = \eta_{p,op} = -w_{op} b + d z_{op} \quad (6)$$

$$\frac{\partial \ln Q_{op}}{\partial \ln P_p} = \eta_{op,p} = -w_p b + d z_p \quad (7)$$

$$\frac{\partial \ln Q_{op}}{\partial \ln P_{op}} = \eta_{op} = w_p b + d z_{op} \qquad (8)$$

where

η_p = own-price elasticity in the peak period

$\eta_{p,op}$ = cross-price elasticity in the peak period

$\eta_{op,p}$ = cross-price elasticity in the off-peak period

η_{op} = own-price elasticity in the peak period.

Appendix 10

Calculation of Standard Errors for Elasticities and Demand Impacts

APPENDIX 10: CALCULATION OF STANDARD ERRORS FOR IMPACTS AND ELASTICITIES

10.1 Standard Errors of Elasticities

This appendix describes how the standard errors are derived for the elasticity of substitution and the daily price elasticity which, for most models, are functions of multiple variables such as weather and CAC ownership. To estimate these standard errors, we first calculate the covariance matrix of the coefficients in the substitution equation and those in the daily equation. Below is an example of the covariance matrix:[1]

$$Co\,\mathrm{var}\left\{ \begin{array}{c|cccccccccc} & A & B & C & D & E & P & Q & R & S & T \\ \hline A & 3.66E-06 & -1.55E-07 & 1.49E-08 & 3.71E-09 & \ldots & & & & & \\ B & -1.55E-07 & \ldots & & & & & & & & \\ C & 1.49E-.08 & & & & & & & & & \\ D & \ldots & & & & & & & & & \\ E & & & & & & & & & & \\ P & & & & & & & & & & \\ Q & & & & & & & & & & \\ R & & & & & & & & & & \\ S & & & & & & & & & & \\ T & & & & & & & & & & \end{array} \right\}$$

In the process of calculating the standard errors of the elasticities, we create a matrix similar in structure to the formulas used to calculate effective elasticities, which appear below:

$$\bar{b} = B + D*\overline{CAC} + E*\overline{\left(DH_p - DH_{op}\right)} \qquad (1.1)$$

$$\bar{d} = Q + S*\overline{CAC} + T*\overline{DH}_{daily} \qquad (1.2)$$

We create the following matrix:

---

[1] The row and column labels in the matrix correspond to the coefficients in each model. Variable definitions corresponding to each letter vary some across models and are defined at the beginning of Appendices 16 and 17.

$$W = \left\{ \begin{array}{c|cccccccccc} & A & B & C & D & E & P & Q & R & S & T \\ \hline \overline{b} & 0 & 1 & 0 & \overline{CAC} & \overline{\left(DH_p - DH_{op}\right)} & 0 & 0 & 0 & 0 & 0 \\ \overline{d} & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & \overline{CAC} & \overline{DH}_{daily} \end{array} \right\}$$

To calculate zonal specific impacts, we add more rows to this matrix, analogous to those above, but with zonal specific CAC saturations and zonal specific weather.

We then perform the following matrix multiplication:

$$COVAR_{\overline{b}\_\overline{d}} = [W]*[COVAR]*[W]^T \tag{1.3}$$

where W^T is the transpose of the *W* matrix. This results in a two-by-two variance-covariance matrix between the elasticity of substitution (*b*) and the daily elasticity (*d*):

$$COVAR_{\overline{b}\_\overline{d}} = \left\{ \begin{array}{c|cc} & \overline{b} & \overline{d} \\ \hline \overline{b} & Var_{\overline{b}} & Co\,\mathrm{var}_{\overline{b}\_\overline{d}} \\ \overline{d} & Co\,\mathrm{var}_{\overline{b}\_\overline{d}} & Var_{\overline{d}} \end{array} \right\} \tag{1.4}$$

where the standard error of the elasticity is simply the square root of the variance.

We estimate the T-statistic:

$$T_{\overline{b}} = \frac{\overline{b}}{\sqrt{Var_{\overline{b}}}} \tag{1.5}$$

$$T_{\overline{d}} = \frac{\overline{d}}{\sqrt{Var_{\overline{d}}}} \tag{1.6}$$

10.2 Standard Errors for Demand Impacts

We use the "Delta Method" to estimate the standard errors for the estimated energy use by rate period under alternative price regimes.[2] This method is also used to estimate standard errors for the % Change in energy use between the pre- and post-treatment periods under the alternative price regimes. The estimated usage can be written as a non-linear function of the estimated elasticities $\bar{b}$ and $\bar{d}$ and the peak and off-peak prices. Uncertainty in this estimate arises from the uncertainty in the estimation of the elasticities.

Appendix 8 showed how the CES model is used to estimate energy use by rate period given a price change. We now calculate the variance of these estimates.

The vector of derivatives of energy use with respect to the elasticity of substitution and the daily elasticity is calculated below. This vector is also referred to as the coefficients of linearization:

$$\begin{gathered}
\overrightarrow{DK_1}' = \left[\frac{\partial K_1'}{\partial \bar{b}} \quad \frac{\partial K_1'}{\partial \bar{d}} \right] \\
\overrightarrow{DK_2}' = \left[\frac{\partial K_2'}{\partial \bar{b}} \quad \frac{\partial K_2'}{\partial \bar{d}} \right] \\
\overrightarrow{D\overline{K}}' = \left[\frac{\partial \overline{K}'}{\partial \bar{b}} \quad \frac{\partial \overline{K}'}{\partial \bar{d}} \right]
\end{gathered} \tag{1.7}$$

These vectors differ but are manipulated in the same way using matrix algebra. We approximate the distribution of period *i* :

$$K_i' \sim normal(K_i', \left[\overrightarrow{DK_i}'\right] * \left[COVAR\right] * \left[\overrightarrow{DK_i}'\right]^T) \tag{1.8}$$

$$SE_{K'_i} = \sqrt{\left[\overrightarrow{DK_i}'\right] * \left[COVAR\right] * \left[\overrightarrow{DK_i}'\right]^T} \tag{1.9}$$

Below, we derive the coefficients of linearization in (1.7) for the three-period model. In the two-period model, $K_3^{'}$ is equal to 0, but all the calculations are equivalent.

---

[2] See, for example, Goldberger, "A Course in Econometrics", pp 102, 110; Greene, "Econometric Analysis," pp. 124, 278.

We assume that all cross-period elasticities are equal. In other words:

$$b_{12} = b_{23} = b$$

In the three period model, we have the following usage formulas:

$$\begin{aligned} K_1^{'} &= e^{A_{12}} K_2^{'} \\ K_2^{'} &= \frac{(h_1 + h_2 + h_3)\overline{K'}}{e^{A_{12}} h_1 + h_2 + h_3 e^{-A_{23}}} \\ K_3^{'} &= K_2^{'} e^{-A_{23}} \end{aligned} \tag{1.10}$$

Differentiate the following with respect to the substitution and daily price elasticities:

$$K_2^{'} = \frac{24\overline{K'}}{h_2 + e^{A_{12}} h_1 + e^{-A_{23}} h_3} \tag{1.11}$$

Use the chain rule to simplify, by defining the following :

$$\begin{aligned} y &= 24\overline{K}^{'} * z^{-1} \\ \frac{\partial y}{\partial z} &= -24\overline{K}^{'} * z^{-2} \end{aligned} \tag{1.12}$$

And,

$$\begin{aligned} z &= (h_2 + e^{A_{12}} h_1 + e^{-A_{23}} h_3) \\ A_{12} &= \ln\left(\frac{K_1}{K_2}\right) + b_{12}\left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) \\ A_{23} &= \ln\left(\frac{K_2}{K_3}\right) + b_{23}\left(\ln\left(\frac{P_2^{'}}{P_3^{'}}\right) - \ln\left(\frac{P_2}{P_3}\right)\right) \\ \frac{\partial z}{\partial b} &= h_1 e^{A_{12}} * \left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) - h_3 e^{A_{23}} * \left(\ln\left(\frac{P_2^{'}}{P_3^{'}}\right) - \ln\left(\frac{P_2}{P_3}\right)\right) \end{aligned} \tag{1.13}$$

Thus, noting that $\overline{K}'$ does not depend on b ,

$$
\begin{aligned}
\frac{\partial K_2^{'}}{\partial b_{12}} &= \frac{\partial y}{\partial z} * \frac{\partial z}{\partial b_{12}} \\
\frac{\partial K_2^{'}}{\partial b_{12}} &= \left(-24\overline{K}^{'} * z^{-2}\right) * \left(h_1 e^{A_{12}} * \left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) - h_3 e^{A_{23}} * \left(\ln\left(\frac{P_2^{'}}{P_3^{'}}\right) - \ln\left(\frac{P_2}{P_3}\right)\right)\right) \\
\frac{\partial K_2^{'}}{\partial b_{12}} &= \left(-24\overline{K}^{'} * (h_2 + h_1 e^{A_{12}} + h_3 e^{-A_{23}})^{-2}\right) * \left(h_1 e^{A_{12}} * \left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) - h_3 e^{A_{23}} * \left(\ln\left(\frac{P_2^{'}}{P_3^{'}}\right) - \ln\left(\frac{P_2}{P_3}\right)\right)\right)
\end{aligned}
$$

(1.14)

In the impact simulator, this is programmed as:

$$
\frac{\partial K_2^{'}}{\partial b_{12}} = -K_2^{'} * (h_2 + h_1 e^{A_{12}} + h_3 e^{A_{32}})^{-1} * \left(h_1 e^{A_{12}} * \left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) + h_3 e^{A_{23}} * \left(\ln\left(\frac{P_3^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_3}{P_2}\right)\right)\right) \quad (1.15)
$$

To differentiate the usage formulas for the first and third periods, we will utilize the product rule:

$$
\begin{aligned}
\frac{\partial K_1^{'}}{\partial b} &= \frac{\partial e^{A_{12}}}{\partial b} K_2^{'} + e^{A_{12}} \frac{\partial K_2^{'}}{\partial b} \\
\frac{\partial K_1^{'}}{\partial b} &= \left[e^{A_{12}} * \left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) * K_2^{'} \right] + e^{A_{12}} \frac{\partial K_2^{'}}{\partial b}
\end{aligned} \quad (1.16)
$$

In the impact simulator this is programmed as:

$$
\frac{\partial K_1^{'}}{\partial b} = \left(\ln\left(\frac{P_1^{'}}{P_2^{'}}\right) - \ln\left(\frac{P_1}{P_2}\right)\right) * K_1^{'} + e^{A_{12}} \frac{\partial K_2^{'}}{\partial b} \quad (1.17)
$$

For the third period:

$$
\begin{aligned}
\frac{\partial K_3^{'}}{\partial b} &= \frac{\partial e^{-A_{23}}}{\partial b} K_2^{'} + e^{-A_{23}} \frac{\partial K_2^{'}}{\partial b} \\
\frac{\partial K_3^{'}}{\partial b} &= \frac{\partial e^{-A_{23}}}{\partial b} K_2^{'} + e^{-A_{23}} \frac{\partial K_2^{'}}{\partial b} \\
\frac{\partial K_3^{'}}{\partial b} &= \left[-e^{-A_{23}} * \left(\ln\left(\frac{P_2^{'}}{P_3^{'}}\right) - \ln\left(\frac{P_2}{P_3}\right)\right) * K_2^{'} \right] + e^{-A_{23}} \frac{\partial K_2^{'}}{\partial b}
\end{aligned} \quad (1.18)
$$

In the impact simulator this is programmed as:

$$\frac{\partial K_3'}{\partial b} = e^{-A_{23}} * \left(\ln\left(\frac{P_3'}{P_2'}\right) - \ln\left(\frac{P_3}{P_2}\right)\right) * K_2' + e^{-A_{23}} \frac{\partial K_2'}{\partial b} \tag{1.19}$$

Lastly,

$$\frac{\partial \overline{K}'}{\partial b} = 0 \tag{1.20}$$

Differentiate usage with respect to the daily price elasticity for daily, peak, shoulder and off-peak periods:

$$\begin{aligned}
\overline{K}' &= \overline{K} * \left(\frac{\overline{P}'}{\overline{P}}\right)^d \\
\frac{\partial \overline{K}'}{\partial d} &= \overline{K} * \ln\left(\frac{\overline{P}'}{\overline{P}}\right)\left(\frac{\overline{P}'}{\overline{P}}\right)^d \\
\frac{\partial \overline{K}'}{\partial d} &= \overline{K}'\ln\left(\frac{\overline{P}'}{\overline{P}}\right)
\end{aligned} \tag{1.21}$$

Then:

$$\begin{aligned}
K_2' &= \frac{24\overline{K}'}{\left(h_1 e^{A_{12}} + h_2 + \frac{h_3}{e^{A_{23}}}\right)} \\
\frac{\partial K_2'}{\partial d} &= \frac{\partial K_2'}{\partial \overline{K}'} \frac{\partial \overline{K}'}{\partial d} \\
\frac{\partial K_2'}{\partial d} &= \frac{24 \frac{\partial \overline{K}'}{\partial d}}{\left(h_1 e^{A_{12}} + h_2 + \frac{h_3}{e^{A_{23}}}\right)} \\
\frac{\partial K_2'}{\partial d} &= \frac{24\overline{K}'\ln\left(\frac{\overline{P}'}{\overline{P}}\right)}{\left(h_1 e^{A_{12}} + h_2 + \frac{h_3}{e^{A_{23}}}\right)} \\
\frac{\partial K_2'}{\partial d} &= K_2'\ln\left(\frac{\overline{P}'}{\overline{P}}\right)
\end{aligned} \tag{1.22}$$

And,

$$
\begin{aligned}
&K_1^{'} = K_2{'}e^{A_{12}} \\
&\frac{\partial K_1^{'}}{\partial d} = \frac{\partial K_1^{'}}{\partial K_2{'}}\frac{\partial K_2{'}}{\partial d} \\
&\frac{\partial K_1^{'}}{\partial d} = e^{A_{12}} * \frac{\partial K_2{'}}{\partial d}
\end{aligned}
$$

(1.23)

$$
\begin{aligned}
&K_3^{'} = K_2^{'} / e^{A_{23}} \\
&\frac{\partial K_3^{'}}{\partial d} = \frac{\partial K_3^{'}}{\partial K_2{'}}\frac{\partial K_2{'}}{\partial d} \\
&\frac{\partial K_3^{'}}{\partial d} = e^{-A_{23}}\,\frac{\partial K_2{'}}{\partial d}
\end{aligned}
$$

10.3 Standard Errors Of Energy Use With Technology Response Variables

This section derives the formulas for the coefficients of linearizations in the three-period model with a technology-response coefficient. Adding the technology response coefficient is analogous to adding another elasticity, and is treated in the manner in which we combined the variances of the elasticity of substitution and the daily elasticity. The variance-covariance matrix now contains the covariance between the technology response coefficient in the elasticity of substitution model, *f*, and all other variables; and the covariance between the technology response coefficient in the daily elasticity, *u*, and all other variables:

$$
COVAR = \left\{ \begin{array}{c|cccccccccccc}
 & A & B & C & D & E & F & P & Q & R & S & T & U \\
\hline
A & \cdots & & & & & & & & & & & \\
B & & & & & & & & & & & & \\
C & & & & & & & & & & & & \\
D & & & & & & & & & & & & \\
E & & & & & & & & & & & & \\
F & & & & & & & & & & & & \\
P & & & & & & & & & & & & \\
Q & & & & & & & & & & & & \\
R & & & & & & & & & & & & \\
S & & & & & & & & & & & & \\
T & & & & & & & & & & & & \\
U & & & & & & & & & & & &
\end{array} \right\} \quad (3.1)
$$

The “weights” matrix is expanded to include the weights associated with technology response coefficients:

$$X = \left\{ \begin{array}{c|cccccccccccc} & A & B & C & D & E & F & P & Q & R & S & T & U \\ \hline b & 0 & 1 & 0 & \overline{CAC} & \overline{DH_p - DH_{op}} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ d & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & \overline{CAC} & \overline{DH}_{daily} & 0 \\ f & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ u & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{array} \right\} \tag{3.2}$$

We then perform the matrix multiplication as in 1.3:

$$COVAR_{b\_d\_f\_u} = [X]*[COVAR]*[X]^T \tag{3.3}$$

where W^T is the transpose of the *W* matrix. This results in a four-by-four variance-covariance matrix between the elasticity of substitution (*b*) and the daily elasticity (*d*):

$$COVAR_{b\_d\_f\_u} = \left\{ \begin{array}{c|cccc} & b & d & f & u \\ \hline b & \mathrm{var}_b & \mathrm{cov}_{bd} & \mathrm{cov}_{bf} & \mathrm{cov}_{bu} \\ d & \mathrm{cov}_{bd} & \mathrm{var}_d & \mathrm{cov}_{df} & \mathrm{cov}_{du} \\ f & \mathrm{cov}_{bf} & \mathrm{cov}_{df} & \mathrm{var}_f & \mathrm{cov}_{fu} \\ u & \mathrm{cov}_{bu} & \mathrm{cov}_{du} & \mathrm{cov}_{fu} & \mathrm{var}_u \end{array} \right\} \tag{3.4}$$

We need to create the vector of partial derivatives:

$$\overrightarrow{DK_i}' = \left[\frac{\partial K_i'}{\partial \overline{b}} \quad \frac{\partial K_i'}{\partial \overline{d}} \quad \frac{\partial K_i'}{\partial \overline{f}} \quad \frac{\partial K_i'}{\partial \overline{u}} \right] \tag{3.5}$$

where the standard error is:

$$SE_{K'_i} = \sqrt{\left[\overrightarrow{DK_i}'\right]*[COVAR]*\left[\overrightarrow{DK_i}'\right]^T} \tag{3.6}$$

In $\overrightarrow{DK}_i$, the formulas for the partial derivatives with respect to *b* are the same as (1.15) (1.16), (1.18), (1.19), and (1.20), except that A_{12} contains *f*:

$$\begin{aligned}
&\frac{\partial K_1^{'}}{\partial b} = \left(\ln\left(\frac{P_1^{'}}{P_2^{'}} \right) - \ln\left(\frac{P_1}{P_2} \right) \right) * K_1^{'} + e^{A_{12}} \frac{\partial K_2^{'}}{\partial b} \\
&where \qquad (3.7) \\
&A_{12} = \ln\left(\frac{K_1}{K_2} \right) + f_{13} + b_{12} \left(\ln\left(\frac{P_1^{'}}{P_2^{'}} \right) - \ln\left(\frac{P_1}{P_2} \right) \right)
\end{aligned}$$

Now we differentiate with respect to the technology-response coefficient:

$$\begin{aligned}
&A_{12} = \ln\left(\frac{K_1}{K_2} \right) + f_{13} + b_{12} \left(\ln\left(\frac{P_1^{'}}{P_2^{'}} \right) - \ln\left(\frac{P_1}{P_2} \right) \right) \\
&A_{23} = \ln\left(\frac{K_2}{K_3} \right) + b_{23} \left(\ln\left(\frac{P_2^{'}}{P_3^{'}} \right) - \ln\left(\frac{P_2}{P_3} \right) \right) \\
&K_2^{'} = \frac{24\overline{K}^{'}}{\left(h_1 e^{A_{12}} + h_2 + h_3 e^{-A_{23}} \right)} \\
&v = h_1 e^{A_{12}} \\
&\frac{\partial K_2^{'}}{\partial v} = -24\overline{K}'\left(v + h_2 + h_3 e^{-A_{23}} \right)^{-2} \\
&note: \frac{\partial A_{12}}{\partial f} = 1 \\
&\frac{\partial v}{\partial f} = h_1 e^{A_{12}} \\
&\frac{\partial K_2^{'}}{\partial f} = -h_1 e^{A_{12}} 24\overline{K}^{'} \left(h_1 e^{A_{12}} + h_2 + h_3 e^{-A_{23}} \right)^{-2} \\
&\frac{\partial K_2^{'}}{\partial f} = \frac{-h_1 e^{A_{12}} K_2'}{h_1 e^{A_{12}} + h_2 + h_3 e^{-A_{23}}} \qquad (3.8)
\end{aligned}$$

And,

$$
\begin{aligned}
&K_1^{'} = e^{A_{12}} K_2^{'} \\
&\frac{\partial K_1^{'}}{\partial f} = \frac{\partial e^{A_{12}}}{\partial f} K_2^{'} + \frac{\partial K_2^{'}}{\partial f} e^{A_{12}} \\
&\frac{\partial K_1^{'}}{\partial f} = e^{A_{12}} K_2^{'} + \frac{\partial K_2^{'}}{\partial f} e^{A_{12}} \\
&K_3^{'} = e^{-A_{23}} K_2^{'} \\
&\frac{\partial K_3^{'}}{\partial f} = \frac{\partial e^{-A_{23}}}{\partial f} K_2^{'} + \frac{\partial K_2^{'}}{\partial f} e^{-A_{23}} \\
&\frac{\partial K_3^{'}}{\partial f} = \frac{\partial K_2^{'}}{\partial f} e^{-A_{23}}
\end{aligned}
\tag{3.9}
$$

Note also:

$$
\begin{aligned}
&\overline{K}' = \overline{K} * e^{u} * \left(\frac{\overline{P}'}{\overline{\overline{P}}} \right)^{d} \\
&\frac{\partial \overline{K}'}{\partial f} = 0
\end{aligned}
\tag{3.10}
$$

The partial derivatives of energy use with respect to the daily price elasticity are the same as in (1.21), (1.22) and (1.23).

The derivative of daily usage with respect to the daily technology response coefficient is:

$$
\begin{aligned}
&\overline{K}' = \overline{K} * e^{u} * \left(\frac{\overline{P}'}{\overline{\overline{P}}} \right)^{d} \\
&\frac{\partial \overline{K}'}{\partial u} = \overline{K} * e^{u} \left(\frac{\overline{P}'}{\overline{\overline{P}}} \right)^{d} \\
&\frac{\partial \overline{K}'}{\partial u} = \overline{K}'
\end{aligned}
\tag{3.11}
$$

The derivative of peak, shoulder, and off-peak period usage with respect to the daily technology response coefficient is calculated below. Note that A_{12} and A_{23} do not contain u, and are thus treated as constants:

$$K_2^{'} = \frac{24\overline{K}^{'}}{\left(h_1 e^{A_{12}} + h_2 + \frac{h_3}{e^{A_{23}}}\right)}$$

$$\frac{\partial K_2^{'}}{\partial u} = \frac{\partial K_2^{'}}{\partial \overline{K}'}\frac{\partial \overline{K}'}{\partial u} \qquad (3.12)$$

$$\frac{\partial K_2^{'}}{\partial u} = \frac{24}{\left(h_1 e^{A_{12}} + h_2 + \frac{h_3}{e^{A_{23}}}\right)} * \overline{K}^{'}$$

$$\frac{\partial K_2^{'}}{\partial u} = K_2^{'}$$

And finally,

$$K_1^{'} = e^{A_{12}} K_2^{'}$$
$$\frac{\partial K_1^{'}}{\partial u} = \frac{\partial K_1^{'}}{\partial K_2^{'}} \frac{\partial K_2^{'}}{\partial u}$$
$$\frac{\partial K_1^{'}}{\partial u} = e^{A_{12}} K_2^{'}$$
$$\frac{\partial K_1^{'}}{\partial u} = K_1^{'}$$

$$K_3^{'} = K_2^{'} / e^{A_{23}}$$
$$\frac{\partial K_3^{'}}{\partial u} = \frac{\partial K_3^{'}}{\partial K_2^{'}} \frac{\partial K_2^{'}}{\partial u}$$
$$\frac{\partial K_3^{'}}{\partial u} = K_2^{'} / e^{A_{23}}$$
$$\frac{\partial K_3^{'}}{\partial u} = K_3^{'} \qquad (3.13)$$

Appendix 11

Econometric Issues in Model Estimation

APPENDIX 11: ECONOMETRIC ISSUES IN MODEL ESTIMATION

As discussed in Section 3.1 of the main report, the experimental design, data issues such as the unbalanced nature of the panel data, and the complexities of the demand behavior being modeled created numerous analytical challenges that had to be examined and addressed if relevant. These included serial correlation, heteroscedasticity, data gaps (both systematic gaps, such as weekends in a weekday only analysis, as well as sporadic gaps due to metering problems, for example), sample weights, the interrelationship between the two demand equations (e.g., the substitution and daily equations) and the influence of customer characteristics on demand response. Addressing all of these issues simultaneously is beyond the capabilities of any readily available estimation software with which we are familiar. Consequently, when exploring these issues, we relied on a variety of different software packages, including SAS, STATA and GAUSS, each of which could address some but not all issues simultaneously.

In addition, it was necessary to explore some issues using unweighted data, as including weights along with some of the other corrections was not possible in any of the software packages. Whether or not the data are weighted has no impact on determining the best course of action for addressing any of the issues at hand. Once that course of action is determined, the weights can be applied as a last step in order to estimate parameters and elasticities that represent the population as a whole.

The remainder of this appendix summarizes the exploration of key issues that was done leading up to selection of the empirical approach that underlies the analysis contained in the main body of the report.

Leading up to the approach underlying the results contained in the Summer 2003 report, the initial estimation of impacts and demand models relied on daily observations from the summer of 2003. This analysis was presented in the January and March 2003 drafts of the Summer 2003 report. The use of daily observations created problems of autocorrelation and heteroskedasticity that were difficult to resolve with available software packages such as SAS, given the unbalanced panel nature of the SPP data set. To overcome this problem, we constructed average values for three types of observations: one covering all days in the pre-treatment period; one covering non-CPP days in the treatment period; and one covering CPP days in the treatment period. We also introduced fixed effects in the estimation process to improve and stabilize the model specification.

Subsequently, a question arose concerning whether price responsiveness was affected by weather conditions (i.e., on a really hot day, would one still get the load impact that occurs on an average day). To address this question, the 3-observation database was modified to increase weather variation in the estimating sample by expanding each day-type average into quintiles based on statewide system load conditions as recorded by the California ISO. For example, we disaggregated the non-CPP day average into five non-CPP average values by rank ordering all non-CPP days based on system load conditions and then taking averages of the top 20 percent of the observations, the next 20 percent, etc. This resulted in a 15-observation database.

While this approach yielded satisfactory estimates of the influence of price, weather, central air conditioning and other parameters on energy demand, an examination of the residuals suggested that the problems of serial correlation and heteroscedasticity had not been completely eliminated. The standard errors of the parameters still exhibited some downward bias, resulting in t-statistics that had some upward bias, as described on page 74 of the Summer 2003 report.

We explored a number of solutions to reducing the remaining bias and have accomplished a reduction by returning to the use of daily observations and implementing a standard data transformation known as "first differences." The first difference transformation creates observations by subtracting the previous day's observation from the current day's observation for each of the variables in the regression equation. It is a commonly used technique for dealing with serial correlation.

Using weekday observations from the CPP-F sample, we tested this approach and found that it effectively reduced the problem of serial correlation. The resulting parameter estimates are very similar to those reported in the Summer 2003 report. However, the new standard errors and t-statistics of the parameter estimates using the difference equation are less biased due to serial correlation.

Table 11-1 summarizes the exploratory analysis that was done for the peak/off-peak substitution equation. The estimates in this table are all based on unweighted data. The figures in parentheses below the parameter estimates are the t-statistics. The table contains estimates using five different methodologies. The first row contains estimates based on the 15-observation database with the fixed-effects model specification that was used to estimate the models presented in the Summer 2003 report. These parameter estimates differ from those presented in the Summer 2003 report because they are based on unweighted data.[1] Row 2 uses daily data with fixed effects. Row 3 presents results based on the application of a standard, first-order autoregressive correction (known as AR(1))[2] to the error terms while row 4 shows results using the first difference data transformation. Finally, row 5 applies the AR(1) correction to the model based on the first difference transformation.

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[1] The estimates based on weighted data are contained in the first row of Table 11-2.

[2] See Jack Johnston and John DiNardo, *Econometric Methods*, Fourth Edition, The McGraw-Hill Companies, 1997 or a similar reference.

Table 11-1
Estimates for the Peak/Off-Peak Substitution Equation
(Based on Unweighted Data)

Regression Approach	Price Ratio	Price Ratio times Weather	Price Ratio times CAC Saturation	Other Comments
1. 15 observations	-0.0371 (-4.45)	-0.0046 (-6.29)	-0.0407 (4.37)	Estimated using ordinary least squares
2. Daily Observations	-0.0321 (-4.79)	-0.0043 (-8.68)	-0.0359 (-4.32)	No AC or HS corrections applied; F test for fixed effects significant
3. Daily Observations **AR (1) correction**	-0.0298 (-4.05)	-0.0049 (-9.09)	-0.0208 (-2.33)	AR (1) Rho = .42 Fixed effects
4. Daily Observations **First Difference**	-0.0327 (-3.82)	-0.0030 (-5.05)	-0.0632 (-6.17)	F test for fixed effects not significant
5. Daily Observations **First Differences** **AR-1 correction**	-0.0317 (-3.65)	-0.0027 (-4.59)	-0.0679 (-6.53)	F test for fixed effects not significant AR (1) Rho = -0.11

Comparing the coefficients in rows 1 and 2, we see that the estimates using the 15-observation database and daily data are similar, validating once again that the 15-observation database does a good job of estimating average response. However, the remaining residual correlation (described on page 74 of the Summer 2003 report) probably means that the t-statistics are biased upwards. The null hypothesis that all the fixed effects are zero was rejected based on an F-test, indicating that they should be included in this specification. It should also be noted that the t-statistics using the 15-observation database and the daily database are quite similar except for the weather/price interaction terms, where the t-statistic using the daily data is higher. This is to be expected, as there is significantly more variation in weather in the daily database than when the 15-observation database is used, which contributes to the improved precision of the parameter estimates for the weather-related variables.

Row 3 in Table 11-1 contains the daily observation model with a first-order autoregressive process applied. All three parameter estimates continue to be statistically significant although the coefficients and t-statistics are somewhat lower on the price-only and price/CAC interaction terms compared to the results without the AR correction. The value of the autoregressive parameter, rho, is .42 (the ideal value for this parameter is zero). The zero fixed effects null hypothesis continues to be rejected, even though the value of the F-test is less than in the previous model specification.

Row 4 contains results based on the “first differences” model using daily data. As noted earlier, “first differences” simply equal the difference between adjacent observations in a time series database. The parameter values and t-statistics increase for the price and price/CAC variables and fall for the price/weather interaction term. The null hypothesis of zero fixed effects cannot be rejected. This makes intuitive sense, since the fixed effects cancel out when the first differences are taken. Fixed effects in such a formulation would indicate the presence of a customer-specific time trend and this does not appear to be indicated by the SPP data.

Row 5 contains the results when the AR (1) correction is applied to the first differences data set. There is hardly any movement in the parameter estimates or the t-statistics and the value of rho is negative but small.[3] The null hypothesis of zero fixed effects cannot be rejected. Between the fourth and fifth rows, we recommended using the simpler formulation of the fourth row.

Table 11-2 contains parameter estimates based on weighted data. Row 1 reproduces the results presented in the Summer 2003 report, which were based on the 15-observation database. Row 2 contains estimates using weighted least squares on the first differences daily database. As expected (and similar to the case using the 15 observation database), the parameter estimates (and the implied elasticities) fall when applying the population weights, as the unweighted sample is biased toward larger users. The t-statistics change very little when going from unweighted to weighted regressions.

Table 11-2
Estimates for the Peak/Off-Peak Substitution Equation
(Based on Weighted Data)

Regression Approach	Price Ratio	Price Ratio times Weather	Price Ratio times CAC Saturation	Other Comments
1. Summer 2003 report 15 observations	-0.0205 (-2.66)	-0.0054 (-7.25)	-0.0320 (-3.32)	Estimated using weighted least squares
2. Daily Observations First Differences	-0.0283 (-3.47)	-0.0029 (-4.87)	-0.0577 (-5.26)	Weighted least squares
3. Daily Observations First Differences Estimated jointly with daily use equation	-0.0305 (-3.72)	-0.0024 (-4.11)	-0.0600 (-5.37)	Joint estimation carried out using the Seemingly Unrelated Regression (SUR)

Row 3 in Table 11-2 shows results based on an approach that jointly estimates the substitution and the daily use equations using Zellner's seemingly unrelated regression (SUR) procedure,[4] which improves the efficiency of the parameter estimates. Another key benefit of joint

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[3] The first difference seems to have over-corrected for serial correlation but not by much. Given the simplicity of the procedure, we believe that first differencing is the best course of action, rather than resorting to the more complex AR (1) process.

[4] Arnold Zellner, "An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias," *Journal of the American Statistical Association*, 57, 1962, 348-68.

estimation is that it yields the covariance matrix of the residuals across both equations, which is used in determining the standard errors for the estimated demand response impacts.

In sum, comparing the parameter estimates between rows 1 and 3 in Table 11-2, we note that the coefficient on the price ratio term has changed from –0.0205 to –0.0305 and it's t-statistic has changed from –2.66 to –3.72. The parameter on the weather interaction term has changed from –0.0054 to –0.0024 and it's t-statistic has fallen from –7.25 to –4.11. The parameter on the CAC interaction term has changed from –0.0320 to –0.0600 and it's t-statistic has gone up from –3.32 to –5.37. In other words, the coefficient on the price ratio term has gone up by 50%, the coefficient on the weather interaction term has halved and the coefficient on the CAC interaction term has doubled. However, the net result of these changes is minimal. The elasticity of substitution reported in the Summer 2003 report equaled –0.069 for the state as a whole. The new value using first differences and SUR equals –0.071.

The estimates in Tables 11-3 and 11-4 are for the daily use equation, with the results in Table 11-3 based on unweighted data and Table 5 based on weighted data. The methodology underlying the estimates in each row is the same as for the corresponding row in Tables 11-1 and 11-2.

Row 1 in Table 11-3 contains results based on the 15-observation database and row 2 contains results based on daily observations. There is some change in the values of the parameter estimates and in their t-statistics. Specifically, the value of the price coefficient doubles, the value of the weather interaction term is halved and the value of the CAC interaction term is reduced to a sixth. The t-statistics are probably biased due to serial correlation. The zero fixed effects null hypothesis is rejected.

Table 11-3
Estimates for the Daily Use Equation
(Based on unweighted data)

Regression Approach	Price	Price times Weather	Price times CAC Saturation	Other Comments
1. 15 observations	-0.0431 (-2.95)	-0.0045 (-2.81)	0.0647 (3.54)	Estimated using ordinary least squares
2. Daily Observations	-0.0787 (-7.33)	-0.0014 (-1.28)	0.0105 (0.76)	No AC or HS corrections applied; F test for fixed effects significant
3. Daily Observations AR (1) correction	0.1559 (26.68)	-0.0107 (-15.59)	-0.1190 (-15.30)	AR (1) Rho = .68
4. Daily Observations First Differences	-0.0260 (-3.47)	-0.0020 (-2.47)	0.0107 (1.13)	F test = 0.06 fails to reject the null hypothesis of zero fixed effects
5. Daily Observations First Differences AR-1 correction	-0.0258 (-3.43)	-0.0021 (-2.56)	0.0113 (1.19)	Rho = 0 F test = .05 fails to reject the null hypothesis of zero fixed effects

Row 3 contains the results when the AR (1) process described earlier is applied to the daily observations. The value of rho is 0.68, much higher than the value for the peak/off-peak substitution equation. The parameters and t-statistics change considerably for reasons that are not clear.

Row 4 contains parameter estimates and t-statistics for a model that uses daily observations and first differences. The F-test is unable to reject the null hypothesis of zero fixed effects, indicating that there is no time-trend in customer-specific fixed effects. This finding is the same as that for the substitution equation. The results in row 5, which introduces a first-order autoregressive correction of the error term, are very similar to row 4. In this case, rho has a value of zero, suggesting that the process of taking first differences has completely eliminated the problem of serial correlation.

Row 1 in Table 11-4 reproduces the Summer 2003 results. Row 2 contains estimates using weighted least squares on daily observations with first differences. Two of the three coefficients are very similar to those in the two previous rows.

Table 11-4
Estimates for the Daily Use Equation
(Based on weighted data)

Regression Approach	Price	Price times Weather	Price times CAC Saturation	Other Comments
1. Summer 2003 report **15 observations** **Weighted**	-0.0397 (-2.69)	-0.0031 (-1.46)	0.0637 (3.12)	Estimated using weighted least squares
2. Daily Observations **First Differences** **Weighted**	-0.0186 (-2.52)	-0.0017 (-1.64)	0.0040 (0.39)	Estimated with weighted least squares
3. Daily Observations **First Differences** **Estimated jointly with daily use equation** **Weighted**	-0.0220 (-3.00)	-0.0007 (-0.68)	0.0015 (0.15)	Joint estimation carried out using the Seemingly Unrelated Regression (SUR) Option

Finally, row 3 contains results based on the simultaneous estimation of the daily and substitution equations. The only statistically significant parameter estimate is the price term. Its value is about half the size of the value obtained through the quintile estimate in the first row. The two interaction terms involving weather and CAC saturation are not significant.

The parameter estimates in Tables 11-2 and 11-4 may still contain some bias due to heteroscedasticity. A standard approach for correcting this problem is to use the “robust” estimator for computing standard errors. Unfortunately, we have not been able to determine how to compute robust standard errors in conjunction with the seemingly unrelated regression estimator using either SAS or STATA. Through other means, we computed robust standard errors for the regressions of both the daily and substitution equations (separately and unweighted) using differenced data. The standard errors are virtually unchanged, with the largest change equaling roughly a 7 percent decrease. For the weighted regressions, robust standard errors are typically much smaller than the OLS standard errors and at most are 20 percent higher. This strongly suggests that heteroscedasticity is not a significant issue in the SPP sample after all the data transformations have been performed.

As a side note, since this new approach is based on differences between consecutive time series observations, any customer-specific effects of either a fixed or random nature cancel out from the equation. This obviates the need to choose between using fixed or random effects in the SPP regression models. As discussed above, in one instance, we did include the fixed effects in the first differences specification and found that they were collectively insignificant, using the F-test. We also implemented the Hausman test to see if the random effects approach would be warranted and obtained a negative result, indicating that random effects was not the proper specification. When the Hausman test was implemented for the daily use model, it yielded a chi-squared statistic of 127.05, indicating that the differences in coefficients were systematic in nature. In other words, they required the use of fixed effects in the model rather than random effects.

Appendix 12

Residential Customer Characteristics Survey Questionnaire

Pacific Gas and Electric Company

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL® Company

SDGE®
A Sempra Energy company

HOME ENERGY SURVEY

Thank you for your help! Your appreciation payment of **$25** will be sent to you when we receive your completed survey. Please note, the service address label must still be attached. The information you provide in this survey will help us plan for the electricity needs for you and all Californians.

Instructions

YOUR PARTICIPATION IS VERY IMPORTANT.

Please fill out this survey by filling in the oval completely. Information in *(italics)* is provided for clarification or to direct you to skip to another question based on your response.

Do your best to answer all of the questions. If you do not know the answer to one of the questions, please move on to the next one. If you would like help in completing the survey, you can call our toll free survey line at 1-800-331-8786 from 8:30 a.m. to 7 p.m., Monday through Friday.

When you are done, please return the survey in the enclosed postage-paid envelope to the address below:

Home Energy Survey Processing Center
492 Ninth Street, Suite 220
Oakland, CA 94607-4048

Thank you for participating!

Las respuestas de la comunidad hispana son muy importantes para las compañias provedoras de energia en California. Si usted gusta su formulario en español, por favor llame al 1-800-331-8786.

Sponsored by:
Pacific Gas and Electric
San Diego Gas and Electric
Southern California Edison

Your Home & Lifestyle

A1 What type of building is your home, listed on the service address label on the front cover of this survey?

○ Single-family detached house
○ Townhouse, duplex, or row house
○ Apartment or condominium (2 – 4 units)
○ Apartment or condominium (5 or more units)
○ Mobile home
○ Other *(Describe)*: ______________________________

A2 Do you own or rent your home?

○ Own / buying ○ Rent / lease

A3 In approximately what year was your home built?

○ Before 1960
○ 1960-1979
○ 1980-1999
○ 2000 or later

A4 How many bedrooms are in your home?

○ No bedrooms *(studio apartment)*
○ 1 bedroom
○ 2 bedrooms
○ 3
○ 4
○ 5
○ 6 or more

A5 How many square feet of **living space** are there in your home, including bathrooms, foyers and hallways?

(Exclude garages, basements and unheated porches.)

○ Less than 750
○ 751 –1000
○ 1001 – 1250
○ 1251 – 1500
○ 1501 – 2000
○ 2001 – 2500
○ 2501 – 3000
○ 3001 – 4000
○ Greater than 4000

○ Or actual sq. ft. __________________

A6 For each of the following age groups, how many people, including yourself, usually live in your home?

	Number of People Usually Living in this Home								
Age	**None**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Over 7**
5 and under	○	○	○	○	○	○	○	○	○
6 – 18	○	○	○	○	○	○	○	○	○
19 – 64	○	○	○	○	○	○	○	○	○
65 and over	○	○	○	○	○	○	○	○	○

Space Cooling

CENTRAL AIR CONDITIONING/COOLING

C1 Do you pay for central air conditioning for your home?

○ Yes ○ No, it is part of my rent/condo fee *(Go to C5.)*
○ No, do not have central air conditioning *(Go to C5.)*

C2 What type and how many central air conditioning/cooling system(s) do you have in your home?

	Number of Central Cooling Systems		
	1	**2**	**3 or more**
Central air conditioning	○	○	○
Central evaporative cooler *(swamp cooler)*	○	○	○
Heat pump *(heats and cools)*	○	○	○

C3 What type of thermostat does your main cooling system(s) use?

- ○ Programmable thermostat
  (Digital units usually have a digital readout and buttons. Mechanical units usually have a clock or rotary timer and tabs, pins or levers.)
- ○ Standard thermostat
  (Allows you to set the temperature and turn the air conditioner on or off. You cannot set on/off times.)
- ○ No thermostat
  (Simple on/off control)

C4 Which of the following statements best describes how you usually operate your central air conditioning system?

- ○ Maintain the thermostat setting at constant temperature
- ○ Raise the thermostat setting when no one is home
- ○ Thermostat setting automatically changes at different times
- ○ Manually turn on/off air conditioner as needed
- ○ Rarely use the central air conditioning system

ROOM AIR CONDITIONING/COOLING (Window / Wall Units)

C5 Please tell us the characteristics of each room air conditioning/cooling unit below.

○ No room air conditioning/cooling units *(Go to H1.)*

Type of Room AC/Cooling Unit	Unit 1	Unit 2	Unit 3
Window/wall air conditioner	○	○	○
Window/wall heat pump	○	○	○
Window/wall evaporative cooler *(swamp cooler)*	○	○	○

C6 Please indicate how often your room air conditioning unit(s) is/are turned on during the summer.
(Choose one answer for each time period.)

Time Period	Never	Rarely *(1 day per week)*	Sometimes *(2-3 days per week)*	Often *(4 or more days per week)*
Weekday Afternoons *(2 p.m. –5 p.m.)*	○	○	○	○
Weekday Evenings *(5 p.m.–7 p.m.)*	○	○	○	○
All other times	○	○	○	○

Space Heating

H1 Do you pay to heat your home?

○ Yes ○ No, it is part of my rent/condo fee *(Go to L1.)*
○ No, do not have a heating system *(Go to L1.)*

H2 What type of heating system do you use to heat your home?

(If you use more than one heating system, mark the system that you use most as "Main Heating" and mark all other systems as "Additional Heating.")

	Main Heating *(Mark only ONE BOX below)*	**Additional Heating** *(Mark ALL BOXES that apply)*
NATURAL GAS		
Central forced-air furnace	○	○
Other natural gas system	○	○
ELECTRIC		
Resistance (baseboard/ceiling/floor/wall)	○	○
Central forced-air furnace *(fan circulates hot air through ducts)*	○	○
Central heat pump *(heats and cools)*	○	○
Through-the-wall heat pump *(looks like a window/wall air conditioner, but also provides heat)*	○	○
Portable heaters	○	○
Other electric system	○	○
OTHER FUEL *(Describe)*:____________________	○	○

H3 Which of the following statements best describes how you usually operate your main heating system?

○ Maintain the thermostat setting at constant temperature
○ Lower the thermostat setting at night or when no one is home
○ Thermostat setting automatically changes at different times
○ Manually turn on/off heater(s) as needed
○ Only heat those rooms that are occupied
○ Rarely use any heating system

Major Appliances

L1 Do you pay for heating water at your home?

☐ Yes ☐ No, it is part of my rent/condo fee *(Go to M3.)*
☐ No hot water heater *(Go to M3.)*

L2 What type of water heating systems do you use in your home?

	Main Water Heater *(Mark ONE BOX in this column)*	**Additional Water Heater(s)** *(Mark ALL BOXES that apply)*
Natural Gas	☐	☐
Electric	☐	☐
Other Describe________________	☐	☐

L3 What type of clothes dryer do you use in your home and pay for the energy to run?
(Do not include coin-operated machines in laundromats or machines in common areas of multifamily complexes.)

☐ I do not have a clothes dryer ☐ Electric dryer
☐ Natural gas dryer ☐ Bottled Gas *(e.g., Propane)*

L4 What types of cooking appliances are used in your home?

	Type of Fuel		
	Natural Gas	Electric	Other
Cooktop, stovetop or range	☐	☐	☐
Oven(s)	☐	☐	☐

L5 How many of the following appliances are used in your home?

	0	**1**	**2**	**3 or more**
Refrigerator	☐	☐	☐	☐
Stand-alone freezer	☐	☐	☐	☐
Dishwasher	☐	☐	☐	☐

Miscellaneous

M1 How many of each of the following appliances or equipment do you **use** in your home?

	None	**1**	**2**	**3 or more**
Television	○	○	○	○
Computer	○	○	○	○
Printer, scanner, copier	○	○	○	○
Humidifier	○	○	○	○
Dehumidifier	○	○	○	○
Pond or water garden pump	○	○	○	○
Heated waterbed	○	○	○	○
Aquarium	○	○	○	○
Fans: portable or ceiling mount	○	○	○	○
Electric attic fan	○	○	○	○
Whole-house fan	○	○	○	○

M2 If you have at least one computer in your home, how often does anyone in your home perform any of the following activities on your computer?

	Never	**Occasionally** *(about once a week)*	**Often** *(several times a week)*
Send or receive e-mail	○	○	○
Browse the Internet for information	○	○	○
Pay bills on-line	○	○	○

M3 Do you (or someone else in your home) operate a business and/or work from your home?

○ No

○ Yes ➡ **M4** How many hours a week is someone working at home?

- ○ 0 – 10 hours per week
- ○ 11 – 30 hours per week
- ○ More than 30 hours per week

M5 Do you use an electric well water pump to provide water for your home?

○ No

○ Yes ➡ **M6** How do you use your well water?

- ○ Only for gardening and landscaping
- ○ Only for household use
- ○ Both household and gardening/landscape use

M7 Do you have a spa or hot tub at your home?
(Do not include whirlpool tubs in your bathroom.)

- ○ Yes, and **I pay for its energy use**
- ○ Yes, but it is in a **common area** and **I do not pay for its energy use** *(Go to M9.)*
- ○ No spa or hot tub *(Go to M9.)*

M8 What fuel do you use to heat the spa or hot tub?

○ Electricity ○ Natural Gas ○ Other

M9 Do you have a swimming pool?
(Do not include a swimming pool that is in a central common area that is used by more than one home.)

- ○ Yes, and **I pay for its energy use**
- ○ Yes, but it is in a **common area** and **I do not pay for its energy use** *(Go to M11.)*
- ○ No pool *(Go to M11.)*

M10 How many **hours per day** do you operate your **swimming pool filter**?

Season	**1 – 2**	**3 – 4**	**5 – 8**	**9 – 12**	**13 – 18**	**19 – 24**
Summer (May-Oct.)	○	○	○	○	○	○
Winter (Nov.-April)	○	○	○	○	○	○

M11 Currently, how often are the following appliances used on weekdays, between 2 p.m. – 7 p.m.?

	Never	**Rarely** *(less than once a week)*	**Occasionally** *(several times a week)*	**Daily**
Television	○	○	○	○
Computer	○	○	○	○
Oven or range	○	○	○	○
Dishwasher	○	○	○	○
Laundry equipment	○	○	○	○
Air conditioning	○	○	○	○
Pool filter	○	○	○	○
Spa filter	○	○	○	○

Household Information

N1 What was the highest level of education completed by the head of household in your home?

○ Elementary *(grades 1 – 8)*
○ Some high school *(grades 9 – 12)*
○ High school graduate
○ Some college/trade/ vocational school
○ College graduate
○ Postgraduate degree

N2 What is the primary language spoken in your home?

○ English
○ Asian *(e.g., Chinese, Tagalog, Japanese)*
*(describe)*__________________
○ Spanish
○ Other
*(describe)*_____________________

N3 Please check the range that best describes your household's **total annual income**.

○ Less than $25,000
○ $25,000 – $49,999
○ $50,000 – $74,999
○ $75,000 – $99,999
○ $100,000 – $149,999
○ $150,000 or more

N4 How would you rate the overall performance of your local electric utility?

○ Poor ○ Fair ○ Good ○ Excellent

N5 Please tell us whether you agree or disagree with the following statements.

I believe everyone should pay a little bit more to ensure a cleaner environment.
○ Strongly Agee ○ Agree ○ Disagree ○ Strongly Disagree

The cost of a cleaner environment will mean fewer jobs and hurt the economy.
○ Strongly Agee ○ Agree ○ Disagree ○ Strongly Disagree

Global warming is a threat I am seriously concerned about.
○ Strongly Agee ○ Agree ○ Disagree ○ Strongly Disagree

Thank you very much for your cooperation and assistance!

Appendix 13

Residential Survey Recoding Instructions

This survey questionnaire recoding instructions contain information on CRA's recoding of the Xenergy Home Energy Survey.

APPENDIX 13: RESIDENTIAL SURVEY RECODING INSTRUCTIONS

CRA Variable Redefinitions of Xenergy's Home Energy Survey

The following table defines changes CRA made to the database variables.

Question	Xenergy Variables	Values	CRA Variables	CRA Label	Values	Missing Observations
A1	A1_1-Al_6, Comment1	1,0	SFU	Single Family Unit	1 if A1_1=1 or A1_5=1, 0 if A1_2 or A1_3 or A1_4 or A1_6=1	Missing if SFU is not assigned a value.
			MFU	Multi Family Unit	1 if A1_2 or A1_3 or A1_4 or A1_6 = 1, 0 if A1_1 or A1_5=1	Missing if MFU is not assigned a value
A2	A2_1-A2_2	1,0	OWN	Own Home	1 if A2_1=1, 0 if A2_2=1	Missing if OWN is not assigned a value.
A3	A3_1-A3_4	1,0	NEWHOME	Home built after 1979	1 if A3_3 or A3_4=1, 0 otherwise	Missing if NEWHOME is not assigned a value
A4	A4_1-A4_7	1,0	BED	Bedrooms	0 if A4_1=1, 1 if A4_2=1, 2 if A4_3=1, 3 if A4_4=1, 4 if A4_5=1, 5 if A4_6=1, 6 if A4_7=1	Missing if BED is not assigned a value.
A5	A5_1-A5_10, ca5_num	1,0	SQFT	Square Feet	700 if A5_1=1, 875 if A5_2=1, 1125 if A5_3=1, 1375 if A5_4=1, 1750 if A5_5=1, 2250 if A5_6=1, 2750 if A5_7=1, 3500 if A5_8=1, 4500 if A5_9=1, ca5_num if A5_10=1	Missing if SQFT is not assigned a value.
A6	A6a_1-A6a_9, A6b_1-A6b_9,	1,0	PPHH	Total # People in Household	0-32	Missing if sum of (A6a_1-A6a_9 through A6d_1-A6d_9)=0

Question	Xenergy Variables	Values	CRA Variables	CRA Label	Values	Missing Observations
	A6c_1-A6c_9, A6d_1-A6d_9		CHILDREN	Total # People Under 19	0-16	Missing if sum of (A6a_1-A6a_9,A6b_1-A6b_9)=0
C1	C1_1-C1_3	1,0	CAC	Central Air Conditioning	1 if C1_1=1 and sum(C2a_1-C2a_3) >=1 or sum(C2c_1-C2c_3)>=1; 1 if C1_1=1 and sum(C2b_1 to C2b_3)=0; 0 if C1_2=1 or C1_3=1 or (C1_1=1 and sum(C2b_1 to C2b_3))	Missing if CAC is not assigned a value
C2	C2a_1-C2a_3 C2b_1-C2b_3 C2c_1-C2c_3	1,0	EVAP	Central Evaporative Cooler	1 if C1_1=1 and (C2b_1=1 or C2b_2=1 or C2b_3=1), otherwise 0	Missing if CAC= missing.
C3	C3_1-C3_3	1,0	THERM	Thermostat	0 if CAC = 0, 1 if C3_1=1 or C3_2=1, otherwise 0	Missing if C1_1=1 and sum(C3_1-C3_3)=0.
			PTHERM	Programmable Thermostat	0 if CAC=0, 1 if C3_1=1, otherwise 0	Missing if C1_1=1 and sum(C3_1-C3_3)=0.
C4	C4_1-C4_5	1,0	CAC_OP	Central Air Conditioning Operation	0 if CAC=0, 1 if C4_1=1, 2 if C4_2=1, 3 if C4_3=1, 4 if C4_4=1, 5 if C4_5=1, otherwise 0	Missing if C1_1=1 and sum(C4_1-C4_5)=0
C5	C5a_1, C5b_1-C5b_3, C5c_1-C5c_3	1,0	NRMAC	Number of room air conditioners	Sum of C5b_1-C5b_3 and C5c_1-C5c_3	Missing if sum(C5a_1,C5b_1,C5b_2,C5b_3,C5c_1,C5c_2,C5c_3)=0
			ROOMAC	Room air conditioner	1 if NRMAC > = 1, otherwise 0	Missing if sum(C5a_1,C5b_1,C5b_2,C5b_3,C5c_1,C5c_2,C5c_3)=0

Question	Xenergy Variables	Values	CRA Variables	CRA Label	Values	Missing Observations
			NREVAP	Number of room evaporative coolers	Sum of C5d_1-C5d_3	Missing if sum(C5a_1,C5b_1,C5b_2,C5b_3,C5c_1,C5c_2,C5c_3)=0
			ROOMEVAP	Evaporative coolers	1 if NREVAP >= 1, otherwise 0	Missing if sum(C5a_1,C5b_1,C5b_2,C5b_3,C5c_1,C5c_2,C5c_3)=0
C6	C6a_1-C6a_4, C6b_1-C6b_4, C6c_1-C6c_4,	1,0	AC_USE_PEAK	Days per Week of AC Use in Weekdays 2-7 PM	0 if ROOMAC=0, otherwise maximum of days turned on for Weekday Afternoons and Weekday Evenings.	Missing if ROOMAC = missing or sum(C5a_1,C6a_1-C6a_4,C6b_1-C6b_4)=0
			AC_USE_OFF	Days per Week of AC Use During Other Times	0 if C6c_1=1, 1 if C6c_2=1, 3 if C6c_3=1, 4 if C6c_4=1	Missing if sum(C5a_1,C6c_1-C6c_4)=0
H1	H1_1-H1_3	1,0	EMHT	Payment for Heating	0 if H1_2=1 or H1_3 =1 or (H1_1=1 and sum(H2a_1, H2b_1, H2i_1)>0); 1 if H1_1=1 and H2c-H2h=1 (for any single one).	Missing if sum(H1_1-H1_3)=0 or sum(H1_1 – H1_3) >1 or if EMHT is not assigned a value
H2	H2a_1-H2a_2 … H2i_1-H2i_2	1,0	EMHT	See above		
H3	H3_1-H3_6	1,0	HEAT	Heating System Operation	0 if EMHT=0 otherwise 1 if H3_1=1, 2 if H3_2=1, 3 if H3_3=1, 4 if H3_4=1, 5 if H3_5=1, 6 if H3_6=1, otherwise 0	Missing if EMHT = Missing or H1_1=1 and sum(H3_1-H3_6)=0 or if HEAT is not assigned a value

Question	Xenergy Variables	Values	CRA Variables	CRA Label	Values	Missing Observations
L1	L1_1-L1_3	1,0	EWH_MAIN	Electric Water Heating (Main)	0 if (L1_1=1 and (L2a_1 or L2c_1=1)) or L1_2=1 or L1_3=1; 1 if L1_1=1 and L2b_1=1	Missing if EWH_MAIN is not assigned a value or sum(L1_1-L1_3)=0 or sum(L1_1-L1_3)>1
L2			None			
L3	L3_1-L3_4	1,0	EDRY	Electric Clothes Dryer	1 if L3_3=1, otherwise 0	Missing if sum(L3_1-3_4)=0
L4	L4a_1-L4a_3, L4b_1-L4b_3	1,0	ECOOK	Electric Range	1 if L4a_2=1, otherwise 0	Missing if sum(L4a_1-L4a_3)=0
			EOVEN	Electric Oven	1 if L4b_2=1, otherwise 0	Missing if sum(L4b_1-L4b_3)=0
L5	L5a_1-L5a_4, L5b_1-L5b_4, L5c_1-L5c_4	1,0	NFRIG	Number of Refrigerators	0 if L5a_1=1, otherwise 1 if L5a_2=1, 2 if L5a_3=1, 3 if L5a_4=1	Missing if NFRIG is not assigned a value.
			NFRZ	Number of Stand-Alone Freezers	0 if L5b_1=1, otherwise 1 if L5b_2=1, 2 if L5b_3=1, 3 if L5b_4=1	Missing if NFRZ is not assigned a value
			NDW	Number of dishwashers	0 if L5c_1=1, otherwise 1 if L5c_2=1, 2 if L5c_3=1, 3 if L5c_4=1	Missing if NDW is not assigned a value
M1	M1a_1-M1a_4, M1b_1-M1b_4, … M1k_1-M1k_4	1,0	NTV	Number of televisions	0 if M1a_1=1, else is sum (M1a_2-M1a_4)	Missing if NTV is not assigned a value
			NCOMP	Number of computers	0 if M1b_1=1, else is sum (M1b_2-M1b_4)	Missing if NCOMP is not assigned a value
			NPRINT	Number of printers/copiers/scanners	0 if M1c_1=1, else is sum (M1c_2-M1c_4)	Missing if NPRINT is not assigned a value
			NHUM	Number of humidifiers	0 if M1d_1=1, else is sum (M1d_2-M1d_4)	Missing if NHUM is not assigned a value
			NDHUM	Number of dehumidifiers	0 if M1e_1=1, else is sum (M1e_2-M1e_4)	Missing if NDHUM is not assigned a value

Question	Xenergy Variables	Values	CRA Variables	CRA Label	Values	Missing Observations
			NPMP	Number of water pumps	0 if M1f_1=1, else is sum (M1f_2-M1f_4)	Missing if NPMP is not assigned a value
			NWBED	Number of waterbeds	0 if M1g_1=1, else is sum (M1g_2-M1g_4)	Missing if NWBED is not assigned a value
			NAQ	Number of aquariums	0 if M1h_1=1, else is sum (M1h_2-M1h_4)	Missing if NAQ is not assigned a value
			NPFAN	Number of ceiling/portable fans	0 if M1i_1=1, else is sum (M1i_2-M1i_4)	Missing if NPFAN is not assigned a value
			NAFAN	Number of electric attic fans	0 if M1j_1=1, else is sum (M1j_2-M1j_4)	Missing if NAFAN is not assigned a value
			NHFAN	Number of whole-house fans	0 if M1k_1=1, else is sum (M1k_2-M1k_4)	Missing if NHFAN is not assigned a value
M2	M2a_1-M2a_3, M2b_1-M2b_3, M2c_1-M2c_3	1,0	HCUSE	Household Computer Use	1 if (M2a_3=1 or M2b_3=1 or M2c_3=1), otherwise 0	Missing if sum(M2a_1-M2a_3,M2b_1-M2b_3,M2c_1-M2c_3)=0 and (M1b_2=1 or M1b_3=1 or M1b_4=1).
M3	M3_1, M3_2	1,0	None			
M4	M4_1-M4_3	1,0	HBUS	Home business	1 if M4_3=1, otherwise 0	Missing if sum(M3_1,M3_2,M4_1-M4_3)=0
M5	M5_1-M5_2	1,0	WELL	Electric Well Water Pump	1 if M5_2=1, otherwise 0	Missing if sum(M5_1,M5_2)=0
M6	M6_1-M6_3	1,0	None			
M7	M7_1-M7_3	1,0	SPA	Spa or Hot tub	1 if M7_1=1, otherwise 0	Missing if sum(M7_1-M7_3)=0

Question	Xenergy Variables	Values	CRA Variables	CRA Label	Values	Missing Observations
M8	M8_1-M8_3	1,0	ESPA	Electric Spa or Hot tub	1 if M7_1=1 and M8_1=1; 0 if M7_2=1 or M7_3=1; 0 if sum(M8_1-M8_3) >=1 and sum(M7_2, M7_3)>=1 and M7_1=0	Missing if sum(M8_1-M8_3)=0 and M7_1=1
M9	M9_1-M9_3	1,0	POOL	Pool	1 if M9_1=1, otherwise 0	Missing if sum(M9_1-M9_3)=0
M10	M10a_1-M10a_6, M10b_1-M10b_4	1,0	SPHRS	Summer Pool Filter Hours/Day	0 if POOL=0, 1.5 if M10a_1=1, 3.5 if M10a_2=1, 7 if M10a_3=1, 10.5 if M10a_4=1, 15.5 if M10a_5=1, 21.5 if M10a_6=1	Missing if pool= missing or sum(M10a_1-M10a_6)=0 and M9_1=1 or SPHRS is not assigned a value.
			WPHRS	Winter Pool Filter Hours/Day	0 if POOL=0, 1.5 if M10b_1=1, 3.5 if M10b_2=1, 7 if M10b_3=1, 10.5 if M10b_4=1, 15.5 if M10b_5=1, 21.5 if M10b_6=1	Missing if pool=missing or sum(M10b_1-M10b_6)=0 and M9_1=1 or WPHRS is not assigned a value
M11	M11a_1-M11a_4, … M11h_1-M11h_4,	1,0	HIGHPEAK	High electricity user	1 if M11a_4=1 orM11b_4=1or …M11h_4=1, else 0.	Missing if sum(M11a_1-M11a_4,…M11h_1-M11h_4)=0
N1	N1_1-N1_6	1,0	COLLEGE	College graduate	1 if N1_5 or N1_6=1, otherwise 0	Missing if sum(N1_1-N1_6)=1
N2	N1_1-N1_4	1,0	NENG	No English	1 if N2_1=0, else 0	Missing if sum(N2_1-N2_4)=0
N3	N3_1-N3_6	1,0	INCOME	Annual income	15,000 if N3_1=1, 37,500 if N3_2=1, 62,500 if N3_3=1, 87,500 if N3_4=1, 125,000 if N3_5=1, 200,000 if N3_6=1	Missing if sum(N3_1-N3_6)=0

Question	Xenergy Variables	Values	CRA Variables	CRA Label	Values	Missing Observations
N4	N4_1-N4_4	1,0	SATISFACTION	Utility performance rating	1 if N4_1=1, 2 if N4_2=1, 3 if N4_3=1, 4 if N4_4=1, 0 otherwise	Missing if sum(N4_1-n4_4)=0
N5	N5a_1-N5a_4, N5b_1-N5b_4, N5c_1-N5c_4,	1,0	GREEN	Environmentally conscious energy consumer	1 if N5a_1=1, 0 otherwise	Missing if sum(N5a_1-N5a_4)=0

Appendix 14

Small Business Survey

This survey questionnaire is for the C&I pilot participants.

SCE Small Business Energy Use Survey

Thank you for your help! Your appreciation payment will be sent to you when we receive your completed survey. The information you provide will help us plan for the electricity needs for you and all Californians. Please complete the survey for the service address listed below:

Please fill out the survey for the service address listed to the left. ⬅

Please fill out this survey by answering the questions as completely as possible. If you do not know the answer to one of the questions, please move on to the next one. If you would like help in completing the survey, you can call our toll free survey line at 1-866-IDEAS-2-U (1-866-433-2728) from 9:00 am to 6:00pm Monday through Friday.

When you are done, please return the survey in the enclosed postage-paid envelope to the address below:

Geltz Communications
133 N. Electric Drive, Suite 201
Pasadena, CA 91103

Thank you for participating!

Las respuestas de la comunidad hispana son muy importantes para las compañias provedoras de energia en California. Si usted gusta su formulario en español, por favor llame al 1-877-823-8716

Q1. Please confirm the following information:

A. Company contact: ____

B. Contact title: ____

C. Business name: ____

D. Address 1: ____

E. Address 2: ____

F. City: ________________________ State: ______ Zip: ________________

G. Telephone 1: (____) _____-_______ Telephone 2: (____) ____- ______

H. E-mail address: ____

Q2. What is the square footage of your business? ___________________________________

Q3. What percentage of your square footage is air conditioned? ________________

Q4. Do you own or lease/rent your building? ☐ Own ☐ Lease/rent

Q5. Do you pay your electricity bill directly or are the electricity costs included in your rent?

☐ Pay our electricity bill directly. ☐ Electricity costs are included in the rent.

Q6. Do you pay for the air conditioning in the space that your business occupies or is it provided as part of the building services and paid for though the rent?

☐ Pay for the air conditioning directly.

☐ Air conditioning is provided as a service and we pay for it through the rent.

Q7. What are your hours of normal business operation during the week?

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Open							
Closed							

Q7a. About how many total days in the year are you closed for national holidays and/or inventory? _________________________

Q8. Do cleaning people come in after you are closed? ______ How often do they come in? (indicate total hours per week) ____

Q9. At what temperature do you set your thermostat during the following periods?

	Summer	Winter
Normal operating hours		
Hours when business is closed		

Q10. Is this building controlled with an Energy Management System or time clock? ________

Are the lights turned on and off automatically or manually during the day? _________________

Q11. How many people work at this location? _______________________________________

Q12. How would you describe your business?

____

Q13. How old is this building? ____

Q14. How many chillers and/or central air conditioning units do you have? ______________

Q15. What kind of space does your business occupy?

☐ Standalone structure ☐ Part of a larger building, office complex or mall

Q16. How would you rate the overall performance of Southern California Edison?

☐ Excellent ☐ Good ☐ Fair ☐ Poor

Q.17. Please tell us if whether you agree or disagree with the following statements:

I believe everyone should pay a little more to ensure a cleaner environment.

☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

The cost of a cleaner environment will mean fewer jobs and hurt the economy.

☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

Global warming is a threat I am seriously concerned about.

☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

Thank you very much for your cooperation and assistance!

Sponsored by Southern California Edison

Appendix 15

Summary of Evaluation of Price Variables for Use in Regression Analysis

APPENDIX 15: SUMMARY OF EVALUATION OF PRICE VARIABLES FOR USE IN REGRESSION ANALYSIS

The estimation of demand models requires development of price data. Given the complexity of electricity tariffs in California, a key issue in model estimation concerns how best to represent the price of electricity in demand equations. There is an extensive literature on this subject dating back to the mid-1970s and many different price terms have been used by various analysts, including current and lagged marginal price with and without infra-marginal price terms, price indices, current and lagged average price and total bills. [1] Before discussing the different methods for measuring the price of electricity, it is useful to discuss three criteria by which the methods should be evaluated.

The first criterion for evaluating price variables is that the method be econometrically sound. That is, it should not create estimation problems that would lead to biased, inconsistent or inefficient estimates of the regression coefficients and ultimately impair estimation of the price elasticities of demand. A problem commonly encountered in demand modeling is simultaneity between price and usage. This occurs if the underlying rate design is either declining block or inverted block. In the SPP case, the rate design is inverted block. The more electricity a customer uses in a time period, the higher the price the customer pays. Thus, if a simple average price, derived by dividing monthly bills by monthly usage, was used to represent price in the demand models, not only would usage depend on price, but the magnitude of price would depend on customer usage. This simultaneous determination of both price and quantity can cause biased estimates of the coefficient on the price term.

A variety of methods can be used to address this problem, including two-stage least squares (2SLS) estimation procedures or indirect least squares (ILS) requiring the use of instrumental variables. A second option is to use lagged price terms (e.g., average price from the previous billing period), but this can lead to loss of data.[2] A third option for reducing, although not completely eliminating, the simultaneity problem is to use the marginal price corresponding to the final tier that the customer is in.[3]

Another criterion for evaluating price variables is that the price term should bear some relationship to what most customers actually perceive to be the price of electricity. Focus group research conducted as part of the SPP indicated that, while California customers have a general idea of what they are paying for electricity and understand the concept of time-varying rates, they are not aware of the actual prices (expressed in cents/kWh) they pay. It is important to strike a reasonable balance between accuracy in the price calculation and the likely perceptions

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[1] The “infra-marginal price” is the amount paid by customers on a multi-part tariff for the electricity used up to the marginal block in which they are consuming. In the simplest case of a two-part tariff with a fixed and variable component, the infra-marginal price would equal the monthly fee. However, if the tariff has two tiers in addition to a fixed monthly charge, and the consumer’s usage placed him or her on the second tier, the infra-marginal price would equal the fixed charge plus the marginal price of first-tier usage times the length of the tier.

[2] In the current instance, we would need to eliminate all of the July data from the demand models so that we could use it to calculate lagged prices.

[3] The marginal price varies with usage only when customers move across tiers. For any usage within a tier, the marginal price is constant. The average price, on the other hand, changes with each additional kWh usage even within a tier.

that customers have about the prices they are charged. That is, it may be a mistake to use precisely accurate prices if they have little to do with what customers actually perceive.

A third criterion is that the method be computationally parsimonious. Computationally intensive methods can be error prone, time consuming, opaque and expensive without yielding any obvious payoffs in improved parameter estimates.

Within the context of the SPP, there were a variety of methods that could be used to measure price, including the following:

- One approach is to use the prices that were communicated to customers in the Welcome Package they received after enrolling in the SPP. Prices using this approach would vary by rate type (e.g., CPP-F), rate level (high or low) and utility. These prices appear on Chart 11 of the Welcome Package (see Appendix 6 for an example) and generally correspond to the average price faced by the average customer. For example, for the CPP-F rate in the SDG&E territory, the current average rate was stated to be 15.5 cents/kWh. The SPP treatment rate was stated to be 10.8 cents/kWh off-peak for 85% of the hours in the year, 27.6 cents/kWh on-peak for 14% of the hours in the year and 76.8 cents/kwh super peak for 1% of the hours of the year. The chart also indicated the specific times for the peak and off-peak periods. This approach is by far the easiest to implement.

- A second approach would begin with development of a composite tariff schedule by climate zone equal to a population-weighted average of the tariffs that exist within each climate zone and service territory. Next, each customer's average daily usage (ADUs) from the previous summer would be used to assign customers to specific tiers within each zone. Finally, average or marginal prices would be computed for the super-peak, peak, and off-peak periods based on the midpoint of each tier by utility, rate type, rate level and climate zone. This assignment of prices would hold prices constant for an entire season (unless a rate change occurred). With this method, there is some variation in average prices across customers within a season due to the assignment of customers to different tiers based on their historical usage but the simultaneity should be less than with other options because the energy consumption used to calculate prices is fixed, based on historical (e.g., year-old) values.

- A third method is similar to the second except that it allows prices to vary with changes in energy consumption by calendar month. With this approach, average or marginal prices would be determined by assigning each customer to a tier based on usage in the current calendar month. The price for all customers assigned to a tier would be the same and equal to the average price based on usage equal to the mid-point of the assigned tier. For example, if a tier ran from 400 kWh to 700 kWh, and a customer's usage in July equaled 600 kWh, the average price for this customer, and for all customers whose usage fell in that tier, would be based on an assumed usage of 550 kWh (e.g., the midpoint of the tier).

- A fourth method would take each customer's usage by calendar month and compute their actual, customer-specific prices rather than using the mid-point of the tier (i.e., each customer's usage would be run through the bill calculator that was developed at the beginning of the project to establish the SPP rate designs). If marginal prices were used in the two methods rather than average prices, this method and the previous one would result in the same values. However, with average prices, the result would be different. The advantage of this approach over the following one is that it avoids the need to grapple with billing cycle issues. Dealing with billing cycles as opposed to calendar months is much more complex computationally and also introduces additional econometric issues.

- A final option would use the average price paid by customers based on their actual billing cycle energy consumption, lagged one period. It should be noted that this option would result in the exclusion of the July data from the regression analysis, as the approach only makes sense under the assumption that customers base their usage decisions in a billing cycle on the price information received in the previous bill.

After evaluating the options described above, an initial decision was made to pursue option 3. This option appeared to strike a reasonable balance between accuracy, computational ease and minimization of econometric problems. Unfortunately, option 3 did not fare well in practice. It yielded positive and statistically significant estimates of the price elasticities of demand across all rate types and day types. On further examination, it became clear that the regression results were being dominated by the simultaneity problem described above. The coefficients on the price terms did not represent the negative slope of the demand curve but reflected instead the upward slope of the inverted five-tier rate schedule.

This was confirmed when the data were subdivided into five tiers and separate regression models were estimated for each tier. This "Option 6" yielded reasonable estimates of price elasticities within each tier for most rate types. However, since the sample was not designed to produce meaningful results at the tier level, an alternative approach was pursued.

First, 2SLS was used to estimate the demand models. This involved estimating an "instrumental variable" model in which price is regressed on factors other than usage. Variables used in the first stage included appliance holdings, household socio-demographic characteristics, weather and binary variables representing climate zone, utility and CARE/non-CARE pricing.[4] The predicted value of price obtained from the instrumental variable regression was then used as the price term in the demand function. Unfortunately, the results from this approach were largely unsatisfactory (e.g., statistically insignificant, wrong signs, etc.), confirming that the problem of simultaneity was sufficiently strong that even the 2SLS procedure failed to remove it.

Second, a variant of Option 1 was explored, where prices for all customers were set equal to the average price for a customer with consumption at the midpoint of tier 3. This approach approximates Option 1 except that prices were allowed to vary as general rate adjustments occurred for each utility over the treatment period. The prices also reflect whether or not a customer receives the CARE discount. With this approach, prices primarily reflect the

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[4] Low-income customers are eligible for a 20% discount on their monthly electric bill through a program called CARE, California Alternate Rates for Energy. For details about PG&E's CARE programs, consult http://www.pge.com/care/.

experimental design and do not vary with customer usage, essentially making them ideal instruments for the demand models.

Reasonable results were obtained using the average price for a customer at the midpoint of tier 3. To test the sensitivity of the results, models were also estimated using the average price for customers at the midpoint of tier 1 and tier 2. The results were quite robust across the three price sets.[5] This is not surprising since the TOU and CPP rates implicitly impose a constant surcharge on the underlying rates during the peak and critical peak period and give a credit during the off-peak period. The amount of the surcharge and credit does not vary by tier. Since customers are spread across all five tiers, and since the average customer in all three utilities is usually a tier 3 customer, a decision was made to use the average price for a tier-3 customer.

Demand models were also estimated using both average and marginal prices. On average, the difference in the estimated elasticities was only 2 percent. A decision was made to use average prices because they correspond more closely to the prices in the Welcome Package. They also are conceptually the same as the prices that customers see in the supplementary billing sheet they receive each month.

In order to calculate average prices for customers in Tier 3, a composite tariff was constructed for each climate zone based on a population-weighted average of the baseline quantities associated with each of the baseline regions within each utility and climate zone. The resulting baseline quantities that were used to calculate average and marginal prices for each utility, climate zone and season are contained in Table 15-1.

Table 15-1
Average Baseline Quantities (kWh)
Used to Calculate Average and Marginal Prices

Utility	Season	Zone 1	Zone 2	Zone 3	Zone 4
PG&E	**Summer**	264	384	485	548
PG&E	**Winter**	312	392	386	375
SCE	**Summer**	n/a	313	472	754
SCE	**Winter**	n/a	305	353	343
SDG&E	**Summer**	n/a	315	313	n/a
SDG&E	**Winter**	n/a	327	347	n/a

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[5] Separate demand models were estimated using the average price for a customer at the midpoint of tier 1, tier 2 and tier 3. The results were generally similar, in terms of the overall goodness of fit of the regressions, as measured by the R-square values, and the magnitude and statistical significance of the price elasticities of demand. A decision was made to use Tier 3 prices since the "typical" customer for each utility lies in Tier 3.

Appendix 16

Regression Models Underlying All Residential Analysis

Regression Variable Dictionary	
Variable	***Definition***
A	Intercept
A_04	2004 Year Dummy
A_04_IN	2004 Year Dummy* Inner Summer Dummy
A_CPP_DISP	CPP Day Dummy * Dispatch Dummy
A_IW_W	Inner Winter Dummy*Weekend Dummy
A_OUT_X_W	Outer Summer Dummy * Weekend Dummy
A_W	Weekend Dummy
A_W_04	2004 Year Dummy* Weekend Dummy
A_W_04_IN	2004 Year Dummy* Weekend Dummy*Inner Summer Dummy
B	Ln(Average Peak Price / Off-Peak Price)
B_04	Ln(Average Peak Price / Off-Peak Price)*2004 Year Dummy
B_04_IN	Ln(Average Peak Price / Off-Peak Price)*2004 Year Dummy* Inner Summer Dummy
B_ADU	Ln(Average Peak Price / Off-Peak Price)*Average Daily Use
B_BED	Ln(Average Peak Price / Off-Peak Price)*Number of Bedrooms
B_COLLEGE	Ln(Average Peak Price / Off-Peak Price)*College Dummy
B_CPP	Ln(Average Peak Price / Off-Peak Price)*CPP Day Dummy
B_CPP_INFO	Ln(Average Peak Price / Off-Peak Price)*CPP Day Dummy*Information Dummy
B_CPP1	Ln(Average Peak Price / Off-Peak Price)*1st CPP Day Dummy
B_CPP1_04	Ln(Average Peak Price / Off-Peak Price)*1st CPP Day Dummy * 2004 Year Dummy
B_CPP2	Ln(Average Peak Price / Off-Peak Price)*2nd CPP Day Dummy
B_CPP3	Ln(Average Peak Price / Off-Peak Price)*3rd CPP Day Dummy
B_ECK	Ln(Average Peak Price / Off-Peak Price)*Electric Cooking Device Dummy
B_INCOME	Ln(Average Peak Price / Off-Peak Price)*Income
B_IW	Ln(Average Peak Price / Off-Peak Price)*Inner Winter Dummy
B_MFU	Ln(Average Peak Price / Off-Peak Price)*Multi-Family Unit Dummy
B_OUT_X	Ln(Average Peak Price / Off-Peak Price)*Outer Summer Dummy
B_OUT_X_04	Ln(Average Peak Price / Off-Peak Price)*Outer Summer Dummy *2004 Year Dummy
B_POOL	Ln(Average Peak Price / Off-Peak Price)*Pool Dummy
B_PPHH	Ln(Average Peak Price / Off-Peak Price)*Number of Persons per Household
B_SPA	Ln(Average Peak Price / Off-Peak Price)*Spa Dummy
B_SQFT	Ln(Average Peak Price / Off-Peak Price)*Square Footage
B_W_INFO	Ln(Average Peak Price / Off-Peak Price)*Weekend Dummy*Information Dummy
C*	Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour
C_04	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*2004 Year Dummy
C_04_IN	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*2004 Year Dummy* Inner Summer Dummy
C_CPP	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*CPP Day Dummy
C_CPP1	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*1st CPP Day Dummy
C_CPP1_04	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*1st CPP Day Dummy * 2004 Year Dummy
C_CPP2	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*2nd CPP Day Dummy
C_CPP3	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*3rd CPP Day Dummy
C_IW	(Peak Heating Degree Hour per Hour - Off-Peak Heating Degree Hour per Hour)*Inner Winter Dummy
C_IW_W	(Peak Heating Degree Hour per Hour - Off-Peak Heating Degree Hour per Hour)*Inner Winter Dummy*Weekend Dummy
C_OUT_X	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Outer Summer Dummy
C_OUT_X_04	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Outer Summer Dummy *2004 Year Dummy

C_OUT_X_W	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Outer Summer Dummy*Weekend Dummy
C_W	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour) * Weekend Dummy
C_W_04	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Weekend Dummy*2004 Year Dummy
C_W_04_IN	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Weekend Dummy*2004 Year Dummy* Inner Summer Dummy
D	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy
D_04	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*2004 Year Dummy
D_04_IN	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*2004 Year Dummy* Inner Summer Dummy
D_CPP	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*CPP Day Dummy
D_CPP1	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*1st CPP Day Dummy
D_CPP1_04	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*1st CPP Day Dummy * 2004 Year Dummy
D_CPP2	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*2nd CPP Day Dummy
D_CPP3	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*3rd CPP Day Dummy
D_OUT_X	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*Outer Summer Dummy
D_OUT_X_04	Ln(Average Peak Price / Off-Peak Price)*CAC Dummy*Outer Summer Dummy *2004 Year Dummy
E *	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Ln(Average Peak Price / Off-Peak Price)
E_04	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*2004 Year Dummy
E_04_IN	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*2004 Year Dummy* Inner Summer Dummy
E_CPP	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*CPP Day Dummy
E_CPP1	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*1st CPP Day Dummy
E_CPP1_04	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*1st CPP Day Dummy * 2004 Year Dummy
E_CPP2	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*2nd CPP Day Dummy
E_CPP3	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*3rd CPP Day Dummy
E_IW	Ln(Average Peak Price / Off-Peak Price)*(Peak Heating Degree Hour per Hour - Off-Peak Heating Degree Hour per Hour)*Inner Winter Dummy
E_OUT_X	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Outer Summer Dummy
E_OUT_X_04	Ln(Average Peak Price / Off-Peak Price)*(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Outer Summer Dummy *2004 Year Dummy
P	Intercept
P_04	2004 Year Dummy
P_04_IN	2004 Year Dummy* Inner Summer Dummy
P_CPP_DISP	CPP Day Dummy * Dispatch Dummy
P_CPP_INFO	CPP Day Dummy*Information Dummy
P_IW_W	Inner Winter Dummy*Weekend Dummy
P_OUT_X_W	Outer Summer Dummy * Weekend Dummy
P_W_04	2004 Year Dummy*Weekend Dummy
P_W_04_IN	2004 Year Dummy*2004 Year Dummy* Inner Summer Dummy*Weekend Dummy
Q*	Ln(Daily Average Price)
Q_04	Ln(Daily Average Price)*2004 Year Dummy
Q_04_IN	Ln(Daily Average Price)*2004 Year Dummy* Inner Summer Dummy
Q_ADU	Ln(Daily Average Price)*Average Daily Use

Q_BED	Ln(Daily Average Price)*Number of Bedrooms
Q_COLLEGE	Ln(Daily Average Price)*College Dummy
Q_CPP	Ln(Daily Average Price)*CPP Day Dummy
Q_CPP1	Ln(Daily Average Price)*1st CPP Day Dummy
Q_CPP1_04	Ln(Daily Average Price)*1st CPP Day Dummy* 2004 Year Dummy
Q_CPP2	Ln(Daily Average Price)*2nd CPP Day Dummy
Q_CPP3	Ln(Daily Average Price)*3rd CPP Day Dummy
Q_ECK	Ln(Daily Average Price)*Electric Cooking Device Dummy
Q_INCOME	Ln(Daily Average Price)*Income
Q_IW	Ln(Daily Average Price)*Inner Winter Dummy
Q_IW_W	Ln(Daily Average Price)*Inner Winter Dummy*Weekend Dummy
Q_MFU	Ln(Daily Average Price)*Multi-Family Unit Dummy
Q_OUT_X	Ln(Daily Average Price)*Outer Summer Dummy
Q_OUT_X_04	Ln(Daily Average Price)*Outer Summer Dummy*2004 Year Dummy
Q_OUT_X_W	Ln(Daily Average Price)*Outer Summer Dummy*Weekend
Q_POOL	Ln(Daily Average Price)*Pool Dummy
Q_PPHH	Ln(Daily Average Price)*Number of Persons per Household
Q_SPA	Ln(Daily Average Price)*Spa Dummy
Q_W	Ln(Daily Average Price) * Weekend Dummy
Q_W_04	Ln(Daily Average Price)*Weekend Dummy*2004 Year Dummy
Q_W_04_IN	Ln(Daily Average Price)*2004 Year Dummy* Inner Summer Dummy*Weekend Dummy
Q_W_ADU	Ln(Daily Average Price)*Average Daily Use*Weekend Dummy
Q_W_BED	Ln(Daily Average Price)*Number of Bedrooms*Weekend Dummy
Q_W_COLLEGE	Ln(Daily Average Price)*College Dummy*Weekend Dummy
Q_W_ECK	Ln(Daily Average Price)*Electric Cooking Device Dummy*Weekend Dummy
Q_W_ESPA	Ln(Daily Average Price)*Electric Spa Dummy*Weekend Dummy
Q_W_INCOME	Ln(Daily Average Price)*Income*Weekend Dummy
Q_W_INFO	Ln(Daily Average Price)*Weekend Dummy*Information Dummy
Q_W_MFU	Ln(Daily Average Price)*Multi-Family Unit Dummy*Weekend Dummy
Q_W_POOL	Ln(Daily Average Price)*Pool Dummy*Weekend Dummy
Q_W_PPHH	Ln(Daily Average Price)*Number of Persons per Household*Weekend Dummy
Q_W_SPA	Ln(Daily Average Price)*Spa Dummy*Weekend Dummy
R*	Daily Average Degree Hour per Hour
R_04	Daily Average Degree Hour per Hour*2004 Year Dummy
R_04_IN	Daily Average Degree Hour per Hour*2004 Year Dummy* Inner Summer Dummy
R_CPP	Daily Average Degree Hour per Hour*CPP Day Dummy
R_CPP1	Daily Average Degree Hour per Hour*1st CPP Day Dummy
R_CPP1_04	Daily Average Degree Hour per Hour*1st CPP Day Dummy* 2004 Year Dummy
R_CPP2	Daily Average Degree Hour per Hour*2nd CPP Day Dummy
R_CPP3	Daily Average Degree Hour per Hour*3rd CPP Day Dummy
R_IW	Daily Average Heating Degree Hour per Hour*Inner Winter Dummy
R_IW_W	Daily Average Heating Degree Hour per Hour*Inner Winter Dummy*Weekend Dummy
R_OUT_X	Daily Average Degree Hour per Hour*Outer Summer Dummy
R_OUT_X_04	Daily Average Degree Hour per Hour*Outer Summer Dummy*2004 Year Dummy
R_OUT_X_W	Daily Average Degree Hour per Hour*Outer Summer Dummy*Weekend
R_W	Daily Average Degree Hour per Hour*Weekend Dummy
R_W_04	Daily Average Degree Hour per Hour*Weekend Dummy*2004 Year Dummy
R_W_04_IN	Daily Average Degree Hour per Hour*2004 Year Dummy* Inner Summer Dummy*Weekend Dummy
S	Ln(Daily Average Price)*CAC Dummy
S_04	Ln(Daily Average Price)*CAC Dummy*2004 Year Dummy

S_04_IN	Ln(Daily Average Price)*CAC Dummy*2004 Year Dummy* Inner Summer Dummy
S_CPP	Ln(Daily Average Price)*CAC Dummy*CPP Day Dummy
S_CPP1	Ln(Daily Average Price)*CAC Dummy*1st CPP Day Dummy
S_CPP1_04	Ln(Daily Average Price)*CAC Dummy*1st CPP Day Dummy* 2004 Year Dummy
S_CPP2	Ln(Daily Average Price)*CAC Dummy*2nd CPP Day Dummy
S_CPP3	Ln(Daily Average Price)*CAC Dummy*3rd CPP Day Dummy
S_OUT_X	Ln(Daily Average Price)*CAC Dummy*Outer Summer Dummy
S_OUT_X_04	Ln(Daily Average Price)*CAC Dummy*Outer Summer Dummy*2004 Year Dummy
S_OUT_X_W	Ln(Daily Average Price)*CAC Dummy*Outer Summer Dummy*Weekend
S_W	Ln(Daily Average Price)*CAC Dummy*Weekend Dummy
S_W_04	Ln(Daily Average Price)*CAC Dummy*Weekend Dummy*2004 Year Dummy
S_W_04_IN	Ln(Daily Average Price)*CAC Dummy*2004 Year Dummy* Inner Summer Dummy*Weekend Dummy
T*	Daily Average Degree Hour per Hour * Ln(Daily Average Price)
T_04	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * 2004 Year Dummy
T_04_IN	Ln(Daily Average Price) *Daily Average Degree Hour per Hour *2004 Year Dummy* Inner Summer Dummy
T_CPP	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * CPP Day Dummy
T_CPP1	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * 1st CPP Day Dummy
T_CPP1_04	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * 1st CPP Day Dummy* 2004 Year Dummy
T_CPP2	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * 2nd CPP Day Dummy
T_CPP3	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * 3rd CPP Day Dummy
T_IW	Daily Average Degree Hour per Hour * Ln(Daily Average Price)*Inner Winter Dummy
T_IW_W	Daily Average Heating Degree Hour per Hour * Ln(Daily Average Price)*Inner Winter Dummy*Weekend Dummy
T_OUT_X	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * Outer Summer Dummy
T_OUT_X_04	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * Outer Summer Dummy*2004 Year Dummy
T_OUT_X_W	Ln(Daily Average Price) *Daily Average Degree Hour per Hour *Outer Summer Dummy* Weekend
T_W	Ln(Daily Average Price) * Daily Average Heating Degree Hour per Hour *Weekend Dummy
T_W_04	Ln(Daily Average Price) *Daily Average Degree Hour per Hour * Weekend Dummy* 2004 Year Dummy
T_W_04_IN	Ln(Daily Average Price) *Daily Average Degree Hour per Hour *2004 Year Dummy* Inner Summer Dummy*Weekend Dummy

*Note: In summer regressions, Degree Hours refers to Cooling Degree Hours, Base 72.
In winter regressions, Degree Hours refers to Heating Degree Hours, Base 65.

Appendix 16.a:
Regression Model Underlying Tables 4-2, 4-3

Residential CPP-F, Pooled Summer 2003-2004, Common Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	55
Equations	2
Number of Statements	2

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_OUT_X(DIF_LN_PEAKP_OPEAKP_AVE_OUT_X), C_OUT_X(DIF_Peak_OPeak_DH_Hr_OUT_X), D_OUT_X(DIF_LN_PO_AVE_CAC_OUT_X), E_OUT_X(DIF_CES_DH_PRICE_OUT_X), A_OUT_X_W(DIF_OUT_X_WKD), C_OUT_X_W(DIF_Peak_OPeak_DH_Hr_OUT_X_WKD), B_04(DIF_LN_PEAKP_OPEAKP_AVE_04), C_04(DIF_Peak_OPeak_DH_Hr_04), D_04(DIF_LN_PEAKP_OPEAKP_AVE_CAC_04), E_04(DIF_CES_DH_PRICE_04), A_W_04(DIF_WKD_04), C_W_04(DIF_Peak_OPeak_DH_Hr_WKD_04), B_OUT_X_04(DIF_LN_PO_AVE_OUT_X_04), C_OUT_X_04(DIF_Peak_OPeak_DH_Hr_OUT_X_04), D_OUT_X_04(DIF_LN_PO_AVE_CAC_OUT_X_04), E_OUT_X_04(DIF_CES_DH_PRICE_OUT_X_04))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_OUT_X(DIF_LN_DAILY_P_AVE_S_OUT_X), R_OUT_X(DIF_DAILY_DH_HOUR_OUT_X), S_OUT_X(DIF_LN_D_P_AVE_S_CAC_OUT_X), T_OUT_X(DIF_Daily_DH_Price_S_OUT_X), P_OUT_X_W(DIF_OUT_X_WKD), Q_OUT_X_W(DIF_LN_DAILY_P_AVE_S_OUT_X_WKD), R_OUT_X_W(DIF_DAILY_DH_HOUR_OUT_X_WKD), S_OUT_X_W(DIF_LN_D_P_AVE_S_CAC_OUT_X_WKD), T_OUT_X_W(DIF_Daily_DH_Price_S_OUT_X_WKD), Q_04(DIF_LN_DAILY_P_AVE_S_04), R_04(DIF_DAILY_DH_HOUR_04), S_04(DIF_LN_Daily_P_AVE_S_CAC_04), T_04(DIF_Daily_DH_Price_S_04), P_W_04(DIF_WKD_04), Q_W_04(DIF_LN_DAILY_P_AVE_S_WKD_04), R_W_04(DIF_DAILY_DH_HOUR_WKD_04), S_W_04(DIF_LN_Daily_P_AVE_S_CAC_WKD_04), T_W_04(DIF_Daily_DH_Price_S_WKD_04), Q_OUT_X_04(DIF_LN_DAILY_P_AVE_S_OUT_X_04), R_OUT_X_04(DIF_DAILY_DH_HOUR_OUT_X_04), S_OUT_X_04(DIF_LN_D_P_AVE_S_CAC_OUT_X_04), T_OUT_X_04(DIF_Daily_DH_Price_S_OUT_X_04))

Residential CPP-F, Pooled Summer 2003-2004, Common Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure

Observations will be weighted by	WEIGHT

```
NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.
```

Residential CPP-F, Pooled Summer 2003-2004, Common Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_COMCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	55
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	1.098E-9
RPC(C_OUT_X_W)	3.705904
Object	0.000051
Trace(S)	7311.009
Objective Value	1.999663

Observations Processed	
Read	256452
Solved	256452
Used	234389
Missing	22063

Residential CPP-F, Pooled Summer 2003-2004, Common Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	23	234E3	1.3037E9	5562.8	74.5841	0.0115	0.0114	2.8845
DIF_LN_DAILYUSE_HR	32	234E3	4.0971E8	1748.2	41.8118	0.0303	0.0302	2.6382

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00014	0.00115	-0.12	0.9008
B	-0.03652	0.00664	-5.50	<.0001
C	0.011031	0.000583	18.92	<.0001
D	-0.0926	0.00798	-11.60	<.0001
E	-0.00162	0.000571	-2.84	0.0045
A_W	0.013617	0.00494	2.76	0.0058
C_W	0.000551	0.000529	1.04	0.2980
B_OUT_X	0.003769	0.0116	0.32	0.7459
C_OUT_X	-0.00422	0.00125	-3.38	0.0007
D_OUT_X	0.060828	0.0152	4.00	<.0001
E_OUT_X	0.001078	0.00120	0.90	0.3700
A_OUT_X_W	0.017598	0.00780	2.26	0.0241
C_OUT_X_W	-0.0004	0.000976	-0.41	0.6814
B_04	0.013009	0.0101	1.29	0.1978
C_04	0.000887	0.000951	0.93	0.3510
D_04	0.003643	0.0122	0.30	0.7662
E_04	-0.0012	0.000899	-1.33	0.1833
A_W_04	-0.00452	0.00741	-0.61	0.5424
C_W_04	0.000095	0.000801	0.12	0.9058
B_OUT_X_04	-0.00148	0.0158	-0.09	0.9256
C_OUT_X_04	0.005902	0.00160	3.68	0.0002
D_OUT_X_04	0.025124	0.0222	1.13	0.2578
E_OUT_X_04	0.000722	0.00173	0.42	0.6763
P	0.000381	0.000644	0.59	0.5546
Q	-0.03144	0.00722	-4.35	<.0001
R	0.031437	0.00195	16.14	<.0001
S	-0.01946	0.00883	-2.20	0.0276
T	0.00095	0.000916	1.04	0.2998

Residential CPP-F, Pooled Summer 2003-2004, Common Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
P_W	0.06626	0.0194	3.41	0.0007
Q_W	0.023205	0.00899	2.58	0.0099
R_W	-0.00108	0.00306	-0.35	0.7242
S_W	-0.01561	0.00181	-8.63	<.0001
T_W	-0.00007	0.00138	-0.05	0.9611
Q_OUT_X	-0.00884	0.00593	-1.49	0.1357
R_OUT_X	-0.01825	0.00511	-3.57	0.0004
S_OUT_X	0.008503	0.00886	0.96	0.3372
T_OUT_X	-0.00196	0.00240	-0.82	0.4146
P_OUT_X_W	-0.01126	0.0284	-0.40	0.6921
Q_OUT_X_W	-0.00569	0.0126	-0.45	0.6523
R_OUT_X_W	0.006922	0.00717	0.96	0.3347
S_OUT_X_W	0.005479	0.00255	2.15	0.0315
T_OUT_X_W	0.003108	0.00328	0.95	0.3435
Q_04	-0.03257	0.0122	-2.66	0.0077
R_04	0.000496	0.00330	0.15	0.8804
S_04	0.013294	0.0145	0.92	0.3597
T_04	0.00143	0.00158	0.91	0.3640
P_W_04	0.081749	0.0305	2.68	0.0073
Q_W_04	0.035776	0.0140	2.55	0.0108
R_W_04	-0.00436	0.00521	-0.84	0.4024
S_W_04	0.002835	0.00263	1.08	0.2813
T_W_04	-0.00217	0.00236	-0.92	0.3585
Q_OUT_X_04	0.012166	0.00748	1.63	0.1039
R_OUT_X_04	0.019465	0.00752	2.59	0.0096
S_OUT_X_04	-0.02175	0.0112	-1.94	0.0524
T_OUT_X_04	0.001299	0.00343	0.38	0.7051

Number of Observations		Statistics for System	
Used	234389	**Objective**	1.9997
Missing	22063	**Objective*N**	468699
Sum of Weights	4.22379E9		

Appendix 16.b:
Regression Model Underlying Tables 4-4, 4-5

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	55
Equations	2
Number of Statements	2

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_OUT_X(DIF_LN_PEAKP_OPEAKP_AVE_OUT_X), C_OUT_X(DIF_Peak_OPeak_DH_Hr_OUT_X), D_OUT_X(DIF_LN_PO_AVE_CAC_OUT_X), E_OUT_X(DIF_CES_DH_PRICE_OUT_X), A_OUT_X_W(DIF_OUT_X_WKD), C_OUT_X_W(DIF_Peak_OPeak_DH_Hr_OUT_X_WKD), B_04(DIF_LN_PEAKP_OPEAKP_AVE_04), C_04(DIF_Peak_OPeak_DH_Hr_04), D_04(DIF_LN_PEAKP_OPEAKP_AVE_CAC_04), E_04(DIF_CES_DH_PRICE_04), A_W_04(DIF_WKD_04), C_W_04(DIF_Peak_OPeak_DH_Hr_WKD_04), B_OUT_X_04(DIF_LN_PO_AVE_OUT_X_04), C_OUT_X_04(DIF_Peak_OPeak_DH_Hr_OUT_X_04), D_OUT_X_04(DIF_LN_PO_AVE_CAC_OUT_X_04), E_OUT_X_04(DIF_CES_DH_PRICE_OUT_X_04))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_OUT_X(DIF_LN_DAILY_P_AVE_S_OUT_X), R_OUT_X(DIF_DAILY_DH_HOUR_OUT_X), S_OUT_X(DIF_LN_D_P_AVE_S_CAC_OUT_X), T_OUT_X(DIF_Daily_DH_Price_S_OUT_X), P_OUT_X_W(DIF_OUT_X_WKD), Q_OUT_X_W(DIF_LN_DAILY_P_AVE_S_OUT_X_WKD), R_OUT_X_W(DIF_DAILY_DH_HOUR_OUT_X_WKD), S_OUT_X_W(DIF_LN_D_P_AVE_S_CAC_OUT_X_WKD), T_OUT_X_W(DIF_Daily_DH_Price_S_OUT_X_WKD), Q_04(DIF_LN_DAILY_P_AVE_S_04), R_04(DIF_DAILY_DH_HOUR_04), S_04(DIF_LN_Daily_P_AVE_S_CAC_04), T_04(DIF_Daily_DH_Price_S_04), P_W_04(DIF_WKD_04), Q_W_04(DIF_LN_DAILY_P_AVE_S_WKD_04), R_W_04(DIF_DAILY_DH_HOUR_WKD_04), S_W_04(DIF_LN_Daily_P_AVE_S_CAC_WKD_04), T_W_04(DIF_Daily_DH_Price_S_WKD_04), Q_OUT_X_04(DIF_LN_DAILY_P_AVE_S_OUT_X_04), R_OUT_X_04(DIF_DAILY_DH_HOUR_OUT_X_04), S_OUT_X_04(DIF_LN_D_P_AVE_S_CAC_OUT_X_04), T_OUT_X_04(DIF_Daily_DH_Price_S_OUT_X_04))

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure

Observations will be weighted by	WEIGHT

```
NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.
```

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	55
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	6.201E-9
RPC(C_OUT_X_W)	3.360524
Object	0.000047
Trace(S)	7366.378
Objective Value	1.999684

Observations Processed	
Read	277351
Solved	277351
Used	247729
Missing	29622

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	23	248E3	1.388E9	5603.5	74.8564	0.0109	0.0108	2.8864
DIF_LN_DAILYUSE_HR	32	248E3	4.3667E8	1762.9	41.9869	0.0293	0.0292	2.6388

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00022	0.00112	-0.20	0.8451
B	-0.03517	0.00646	-5.45	<.0001
C	0.010974	0.000571	19.21	<.0001
D	-0.09045	0.00775	-11.67	<.0001
E	-0.00144	0.000557	-2.59	0.0097
A_W	0.01397	0.00479	2.91	0.0036
C_W	0.000579	0.000515	1.12	0.2612
B_OUT_X	0.008157	0.0114	0.72	0.4733
C_OUT_X	-0.00414	0.00122	-3.39	0.0007
D_OUT_X	0.057024	0.0149	3.83	0.0001
E_OUT_X	0.00084	0.00117	0.72	0.4744
A_OUT_X_W	0.017928	0.00757	2.37	0.0179
C_OUT_X_W	-0.0002	0.000953	-0.21	0.8328
B_04	0.008433	0.00984	0.86	0.3915
C_04	0.00032	0.000933	0.34	0.7320
D_04	-0.00183	0.0120	-0.15	0.8783
E_04	-0.00095	0.000879	-1.08	0.2783
A_W_04	-0.01059	0.00717	-1.48	0.1395
C_W_04	0.000513	0.000780	0.66	0.5109
B_OUT_X_04	-0.00267	0.0155	-0.17	0.8637
C_OUT_X_04	0.006032	0.00157	3.83	0.0001
D_OUT_X_04	0.029631	0.0219	1.35	0.1755
E_OUT_X_04	0.000873	0.00170	0.51	0.6084
P	0.000428	0.000627	0.68	0.4954
Q	-0.02813	0.00707	-3.98	<.0001
R	0.031306	0.00191	16.36	<.0001
S	-0.02179	0.00863	-2.52	0.0116
T	0.00097	0.000900	1.08	0.2813

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer/Year Dummies

The MODEL Procedure

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
P_W	0.045576	0.0190	2.40	0.0162
Q_W	0.013826	0.00878	1.57	0.1155
R_W	0.000014	0.00296	0.00	0.9961
S_W	-0.01491	0.00175	-8.51	<.0001
T_W	0.0004	0.00133	0.30	0.7644
Q_OUT_X	-0.01023	0.00581	-1.76	0.0782
R_OUT_X	-0.0161	0.00504	-3.19	0.0014
S_OUT_X	0.010422	0.00867	1.20	0.2291
T_OUT_X	-0.00108	0.00237	-0.46	0.6484
P_OUT_X_W	0.010876	0.0277	0.39	0.6949
Q_OUT_X_W	0.004995	0.0123	0.40	0.6857
R_OUT_X_W	0.003949	0.00704	0.56	0.5748
S_OUT_X_W	0.004495	0.00249	1.80	0.0712
T_OUT_X_W	0.001633	0.00322	0.51	0.6123
Q_04	-0.0339	0.0120	-2.83	0.0047
R_04	0.000514	0.00325	0.16	0.8741
S_04	0.008655	0.0143	0.61	0.5436
T_04	0.001599	0.00155	1.03	0.3030
P_W_04	0.086773	0.0296	2.94	0.0033
Q_W_04	0.037943	0.0136	2.78	0.0054
R_W_04	-0.00377	0.00508	-0.74	0.4581
S_W_04	0.003726	0.00256	1.46	0.1456
T_W_04	-0.00194	0.00230	-0.84	0.3998
Q_OUT_X_04	0.011945	0.00734	1.63	0.1036
R_OUT_X_04	0.018978	0.00742	2.56	0.0106
S_OUT_X_04	-0.02258	0.0110	-2.05	0.0400
T_OUT_X_04	0.001084	0.00339	0.32	0.7492

Number of Observations		Statistics for System	
Used	247729	**Objective**	1.9997
Missing	29622	**Objective*N**	495380
Sum of Weights	4.48926E9		

Appendix 16.c:
Regression Model Underlying Tables 4-6 through 4-9

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer Dummy

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	32
Equations	2
Number of Statements	2

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_OUT_X(DIF_LN_PEAKP_OPEAKP_AVE_OUT_X), C_OUT_X(DIF_Peak_OPeak_DH_Hr_OUT_X), D_OUT_X(DIF_LN_PO_AVE_CAC_OUT_X), E_OUT_X(DIF_CES_DH_PRICE_OUT_X), A_OUT_X_W(DIF_OUT_X_WKD), C_OUT_X_W(DIF_Peak_OPeak_DH_Hr_OUT_X_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_OUT_X(DIF_LN_DAILY_P_AVE_S_OUT_X), R_OUT_X(DIF_DAILY_DH_HOUR_OUT_X), S_OUT_X(DIF_LN_D_P_AVE_S_CAC_OUT_X), T_OUT_X(DIF_Daily_DH_Price_S_OUT_X), P_OUT_X_W(DIF_OUT_X_WKD), Q_OUT_X_W(DIF_LN_DAILY_P_AVE_S_OUT_X_WKD), R_OUT_X_W(DIF_DAILY_DH_HOUR_OUT_X_WKD), S_OUT_X_W(DIF_LN_D_P_AVE_S_CAC_OUT_X_WKD), T_OUT_X_W(DIF_Daily_DH_Price_S_OUT_X_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer Dummy

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	32
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	6.293E-9
RPC(S_OUT_X)	4.005235
Object	0.000045
Trace(S)	7367.728
Objective Value	1.99978

Observations Processed	
Read	277351
Solved	277351
Used	247729
Missing	29622

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer Dummy

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	13	248E3	1.3882E9	5604.0	74.8602	0.0108	0.0107	2.8864
DIF_LN_DAILYUSE_HR	19	248E3	4.3688E8	1763.7	41.9962	0.0288	0.0288	2.6385

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00023	0.00112	-0.21	0.8353
B	-0.03073	0.00495	-6.21	<.0001
C	0.011118	0.000456	24.38	<.0001
D	-0.09107	0.00591	-15.41	<.0001
E	-0.00187	0.000436	-4.28	<.0001
A_W	0.009764	0.00401	2.43	0.0150
C_W	0.000804	0.000423	1.90	0.0572
B_OUT_X	0.006597	0.00884	0.75	0.4556
C_OUT_X	-0.00055	0.000880	-0.62	0.5331
D_OUT_X	0.071471	0.0110	6.49	<.0001
E_OUT_X	0.000838	0.000957	0.88	0.3810
A_OUT_X_W	0.014361	0.00713	2.01	0.0439
C_OUT_X_W	0.000019	0.000909	0.02	0.9835
P	0.000426	0.000627	0.68	0.4971
Q	-0.03966	0.00565	-7.02	<.0001
R	0.030807	0.00154	20.04	<.0001
S	-0.01573	0.00681	-2.31	0.0209
T	0.001206	0.000730	1.65	0.0984
P_W	0.071206	0.0163	4.37	<.0001
Q_W	0.024745	0.00751	3.30	0.0010
R_W	-0.00079	0.00253	-0.31	0.7537
S_W	-0.01364	0.00143	-9.54	<.0001
T_W	-2.91E-6	0.00114	-0.00	0.9980
Q_OUT_X	-0.00425	0.00372	-1.14	0.2533
R_OUT_X	-0.00322	0.00461	-0.70	0.4846
S_OUT_X	-0.00358	0.00560	-0.64	0.5223
T_OUT_X	0.000342	0.00221	0.15	0.8771
P_OUT_X_W	0.030185	0.0263	1.15	0.2511

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer Dummy

The MODEL Procedure

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
Q_OUT_X_W	0.012548	0.0117	1.07	0.2852
R_OUT_X_W	0.001021	0.00639	0.16	0.8729
S_OUT_X_W	0.004758	0.00242	1.96	0.0498
T_OUT_X_W	0.000393	0.00289	0.14	0.8920

Number of Observations		Statistics for System	
Used	247729	**Objective**	1.9998
Missing	29622	**Objective*N**	495403
Sum of Weights	4.48926E9		

Appendix 16.d:
Regression Model Underlying Tables 4-10, 4-11

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	17
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W P Q R S T P_W Q_W R_W S_W T_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	17
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	7.46E-11
RPC(R_W)	1.610012
Object	0.000043
Trace(S)	7369.726
Objective Value	1.999845

Observations Processed	
Read	277351
Solved	277351
Used	247729
Missing	29622

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors

Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	7	248E3	1.3887E9	5606.0	74.8729	0.0104	0.0104	2.8861
DIF_LN_DAILYUSE_HR	10	248E3	4.3692E8	1763.8	41.9973	0.0288	0.0287	2.6387

Nonlinear SUR Parameter Estimates

Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00019	0.00112	-0.17	0.8669
B	-0.02726	0.00432	-6.31	<.0001
C	0.0112	0.000403	27.79	<.0001
D	-0.07096	0.00515	-13.79	<.0001
E	-0.0022	0.000389	-5.64	<.0001
A_W	0.013305	0.00338	3.94	<.0001
C_W	0.000691	0.000373	1.85	0.0637
P	0.000458	0.000627	0.73	0.4654
Q	-0.04195	0.00555	-7.56	<.0001
R	0.030628	0.00152	20.14	<.0001
S	-0.01637	0.00669	-2.45	0.0144
T	0.001606	0.000724	2.22	0.0264
P_W	0.081169	0.0137	5.92	<.0001
Q_W	0.029121	0.00633	4.60	<.0001
R_W	-0.00129	0.00230	-0.56	0.5756
S_W	-0.01228	0.00123	-10.01	<.0001
T_W	-0.00028	0.00104	-0.27	0.7896

Number of Observations		Statistics for System	
Used	247729	**Objective**	1.9998
Missing	29622	**Objective*N**	495420
Sum of Weights	4.48926E9		

Appendix 16.e:
Regression Model Underlying Tables 4-12 through 4-14

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	71
Equations	2
Number of Statements	2

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_OUT_X(DIF_LN_PEAKP_OPEAKP_AVE_OUT_X), C_OUT_X(DIF_Peak_OPeak_DH_Hr_OUT_X), D_OUT_X(DIF_LN_PO_AVE_CAC_OUT_X), E_OUT_X(DIF_CES_DH_PRICE_OUT_X), A_OUT_X_W(DIF_OUT_X_WKD), C_OUT_X_W(DIF_Peak_OPeak_DH_Hr_OUT_X_WKD), B_04(DIF_LN_PEAKP_OPEAKP_AVE_04), C_04(DIF_Peak_OPeak_DH_Hr_04), D_04(DIF_LN_PEAKP_OPEAKP_AVE_CAC_04), E_04(DIF_CES_DH_PRICE_04), A_W_04(DIF_WKD_04), C_W_04(DIF_Peak_OPeak_DH_Hr_WKD_04), B_OUT_X_04(DIF_LN_PO_AVE_OUT_X_04), C_OUT_X_04(DIF_Peak_OPeak_DH_Hr_OUT_X_04), D_OUT_X_04(DIF_LN_PO_AVE_CAC_OUT_X_04), E_OUT_X_04(DIF_CES_DH_PRICE_OUT_X_04), B_CPP2(DIF_LN_PEAKP_OPEAKP_AVE_CPP2), C_CPP2(DIF_Peak_OPeak_DH_Hr_CPP2), D_CPP2(DIF_LN_PEAKP_OPEAKP_AVE_CAC_CPP2), E_CPP2(DIF_CES_DH_PRICE_CPP2), B_CPP3(DIF_LN_PEAKP_OPEAKP_AVE_CPP3), C_CPP3(DIF_Peak_OPeak_DH_Hr_CPP3), D_CPP3(DIF_LN_PEAKP_OPEAKP_AVE_CAC_CPP3), E_CPP3(DIF_CES_DH_PRICE_CPP3))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_OUT_X(DIF_LN_DAILY_P_AVE_S_OUT_X), R_OUT_X(DIF_DAILY_DH_HOUR_OUT_X), S_OUT_X(DIF_LN_D_P_AVE_S_CAC_OUT_X), T_OUT_X(DIF_Daily_DH_Price_S_OUT_X), P_OUT_X_W(DIF_OUT_X_WKD), Q_OUT_X_W(DIF_LN_DAILY_P_AVE_S_OUT_X_WKD), R_OUT_X_W(DIF_DAILY_DH_HOUR_OUT_X_WKD), S_OUT_X_W(DIF_LN_D_P_AVE_S_CAC_OUT_X_WKD), T_OUT_X_W(DIF_Daily_DH_Price_S_OUT_X_WKD), Q_04(DIF_LN_DAILY_P_AVE_S_04), R_04(DIF_DAILY_DH_HOUR_04),

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

The 2 Equations to Estimate	
DIF_LN_DAILYUSE_HR =	S_04(DIF_LN_Daily_P_AVE_S_CAC_04), T_04(DIF_Daily_DH_Price_S_04), P_W_04(DIF_WKD_04), Q_W_04(DIF_LN_DAILY_P_AVE_S_WKD_04), R_W_04(DIF_DAILY_DH_HOUR_WKD_04), S_W_04(DIF_LN_Daily_P_AVE_S_CAC_WKD_04), T_W_04(DIF_Daily_DH_Price_S_WKD_04), Q_OUT_X_04(DIF_LN_DAILY_P_AVE_S_OUT_X_04), R_OUT_X_04(DIF_DAILY_DH_HOUR_OUT_X_04), S_OUT_X_04(DIF_LN_D_P_AVE_S_CAC_OUT_X_04), T_OUT_X_04(DIF_Daily_DH_Price_S_OUT_X_04), Q_CPP2(DIF_LN_DAILY_P_AVE_S_CPP2), R_CPP2(DIF_DAILY_DH_HOUR_CPP2), S_CPP2(DIF_LN_Daily_P_AVE_S_CAC_CPP2), T_CPP2(DIF_Daily_DH_Price_S_CPP2), Q_CPP3(DIF_LN_DAILY_P_AVE_S_CPP3), R_CPP3(DIF_DAILY_DH_HOUR_CPP3), S_CPP3(DIF_LN_Daily_P_AVE_S_CAC_CPP3), T_CPP3(DIF_Daily_DH_Price_S_CPP3))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	71
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	4.72E-10
RPC(T)	5.283684
Object	0.000049
Trace(S)	7366.134
Objective Value	1.999616

Observations Processed	
Read	277351
Solved	277351
Used	247729
Missing	29622

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	31	248E3	1.3879E9	5603.3	74.8551	0.0110	0.0109	2.8864
DIF_LN_DAILYUSE_HR	40	248E3	4.3664E8	1762.8	41.9862	0.0294	0.0292	2.6386

The MODEL Procedure

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00022	0.00112	-0.20	0.8441
B	-0.03321	0.00651	-5.10	<.0001
C	0.01097	0.000572	19.17	<.0001
D	-0.09119	0.00788	-11.57	<.0001
E	-0.00141	0.000568	-2.48	0.0131
A_W	0.014311	0.00480	2.98	0.0028
C_W	0.000569	0.000517	1.10	0.2710
B_OUT_X	0.005988	0.0114	0.52	0.5997
C_OUT_X	-0.00416	0.00122	-3.41	0.0007
D_OUT_X	0.058165	0.0149	3.89	<.0001
E_OUT_X	0.000829	0.00118	0.70	0.4822
A_OUT_X_W	0.017073	0.00758	2.25	0.0243
C_OUT_X_W	-0.0001	0.000955	-0.11	0.9147
B_04	0.009726	0.00996	0.98	0.3287
C_04	0.000541	0.000937	0.58	0.5639
D_04	-0.00009	0.0121	-0.01	0.9943
E_04	-0.00104	0.000895	-1.17	0.2430
A_W_04	-0.00943	0.00718	-1.31	0.1892
C_W_04	0.000357	0.000783	0.46	0.6490
B_OUT_X_04	-0.00275	0.0156	-0.18	0.8600
C_OUT_X_04	0.005916	0.00157	3.76	0.0002
D_OUT_X_04	0.027296	0.0219	1.24	0.2136
E_OUT_X_04	0.000873	0.00171	0.51	0.6096
B_CPP2	-0.02175	0.00945	-2.30	0.0214
C_CPP2	-0.00055	0.000929	-0.59	0.5554
D_CPP2	0.005475	0.0118	0.46	0.6436
E_CPP2	0.000572	0.000964	0.59	0.5530
B_CPP3	-0.01312	0.0146	-0.90	0.3703
C_CPP3	-0.00317	0.00128	-2.47	0.0133
D_CPP3	-0.01005	0.0185	-0.54	0.5865
E_CPP3	0.001448	0.00150	0.96	0.3346
P	0.000429	0.000627	0.68	0.4945
Q	-0.02898	0.00709	-4.09	<.0001
R	0.030892	0.00193	16.03	<.0001

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Nonlinear SUR Parameter Estimates

Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
S	-0.02025	0.00866	-2.34	0.0193
T	0.00078	0.000907	0.86	0.3894
P_W	0.046398	0.0190	2.45	0.0144
Q_W	0.014231	0.00879	1.62	0.1053
R_W	0.000189	0.00296	0.06	0.9490
S_W	-0.01485	0.00175	-8.47	<.0001
T_W	0.000483	0.00134	0.36	0.7177
Q_OUT_X	-0.00986	0.00581	-1.70	0.0898
R_OUT_X	-0.01566	0.00505	-3.10	0.0019
S_OUT_X	0.009782	0.00867	1.13	0.2591
T_OUT_X	-0.00086	0.00238	-0.36	0.7175
P_OUT_X_W	0.010468	0.0277	0.38	0.7058
Q_OUT_X_W	0.004702	0.0123	0.38	0.7032
R_OUT_X_W	0.003882	0.00705	0.55	0.5817
S_OUT_X_W	0.004645	0.00249	1.86	0.0626
T_OUT_X_W	0.00156	0.00323	0.48	0.6286
Q_04	-0.03106	0.0121	-2.57	0.0101
R_04	0.0004	0.00332	0.12	0.9041
S_04	0.005423	0.0143	0.38	0.7044
T_04	0.001472	0.00159	0.93	0.3532
P_W_04	0.085014	0.0296	2.87	0.0041
Q_W_04	0.037162	0.0137	2.71	0.0066
R_W_04	-0.00366	0.00511	-0.72	0.4739
S_W_04	0.003473	0.00256	1.36	0.1752
T_W_04	-0.00182	0.00232	-0.79	0.4318
Q_OUT_X_04	0.011439	0.00734	1.56	0.1191
R_OUT_X_04	0.018673	0.00743	2.51	0.0119
S_OUT_X_04	-0.02165	0.0110	-1.97	0.0490
T_OUT_X_04	0.000981	0.00339	0.29	0.7726
Q_CPP2	-0.00265	0.00363	-0.73	0.4652
R_CPP2	0.004206	0.00304	1.38	0.1666
S_CPP2	0.010557	0.00494	2.14	0.0326
T_CPP2	0.001841	0.00174	1.06	0.2890
Q_CPP3	0.011173	0.00532	2.10	0.0359

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
R_CPP3	0.005354	0.00429	1.25	0.2123
S_CPP3	-0.01471	0.00732	-2.01	0.0445
T_CPP3	0.003507	0.00244	1.44	0.1511

Number of Observations		Statistics for System	
Used	247729	**Objective**	1.9996
Missing	29622	**Objective*N**	495363
Sum of Weights	4.48926E9		

Appendix 16.f:
Regression Model Underlying Tables 4-15 through 4-17

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/1st CPP Day/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	87
Equations	2
Number of Statements	2

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_OUT_X(DIF_LN_PEAKP_OPEAKP_AVE_OUT_X), C_OUT_X(DIF_Peak_OPeak_DH_Hr_OUT_X), D_OUT_X(DIF_LN_PO_AVE_CAC_OUT_X), E_OUT_X(DIF_CES_DH_PRICE_OUT_X), A_OUT_X_W(DIF_OUT_X_WKD), C_OUT_X_W(DIF_Peak_OPeak_DH_Hr_OUT_X_WKD), B_04(DIF_LN_PEAKP_OPEAKP_AVE_04), C_04(DIF_Peak_OPeak_DH_Hr_04), D_04(DIF_LN_PEAKP_OPEAKP_AVE_CAC_04), E_04(DIF_CES_DH_PRICE_04), A_W_04(DIF_WKD_04), C_W_04(DIF_Peak_OPeak_DH_Hr_WKD_04), B_OUT_X_04(DIF_LN_PO_AVE_OUT_X_04), C_OUT_X_04(DIF_Peak_OPeak_DH_Hr_OUT_X_04), D_OUT_X_04(DIF_LN_PO_AVE_CAC_OUT_X_04), E_OUT_X_04(DIF_CES_DH_PRICE_OUT_X_04), B_CPP1(DIF_LN_PEAKP_OPEAKP_AVE_CPP1), C_CPP1(DIF_Peak_OPeak_DH_Hr_CPP1), D_CPP1(DIF_LN_PEAKP_OPEAKP_AVE_CAC_CPP1), E_CPP1(DIF_CES_DH_PRICE_CPP1), B_CPP1_04(DIF_LN_PO_AVE_CPP1_04), C_CPP1_04(DIF_Peak_OPeak_DH_Hr_CPP1_04), D_CPP1_04(DIF_LN_PO_AVE_CAC_CPP1_04), E_CPP1_04(DIF_CES_DH_PRICE_CPP1_04), B_CPP2(DIF_LN_PEAKP_OPEAKP_AVE_CPP2), C_CPP2(DIF_Peak_OPeak_DH_Hr_CPP2), D_CPP2(DIF_LN_PEAKP_OPEAKP_AVE_CAC_CPP2), E_CPP2(DIF_CES_DH_PRICE_CPP2), B_CPP3(DIF_LN_PEAKP_OPEAKP_AVE_CPP3), C_CPP3(DIF_Peak_OPeak_DH_Hr_CPP3), D_CPP3(DIF_LN_PEAKP_OPEAKP_AVE_CAC_CPP3), E_CPP3(DIF_CES_DH_PRICE_CPP3))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_OUT_X(DIF_LN_DAILY_P_AVE_S_OUT_X), R_OUT_X(DIF_DAILY_DH_HOUR_OUT_X), S_OUT_X(DIF_LN_D_P_AVE_S_CAC_OUT_X), T_OUT_X(DIF_Daily_DH_Price_S_OUT_X), P_OUT_X_W(DIF_OUT_X_WKD), Q_OUT_X_W(DIF_LN_DAILY_P_AVE_S_OUT_X_

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/1st CPP Day/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

The 2 Equations to Estimate	
DIF_LN_DAILYUSE_HR =	WKD), R_OUT_X_W(DIF_DAILY_DH_HOUR_OUT_X_WKD), S_OUT_X_W(DIF_LN_D_P_AVE_S_CAC_OUT_X_WKD), T_OUT_X_W(DIF_Daily_DH_Price_S_OUT_X_WKD), Q_04(DIF_LN_DAILY_P_AVE_S_04), R_04(DIF_DAILY_DH_HOUR_04), S_04(DIF_LN_Daily_P_AVE_S_CAC_04), T_04(DIF_Daily_DH_Price_S_04), P_W_04(DIF_WKD_04), Q_W_04(DIF_LN_DAILY_P_AVE_S_WKD_04), R_W_04(DIF_DAILY_DH_HOUR_WKD_04), S_W_04(DIF_LN_Daily_P_AVE_S_CAC_WKD_04), T_W_04(DIF_Daily_DH_Price_S_WKD_04), Q_OUT_X_04(DIF_LN_DAILY_P_AVE_S_OUT_X_04), R_OUT_X_04(DIF_DAILY_DH_HOUR_OUT_X_04), S_OUT_X_04(DIF_LN_D_P_AVE_S_CAC_OUT_X_04), T_OUT_X_04(DIF_Daily_DH_Price_S_OUT_X_04), Q_CPP1(DIF_LN_DAILY_P_AVE_S_CPP1), R_CPP1(DIF_DAILY_DH_HOUR_CPP1), S_CPP1(DIF_LN_Daily_P_AVE_S_CAC_CPP1), T_CPP1(DIF_Daily_DH_Price_S_CPP1), Q_CPP1_04(DIF_LN_DAILY_P_AVE_S_CPP1_04), R_CPP1_04(DIF_DAILY_DH_HOUR_CPP1_04), S_CPP1_04(DIF_LN_Daily_P_AVE_S_CAC_CPP1_04), T_CPP1_04(DIF_Daily_DH_Price_S_CPP1_04), Q_CPP2(DIF_LN_DAILY_P_AVE_S_CPP2), R_CPP2(DIF_DAILY_DH_HOUR_CPP2), S_CPP2(DIF_LN_Daily_P_AVE_S_CAC_CPP2), T_CPP2(DIF_Daily_DH_Price_S_CPP2), Q_CPP3(DIF_LN_DAILY_P_AVE_S_CPP3), R_CPP3(DIF_DAILY_DH_HOUR_CPP3), S_CPP3(DIF_LN_Daily_P_AVE_S_CAC_CPP3), T_CPP3(DIF_Daily_DH_Price_S_CPP3))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/1st CPP Day/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	87
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	4.66E-10
RPC(C_OUT_X_W)	131.4238
Object	0.000046
Trace(S)	7365.753
Objective Value	1.999558

Observations Processed	
Read	277351
Solved	277351
Used	247729
Missing	29622

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/1st CPP Day/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	39	248E3	1.3878E9	5603.2	74.8543	0.0110	0.0109	2.8864
DIF_LN_DAILYUSE_HR	48	248E3	4.3656E8	1762.6	41.9832	0.0296	0.0294	2.6387

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/1st CPP Day/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00023	0.00112	-0.21	0.8372
B	-0.02869	0.00832	-3.45	0.0006
C	0.010703	0.000594	18.03	<.0001
D	-0.09286	0.0100	-9.29	<.0001
E	-0.00016	0.000757	-0.21	0.8336
A_W	0.016024	0.00499	3.21	0.0013
C_W	0.000941	0.000546	1.72	0.0846
B_OUT_X	0.007607	0.0115	0.66	0.5097
C_OUT_X	-0.00416	0.00122	-3.40	0.0007
D_OUT_X	0.058101	0.0150	3.87	0.0001
E_OUT_X	0.000503	0.00119	0.42	0.6721
A_OUT_X_W	0.017295	0.00769	2.25	0.0244
C_OUT_X_W	-0.00037	0.000967	-0.38	0.7005
B_04	0.005608	0.0125	0.45	0.6534
C_04	0.000317	0.000972	0.33	0.7445
D_04	0.008676	0.0148	0.58	0.5586
E_04	-0.00096	0.00116	-0.82	0.4094
A_W_04	-0.01041	0.00754	-1.38	0.1670
C_W_04	0.000488	0.000825	0.59	0.5546
B_OUT_X_04	-0.00384	0.0162	-0.24	0.8127
C_OUT_X_04	0.006252	0.00158	3.96	<.0001
D_OUT_X_04	0.021184	0.0229	0.93	0.3544
E_OUT_X_04	0.000078	0.00178	0.04	0.9651
B_CPP1	-0.00407	0.00672	-0.61	0.5450
C_CPP1	-0.00029	0.000596	-0.49	0.6240
D_CPP1	0.004003	0.00856	0.47	0.6400
E_CPP1	-0.00127	0.000731	-1.74	0.0822
B_CPP1_04	0.003793	0.0111	0.34	0.7317
C_CPP1_04	0.000388	0.000929	0.42	0.6762
D_CPP1_04	-0.01605	0.0138	-1.16	0.2443
E_CPP1_04	0.000064	0.00116	0.06	0.9559
B_CPP2	-0.02387	0.0107	-2.23	0.0260
C_CPP2	-0.00036	0.000979	-0.37	0.7146
D_CPP2	0.000176	0.0133	0.01	0.9894

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/1st CPP Day/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
E_CPP2	-0.00046	0.00109	-0.43	0.6687
B_CPP3	-0.01505	0.0154	-0.98	0.3278
C_CPP3	-0.00288	0.00129	-2.22	0.0262
D_CPP3	-0.01509	0.0194	-0.78	0.4363
E_CPP3	0.000393	0.00159	0.25	0.8042
P	0.000425	0.000627	0.68	0.4983
Q	-0.0495	0.00817	-6.06	<.0001
R	0.03379	0.00330	10.24	<.0001
S	-0.02283	0.00953	-2.40	0.0166
T	0.002103	0.00155	1.36	0.1745
P_W	0.078016	0.0197	3.95	<.0001
Q_W	0.029288	0.00918	3.19	0.0014
R_W	-0.00096	0.00348	-0.27	0.7835
S_W	-0.01463	0.00177	-8.25	<.0001
T_W	-0.00007	0.00160	-0.05	0.9634
Q_OUT_X	-0.01013	0.00581	-1.74	0.0813
R_OUT_X	-0.01491	0.00510	-2.92	0.0035
S_OUT_X	0.009723	0.00867	1.12	0.2621
T_OUT_X	-0.00046	0.00240	-0.19	0.8482
P_OUT_X_W	0.010063	0.0278	0.36	0.7174
Q_OUT_X_W	0.004821	0.0124	0.39	0.6967
R_OUT_X_W	0.002479	0.00714	0.35	0.7285
S_OUT_X_W	0.004423	0.00251	1.77	0.0775
T_OUT_X_W	0.000853	0.00327	0.26	0.7944
Q_04	-0.02209	0.0136	-1.63	0.1033
R_04	-0.00611	0.00489	-1.25	0.2112
S_04	0.010713	0.0154	0.70	0.4869
T_04	-0.00165	0.00233	-0.71	0.4791
P_W_04	0.070507	0.0311	2.27	0.0233
Q_W_04	0.030143	0.0144	2.09	0.0362
R_W_04	0.000648	0.00574	0.11	0.9101
S_W_04	0.003483	0.00259	1.35	0.1784
T_W_04	0.000308	0.00264	0.12	0.9072
Q_OUT_X_04	0.011907	0.00734	1.62	0.1048

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer/Year/1st CPP Day/2nd CPP Day/3rd CPP Day Dummies

The MODEL Procedure

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
R_OUT_X_04	0.019545	0.00752	2.60	0.0094
S_OUT_X_04	-0.02179	0.0110	-1.98	0.0477
T_OUT_X_04	0.001409	0.00344	0.41	0.6819
Q_CPP1	-0.00974	0.00218	-4.47	<.0001
R_CPP1	0.000794	0.00331	0.24	0.8106
S_CPP1	-0.00397	0.00307	-1.30	0.1952
T_CPP1	0.001613	0.00164	0.98	0.3257
Q_CPP1_04	0.00307	0.00365	0.84	0.4007
R_CPP1_04	0.005838	0.00467	1.25	0.2117
S_CPP1_04	0.007429	0.00503	1.48	0.1394
T_CPP1_04	0.002219	0.00242	0.92	0.3583
Q_CPP2	-0.00664	0.00391	-1.70	0.0897
R_CPP2	0.008866	0.00438	2.03	0.0428
S_CPP2	0.012023	0.00526	2.29	0.0222
T_CPP2	0.004443	0.00230	1.93	0.0538
Q_CPP3	0.008492	0.00543	1.56	0.1177
R_CPP3	0.010337	0.00545	1.90	0.0577
S_CPP3	-0.01362	0.00742	-1.84	0.0665
T_CPP3	0.006112	0.00292	2.10	0.0362

Number of Observations		Statistics for System	
Used	247729	**Objective**	1.9996
Missing	29622	**Objective*N**	495348
Sum of Weights	4.48926E9		

Appendix 16.g:
Regression Models Underlying Tables 4-18, 4-19

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Average Daily Use Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_ADU P Q R S T P_W Q_W R_W S_W T_W Q_ADU Q_W_ADU
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_ADU(DIF_LN_PEAKP_OPEAKP_AVE_adu))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_ADU(DIF_LN_Daily_P_AVE_S_adu), Q_W_ADU(DIF_LN_Daily_P_AVE_S_adu_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Average Daily Use Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	1.07E-10
RPC(R_W)	1.653297
Object	0.000048
Trace(S)	7257.503
Objective Value	1.999821

Observations Processed	
Read	277351
Solved	277351
Used	244140
Missing	33211

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Average Daily Use Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	244E3	1.3476E9	5519.8	74.2951	0.0106	0.0106	2.8837
DIF_LN_DAILYUSE_HR	12	244E3	4.2423E8	1737.7	41.6862	0.0292	0.0292	2.6397

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00019	0.00112	-0.17	0.8658
B	-0.02002	0.00515	-3.88	0.0001
C	0.011166	0.000404	27.62	<.0001
D	-0.06709	0.00549	-12.21	<.0001
E	-0.00221	0.000390	-5.67	<.0001
A_W	0.015192	0.00341	4.45	<.0001
C_W	0.000497	0.000375	1.33	0.1852
B_ADU	-0.00048	0.000226	-2.15	0.0317
P	0.000449	0.000629	0.71	0.4755
Q	-0.03441	0.00663	-5.19	<.0001
R	0.030741	0.00152	20.20	<.0001
S	-0.00776	0.00710	-1.09	0.2745
T	0.001704	0.000724	2.35	0.0186
P_W	0.08716	0.0137	6.37	<.0001
Q_W	0.029579	0.00635	4.66	<.0001
R_W	-0.00138	0.00230	-0.60	0.5492
S_W	-0.01494	0.00132	-11.30	<.0001
T_W	-0.00034	0.00104	-0.33	0.7396
Q_ADU	-0.00065	0.000282	-2.30	0.0215
Q_W_ADU	0.000182	0.000056	3.28	0.0011

Number of Observations		Statistics for System	
Used	244140	**Objective**	1.9998
Missing	33211	**Objective*N**	488236
Sum of Weights	4.38937E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Bedroom Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_BED P Q R S T P_W Q_W R_W S_W T_W Q_BED Q_W_BED
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_BED(DIF_LN_PEAKP_OPEAKP_AVE_bed))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_BED(DIF_LN_Daily_P_AVE_S_bed), Q_W_BED(DIF_LN_Daily_P_AVE_S_bed_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Bedroom Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	5.4E-11
RPC(R_W)	1.846688
Object	0.000043
Trace(S)	7370.115
Objective Value	1.999832

Observations Processed	
Read	277351
Solved	277351
Used	244607
Missing	32744

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Bedroom Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	245E3	1.3711E9	5605.3	74.8688	0.0106	0.0106	2.8862
DIF_LN_DAILYUSE_HR	12	245E3	4.3165E8	1764.8	42.0092	0.0286	0.0286	2.6383

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00018	0.00112	-0.16	0.8708
B	0.003859	0.00760	0.51	0.6115
C	0.011217	0.000406	27.60	<.0001
D	-0.06199	0.00537	-11.54	<.0001
E	-0.00229	0.000394	-5.82	<.0001
A_W	0.012453	0.00339	3.67	0.0002
C_W	0.000749	0.000375	2.00	0.0459
B_BED	-0.01289	0.00243	-5.31	<.0001
P	0.000486	0.000631	0.77	0.4412
Q	-0.01669	0.0101	-1.65	0.0993
R	0.030187	0.00153	19.72	<.0001
S	-0.01241	0.00696	-1.78	0.0746
T	0.00146	0.000728	2.01	0.0449
P_W	0.07487	0.0138	5.41	<.0001
Q_W	0.029841	0.00643	4.64	<.0001
R_W	-0.00155	0.00231	-0.67	0.5037
S_W	-0.01087	0.00127	-8.54	<.0001
T_W	-0.00045	0.00105	-0.43	0.6646
Q_BED	-0.00966	0.00321	-3.00	0.0027
Q_W_BED	-0.0014	0.000565	-2.48	0.0133

Number of Observations		Statistics for System	
Used	244607	**Objective**	1.9998
Missing	32744	**Objective*N**	489173
Sum of Weights	4.43289E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With College Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_COLLEGE P Q R S T P_W Q_W R_W S_W T_W Q_COLLEGE Q_W_COLLEGE
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_COLLEGE(DIF_LN_PEAKP_OPEAKP_AVE_col))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_COLLEGE(DIF_LN_Daily_P_AVE_S_col), Q_W_COLLEGE(DIF_LN_Daily_P_AVE_S_col_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With College Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	4.41E-11
RPC(R_W)	2.154449
Object	0.000039
Trace(S)	7396.236
Objective Value	1.99984

Observations Processed	
Read	277351
Solved	277351
Used	243789
Missing	33562

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With College Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	244E3	1.3714E9	5625.7	75.0045	0.0115	0.0114	2.8871
DIF_LN_DAILYUSE_HR	12	244E3	4.3162E8	1770.6	42.0780	0.0288	0.0288	2.6388

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.0002	0.00113	-0.18	0.8606
B	0.004407	0.00488	0.90	0.3665
C	0.01137	0.000408	27.87	<.0001
D	-0.06033	0.00525	-11.50	<.0001
E	-0.00264	0.000396	-6.67	<.0001
A_W	0.012756	0.00341	3.74	0.0002
C_W	0.000738	0.000377	1.96	0.0500
B_COLLEGE	-0.07615	0.00498	-15.29	<.0001
P	0.000446	0.000634	0.70	0.4813
Q	-0.03362	0.00637	-5.28	<.0001
R	0.030284	0.00155	19.52	<.0001
S	-0.01427	0.00682	-2.09	0.0364
T	0.001566	0.000739	2.12	0.0341
P_W	0.078371	0.0139	5.64	<.0001
Q_W	0.031559	0.00640	4.93	<.0001
R_W	-0.00165	0.00234	-0.70	0.4812
S_W	-0.0105	0.00125	-8.40	<.0001
T_W	-0.00063	0.00106	-0.60	0.5515
Q_COLLEGE	-0.01652	0.00655	-2.52	0.0117
Q_W_COLLEGE	-0.00933	0.00120	-7.76	<.0001

Number of Observations		Statistics for System	
Used	243789	**Objective**	1.9998
Missing	33562	**Objective*N**	487539
Sum of Weights	4.40944E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Electric Cooking Device Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_ECK P Q R S T P_W Q_W R_W S_W T_W Q_ECK Q_W_ECK
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_ECK(DIF_LN_PEAKP_OPEAKP_AVE_eck))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_ECK(DIF_LN_Daily_P_AVE_S_eck), Q_W_ECK(DIF_LN_Daily_P_AVE_S_eck_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Electric Cooking Device Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	1.58E-10
RPC(R_W)	1.497901
Object	0.000051
Trace(S)	7384.78
Objective Value	1.999816

Observations Processed	
Read	277351
Solved	277351
Used	243350
Missing	34001

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Electric Cooking Device Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	243E3	1.3672E9	5618.4	74.9557	0.0106	0.0106	2.8864
DIF_LN_DAILYUSE_HR	12	243E3	4.2984E8	1766.4	42.0288	0.0290	0.0289	2.6372

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00015	0.00113	-0.13	0.8942
B	-0.04213	0.00482	-8.74	<.0001
C	0.01115	0.000406	27.43	<.0001
D	-0.06899	0.00521	-13.23	<.0001
E	-0.00203	0.000394	-5.15	<.0001
A_W	0.010792	0.00341	3.16	0.0016
C_W	0.000802	0.000376	2.14	0.0326
B_ECK	0.030782	0.00525	5.86	<.0001
P	0.00046	0.000634	0.73	0.4675
Q	-0.03268	0.00626	-5.22	<.0001
R	0.03011	0.00154	19.62	<.0001
S	-0.01508	0.00677	-2.23	0.0259
T	0.001389	0.000730	1.90	0.0573
P_W	0.076822	0.0140	5.50	<.0001
Q_W	0.023961	0.00648	3.70	0.0002
R_W	-0.00116	0.00232	-0.50	0.6184
S_W	-0.01273	0.00124	-10.29	<.0001
T_W	-0.0002	0.00105	-0.19	0.8489
Q_ECK	-0.02189	0.00679	-3.22	0.0013
Q_W_ECK	0.009366	0.00123	7.62	<.0001

Number of Observations		Statistics for System	
Used	243350	**Objective**	1.9998
Missing	34001	**Objective*N**	486655
Sum of Weights	4.40013E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Income Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_INCOME P Q R S T P_W Q_W R_W S_W T_W Q_INCOME Q_W_INCOME
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_INCOME(DIF_LN_PEAKP_OPEAKP_AVE_inc))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_INCOME(DIF_LN_Daily_P_AVE_S_inc), Q_W_INCOME(DIF_LN_Daily_P_AVE_S_inc_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	7.49E-11
RPC(R_W)	4.279169
Object	0.00005
Trace(S)	7370.642
Objective Value	1.99981

Observations Processed	
Read	277351
Solved	277351
Used	225689
Missing	51662

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Income Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	226E3	1.2643E9	5602.3	74.8483	0.0112	0.0111	2.8834
DIF_LN_DAILYUSE_HR	12	226E3	3.9908E8	1768.4	42.0521	0.0295	0.0295	2.6393

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00017	0.00118	-0.14	0.8884
B	0.011718	0.00541	2.16	0.0304
C	0.011876	0.000430	27.61	<.0001
D	-0.05675	0.00541	-10.50	<.0001
E	-0.00274	0.000410	-6.69	<.0001
A_W	0.011703	0.00358	3.27	0.0011
C_W	0.000764	0.000395	1.94	0.0529
B_INCOME	-6.54E-7	5.066E-8	-12.90	<.0001
P	0.000439	0.000662	0.66	0.5077
Q	-0.02846	0.00716	-3.97	<.0001
R	0.030212	0.00159	18.96	<.0001
S	-0.01337	0.00707	-1.89	0.0586
T	0.001327	0.000758	1.75	0.0799
P_W	0.060066	0.0144	4.16	<.0001
Q_W	0.02771	0.00660	4.20	<.0001
R_W	-0.00253	0.00239	-1.06	0.2895
S_W	-0.00949	0.00131	-7.26	<.0001
T_W	-0.00101	0.00107	-0.94	0.3450
Q_INCOME	-1.72E-7	6.638E-8	-2.60	0.0094
Q_W_INCOME	-1.32E-7	1.249E-8	-10.55	<.0001

Number of Observations		Statistics for System	
Used	225689	**Objective**	1.9998
Missing	51662	**Objective*N**	451335
Sum of Weights	4.02995E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Multi-Family Unit Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_MFU P Q R S T P_W Q_W R_W S_W T_W Q_MFU Q_W_MFU
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_MFU(DIF_LN_PEAKP_OPEAKP_AVE_mfu))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_MFU(DIF_LN_Daily_P_AVE_S_mfu), Q_W_MFU(DIF_LN_Daily_P_AVE_S_mfu_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Multi-Family Unit Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	6.75E-11
RPC(R_W)	1.720939
Object	0.000043
Trace(S)	7389.132
Objective Value	1.999831

Observations Processed	
Read	277351
Solved	277351
Used	244414
Missing	32937

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Multi-Family Unit Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	244E3	1.3737E9	5620.6	74.9704	0.0107	0.0107	2.8859
DIF_LN_DAILYUSE_HR	12	244E3	4.3224E8	1768.6	42.0544	0.0291	0.0290	2.6375

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00017	0.00113	-0.15	0.8793
B	-0.03938	0.00484	-8.13	<.0001
C	0.011237	0.000406	27.66	<.0001
D	-0.06728	0.00525	-12.83	<.0001
E	-0.00209	0.000395	-5.28	<.0001
A_W	0.012844	0.00339	3.78	0.0002
C_W	0.000777	0.000375	2.07	0.0383
B_MFU	0.025649	0.00537	4.78	<.0001
P	0.000479	0.000632	0.76	0.4485
Q	-0.03591	0.00623	-5.77	<.0001
R	0.030314	0.00154	19.74	<.0001
S	-0.01823	0.00681	-2.68	0.0075
T	0.001387	0.000731	1.90	0.0577
P_W	0.079243	0.0138	5.73	<.0001
Q_W	0.025838	0.00642	4.02	<.0001
R_W	-0.00143	0.00232	-0.62	0.5377
S_W	-0.0115	0.00124	-9.28	<.0001
T_W	-0.00034	0.00105	-0.33	0.7437
Q_MFU	-0.017	0.00716	-2.37	0.0176
Q_W_MFU	0.006204	0.00126	4.93	<.0001

Number of Observations		Statistics for System	
Used	244414	**Objective**	1.9998
Missing	32937	**Objective*N**	488787
Sum of Weights	4.43311E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Pool Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_POOL P Q R S T P_W Q_W R_W S_W T_W Q_POOL Q_W_POOL
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_POOL(DIF_LN_PEAKP_OPEAKP_AVE_pool))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_POOL(DIF_LN_Daily_P_AVE_S_pool), Q_W_POOL(DIF_LN_Daily_P_AVE_S_pool_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Pool Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	3.34E-10
RPC(R_W)	1.449958
Object	0.000044
Trace(S)	7434.914
Objective Value	1.999829

Observations Processed	
Read	277351
Solved	277351
Used	240671
Missing	36680

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Pool Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	241E3	1.3614E9	5657.1	75.2135	0.0109	0.0109	2.8865
DIF_LN_DAILYUSE_HR	12	241E3	4.2785E8	1777.8	42.1645	0.0289	0.0289	2.6408

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00013	0.00114	-0.12	0.9073
B	-0.0283	0.00445	-6.36	<.0001
C	0.011454	0.000411	27.85	<.0001
D	-0.07153	0.00531	-13.47	<.0001
E	-0.00226	0.000397	-5.69	<.0001
A_W	0.014696	0.00344	4.27	<.0001
C_W	0.000604	0.000380	1.59	0.1120
B_POOL	-0.01347	0.00877	-1.53	0.1249
P	0.000462	0.000640	0.72	0.4707
Q	-0.04082	0.00574	-7.11	<.0001
R	0.030292	0.00158	19.23	<.0001
S	-0.017	0.00688	-2.47	0.0135
T	0.001467	0.000751	1.95	0.0509
P_W	0.074409	0.0143	5.20	<.0001
Q_W	0.024924	0.00662	3.76	0.0002
R_W	-0.00102	0.00243	-0.42	0.6731
S_W	-0.01289	0.00126	-10.23	<.0001
T_W	-0.00014	0.00110	-0.12	0.9013
Q_POOL	-0.01478	0.0112	-1.32	0.1861
Q_W_POOL	0.005024	0.00218	2.30	0.0214

Number of Observations		Statistics for System	
Used	240671	**Objective**	1.9998
Missing	36680	**Objective*N**	481301
Sum of Weights	4.33464E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Persons per Household Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_PPHH P Q R S T P_W Q_W R_W S_W T_W Q_PPHH Q_W_PPHH
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_PPHH(DIF_LN_PEAKP_OPEAKP_AVE_pphh))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_PPHH(DIF_LN_Daily_P_AVE_S_pphh), Q_W_PPHH(DIF_LN_Daily_P_AVE_S_pphh_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Persons per Household Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	2.31E-10
RPC(R_W)	1.28156
Object	0.000048
Trace(S)	7378.952
Objective Value	1.999822

Observations Processed	
Read	277351
Solved	277351
Used	244226
Missing	33125

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Persons per Household Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	244E3	1.3704E9	5611.5	74.9103	0.0106	0.0106	2.8868
DIF_LN_DAILYUSE_HR	12	244E3	4.3162E8	1767.4	42.0405	0.0286	0.0285	2.6381

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00018	0.00113	-0.16	0.8742
B	-0.05197	0.00601	-8.65	<.0001
C	0.011223	0.000407	27.61	<.0001
D	-0.06953	0.00520	-13.36	<.0001
E	-0.00224	0.000395	-5.66	<.0001
A_W	0.012663	0.00339	3.73	0.0002
C_W	0.000854	0.000375	2.28	0.0229
B_PPHH	0.008233	0.00150	5.47	<.0001
P	0.000484	0.000632	0.77	0.4432
Q	-0.03863	0.00791	-4.88	<.0001
R	0.03017	0.00153	19.67	<.0001
S	-0.01626	0.00677	-2.40	0.0163
T	0.001483	0.000730	2.03	0.0421
P_W	0.078071	0.0138	5.66	<.0001
Q_W	0.023573	0.00646	3.65	0.0003
R_W	-0.00079	0.00232	-0.34	0.7342
S_W	-0.01224	0.00124	-9.87	<.0001
T_W	-0.00012	0.00105	-0.11	0.9090
Q_PPHH	-0.00108	0.00196	-0.55	0.5835
Q_W_PPHH	0.001367	0.000347	3.93	<.0001

Number of Observations		Statistics for System	
Used	244226	**Objective**	1.9998
Missing	33125	**Objective*N**	488408
Sum of Weights	4.42929E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Spa Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_SPA P Q R S T P_W Q_W R_W S_W T_W Q_SPA Q_W_SPA
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_SPA(DIF_LN_PEAKP_OPEAKP_AVE_spa))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_SPA(DIF_LN_Daily_P_AVE_S_spa), Q_W_SPA(DIF_LN_Daily_P_AVE_S_spa_wkd))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Spa Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	3.47E-10
RPC(R_W)	1.153909
Object	0.000044
Trace(S)	7373.458
Objective Value	1.999829

Observations Processed	
Read	277351
Solved	277351
Used	243216
Missing	34135

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Spa Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	243E3	1.3653E9	5613.7	74.9246	0.0107	0.0107	2.8868
DIF_LN_DAILYUSE_HR	12	243E3	4.2798E8	1759.8	41.9496	0.0288	0.0288	2.6409

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00013	0.00113	-0.11	0.9097
B	-0.02753	0.00440	-6.25	<.0001
C	0.011234	0.000407	27.59	<.0001
D	-0.06839	0.00530	-12.90	<.0001
E	-0.00217	0.000394	-5.52	<.0001
A_W	0.014247	0.00341	4.17	<.0001
C_W	0.000652	0.000376	1.73	0.0834
B_SPA	-0.02644	0.00854	-3.09	0.0020
P	0.000473	0.000633	0.75	0.4549
Q	-0.04096	0.00567	-7.22	<.0001
R	0.030286	0.00154	19.67	<.0001
S	-0.01835	0.00687	-2.67	0.0075
T	0.00151	0.000733	2.06	0.0394
P_W	0.068375	0.0140	4.87	<.0001
Q_W	0.023099	0.00649	3.56	0.0004
R_W	-0.00046	0.00233	-0.20	0.8440
S_W	-0.01189	0.00125	-9.49	<.0001
T_W	0.000099	0.00105	0.09	0.9248
Q_SPA	0.004901	0.0106	0.46	0.6439
Q_W_SPA	-0.00379	0.00199	-1.91	0.0566

Number of Observations		Statistics for System	
Used	243216	**Objective**	1.9998
Missing	34135	**Objective*N**	486391
Sum of Weights	4.39416E9		

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Care Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	20
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D E A_W C_W B_CARE P Q R S T P_W Q_W R_W S_W T_W Q_CARE Q_W_CARE
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_CARE(DIF_LN_PEAKP_OPEAKP_AVE_C))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_cac_wkd), T_W(DIF_Daily_DH_Price_S_WKD), Q_CARE(DIF_LN_DAILY_P_AVE_S_C), Q_W_CARE(DIF_LN_DAILY_P_AVE_S_WKD_C))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Care Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUMMER_CPPF_0304_ALLCUST_CARE_V2
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	20
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	6.38E-12
RPC(Q_CARE)	3.323685
Object	0.000031
Trace(S)	7361.098
Objective Value	1.999857

Observations Processed	
Read	277023
Solved	277023
Used	247430
Missing	29593

Residential CPP-F, Pooled Summer 2003-2004, All Customers, Whole Summer, With Care Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	247E3	1.3855E9	5599.6	74.8303	0.0116	0.0115	2.8863
DIF_LN_DAILYUSE_HR	12	247E3	4.3583E8	1761.5	41.9705	0.0301	0.0301	2.6399

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00019	0.00112	-0.17	0.8678
B	-0.05162	0.00450	-11.46	<.0001
C	0.011299	0.000403	28.02	<.0001
D	-0.06846	0.00513	-13.35	<.0001
E	-0.0025	0.000389	-6.45	<.0001
A_W	0.011261	0.00338	3.33	0.0009
C_W	0.000839	0.000373	2.25	0.0243
B_CARE	0.096199	0.00556	17.30	<.0001
P	0.000497	0.000627	0.79	0.4282
Q	-0.02748	0.00590	-4.66	<.0001
R	0.02973	0.00152	19.58	<.0001
S	-0.01697	0.00668	-2.54	0.0111
T	0.001244	0.000717	1.73	0.0828
P_W	-0.04083	0.0154	-2.65	0.0081
Q_W	-0.03156	0.00724	-4.36	<.0001
R_W	-0.00402	0.00225	-1.79	0.0732
S_W	-0.01159	0.00122	-9.49	<.0001
T_W	-0.00157	0.00101	-1.56	0.1185
Q_CARE	0.014471	0.00759	1.91	0.0565
Q_W_CARE	0.026471	0.00182	14.54	<.0001

Number of Observations		Statistics for System	
Used	247430	**Objective**	1.9999
Missing	29593	**Objective*N**	494825
Sum of Weights	4.48405E9		

Appendix 16.h:
Regression Model Underlying Tables 4-20 through 4-22

Residential CPP-F, Winter 2003-2004, All Customers, Whole Winter, With Inner Winter Dummy

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	26
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C E A_W C_W A_IW_W C_IW_W B_IW C_IW E_IW P Q R T P_W Q_W R_W T_W Q_IW R_IW T_IW P_IW_W Q_IW_W R_IW_W T_IW_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPeak_HDH65_Hr), E(DIF_CES_HDH65_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_HDH65_Hr_WKD), A_IW_W(DIF_winter_WKD), C_IW_W(DIF_Peak_OPeak_HDH65_Hr_TW_WKD), B_IW(DIF_LN_PEAKP_OPEAKP_AVE_TW), C_IW(DIF_Peak_OPeak_HDH65_Hr_TW), E_IW(DIF_CES_HDH65_PRICE_TW))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_HDH65_HOUR), T(DIF_Daily_HDH65_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_HDH65_HOUR_WKD), T_W(DIF_Daily_HDH65_Price_S_WKD), Q_IW(DIF_LN_DAILY_P_AVE_S_TW), R_IW(DIF_DAILY_HDH65_HOUR_TW), T_IW(DIF_Daily_HDH65_Price_S_TW), P_IW_W(DIF_winter_WKD), Q_IW_W(DIF_LN_DAILY_P_AVE_S_TW_WKD), R_IW_W(DIF_DAILY_HDH65_HOUR_TW_WKD), T_IW_W(DIF_Daily_HDH65_Price_S_TW_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.WINTER_CPPF_RES_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	26
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	2.94E-10
RPC(T_W)	2.358768
Object	0.000024
Trace(S)	7363.794
Objective Value	1.999792

Observations Processed	
Read	161933
Solved	161933
Used	161810
Missing	123

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	11	162E3	8.9769E8	5548.2	74.4860	0.0037	0.0037	2.9143
DIF_LN_DAILYUSE_HR	15	162E3	2.9376E8	1815.6	42.6102	0.0042	0.0041	2.6685

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00042	0.00137	-0.31	0.7586
B	-0.02861	0.0102	-2.82	0.0049
C	0.009309	0.000868	10.73	<.0001
E	-0.00305	0.00139	-2.20	0.0279
A_W	0.031487	0.00721	4.36	<.0001
C_W	-0.00043	0.00107	-0.40	0.6859
A_IW_W	-0.02389	0.00975	-2.45	0.0143
C_IW_W	0.000719	0.00141	0.51	0.6093
B_IW	-0.00341	0.0131	-0.26	0.7949
C_IW	-0.00165	0.00111	-1.48	0.1382
E_IW	0.003241	0.00175	1.86	0.0634
P	-0.00041	0.000786	-0.52	0.6040
Q	-0.05064	0.0222	-2.29	0.0223
R	0.002043	0.00479	0.43	0.6700
T	0.001164	0.00231	0.50	0.6137
P_W	0.199624	0.0533	3.75	0.0002
Q_W	0.087517	0.0251	3.48	0.0005
R_W	0.000876	0.00592	0.15	0.8823
T_W	-0.00081	0.00277	-0.29	0.7710
Q_IW	0.066344	0.0339	1.96	0.0500
R_IW	-0.0009	0.00588	-0.15	0.8780
T_IW	-0.00271	0.00284	-0.95	0.3400
P_IW_W	-0.09734	0.0943	-1.03	0.3018
Q_IW_W	-0.05617	0.0444	-1.26	0.2060
R_IW_W	-0.00492	0.00813	-0.61	0.5449
T_IW_W	-0.00074	0.00380	-0.19	0.8459

The MODEL Procedure

Number of Observations		Statistics for System	
Used	161810	**Objective**	1.9998
Missing	123	**Objective*N**	323586
Sum of Weights	2.94602E9		

Appendix 16.i:
Regression Model Underlying Tables 4-23, 4-24

Residential CPP-F, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	14
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C E A_W C_W P Q R T P_W Q_W R_W T_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPeak_HDH65_Hr), E(DIF_CES_HDH65_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_HDH65_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_HDH65_HOUR), T(DIF_Daily_HDH65_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_HDH65_HOUR_WKD), T_W(DIF_Daily_HDH65_Price_S_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-F, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.WINTER_CPPF_RES_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	14
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(C_W)	4.613968
Object	0.000021
Trace(S)	7365.62
Objective Value	1.999872

Observations Processed	
Read	161933
Solved	161933
Used	161810
Missing	123

Residential CPP-F, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	162E3	8.9786E8	5549.1	74.4920	0.0035	0.0035	2.9144
DIF_LN_DAILYUSE_HR	8	162E3	2.9392E8	1816.6	42.6211	0.0036	0.0036	2.6682

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00049	0.00137	-0.35	0.7235
B	-0.03027	0.00643	-4.71	<.0001
C	0.008028	0.000541	14.84	<.0001
E	-0.00086	0.000841	-1.02	0.3061
A_W	0.020565	0.00483	4.26	<.0001
C_W	0.000331	0.000692	0.48	0.6320
P	-0.00024	0.000785	-0.31	0.7597
Q	-0.03292	0.0161	-2.04	0.0414
R	0.005773	0.00236	2.45	0.0145
T	0.001488	0.00114	1.31	0.1915
P_W	0.202626	0.0417	4.86	<.0001
Q_W	0.083447	0.0197	4.24	<.0001
R_W	-0.00831	0.00349	-2.38	0.0172
T_W	-0.00408	0.00163	-2.50	0.0124

Number of Observations		Statistics for System	
Used	161810	**Objective**	1.9999
Missing	123	**Objective*N**	323599
Sum of Weights	2.94602E9		

Appendix 16.j:
Regression Models Underlying Table 4-25

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	16
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A C A_W B_W_INFO C_W A_CPP B_CPP_INFO C_CPP P R P_W Q_W_INFO R_W P_CPP Q_CPP_INFO R_CPP
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), B_W_INFO(DIF_info_WKD), C_W(DIF_Peak_OPeak_DH_Hr_WKD), A_CPP(DIF_CPP_F_DAY), B_CPP_INFO(DIF_info_CPP), C_CPP(DIF_Peak_OPeak_DH_Hr_CPP))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), Q_W_INFO(DIF_info_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), P_CPP(DIF_CPP_F_DAY), Q_CPP_INFO(DIF_info_CPP), R_CPP(DIF_DAILY_DH_HOUR_CPP))

Observations will be weighted by	WEIGHT

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure
SUR Estimation

year=2003 ZONE=2

```
NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.
```

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure
SUR Estimation Summary

year=2003 ZONE=2

Data Set Options	
DATA=	F_INTER.SUMMER_0304_INFO_ONLY_RES
OUT=	DATASET_1

Minimization Summary	
Parameters Estimated	16
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B_CPP_INFO)	0.416131
Object	0.000011
Trace(S)	13929.02
Objective Value	1.999167

Observations Processed	
Read	19710
Solved	19710
Used	19708
Missing	2

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure

year=2003 ZONE=2

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	19700	2.0661E8	10487.6	102.4	0.0027	0.0023	2.9506
DIF_LN_DAILYUSE_HR	8	19700	67795122	3441.4	58.6632	0.0120	0.0116	2.6581

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	0.00055	0.00399	0.14	0.8905
C	0.005953	0.00120	4.94	<.0001
A_W	0.004584	0.0112	0.41	0.6828
B_W_INFO	0.015478	0.0178	0.87	0.3836
C_W	0.001264	0.00134	0.94	0.3465
A_CPP	-0.03458	0.0134	-2.58	0.0098
B_CPP_INFO	0.000945	0.0213	0.04	0.9646
C_CPP	0.002373	0.00156	1.52	0.1282
P	0.000272	0.00229	0.12	0.9053
R	0.020598	0.00153	13.44	<.0001
P_W	0.023298	0.00627	3.72	0.0002
Q_W_INFO	0.011477	0.0101	1.14	0.2547
R_W	-0.00481	0.00156	-3.09	0.0020
P_CPP	0.01273	0.00737	1.73	0.0839
Q_CPP_INFO	-0.02235	0.0121	-1.84	0.0655
R_CPP	-0.00143	0.00176	-0.81	0.4161

Number of Observations		Statistics for System	
Used	19708	Objective	1.9992
Missing	2	Objective*N	39400
Sum of Weights	658669295		

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure
SUR Estimation

year=2003 ZONE=3

```
NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.
```

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure
SUR Estimation Summary

year=2003 ZONE=3

Data Set Options	
DATA=	F_INTER.SUMMER_0304_INFO_ONLY_RES
OUT=	DATASET_1

Minimization Summary	
Parameters Estimated	16
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(A_W)	1.728848
Object	0.000116
Trace(S)	8144.016
Objective Value	1.998938

Observations Processed	
Read	19265
Solved	19265
First	26846
Last	52010

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure

year=2003 ZONE=3

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	19257	1.2194E8	6332.4	79.5766	0.0140	0.0136	2.8635
DIF_LN_DAILYUSE_HR	8	19257	34885646	1811.6	42.5627	0.0627	0.0623	2.6567

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	0.000881	0.00421	0.21	0.8343
C	0.017137	0.00116	14.74	<.0001
A_W	0.025151	0.0159	1.59	0.1130
B_W_INFO	0.039601	0.0219	1.81	0.0700
C_W	0.000274	0.00132	0.21	0.8350
A_CPP	0.033312	0.0189	1.77	0.0775
B_CPP_INFO	-0.10132	0.0263	-3.86	0.0001
C_CPP	-0.00196	0.00153	-1.28	0.2007
P	-0.00072	0.00225	-0.32	0.7488
R	0.036591	0.00113	32.28	<.0001
P_W	0.042393	0.00750	5.65	<.0001
Q_W_INFO	0.038647	0.0116	3.33	0.0009
R_W	-0.00169	0.00111	-1.52	0.1277
P_CPP	0.0202	0.00904	2.24	0.0254
Q_CPP_INFO	-0.02599	0.0139	-1.87	0.0620
R_CPP	-0.00031	0.00129	-0.24	0.8122

Number of Observations		**Statistics for System**	
Used	19265	**Objective**	1.9989
Missing	0	**Objective*N**	38510
Sum of Weights	357582812		

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure
SUR Estimation

year=2004 ZONE=2

```
NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.
```

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure
SUR Estimation Summary

year=2004 ZONE=2

Data Set Options	
DATA=	F_INTER.SUMMER_0304_INFO_ONLY_RES
OUT=	DATASET_1

Minimization Summary	
Parameters Estimated	16
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(C_CPP)	0.447005
Object	0.00003
Trace(S)	13353.08
Objective Value	1.998871

Observations Processed	
Read	14973
Solved	14973
First	52011
Last	66983

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure

year=2004 ZONE=2

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	14965	1.4569E8	9735.1	98.6666	0.0062	0.0058	2.8817
DIF_LN_DAILYUSE_HR	8	14965	54143056	3618.0	60.1496	0.0151	0.0146	2.6110

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00047	0.00444	-0.11	0.9150
C	0.008805	0.00142	6.21	<.0001
A_W	-0.00821	0.0118	-0.70	0.4870
B_W_INFO	0.025926	0.0189	1.37	0.1694
C_W	0.003297	0.00149	2.21	0.0271
A_CPP	-0.02779	0.0177	-1.57	0.1154
B_CPP_INFO	0.03646	0.0270	1.35	0.1770
C_CPP	0.00086	0.00188	0.46	0.6467
P	0.000757	0.00270	0.28	0.7795
R	0.021844	0.00194	11.28	<.0001
P_W	0.024329	0.00728	3.34	0.0008
Q_W_INFO	-0.00967	0.0114	-0.85	0.3960
R_W	0.000888	0.00191	0.46	0.6422
P_CPP	0.016804	0.0109	1.54	0.1241
Q_CPP_INFO	0.014092	0.0163	0.86	0.3873
R_CPP	-0.00551	0.00248	-2.22	0.0263

Number of Observations		**Statistics for System**	
Used	14973	**Objective**	1.9989
Missing	0	**Objective*N**	29929
Sum of Weights	494885439		

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure
SUR Estimation

year=2004 ZONE=3

```
NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.
```

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure
SUR Estimation Summary

year=2004 ZONE=3

Data Set Options	
DATA=	F_INTER.SUMMER_0304_INFO_ONLY_RES
OUT=	DATASET_1

Minimization Summary	
Parameters Estimated	16
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	1.07E-12
RPC(A_W)	17.45798
Object	0.000026
Trace(S)	9206.752
Objective Value	1.998873

Observations Processed	
Read	14871
Solved	14871
First	66984
Last	81854

Residential Information Only, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day/Information Dummies

The MODEL Procedure

year=2004 ZONE=3

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	14863	1.0625E8	7148.5	84.5489	0.0108	0.0104	2.8781
DIF_LN_DAILYUSE_HR	8	14863	30591664	2058.2	45.3679	0.0618	0.0614	2.6078

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00197	0.00513	-0.38	0.7005
C	0.015218	0.00164	9.25	<.0001
A_W	-0.00759	0.0183	-0.41	0.6789
B_W_INFO	0.000327	0.0251	0.01	0.9896
C_W	0.005167	0.00156	3.32	0.0009
A_CPP	-0.05524	0.0325	-1.70	0.0896
B_CPP_INFO	0.010318	0.0366	0.28	0.7782
C_CPP	0.004123	0.00235	1.75	0.0797
P	-0.00111	0.00275	-0.40	0.6863
R	0.040037	0.00153	26.18	<.0001
P_W	0.052966	0.00881	6.01	<.0001
Q_W_INFO	0.006038	0.0134	0.45	0.6530
R_W	-0.00219	0.00147	-1.49	0.1357
P_CPP	-0.02881	0.0148	-1.94	0.0522
Q_CPP_INFO	0.016611	0.0195	0.85	0.3950
R_CPP	0.001475	0.00197	0.75	0.4538

Number of Observations		**Statistics for System**	
Used	14871	**Objective**	1.9989
Missing	0	**Objective*N**	29725
Sum of Weights	272213491		

Appendix 16.k:
Regression Model Underlying Tables 5-2 through 5-5

Residential TOU Rate, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer/2004 Inner Summer Dummies

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	49
Equations	2
Number of Statements	2

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), E(DIF_CES_DH_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_OUT_X(DIF_LN_PEAKP_OPEAKP_AVE_OUT_X), C_OUT_X(DIF_Peak_OPeak_DH_Hr_OUT_X), D_OUT_X(DIF_LN_PO_AVE_CAC_OUT_X), E_OUT_X(DIF_CES_DH_PRICE_OUT_X), A_OUT_X_W(DIF_OUT_X_WKD), C_OUT_X_W(DIF_Peak_OPeak_DH_Hr_OUT_X_WKD), A_04_IN(DIF_IN_04), B_04_IN(DIF_LN_PEAKP_OPEAKP_AVE_04IN), C_04_IN(DIF_Peak_OPeak_DH_Hr_04IN), D_04_IN(DIF_LN_PEAKP_OPEAKP_AVE_CAC_04IN), E_04_IN(DIF_CES_DH_PRICE_04IN), A_W_04_IN(DIF_IN_04_WKD), C_W_04_IN(DIF_Peak_OPeak_DH_Hr_4IW))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), S(DIF_LN_Daily_P_AVE_S_CAC), T(DIF_Daily_DH_Price_S), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD), S_W(DIF_LN_Daily_P_AVE_S_CAC_WKD), T_W(DIF_Daily_DH_Price_S_WKD), Q_OUT_X(DIF_LN_DAILY_P_AVE_S_OUT_X), R_OUT_X(DIF_DAILY_DH_HOUR_OUT_X), S_OUT_X(DIF_LN_D_P_AVE_S_CAC_OUT_X), T_OUT_X(DIF_Daily_DH_Price_S_OUT_X), P_OUT_X_W(DIF_OUT_X_WKD), Q_OUT_X_W(DIF_LN_DAILY_P_AVE_S_OUT_X_WKD), R_OUT_X_W(DIF_DAILY_DH_HOUR_OUT_X_WKD), S_OUT_X_W(DIF_LN_D_P_AVE_S_CAC_OUT_X_WKD), T_OUT_X_W(DIF_Daily_DH_Price_S_OUT_X_WKD), P_04_IN(DIF_IN_04), Q_04_IN(DIF_LN_DAILY_P_AVE_S_04IN), R_04_IN(DIF_DAILY_DH_HOUR_04IN), S_04_IN(DIF_LN_Daily_P_AVE_S_CAC_04IN), T_04_IN(DIF_Daily_DH_Price_S_04IN), P_W_04_IN(DIF_IN_04_WKD), Q_W_04_IN(DIF_LN_DAILY_P_AVE_S_4IW), R_W_04_IN(DIF_DAILY_DH_HOUR_4IW), S_W_04_IN(DIF_LN_Daily_P_AVE_S_CAC_4IW), T_W_04_IN(DIF_Daily_DH_Price_S_4IW))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential TOU Rate, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer/2004 Inner Summer Dummies

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_0304_TOU_RES
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	49
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	4.76E-10
RPC(S_W_04_IN)	2.105958
Object	0.000048
Trace(S)	12291.88
Objective Value	1.99958

Observations Processed	
Read	177477
Solved	177477
Used	151767
Missing	25710

Residential TOU Rate, Pooled Summer 2003-2004, All Customers, Whole Summer, With Outer Summer/2004 Inner Summer Dummies

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	20	152E3	1.4095E9	9288.4	96.3765	0.0094	0.0093	2.8849
DIF_LN_DAILYUSE_HR	29	152E3	4.5574E8	3003.5	54.8038	0.0326	0.0324	2.6335

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00113	0.00143	-0.79	0.4290
B	-0.07024	0.0139	-5.07	<.0001
C	0.011501	0.000740	15.53	<.0001
D	-0.13009	0.0170	-7.65	<.0001
E	0.004093	0.00128	3.21	0.0013
A_W	0.002643	0.00660	0.40	0.6888
C_W	0.00127	0.000706	1.80	0.0720
B_OUT_X	0.028001	0.0196	1.43	0.1525
C_OUT_X	-0.00209	0.00125	-1.67	0.0954
D_OUT_X	0.066352	0.0237	2.79	0.0052
E_OUT_X	-0.00233	0.00204	-1.14	0.2538
A_OUT_X_W	0.018323	0.0103	1.78	0.0748
C_OUT_X_W	0.001058	0.00126	0.84	0.4018
A_04_IN	0.009904	0.0256	0.39	0.6985
B_04_IN	0.072365	0.0225	3.21	0.0013
C_04_IN	0.000689	0.00124	0.55	0.5791
D_04_IN	0.013516	0.0271	0.50	0.6179
E_04_IN	0.003283	0.00219	1.50	0.1340
A_W_04_IN	0.008705	0.0110	0.79	0.4272
C_W_04_IN	0.001782	0.00115	1.55	0.1213
P	0.000251	0.000815	0.31	0.7584
Q	-0.0844	0.0245	-3.45	0.0006
R	0.039847	0.00628	6.34	<.0001
S	-0.11329	0.0238	-4.75	<.0001
T	0.004177	0.00304	1.37	0.1695
P_W	0.196672	0.0370	5.32	<.0001
Q_W	0.089806	0.0179	5.02	<.0001
R_W	-0.01815	0.00601	-3.02	0.0025

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
S_W	-0.01193	0.00254	-4.70	<.0001
T_W	-0.00848	0.00285	-2.98	0.0029
Q_OUT_X	-0.01324	0.00853	-1.55	0.1209
R_OUT_X	-0.01618	0.0123	-1.32	0.1870
S_OUT_X	0.028546	0.0126	2.26	0.0236
T_OUT_X	-0.00565	0.00597	-0.95	0.3439
P_OUT_X_W	0.092022	0.0490	1.88	0.0602
Q_OUT_X_W	0.036522	0.0227	1.61	0.1075
R_OUT_X_W	0.006546	0.0133	0.49	0.6236
S_OUT_X_W	0.007601	0.00356	2.13	0.0329
T_OUT_X_W	0.003589	0.00632	0.57	0.5699
P_04_IN	-0.04011	0.0877	-0.46	0.6474
Q_04_IN	-0.01827	0.0427	-0.43	0.6688
R_04_IN	-0.00255	0.0133	-0.19	0.8476
S_04_IN	0.003131	0.0176	0.18	0.8586
T_04_IN	0.000637	0.00645	0.10	0.9214
P_W_04_IN	0.162391	0.0740	2.19	0.0282
Q_W_04_IN	0.070085	0.0356	1.97	0.0493
R_W_04_IN	-0.00872	0.0128	-0.68	0.4949
S_W_04_IN	0.00174	0.00370	0.47	0.6384
T_W_04_IN	-0.00435	0.00611	-0.71	0.4765

Number of Observations		Statistics for System	
Used	151767	**Objective**	1.9996
Missing	25710	**Objective*N**	303470
Sum of Weights	4.56089E9		

Appendix 16.I:
Regression Model Underlying Tables 5-6 through 5-8

Residential TOU Rate, Winter 2003-2004, All Customers, Whole Winter, With Inner Winter Dummy

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	26
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C E A_W C_W A_IW_W C_IW_W B_IW C_IW E_IW P Q R T P_W Q_W R_W T_W Q_IW R_IW T_IW P_IW_W Q_IW_W R_IW_W T_IW_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPeak_HDH65_Hr), E(DIF_CES_HDH65_PRICE), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_HDH65_Hr_WKD), A_IW_W(DIF_winter_WKD), C_IW_W(DIF_Peak_OPeak_HDH65_Hr_TW_WKD), B_IW(DIF_LN_PEAKP_OPEAKP_AVE_TW), C_IW(DIF_Peak_OPeak_HDH65_Hr_TW), E_IW(DIF_CES_HDH65_PRICE_TW))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_C), R(DIF_DAILY_HDH65_HOUR), T(DIF_Daily_HDH65_Price_C), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_C_WKD), R_W(DIF_DAILY_HDH65_HOUR_WKD), T_W(DIF_Daily_HDH65_Price_C_WKD), Q_IW(DIF_LN_DAILY_P_AVE_C_TW), R_IW(DIF_DAILY_HDH65_HOUR_TW), T_IW(DIF_Daily_HDH65_Price_C_TW), P_IW_W(DIF_winter_WKD), Q_IW_W(DIF_LN_DAILY_P_AVE_C_TW_WKD), R_IW_W(DIF_DAILY_HDH65_HOUR_TW_WKD), T_IW_W(DIF_Daily_HDH65_Price_C_TW_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.WINTER_0304_TOU_RES
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	26
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	1.313E-9
RPC(T_IW_W)	11.73224
Object	0.000044
Trace(S)	11531.82
Objective Value	1.999648

Observations Processed	
Read	99978
Solved	99978
Used	98741
Missing	1237

Residential TOU Rate, Winter 2003-2004, All Customers, Whole Winter, With Inner Winter Dummy

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	11	98730	8.5733E8	8683.6	93.1857	0.0038	0.0037	2.9093
DIF_LN_DAILYUSE_HR	15	98726	2.812E8	2848.2	53.3689	0.0046	0.0045	2.6417

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00027	0.00174	-0.16	0.8743
B	-0.06148	0.0197	-3.12	0.0018
C	0.009043	0.00125	7.22	<.0001
E	-0.00697	0.00275	-2.54	0.0112
A_W	0.002427	0.0101	0.24	0.8092
C_W	-0.00392	0.00148	-2.65	0.0082
A_IW_W	-0.00579	0.0138	-0.42	0.6748
C_IW_W	0.004613	0.00194	2.38	0.0172
B_IW	-0.03247	0.0278	-1.17	0.2428
C_IW	-0.00271	0.00162	-1.67	0.0942
E_IW	0.009667	0.00359	2.69	0.0071
P	-0.00015	0.000995	-0.15	0.8804
Q	-0.19555	0.0531	-3.68	0.0002
R	0.003815	0.00988	0.39	0.6995
T	0.002784	0.00475	0.59	0.5580
P_W	0.277344	0.0677	4.10	<.0001
Q_W	0.131871	0.0326	4.05	<.0001
R_W	0.001181	0.00781	0.15	0.8798
T_W	-0.00077	0.00372	-0.21	0.8361
Q_IW	-0.12568	0.0838	-1.50	0.1337
R_IW	0.014175	0.0129	1.10	0.2726
T_IW	0.003733	0.00622	0.60	0.5483
P_IW_W	0.023079	0.1233	0.19	0.8515
Q_IW_W	0.004353	0.0591	0.07	0.9413
R_IW_W	-0.0112	0.0109	-1.02	0.3061
T_IW_W	-0.00384	0.00521	-0.74	0.4614

Residential TOU Rate, Winter 2003-2004, All Customers, Whole Winter, With Inner Winter Dummy

The MODEL Procedure

Number of Observations		Statistics for System	
Used	98741	**Objective**	1.9996
Missing	1237	**Objective*N**	197447
Sum of Weights	2.88551E9		

Appendix 16.m:
Regression Model Underlying Tables 6-2, 6-3

Residential CPP-V Rate, Track A, Summer 2004, All Customers, Whole Summer

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	12
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C D A_W C_W P Q R P_W Q_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), D(DIF_LN_PEAKP_OPEAKP_AVE_CAC), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_04_RES_CPPV_TRKA
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	12
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	7.87E-12
RPC(C_W)	2.223648
Object	0.000293
Trace(S)	1032.313
Objective Value	1.998905

Observations Processed	
Read	25730
Solved	25730
Used	23598
Missing	2132

Residential CPP-V Rate, Track A, Summer 2004, All Customers, Whole Summer

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	23592	18565365	786.9	28.0524	0.0130	0.0128	2.9049
DIF_LN_DAILYUSE_HR	6	23592	5788958	245.4	15.6645	0.0220	0.0218	2.6280

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	0.00072	0.00305	0.24	0.8134
B	-0.07059	0.0195	-3.61	0.0003
C	0.00737	0.00164	4.50	<.0001
D	-0.05026	0.0206	-2.44	0.0145
A_W	0.022414	0.00674	3.33	0.0009
C_W	0.001089	0.00249	0.44	0.6613
P	-0.00007	0.00170	-0.04	0.9665
Q	-0.02671	0.0157	-1.70	0.0895
R	0.018572	0.00115	16.15	<.0001
P_W	0.011726	0.0409	0.29	0.7742
Q_W	-0.0165	0.0203	-0.81	0.4153
R_W	-0.0047	0.00125	-3.76	0.0002

Number of Observations		**Statistics for System**	
Used	23598	**Objective**	1.9989
Missing	2132	**Objective*N**	47170
Sum of Weights	84490444		

Appendix 16.n:
Regression Model Underlying Tables 6-4, 6-5

Residential CPP-V Rate, Track C, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Dispatch Dummy

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	13
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_CPP_DISP A_W C_W P Q R P_CPP_DISP P_W Q_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_CPP_DISP(DIF_CPP_Dispatch), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_DH_HOUR), P_CPP_DISP(DIF_CPP_Dispatch), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_DH_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-V Rate, Track C, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Dispatch Dummy

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_0304_CPPV_TRKC_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	13
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	7.74E-12
RPC(R)	0.158744
Object	0.000551
Trace(S)	0.381401
Objective Value	1.998706

Observations Processed	
Read	68839
Solved	68839
Used	67546
Missing	1293

Residential CPP-V Rate, Track C, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Dispatch Dummy

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	67540	20155.1	0.2984	0.5463	0.0399	0.0398	2.8359
DIF_LN_DAILYUSE_HR	7	67539	5604.6	0.0830	0.2881	0.0574	0.0573	2.6030

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	0.001011	0.00210	0.48	0.6305
B	-0.07743	0.00730	-10.61	<.0001
C	0.008312	0.000965	8.61	<.0001
A_CPP_DISP	-0.21403	0.00890	-24.04	<.0001
A_W	0.053617	0.00517	10.38	<.0001
C_W	0.010634	0.00149	7.13	<.0001
P	0.000706	0.00111	0.64	0.5238
Q	-0.04408	0.0126	-3.49	0.0005
R	0.030563	0.000715	42.76	<.0001
P_CPP_DISP	-0.0194	0.00579	-3.35	0.0008
P_W	0.048327	0.0294	1.64	0.1006
Q_W	0.002605	0.0148	0.18	0.8606
R_W	0.004575	0.000721	6.34	<.0001

Number of Observations		**Statistics for System**	
Used	67546	**Objective**	1.9987
Missing	1293	**Objective*N**	135005

Appendix 16.o:
Regression Model Underlying Discussion of Residential Track C, CPP-V Winter Analysis (Section 6.2)

Residential CPP-V Rate, Track C, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	11
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W P Q R P_W Q_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPeak_HDH_65_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_HDH_65_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), Q(DIF_LN_DAILY_P_AVE_S), R(DIF_DAILY_HDH65_HOUR), P_W(DIF_Weekend), Q_W(DIF_LN_DAILY_P_AVE_S_WKD), R_W(DIF_DAILY_HDH65_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

Residential CPP-V Rate, Track C, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.WINTER_CPPV_TRKC_ALLCUST
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	11
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	6.41E-11
RPC(P_W)	0.803371
Object	0.000025
Trace(S)	0.288278
Objective Value	1.999686

Observations Processed	
Read	42483
Solved	42483
Used	41556
Missing	927

Residential CPP-V Rate, Track C, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	5	41551	9202.5	0.2215	0.4706	0.0064	0.0063	2.9152
DIF_LN_DAILYUSE_HR	6	41550	2775.7	0.0668	0.2585	0.0116	0.0115	2.6585

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00032	0.00231	-0.14	0.8886
B	-0.02173	0.00739	-2.94	0.0033
C	0.006932	0.000843	8.22	<.0001
A_W	0.051986	0.00721	7.21	<.0001
C_W	0.002474	0.00117	2.12	0.0342
P	-0.00051	0.00127	-0.40	0.6882
Q	0.008792	0.0120	0.73	0.4644
R	0.002383	0.000675	3.53	0.0004
P_W	-0.01005	0.0467	-0.22	0.8297
Q_W	-0.0212	0.0232	-0.92	0.3600
R_W	0.001555	0.000518	3.00	0.0027

Number of Observations		**Statistics for System**	
Used	41556	**Objective**	1.9997
Missing	927	**Objective*N**	83099

Appendix 17

Regression Models Underlying All Commercial and Industrial Sector Analysis

Regression Variable Dictionary	
Variable	***Definition***
A	Intercept
A_CPP	CPP Day Dummy
A_W	Weekend Dummy
A_W_04	2004 Year Dummy* Weekend Dummy
B	Ln(Average Peak Price / Off-Peak Price)
B_04	Ln(Average Peak Price / Off-Peak Price)*2004 Year Dummy
B_ADU	Ln(Average Peak Price / Off-Peak Price)*Average Daily Use
B_SQFT	Ln(Average Peak Price / Off-Peak Price)*Square Footage
C*	Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour
C_04	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*2004 Year Dummy
C_W	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour) * Weekend Dummy
C_W_04	(Peak Degree Hour per Hour - Off-Peak Degree Hour per Hour)*Weekend Dummy*2004 Year Dummy
P	Intercept
P_04	2004 Year Dummy
P_W_04	2004 Year Dummy*Weekend Dummy
Q*	Ln(Daily Average Price)
Q_04	Ln(Daily Average Price)*2004 Year Dummy
Q_W_04	Ln(Daily Average Price)*Weekend Dummy*2004 Year Dummy
R	Daily Average Degree Hour per Hour
R_04	Daily Average Degree Hour per Hour*2004 Year Dummy
R_W	Daily Average Degree Hour per Hour*Weekend Dummy
R_W_04	Daily Average Degree Hour per Hour*Weekend Dummy*2004 Year Dummy

*Note: In Summer regressions, Degree Hours refers to Cooling Degree Hours, Base 72
In Winter regressions, Degree Hours refers to Heating Degree Hours, Base 65.

Appendix 17.a:
Regression Models Underlying Table 7-2

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	9
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_04_CPPV_CI_LT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	9
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B)	0.346478
Object	0.000218
Trace(S)	3201.982
Objective Value	1.998792

Observations Processed	
Read	11666
Solved	11666

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	5	11661	20781820	1782.2	42.2157	0.0681	0.0678	2.7448
DIF_LN_DAILYUSE_HR	4	11662	16557916	1419.8	37.6805	0.1360	0.1358	2.6414

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00249	0.00628	-0.40	0.6915
B	-0.04452	0.0144	-3.10	0.0020
C	0.003988	0.00214	1.87	0.0622
A_W	-0.40831	0.0162	-25.25	<.0001
C_W	0.009599	0.00170	5.65	<.0001
P	-0.00154	0.00560	-0.28	0.7832
R	0.020015	0.00338	5.93	<.0001
P_W	-0.49421	0.0133	-37.13	<.0001
R_W	0.012191	0.00218	5.60	<.0001

Number of Observations		**Statistics for System**	
Used	11666	**Objective**	1.9988
Missing	0	**Objective*N**	23318
Sum of Weights	45202184		

C&I CPP-V Rate, Track A GT20kW, Summer 2004, All Customers, Whole Summer

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	9
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track A GT20kW, Summer 2004, All Customers, Whole Summer

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_04_CPPV_CI_GT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	9
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(C_W)	0.587444
Object	0.000419
Trace(S)	506.9195
Objective Value	1.998544

Observations Processed	
Read	14560
Solved	14560

C&I CPP-V Rate, Track A GT20kW, Summer 2004, All Customers, Whole Summer

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	5	14555	3107944	213.5	14.6127	0.1050	0.1047	2.6899
DIF_LN_DAILYUSE_HR	4	14556	4270563	293.4	17.1286	0.2125	0.2123	2.5436

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00113	0.00328	-0.35	0.7293
B	-0.06924	0.00830	-8.34	<.0001
C	0.002835	0.00115	2.46	0.0137
A_W	-0.28042	0.00860	-32.59	<.0001
C_W	0.002027	0.000956	2.12	0.0340
P	-0.00155	0.00384	-0.40	0.6859
R	0.008169	0.00247	3.31	0.0009
P_W	-0.48177	0.00904	-53.32	<.0001
R_W	0.009951	0.00174	5.71	<.0001

Number of Observations		**Statistics for System**	
Used	14560	**Objective**	1.9985
Missing	0	**Objective*N**	29099
Sum of Weights	19884996		

Appendix 17.b:
Regression Models Underlying Table 7-3

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer, Square Footage Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	10
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C B_SQFT A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), B_SQFT(DIF_LN_PEAKP_OPEAKP_AVE_sqft), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer, Square Footage Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_04_CPPV_CI_LT20_V2
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	10
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B_SQFT)	0.279528
Object	0.000269
Trace(S)	3424.406
Objective Value	1.998424

Observations Processed	
Read	9637
Solved	9637

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer, Square Footage Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	9631	17632530	1830.8	42.7880	0.0752	0.0747	2.7394
DIF_LN_DAILYUSE_HR	4	9633	15351110	1593.6	39.9199	0.1346	0.1343	2.6637

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00337	0.00703	-0.48	0.6316
B	-0.08053	0.0175	-4.60	<.0001
C	0.005124	0.00238	2.15	0.0316
B_SQFT	4.692E-6	1.98E-6	2.37	0.0178
A_W	-0.44626	0.0191	-23.32	<.0001
C_W	0.00996	0.00194	5.13	<.0001
P	-0.00131	0.00656	-0.20	0.8417
R	0.023817	0.00388	6.14	<.0001
P_W	-0.52289	0.0157	-33.24	<.0001
R_W	0.012212	0.00244	5.01	<.0001

Number of Observations		**Statistics for System**	
Used	9637	**Objective**	1.9984
Missing	0	**Objective*N**	19259
Sum of Weights	36998211		

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer, ADU Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	10
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C B_ADU A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), B_ADU(DIF_LN_PEAKP_OPEAKP_AVE_adu), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer, ADU Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_04_CPPV_CI_LT20_V2
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	10
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B)	1.093377
Object	0.000289
Trace(S)	3423.403
Objective Value	1.998385

Observations Processed	
Read	9637
Solved	9637

C&I CPP-V Rate, Track A LT20kW, Summer 2004, All Customers, Whole Summer, ADU Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	9631	17622412	1829.8	42.7757	0.0758	0.0753	2.7405
DIF_LN_DAILYUSE_HR	4	9633	15351568	1593.6	39.9205	0.1346	0.1343	2.6637

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00336	0.00703	-0.48	0.6327
B	-0.00184	0.0226	-0.08	0.9351
C	0.00525	0.00238	2.20	0.0275
B_ADU	-0.00142	0.000420	-3.39	0.0007
A_W	-0.44696	0.0191	-23.36	<.0001
C_W	0.009972	0.00194	5.14	<.0001
P	-0.00131	0.00656	-0.20	0.8424
R	0.024015	0.00388	6.20	<.0001
P_W	-0.52186	0.0157	-33.18	<.0001
R_W	0.011944	0.00244	4.90	<.0001

Number of Observations		**Statistics for System**	
Used	9637	**Objective**	1.9984
Missing	0	**Objective*N**	19258
Sum of Weights	36998211		

C&I CPP-V Rate, Track A GT20kW, Summer 2004, All Customers, Whole Summer, ADU Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	10
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C B_ADU A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), B_ADU(DIF_LN_PEAKP_OPEAKP_AVE_adu), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_04_CPPV_CI_GT20_V2
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	10
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B_ADU)	3.334034
Object	0.000506
Trace(S)	537.4294
Objective Value	1.998214

Observations Processed	
Read	12933
Solved	12933

C&I CPP-V Rate, Track A GT20kW, Summer 2004, All Customers, Whole Summer, ADU Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	12927	2887977	223.4	14.9468	0.1087	0.1084	2.7057
DIF_LN_DAILYUSE_HR	4	12929	4060000	314.0	17.7207	0.2221	0.2219	2.5622

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00117	0.00357	-0.33	0.7428
B	-0.07897	0.0114	-6.94	<.0001
C	0.00276	0.00125	2.22	0.0267
B_ADU	0.000016	0.000024	0.67	0.5015
A_W	-0.29084	0.00948	-30.69	<.0001
C_W	0.001298	0.00102	1.27	0.2038
P	-0.00146	0.00423	-0.35	0.7298
R	0.007225	0.00267	2.71	0.0068
P_W	-0.51842	0.0100	-51.67	<.0001
R_W	0.011381	0.00186	6.13	<.0001

Number of Observations		Statistics for System	
Used	12933	**Objective**	1.9982
Missing	0	**Objective*N**	25843
Sum of Weights	17527209		

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	10
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C B_SQFT A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), B_SQFT(DIF_LN_PEAKP_OPEAKP_AVE_sqft), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track A GT20kW, Summer 2004, All Customers, Whole Summer, Square Footage Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_04_CPPV_CI_GT20_V2
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	10
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(C_W)	0.677196
Object	0.000747
Trace(S)	536.9239
Objective Value	1.997733

Observations Processed	
Read	12933
Solved	12933

C&I CPP-V Rate, Track A GT20kW, Summer 2004, All Customers, Whole Summer, Square Footage Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	12927	2881551	222.9	14.9302	0.1107	0.1104	2.7080
DIF_LN_DAILYUSE_HR	4	12929	4059892	314.0	17.7205	0.2221	0.2219	2.5622

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00118	0.00356	-0.33	0.7407
B	-0.09527	0.0104	-9.18	<.0001
C	0.002685	0.00124	2.16	0.0310
B_SQFT	1.388E-6	3.61E-7	3.84	0.0001
A_W	-0.29118	0.00947	-30.76	<.0001
C_W	0.001391	0.00102	1.36	0.1728
P	-0.00146	0.00423	-0.35	0.7294
R	0.007105	0.00267	2.66	0.0078
P_W	-0.51905	0.0100	-51.72	<.0001
R_W	0.011576	0.00186	6.23	<.0001

Number of Observations		Statistics for System	
Used	12933	**Objective**	1.9977
Missing	0	**Objective*N**	25837
Sum of Weights	17527209		

Appendix 17.c:
Regression Models Underlying Tables 7-6, 7-7

C&I CPP-V Rate, Track C LT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day Dummy

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	11
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W A_CPP P R P_W R_W P_CPP
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), A_CPP(DIF_CPP_V_TrkC_Day))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD), P_CPP(DIF_CPP_V_TrkC_Day))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track C LT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day Dummy

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_0304_CPPV_CI_TRKC_LT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	11
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B)	1.078588
Object	0.000115
Trace(S)	21.61564
Objective Value	1.99918

Observations Processed	
Read	18627
Solved	18627

C&I CPP-V Rate, Track C LT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day Dummy

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	18621	204578	10.9864	3.3146	0.1138	0.1136	2.8252
DIF_LN_DAILYUSE_HR	5	18622	197937	10.6292	3.2602	0.1935	0.1933	2.7333

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00138	0.00488	-0.28	0.7767
B	0.033701	0.0124	2.72	0.0064
C	0.006863	0.00157	4.38	<.0001
A_W	-0.48046	0.0173	-27.72	<.0001
C_W	0.003072	0.00143	2.15	0.0318
A_CPP	-0.22942	0.0150	-15.28	<.0001
P	-0.00127	0.00480	-0.27	0.7907
R	0.016268	0.00260	6.25	<.0001
P_W	-0.47768	0.0128	-37.40	<.0001
R_W	-0.02027	0.00147	-13.83	<.0001
P_CPP	-0.036	0.0128	-2.82	0.0048

Number of Observations		Statistics for System	
Used	18627	Objective	1.9992
Missing	0	Objective*N	37239
Sum of Weights	461811		

C&I CPP-V Rate, Track C GT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day Dummy

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	11
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W A_CPP P R P_W R_W P_CPP
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), A_CPP(DIF_CPP_V_TrkC_Day))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD), P_CPP(DIF_CPP_V_TrkC_Day))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track C GT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day Dummy

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_0304_CPPV_CI_TRKC_GT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	11
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(C_W)	1.122762
Object	0.000389
Trace(S)	3.026679
Objective Value	1.998792

Observations Processed	
Read	25634
Solved	25634

C&I CPP-V Rate, Track C GT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With CPP Day Dummy

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	6	25628	39894.3	1.5567	1.2477	0.0595	0.0593	2.6230
DIF_LN_DAILYUSE_HR	5	25629	37674.9	1.4700	1.2124	0.1188	0.1187	2.3644

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00106	0.00215	-0.49	0.6221
B	-0.02247	0.00547	-4.10	<.0001
C	0.005261	0.000681	7.73	<.0001
A_W	-0.16462	0.00693	-23.75	<.0001
C_W	0.000253	0.000595	0.42	0.6710
A_CPP	-0.11774	0.00675	-17.44	<.0001
P	-0.00045	0.00209	-0.21	0.8309
R	0.016906	0.00118	14.36	<.0001
P_W	-0.229	0.00569	-40.24	<.0001
R_W	-0.00114	0.000829	-1.38	0.1682
P_CPP	-0.02213	0.00565	-3.91	<.0001

Number of Observations		Statistics for System	
Used	25634	**Objective**	1.9988
Missing	0	**Objective*N**	51237
Sum of Weights	336078		

Appendix 17.d:
Regression Models Underlying Table 7-8

C&I CPP-V Rate, Track C LT20kW, Summer 2003, All Customers, Whole Summer, With CPP and ADU Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	14
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W A_CPP B_ADU A_CPP_ADU P R P_W R_W P_CPP P_CPP_ADU
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), A_CPP(DIF_CPP_V_TrkC_Day), B_ADU(DIF_LN_PEAKP_OPEAKP_AVE_adu), A_CPP_ADU(DIF_AN_ADU_CPP))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD), P_CPP(DIF_CPP_V_TrkC_Day), P_CPP_ADU(DIF_AN_ADU_CPP))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track C LT20kW, Summer 2003, All Customers, Whole Summer, With CPP and ADU Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_0304_CPPV_CI_TRKC_LT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	14
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B_ADU)	0.466015
Object	0.000855
Trace(S)	21.36306
Objective Value	1.997514

Observations Processed	
Read	18018
Solved	18018

C&I CPP-V Rate, Track C LT20kW, Summer 2003, All Customers, Whole Summer, With CPP and ADU Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	18010	196080	10.8873	3.2996	0.1186	0.1182	2.8427
DIF_LN_DAILYUSE_HR	6	18012	188690	10.4758	3.2366	0.1912	0.1910	2.7296

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00147	0.00494	-0.30	0.7663
B	0.125925	0.0207	6.09	<.0001
C	0.006686	0.00159	4.20	<.0001
A_W	-0.47414	0.0174	-27.28	<.0001
C_W	0.002216	0.00145	1.53	0.1270
A_CPP	-0.33125	0.0270	-12.26	<.0001
B_ADU	-0.00173	0.000298	-5.80	<.0001
A_CPP_ADU	0.001896	0.000418	4.54	<.0001
P	-0.00122	0.00485	-0.25	0.8008
R	0.016789	0.00263	6.38	<.0001
P_W	-0.46438	0.0128	-36.33	<.0001
R_W	-0.02106	0.00147	-14.34	<.0001
P_CPP	0.032685	0.0223	1.47	0.1420
P_CPP_ADU	-0.00131	0.000333	-3.93	<.0001

Number of Observations		**Statistics for System**	
Used	18018	**Objective**	1.9975
Missing	0	**Objective*N**	35991
Sum of Weights	445934		

C&I CPP-V Rate, Track C LT20kW, Summer 2003, All Customers, Whole Summer, With CPP and SQFT Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	14
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W A_CPP B_SQFT A_CPP_SQFT P R P_W R_W P_CPP P_CPP_SQFT
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), A_CPP(DIF_CPP_V_TrkC_Day), B_SQFT(DIF_LN_PEAKP_OPEAKP_AVE_sqft), A_CPP_SQFT(DIF_SQFT_CPP))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD), P_CPP(DIF_CPP_V_TrkC_Day), P_CPP_SQFT(DIF_SQFT_CPP))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track C LT20kW, Summer 2003, All Customers, Whole Summer, With CPP and SQFT Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_0304_CPPV_CI_TRKC_LT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	14
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B)	3.306526
Object	0.000205
Trace(S)	21.40824
Objective Value	1.998812

Observations Processed	
Read	18018
Solved	18018

C&I CPP-V Rate, Track C LT20kW, Summer 2003, All Customers, Whole Summer, With CPP and SQFT Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	18010	196838	10.9294	3.3060	0.1152	0.1148	2.8382
DIF_LN_DAILYUSE_HR	6	18012	188746	10.4789	3.2371	0.1910	0.1908	2.7282

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00147	0.00495	-0.30	0.7672
B	0.030157	0.0140	2.15	0.0314
C	0.006556	0.00159	4.11	<.0001
A_W	-0.47826	0.0174	-27.52	<.0001
C_W	0.002756	0.00145	1.90	0.0574
A_CPP	-0.24392	0.0175	-13.92	<.0001
B_SQFT	8.17E-7	2.071E-6	0.39	0.6933
A_CPP_SQFT	3.355E-6	2.291E-6	1.46	0.1432
P	-0.00121	0.00485	-0.25	0.8022
R	0.016839	0.00263	6.40	<.0001
P_W	-0.46454	0.0128	-36.36	<.0001
R_W	-0.02104	0.00147	-14.34	<.0001
P_CPP	-0.0603	0.0145	-4.14	<.0001
P_CPP_SQFT	5.801E-6	1.822E-6	3.18	0.0015

Number of Observations		Statistics for System	
Used	18018	**Objective**	1.9988
Missing	0	**Objective*N**	36015
Sum of Weights	445934		

C&I CPP-V Rate, Track C GT20kW, Summer 2003, All Customers, Whole Summer, With CPP and ADU Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	14
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W A_CPP B_ADU A_CPP_ADU P R P_W R_W P_CPP P_CPP_ADU
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), A_CPP(DIF_CPP_V_TrkC_Day), B_ADU(DIF_LN_PEAKP_OPEAKP_AVE_adu), A_CPP_ADU(DIF_AN_ADU_CPP))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD), P_CPP(DIF_CPP_V_TrkC_Day), P_CPP_ADU(DIF_AN_ADU_CPP))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track C GT20kW, Summer 2003, All Customers, Whole Summer, With CPP and ADU Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_0304_CPPV_CI_TRKC_GT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	14
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B_ADU)	3.616844
Object	0.001071
Trace(S)	3.062912
Objective Value	1.997232

Observations Processed	
Read	22328
Solved	22328
First	92
Last	25634

C&I CPP-V Rate, Track C GT20kW, Summer 2003, All Customers, Whole Summer, With CPP and ADU Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	22320	35109.6	1.5730	1.2542	0.0609	0.0606	2.6283
DIF_LN_DAILYUSE_HR	6	22322	33257.6	1.4899	1.2206	0.1144	0.1142	2.3709

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00096	0.00232	-0.41	0.6801
B	-0.05468	0.00843	-6.48	<.0001
C	0.005036	0.000726	6.94	<.0001
A_W	-0.17223	0.00754	-22.83	<.0001
C_W	0.000473	0.000635	0.74	0.4563
A_CPP	-0.12979	0.0108	-12.07	<.0001
B_ADU	0.000078	0.000023	3.32	0.0009
A_CPP_ADU	0.000064	0.000030	2.15	0.0320
P	-0.0006	0.00226	-0.27	0.7908
R	0.016627	0.00125	13.29	<.0001
P_W	-0.21689	0.00615	-35.25	<.0001
R_W	-0.00269	0.000870	-3.10	0.0020
P_CPP	0.007179	0.00892	0.81	0.4207
P_CPP_ADU	-0.00011	0.000026	-4.29	<.0001

Number of Observations		Statistics for System	
Used	22328	**Objective**	1.9972
Missing	0	**Objective*N**	44594
Sum of Weights	292223		

C&I CPP-V Rate, Track C GT20kW, Summer 2003, All Customers, Whole Summer, With CPP and SQFT Interaction

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	14
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W A_CPP B_SQFT A_CPP_sqft P R P_W R_W P_CPP P_CPP_sqft
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), A_CPP(DIF_CPP_V_TrkC_Day), B_SQFT(DIF_LN_PEAKP_OPEAKP_AVE_sqft), A_CPP_sqft(DIF_SQFT_CPP))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD), P_CPP(DIF_CPP_V_TrkC_Day), P_CPP_sqft(DIF_SQFT_CPP))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track C GT20kW, Summer 2003, All Customers, Whole Summer, With CPP and SQFT Interaction

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.SUM_0304_CPPV_CI_TRKC_GT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	14
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(C_W)	1.212116
Object	0.000778
Trace(S)	3.060617
Objective Value	1.997818

Observations Processed	
Read	22328
Solved	22328
First	92
Last	25634

C&I CPP-V Rate, Track C GT20kW, Summer 2003, All Customers, Whole Summer, With CPP and SQFT Interaction

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	8	22320	35048.8	1.5703	1.2531	0.0625	0.0622	2.6323
DIF_LN_DAILYUSE_HR	6	22322	33267.2	1.4903	1.2208	0.1142	0.1140	2.3693

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00096	0.00232	-0.41	0.6794
B	-0.05226	0.00725	-7.21	<.0001
C	0.004973	0.000726	6.85	<.0001
A_W	-0.1735	0.00754	-23.01	<.0001
C_W	0.000559	0.000635	0.88	0.3785
A_CPP	-0.12481	0.00952	-13.11	<.0001
B_SQFT	1.929E-6	5.54E-7	3.48	0.0005
A_CPP_sqft	1.572E-6	8.27E-7	1.90	0.0573
P	-0.0006	0.00226	-0.26	0.7911
R	0.01665	0.00125	13.29	<.0001
P_W	-0.21767	0.00615	-35.38	<.0001
R_W	-0.00254	0.000870	-2.92	0.0035
P_CPP	-0.03879	0.00779	-4.98	<.0001
P_CPP_sqft	2.258E-6	6.386E-7	3.54	0.0004

Number of Observations		**Statistics for System**	
Used	22328	**Objective**	1.9978
Missing	0	**Objective*N**	44607
Sum of Weights	292223		

Appendix 17.e:
Regression Model Underlying Discussion of C&I Track C, CPP-V Winter Analysis (Section 7.2)

C&I CPP-V Rate, Track C LT20kW, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	9
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPeak_hDH65_Hr), A_W(DIF_weekend), C_W(DIF_Peak_OPeak_hDH65_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_hDH65_HOUR), P_W(DIF_weekend), R_W(DIF_DAILY_hDH65_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.CI_CPPV_TRKC_WINTER_LT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	9
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(R)	0.806203
Object	0.000256
Trace(S)	17.10727
Objective Value	1.999089

Observations Processed	
Read	22521
Solved	22521

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	5	22516	190714	8.4701	2.9104	0.1205	0.1203	2.8435
DIF_LN_DAILYUSE_HR	4	22517	194482	8.6371	2.9389	0.1554	0.1553	2.6850

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00038	0.00385	-0.10	0.9221
B	-0.00947	0.0103	-0.92	0.3596
C	0.006941	0.00123	5.65	<.0001
A_W	-0.44059	0.0132	-33.47	<.0001
C_W	-0.00883	0.00145	-6.09	<.0001
P	-0.001	0.00389	-0.26	0.7978
R	-0.00068	0.00164	-0.42	0.6780
P_W	-0.45213	0.0115	-39.18	<.0001
R_W	0.000917	0.00115	0.80	0.4255

Number of Observations		Statistics for System	
Used	22521	**Objective**	1.9991
Missing	0	**Objective*N**	45021
Sum of Weights	570237		

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	9
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPeak_hDH65_Hr), A_W(DIF_weekend), C_W(DIF_Peak_OPeak_hDH65_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_hDH65_HOUR), P_W(DIF_weekend), R_W(DIF_DAILY_hDH65_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I CPP-V Rate, Track C GT20kW, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.CI_CPPV_TRKC_WINTER_GT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	9
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(B)	2.359541
Object	0.001818
Trace(S)	2.568362
Objective Value	1.996064

Observations Processed	
Read	29959
Solved	29959

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	5	29954	40581.9	1.3548	1.1640	0.0682	0.0681	2.5871
DIF_LN_DAILYUSE_HR	4	29955	36352.1	1.2136	1.1016	0.1343	0.1342	2.3733

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00014	0.00186	-0.08	0.9400
B	-0.01783	0.00428	-4.17	<.0001
C	0.00164	0.000523	3.14	0.0017
A_W	-0.17939	0.00581	-30.90	<.0001
C_W	-0.00226	0.000654	-3.46	0.0005
P	-0.00044	0.00176	-0.25	0.8005
R	0.001611	0.000654	2.46	0.0138
P_W	-0.20723	0.00503	-41.17	<.0001
R_W	-0.00081	0.000492	-1.64	0.1012

Number of Observations		**Statistics for System**	
Used	29959	**Objective**	1.9961
Missing	0	**Objective*N**	59800
Sum of Weights	391275		

Appendix 17.f:
Regression Models Underlying Table 7-10, 7-11

C&I TOU Rate, Track A LT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With 2004 Year Dummy

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	16
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W B_04 C_04 A_W_04 C_W_04 P R P_W R_W R_04 P_W_04 R_W_04
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_04(DIF_LN_PEAKP_OPEAKP_AVE_04), C_04(DIF_Peak_OPeak_DH_Hr_04), A_W_04(DIF_WKD_04), C_W_04(DIF_Peak_OPeak_DH_Hr_WKD_04))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD), R_04(DIF_DAILY_DH_HOUR_04), P_W_04(DIF_WKD_04), R_W_04(DIF_DAILY_DH_HOUR_WKD_04))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I TOU Rate, Track A LT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With 2004 Year Dummy

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.CI_TOU_LT20_POOL
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	16
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(C)	9.411165
Object	0.000272
Trace(S)	6570.485
Objective Value	1.998673

Observations Processed	
Read	20453
Solved	20453

C&I TOU Rate, Track A LT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With 2004 Year Dummy

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	9	20444	91833290	4491.9	67.0220	0.0228	0.0224	2.9481
DIF_LN_DAILYUSE_HR	7	20446	42497872	2078.5	45.5910	0.1028	0.1025	2.5559

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00213	0.00593	-0.36	0.7197
B	-0.00471	0.0318	-0.15	0.8822
C	0.000876	0.00316	0.28	0.7817
A_W	-0.23649	0.0247	-9.57	<.0001
C_W	-0.00309	0.00261	-1.18	0.2367
B_04	-0.12571	0.0448	-2.80	0.0051
C_04	0.004148	0.00440	0.94	0.3458
A_W_04	-0.06092	0.0343	-1.78	0.0754
C_W_04	0.006647	0.00358	1.86	0.0631
P	0.001379	0.00403	0.34	0.7323
R	0.016851	0.00413	4.08	<.0001
P_W	-0.34505	0.0140	-24.63	<.0001
R_W	-0.00674	0.00248	-2.71	0.0067
R_04	-0.00971	0.00547	-1.77	0.0761
P_W_04	-0.05142	0.0195	-2.64	0.0083
R_W_04	0.01625	0.00354	4.60	<.0001

Number of Observations		**Statistics for System**	
Used	20453	**Objective**	1.9987
Missing	0	**Objective*N**	40879
Sum of Weights	127832329		

C&I TOU Rate, Track A GT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With 2004 Year Dummy

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	16
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W B_04 C_04 A_W_04 C_W_04 P R P_W R_W R_04 P_W_04 R_W_04
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPEAK_DH_Hr), A_W(DIF_Weekend), C_W(DIF_Peak_OPeak_DH_Hr_WKD), B_04(DIF_LN_PEAKP_OPEAKP_AVE_04), C_04(DIF_Peak_OPeak_DH_Hr_04), A_W_04(DIF_WKD_04), C_W_04(DIF_Peak_OPeak_DH_Hr_WKD_04))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_DH_HOUR), P_W(DIF_Weekend), R_W(DIF_DAILY_DH_HOUR_WKD), R_04(DIF_DAILY_DH_HOUR_04), P_W_04(DIF_WKD_04), R_W_04(DIF_DAILY_DH_HOUR_WKD_04))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I TOU Rate, Track A GT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With 2004 Year Dummy

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.CI_TOU_GT20_POOL
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	16
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	1.23E-12
RPC(C_W)	1.913091
Object	0.000436
Trace(S)	1247.752
Objective Value	1.998408

Observations Processed	
Read	22207
Solved	22207

C&I TOU Rate, Track A GT20kW, Pooled Summer 2003-2004, All Customers, Whole Summer, With 2004 Year Dummy

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	9	22198	9352955	421.3	20.5266	0.0390	0.0387	2.7190
DIF_LN_DAILYUSE_HR	7	22200	18346292	826.4	28.7473	0.1150	0.1148	2.3883

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	-0.00171	0.00290	-0.59	0.5556
B	-0.09294	0.0213	-4.37	<.0001
C	0.002161	0.00145	1.49	0.1369
A_W	-0.19798	0.0137	-14.40	<.0001
C_W	0.001526	0.00119	1.28	0.2015
B_04	-0.11792	0.0308	-3.83	0.0001
C_04	0.000746	0.00206	0.36	0.7168
A_W_04	-0.02359	0.0195	-1.21	0.2256
C_W_04	0.000331	0.00167	0.20	0.8433
P	0.000116	0.00406	0.03	0.9772
R	0.00707	0.00360	1.96	0.0496
P_W	-0.38011	0.0148	-25.70	<.0001
R_W	-0.00866	0.00202	-4.29	<.0001
R_04	0.002564	0.00499	0.51	0.6078
P_W_04	0.025804	0.0203	1.27	0.2030
R_W_04	0.000406	0.00297	0.14	0.8911

Number of Observations		Statistics for System	
Used	22207	**Objective**	1.9984
Missing	0	**Objective*N**	44379
Sum of Weights	50151630		

Appendix 17.g:
Regression Models Underlying Table 7-12

C&I TOU Rate, Track A LT20kW, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	9
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPeak_hDH65_Hr), A_W(DIF_weekend), C_W(DIF_Peak_OPeak_hDH65_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_hDH65_HOUR), P_W(DIF_weekend), R_W(DIF_DAILY_hDH65_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.CI_TOU_WINTER_LT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	9
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(R_W)	0.499491
Object	0.000047
Trace(S)	5161.832
Objective Value	1.999479

Observations Processed	
Read	21095
Solved	21095

C&I TOU Rate, Track A LT20kW, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	**DF Model**	**DF Error**	**SSE**	**MSE**	**Root MSE**	**R-Square**	**Adj R-Sq**	**Durbin Watson**
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	5	21090	65599486	3110.5	55.7714	0.0198	0.0197	2.8651
DIF_LN_DAILYUSE_HR	4	21091	43265595	2051.4	45.2921	0.0836	0.0835	2.6059

Nonlinear SUR Parameter Estimates				
Parameter	**Estimate**	**Approx Std Err**	**t Value**	**Approx Pr > |t|**
A	0.000261	0.00476	0.05	0.9563
B	-0.00754	0.0130	-0.58	0.5628
C	0.00683	0.00160	4.26	<.0001
A_W	-0.23033	0.0161	-14.30	<.0001
C_W	-0.00927	0.00192	-4.84	<.0001
P	-0.0001	0.00387	-0.03	0.9788
R	0.005269	0.00170	3.10	0.0019
P_W	-0.28572	0.0114	-25.03	<.0001
R_W	-0.00199	0.00119	-1.67	0.0947

Number of Observations		**Statistics for System**	
Used	21095	**Objective**	1.9995
Missing	0	**Objective*N**	42179
Sum of Weights	137080789		

The MODEL Procedure

Model Summary	
Model Variables	2
Parameters	9
Equations	2
Number of Statements	2

Model Variables	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR
Parameters	A B C A_W C_W P R P_W R_W
Equations	DIF_LN_PEAKUSE_OPEAKUSE_HOUR DIF_LN_DAILYUSE_HR

The 2 Equations to Estimate	
DIF_LN_PEAKUSE_OPEAKUSE_HOUR =	F(A(1), B(DIF_LN_PEAKP_OPEAKP_AVE), C(DIF_Peak_OPeak_hDH65_Hr), A_W(DIF_weekend), C_W(DIF_Peak_OPeak_hDH65_Hr_WKD))
DIF_LN_DAILYUSE_HR =	F(P(1), R(DIF_DAILY_hDH65_HOUR), P_W(DIF_weekend), R_W(DIF_DAILY_hDH65_HOUR_WKD))

Observations will be weighted by	WEIGHT

NOTE: At SUR Iteration 1 CONVERGE=0.001 Criteria Met.

C&I TOU Rate, Track A GT20kW, Winter 2003-2004, All Customers, Whole Winter

The MODEL Procedure
SUR Estimation Summary

Data Set Options	
DATA=	F_INTER.CI_TOU_WINTER_GT20
OUT=	DATASET_1
OUTEST=	X
OUTS=	S

Minimization Summary	
Parameters Estimated	9
Method	Gauss
Iterations	1

Final Convergence Criteria	
R	0
PPC	0
RPC(C_W)	0.691208
Object	0.000205
Trace(S)	1133.857
Objective Value	1.999208

Observations Processed	
Read	23487
Solved	23487

The MODEL Procedure

Nonlinear SUR Summary of Residual Errors								
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
DIF_LN_PEAKUSE_OPEAKUSE_HOUR	5	23482	8905855	379.3	19.4747	0.0568	0.0566	2.7405
DIF_LN_DAILYUSE_HR	4	23483	17720131	754.6	27.4699	0.1178	0.1177	2.2830

Nonlinear SUR Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
A	-0.00116	0.00267	-0.43	0.6647
B	-0.07245	0.00873	-8.30	<.0001
C	0.00521	0.000905	5.76	<.0001
A_W	-0.20512	0.00960	-21.36	<.0001
C_W	0.000492	0.00108	0.46	0.6473
P	-0.00134	0.00377	-0.36	0.7226
R	0.005287	0.00168	3.14	0.0017
P_W	-0.30269	0.0114	-26.51	<.0001
R_W	-0.00887	0.00118	-7.52	<.0001

Number of Observations		Statistics for System	
Used	23487	**Objective**	1.9992
Missing	0	**Objective*N**	46955
Sum of Weights	53133276		