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Introduction

Kentucky Utilities Company and Louisville Gas & Electric Company (the Companies) evaluate future electric service requirements of customers with balanced consideration of demand-side and supply-side resource options. The purpose of this study is to evaluate and screen available demand-side management (DSM) alternatives to be included in the integrated analysis portion of the 2005 Integrated Resource Plan. Each alternative was investigated and evaluated using a two-step screening process. The first step was qualitative in nature, where each alternative was evaluated based on four criteria. The alternatives that passed the first step underwent a second step of screening that was quantitative in nature. The quantitative screening process was broken down into two separate phases and is discussed in the Quantitative Screening Process section of this report. The DSM programs that passed the quantitative screening process were evaluated with supply-side alternatives in the integrated analysis.

Qualitative Screening Process

A list of 71 alternatives was identified which needed to be evaluated (see EXHIBIT DSM-1). Next, criteria were defined to facilitate an objective evaluation of the alternatives. Based upon the Companies' objectives to provide low cost, reliable energy to our customers, and the comments from the PSC Staff Report on KU and LG&E's most recently filed integrated resource plan (IRP), four criteria were selected. The next task was to assign weights or values to each of the criteria. The highest weights were assigned to the criteria judged to be the most important to develop a successful DSM program. The most important criterion was the cost effectiveness of peak demand

reduction. Each potential DSM option was evaluated, based on a scale of 1 to 4, using the four criteria. The four criteria, their weights, and an explanation of each are shown on EXHIBIT DSM-2.

Qualitative Screening Results

The results of the qualitative screening process are shown on EXHIBIT DSM-3. EXHIBIT DSM-4 depicts a graphical representation of the results of the qualitative screening process. Each bar in the graph represents the weighted average of the evaluations. The weighted averages are ranked from the highest to the lowest. The horizontal dark line on EXHIBIT DSM-3 and EXHIBIT DSM-4 delineates desirable programs produced by the qualitative screening analysis which resulted in 27 DSM options for further analysis. The cut off of 2.4 was selected by the Companies' DSM Department. Of the 27 programs, 17 programs target residential customers and 10 target commercial customers. These 27 options were then evaluated in the quantitative screening process.

Quantitative Screening Process

The 27 options that passed the qualitative screening process were modeled in more detail using EPRI's DSManager software. DSManager is a PC-based software package developed by EPS Solutions under contract with EPRI. It is a screening tool that determines the cost effectiveness of DSM options by modeling their costs and benefits over a period of time. The program simplifies the "real world" by using 48 typical days to represent a year. There are four daily load shapes per month, each representing a specific type of day. The day types are high weekday, medium weekday, low weekday,

and weekend. For each of the 21 DSM options that were modeled in DSManager, load shapes in this 48-day format were developed for scenarios with and without the DSM option. Also required by the DSManager program is the Companies' aggregate system load shape. This system load shape was converted into 48 daily load shapes. DSManager utilizes marginal energy costs to estimate the change in production costs resulting from the implementation of each DSM option. A detailed production-costing model, PROSYM™, was used to determine the marginal energy costs used by DSManager.

DSManager calculates the net present value of the quantifiable costs and benefits assignable to both the Companies and the customers participating in a DSM program. For each DSM initiative, DSManager requires the administrative costs, participant's costs, life span of the technology, expected level of participation, expected level of free-riders, and rate schedules. DSManager calculates changes to the participant's bill, changes in the Companies' revenue, changes in production costs, and changes in the peak demand. The present value for each DSM alternative is calculated by DSManager and reported as the costs and benefits using the five "California Tests." These five tests include the participant, utility cost, ratepayer impact measure (RIM), total resource cost (TRC), and societal cost tests. The Companies used only the participant and TRC tests to screen DSM options. The participant test includes changes in all costs and benefits to the customer participating in the DSM program. The TRC test combines the RIM and participant tests and indicates overall benefits of the DSM option to the average customer, whereas the RIM test considers all impacts to the non-participants.

The quantitative screening was set up in two phases. In Phase I, the cost to administer the program was not considered and it was assumed that the program had only one participant per company (KU and LG&E). This phase was created to remove non-cost effective programs. If the benefits of a program did not exceed the cost of the program without the administration cost, then it did not pass with a higher penetration of customers and the added burden of the administrative costs. The only cost included in this phase was the incremental cost of the DSM alternative. Of the 27 programs evaluated in the Phase I portion of the qualitative screening process, 15 passed the TRC in this phase and were further evaluated in greater detail in Phase II of the quantitative analysis. EXHIBIT DSM-5 is a list of the assumptions used in Phase I of the quantitative analysis and the resulting TRC benefit cost ratio.

Each program that passed Phase I of the quantitative screening process was put through a program design phase (Phase II). The costs to administer the programs and the expected levels of penetration for each Company (KU and LG&E) were added to the nine programs that passed Phase I (see EXHIBIT DSM-2 for a complete description of the quantitative screening process). A breakdown of the cost to deliver each program to the targeted customers, the number of customers expected to participate in each program, and other pertinent assumptions can be found on the following: EXHIBIT DSM-6 through EXHIBIT DSM-10.

Quantitative Screening Results

DSManager calculates the net present value of the costs and benefits of a given DSM program and calculates the benefit-to-cost ratios for each of the perspectives of the California Tests. Results of the programs evaluated in Phase II of the quantitative

screening process are shown on EXHIBIT DSM-11. The programs are ranked by the benefit to cost ratios for the TRC test.

DSM Resources that failed the Quantitative Screening Process

Below are descriptions of the programs that failed the quantitative screening and the reasons they failed. For each program, (C) represents commercial and (R) represents residential customers.

Duct Sealing A/C (R)

Many residential air conditioners have duct systems that are poorly insulated and have high rates of leakage. This program would perform diagnostic testing of residential duct systems and assist customers to rectify any problems discovered. The peak and energy savings are not enough to overcome the cost to administer this program.

Duct Sealing (C)

Many commercial air conditioners and heat pumps have duct systems that are poorly insulated and have high rates of leakage. This program would perform diagnostic testing of duct systems and assist customers to rectify any problems discovered. The peak and energy savings are not enough to overcome the cost to administer this program.

Geothermal Heat Pump (new construction) (C)

Geothermal heat pumps are highly efficient heating and cooling systems, but also have high construction costs. This program would provide incentives for commercial

customers building new facilities to install geothermal systems. The peak and energy savings are not enough to overcome the cost to administer this program.

Heat Pump Tune-Up (R)

Many residential heat pumps are not properly maintained. This program would perform diagnostic testing of residential heat pumps and encourage customers to rectify any problems discovered. The peak and energy savings are not enough to overcome the cost to administer this program.

High-Performance Glazings (R)

This program would provide incentives for residential customers to install high performance glazings to existing windows to reduce solar heat gain thus reducing cooling costs. The peak and energy savings are not enough to overcome the cost to administer this program.

PROA H/P (R)

Polarized refrigerant oxidant agent (PROA) is a product that increases the efficiency of heat transfer in a refrigerant system such as a heat pump (H/P). Data indicates that most refrigerant systems lose efficiency over time due to decreased heat transfer in the heat exchangers. This program would provide an analysis of existing systems and incentives for customers to install PROA where necessary, reducing heating and cooling costs. The peak and energy savings are not enough to overcome the cost to administer this program.

Duct Sealing HP (R)

Many residential heat pumps (HP) have duct systems that are poorly insulated and have high rates of leakage. This program would perform diagnostic testing of residential duct systems and assist customers to rectify any problems discovered. The peak and energy savings are not enough to overcome the cost to administer this program.

A/C Tune-Up (R)

Many residential air conditioners are not properly maintained. This program would perform diagnostic testing of residential air conditioners and encourage customers to rectify any problems discovered. The peak and energy savings are not enough to overcome the cost to administer this program.

High Efficiency Motors/ASD Motors (C)

This program encourages commercial customers that are considering replacing worn out motors to purchase energy efficient motors or adjustable speed drive (ASD) motors. Based on research from other utility programs, a reasonable incentive would be $75 per motor with the customer paying an additional $80 per motor. This program is favorable for the participants but the peak and energy savings do not overcome the cost to administer the program from the TRC perspective.

Cool Roof (C)

This program would encourage commercial businesses to install a reflective membrane for roofing material instead of black rubber/asphalt. A cool roof is typically a

light color and absorbs less sunlight than a typical black rubber or asphalt roof. Lower absorption sunlight results in less radiant heat, which in turn results in a lower cooling demand on the air conditioning system. A lower cooling demand will result in lower summer energy consumption for the customer. The biggest benefit of this technology, however, is not the energy savings, but the lower maintenance cost and the longer life of the roof compared to a standard roof. This technology is advantageous for individual customers, but based upon the energy savings alone it is not cost effective from the TRC perspective. Without the non-energy benefits, the Participant and TRC benefit/cost test results are 1.18 and 0.35, respectively.

DSM Resources That Passed Quantitative Screening

Of the five programs that passed the quantitative screening process, two are load management programs, Setback Thermostats and Smart Thermostats (special rate). The two load management programs are somewhat similar in nature to the existing load management program, Demand Conservation, and could have some cannibalistic effect with the existing Demand Conservation program; however, they will provide customers additional choices and should bring new customers into load management that would not otherwise participate.

Setback Thermostats (R)

This program is similar to the Companies existing load management program, Demand Conservation. The most significant difference is in the incentive mechanism. Demand

Conservation credits customers' bills as an incentive whereas this program would provide the customer with a programmable set back thermostat as an incentive. The Setback Thermostat program can either change the set point on the thermostat or duty cycle the air conditioner, as does the Demand Conservation Program device. One of the advantages of the Setback Thermostat program is that a utility company could pre-cool a home before going into a cycling or control session, and also allow the customer to reduce heating and cooling costs year-round. Customers would be provided the thermostat at no cost, but would not receive the bill credit as do customers in the existing Demand Conservation program. Based upon the energy and demand savings this program is cost effective with a TRC of 2.09 and a Participant test of infinity.

Smart Thermostat (TOU rate) (R)

This is a sophisticated load management and Time of Use (TOU) rate program. The TOU rate will be a three-tier TOU rate similar to those existing at other utilities, but with a fourth real-time component. This real-time component would be the highest cost period and would be invoked during system peaks (i.e. at the times that our existing Demand Conservation program switches are controlled). A Smart Thermostat would incorporate a radio receiver to react when the real-time component of the rate is invoked. Customers would set heating and cooling temperatures and turn large loads such as water heaters off or on, based on the price of electricity. Pilot programs and a full scale deployment of this type of pricing structure at other utilities indicate that significantly larger demand saving can occur than is seen in our existing Demand Conservation program.

Based upon the energy and demand savings this program is cost effective with a TRC of 1.24 and a Participant test of 2.84. The Companies plan on doing a pilot of this program sometime in the near future as stated in the DSM Program Plan filed with the KPSC in September of 2000 and approved in May of 2001 (Case No. 2000-459). This pilot program has not been implemented previously because of costs; however, equipment availability has increased and costs have decreased.

A/C Tune-Up (C)

This program would take advantage of the fact that information indicates that 50% or more of the existing air conditioning (A/C) systems operate at below manufacturer specified efficiency, due to over or under refrigerant charge, and/or air flow problems in the evaporator coil. This program would provide customers an analysis of existing commercial A/C systems and discounted corrective action when necessary. Based upon the energy and demand savings this program is cost effective with a TRC of 1.20 and a Participant test of 5.53.

Energy Efficient Indoor Lighting (R)

Compact fluorescent lighting is a technology that has been available for over 15 years, but due to costs and availability of product for only limited applications, has not proven viable. Today, costs have been significantly reduced while the product is now available in a great number of sizes and shapes, with higher lighting levels, and better color rendition. This program would piggyback on the existing Residential Conservation program as the delivery channel and provide customers with a wide selection of compact

fluorescent bulbs at below retail pricing. Based upon the energy and demand savings this program is cost effective with a TRC of 1.14 and a Participant test of 6.91.

Polarized Refrigerant Oxidant Agent (C)

Polarized refrigerant oxidant agent (PROA) is a product that increases the efficiency of heat transfer in a refrigerant system such as an air conditioner or heat pump. Data indicates that most refrigerant systems lose efficiency over time due to decreased heat transfer in the heat exchangers. This program would provide an analysis of existing commercial systems and incentives for customers to install PROA where necessary, reducing heating and cooling costs. This technology would be provided to customers through the existing Commercial Conservation program. Based upon the energy and demand savings, this program is cost effective with a TRC of 1.13 and a Participant test of 2.59.

Recommendations

All of the programs that passed the quantitative screening process were considered in the integrated analysis portion of the IRP where the DSM programs are evaluated with the supply-side alternatives. The integrated analysis is used to determine the direction the Companies should take in meeting the future needs of our customers.

DSM program design is a complex, dynamic, and time-consuming activity. Alternatives that are ultimately selected through this evaluation process may not be

implemented as they have been described in this document. DSM alternatives that are ultimately proposed will be subjected to a much more rigorous program design cycle, which could result in program concepts and program details being changed significantly, or programs not being implemented.

Long List of DSM Alternatives

Residential

Air-Air Heat Pump (replacing resistive heat)
Smart Thermostats (special rate)
A/C Tune-Up
Heat Pump Tune-Up
Duct Sealing
Setback Thermostats
Geothermal Heat Pump
High-Performance Glazings
Strategic tree-planting
Energy Efficient Indoor Lighting
Gas Clothes Drier Purchase Incentive
Gas Oven/Range Purchase Incentive
Dual Fuel Heating System
Passive Solar Heating (new construction)
Water Heater Replacement (elect. to gas)
Removal of 2nd Refrigerator
Removal of 2nd Freezer
High Efficiency Outdoor Lighting (retrofit)
High Efficiency Outdoor Lighting (new)
Air-Air Heat Pump (replacing heat pump)
Room Air Conditioner Replacement
Water Heater Replacement (elect. to elect.)
Window Shading and Films
Multi-Family New/Rehab Design Assistance
Gas Air Conditioning
Refrigerator Replacement
Solar Water Heating
Clean CHP/CHRP (Multi-Family)
Air-to-Air Heat Exchangers (new construction)
Hydronic Distribution of Cooling and Heating
Air-Air Heat Pump (replacing gas heat)
Electric Thermal Storage (special rate)
Fuel Cells
Solar Greenhouses and Sunspaces
Photovoltaic
Windmills

Long List of DSM Alternatives

Commercial

A/C - Heat Pump Tune-Up
High-Performance Glazings
Energy Management System
Window Shading and Films
Daylighting
Duct Sealing
Geothermal Heat Pump (new construction)
Polarized Refrigerant Oxidant Agent
Gas Air Conditioning
Cool Roofs (coatings, membranes)
Building Commissioning
Convection Ovens
High Efficiency Motors/ASD Motors
New Construction Program (Design and Finance)
Air-to-Air Heat Exchangers
District Heating and Cooling
Standby Generation (special rate)
Interruptible Rates
Desiccant Cooling
Demand Subscription
Refrigeration Case Covers/Doors
Chilled Water System Optimization
Thermal Energy Storage (special rate)
Strategic Tree Planting
High Efficiency Fryers
Clean CHP/CHRP
Passive Solar Heating
Solar Water Heating
Fuel Cells
Hydronic Distribution of Cooling and Heating (small comm.)
Green Roofs (plants)
Solar Greenhouses and Sunspaces
Photovoltaic
Windmills

DSM Screening Process for 2005 IRP

Qualitative Screening Criteria

Criteria	Description	Weighting
Customer Acceptance	The degree to which an acceptable number of customers is willing to participate to create a successful program. The highest scores would be reserved for measures that have beneficial side effects, e.g., enhanced worker productivity or improvements in the quality of a product or service.	25%
Technical Reliability	The degree to which the technology is commercially available and the necessary data are available to evaluate this measure.	15%
Cost Effectiveness of Energy Conservation	The cost of this measure to reduce a kwh relative to the cost of generation in $/kwh.	25%
Cost Effectiveness of Peak Demand Reduction	The cost of this measure to reduce a kw relative to the cost of generation in $/kw.	35%

Each DSM measure will be given a grade for each criterion based on a zero to four scale with four being an excellent rating. The weighted averages of the ratings will be calculated. Measures that are below the selected cutoff will be eliminated from further evaluation except when they might complement other measures in the context of a larger DSM program. For example, low-E windows for homes might score poorly individually but improve the cost-effectiveness of a residential new construction program in which the cost of the windows is partially offset by lower costs of HVAC equipment. The selected cutoff will be determined from any obvious breakpoints between the sorted weighted average scores of the measures.

Quantitative Screening Criteria

The quantitative screening analysis will be performed in DSManager and will consist of the following phases.

Phase I:

Phase I will not include the cost to administer the program and will include only one participant per company. All programs that pass the Total Resource Cost Test (TRC) will be analyzed in Phase II.

Phase II:

Each program passing Phase I will be evaluated again, using all costs including the cost of administration and the best estimate of penetration. Each program has to pass the Participants Test and the TRC to be evaluated further.

Each of the DSM programs that pass Phase II of the quantitative screening may be aggregated to create a larger program. The aggregate program(s) will then compete with supply-side options in the integrated planning model.

Preliminary DSM Screening Sorted

	Customer Acceptance 25%	Technical Reliability 15%	Cost Effectiveness of Energy Conservation 25%	Cost Effectiveness of Peak Demand Reduction 35%	Weighted Average	Market Segment
A/C Tune-Up	4	4	3	2	3.05	C
Air-Air Heat Pump (replacing resistive heat)	4	4	3	2	3.05	R
Smart Thermostats (special rate)	3	3	3	3	3	R
A/C Tune-Up	4	3	3	2	2.9	R
Heat Pump Tune-Up	4	3	3	2	2.9	R
Duct Sealing	4	3	3	2	2.9	R
High-Performance Glazings	3	4	3	2	2.8	C
Setback Thermostats	3	4	4	1	2.7	R
Duct Sealing A/C	4	3	2	2	2.65	R
Window Shading and Films	3	3	3	2	2.65	C
Daylighting	3	3	3	2	2.65	C
Duct Sealing	3	3	3	2	2.65	C
High Efficiency Cooling	2	4	3	2	2.55	C
Geothermal Heat Pump (new construction)	3	4	2	2	2.55	C
Geothermal Heat Pump	3	4	2	2	2.55	R
High-Performance Glazings	3	4	2	2	2.55	R
Polarized Refrigerant Oxidant Agent	3	2	3	2	2.5	C
Strategic tree-planting	3	2	3	2	2.5	R
Energy Efficient Indoor Lighting	3	4	3	1	2.45	R
Duct Sealing A/C	3	3	2	2	2.4	C
Cool Roofs (coatings, membranes)	2	3	3	2	2.4	C
Convection Ovens	2	3	3	2	2.4	C
High Efficiency Motors/ASD Motors	2	3	3	2	2.4	C
New Construction Program (Design and Finance)	3	3	2	2	2.4	C
Air-to-Air Heat Exchangers	2	3	3	2	2.4	C
Gas Clothes Drier Purchase Incentive	3	3	2	2	2.4	R
Gas Oven/Range Purchase Incentive	3	3	2	2	2.4	R
Interruptible Rates	1	3	1	4	2.35	C
Desiccant Cooling	2	2	2	3	2.35	C
Demand Subscription	2	1	1	4	2.3	C
Refrigeration Case Covers/Doors	2	4	2	2	2.3	C
Chilled Water System Optimization	3	3	3	1	2.3	C
Dual Fuel Heating System	3	4	1	2	2.3	R
Passive Solar Heating (new construction)	3	3	3	1	2.3	R
Water Heater Replacement (elect. to gas)	2	4	2	2	2.3	R
Building Commissioning	2	2	3	2	2.25	C
District Heating and Cooling	2	2	3	2	2.25	C
Thermal Energy Storage (special rate)	2	3	1	3	2.25	C
Strategic Tree Planting	2	2	3	2	2.25	C

Preliminary DSM Screening Sorted

	Customer Acceptance	Technical Reliability	Cost Effectiveness of Energy Conservation	Cost Effectiveness of Peak Demand Reduction	Weighted Average	Market Segment
Removal of 2nd Refrigerator	2	4	3	1	2.2	R
Removal of 2nd Freezer	2	4	3	1	2.2	R
High Efficiency Outdoor Lighting (retrofit)	2	4	3	1	2.2	R
High Efficiency Outdoor Lighting (new)	2	4	3	1	2.2	R
Air-Air Heat Pump (replacing heat pump)	3	4	2	1	2.2	R
Room Air Conditioner Replacement	3	4	2	1	2.2	R
Water Heater Replacement (elect. to elect.)	4	4	1	1	2.2	R
High Efficiency Fryers	2	3	2	2	2.15	C
Clean CHP/CHRP	2	3	2	2	2.15	C
Window Shading and Films	2	3	2	2	2.15	R
Multi-Family New/Rehab Design Assistance	2	3	2	2	2.15	R
Gas Air Conditioning	1	2	2	3	2.1	R
Passive Solar Heating	2	3	3	1	2.05	C
Solar Water Heating	2	4	2	1	1.95	C
Refrigerator Replacement	2	4	2	1	1.95	R
Solar Water Heating	2	4	2	1	1.95	R
Fuel Cells	2	3	1	2	1.9	C
Clean CHP/CHRP (Multi-Family)	1	3	2	2	1.9	R
Hydronic Distribution of Cooling and Heating (small comm.)	2	3	2	1	1.8	C
Air-to-Air Heat Exchangers (new construction)	2	3	2	1	1.8	R
Hydronic Distribution of Cooling and Heating	2	3	2	1	1.8	R
Green Roofs (plants)	1	2	2	2	1.75	C
Air-Air Heat Pump (replacing gas heat)	2	4	1	1	1.7	R
Electric Thermal Storage (special rate)	1	4	2	1	1.7	R
Fuel Cells	1	3	1	2	1.65	R
Solar Greenhouses and Sunspaces	1	3	2	1	1.55	C
Photovoltaic	1	3	1	1	1.3	C
Windmills	1	3	1	1	1.3	C
Solar Greenhouses and Sunspaces	1	3	1	1	1.3	R
Photovoltaic	1	3	1	1	1.3	R
Windmills	1	3	1	1	1.3	R

Results of Qualitative Screening

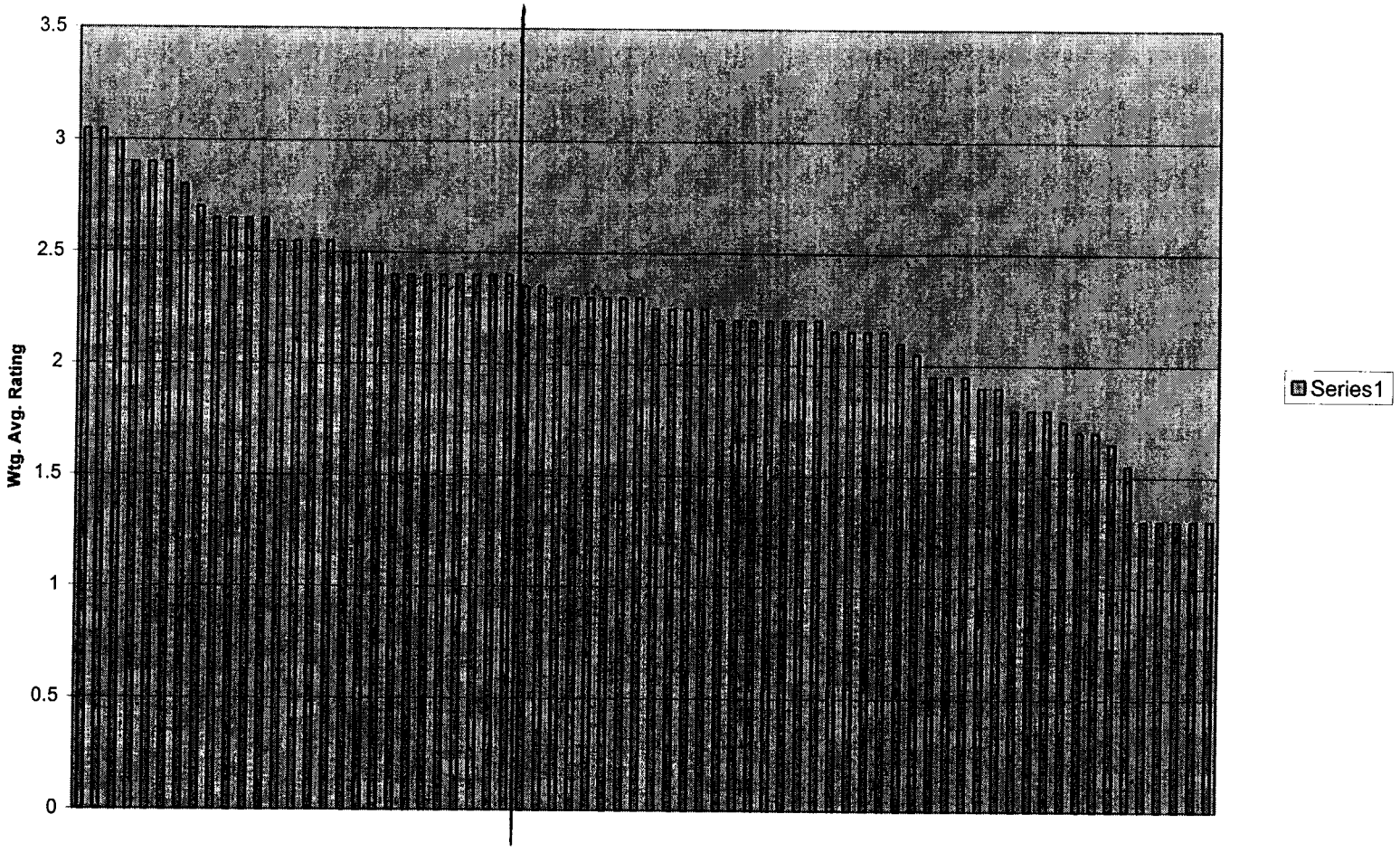

Exhibit DSM-4

Assumptions and Results of Phase I Quantitative Screening Process

Customer Class	Program Description	Program Name in DSManager	Per Participant			New Participants	% Free Riders	Measure Lifetime	Phase I TRC B/C
			Cost	Peak kw Reduction	Annual kWh Reduction				
R	Setback Thermostats	04_RSBAK	0	1.17	1926	2	0	15	**3.56**
R	Smart Thermostats (TOU rate)	04_RSMRT	328	1.6	1920	2	0	15	**2.25**
C	A/C Tune-Up	04_COMTU	233	2.2	2494	2	0	10	**2.15**
R	Energy Efficient Indoor Lighting	04_RLITE	30	0.06	642	2	0	7	**1.97**
R	Duct Sealing A/C	04_ACDUC	133	0.46	482	2	0	10	**1.71**
R	Heat Pump Tune-Up	04_HPTUP	133	0.46	1481	2	0	10	**1.67**
R	High-Performance Glazings	04_RGLAZ	200	0.38	1235	2	0	15	**1.59**
C	Duct Sealing	04_CDUCT	233	1.54	1746	2	0	10	**1.44**
R	PROA H/P	04_HPPRO	100	0.38	1255	2	0	10	**1.39**
C	Geothermal Heat Pump (new construction)	04_CGEHP	10000	7	9558	2	0	20	**1.33**
C	Polarized Refrigerant Oxidant Agent	04_CPROA	500	2.2	2494	2	0	10	**1.29**
C	Cool Roofs (coatings, membranes)	04_CCOOL	1312	2.64	2993	2	0	20	**1.18**
C	High Efficiency Motors/ASD Motors	04_CMOTO	155	0.14	745	2	0	10	**1.09**
R	A/C Tune-Up	04_ACTUP	133	0.46	483	2	0	10	**1.08**
R	Duct Sealing HP	04_HPDUC	133	0.46	1482	2	0	10	**1.04**
R	Res PROA A/C	04_ACPRO	100	0.38	402	2	0	10	**0.90**
R	Strategic tree-planting	04_RTREE	0	0.17	3863	2	0	20	**0.82**
C	New Construction Program (Design and Finance)	04_CNEWC	65000	30	125704	2	0	20	**0.76**
R	Geothermal Heat Pump	04_GEOHP	3500	1.5	6174	2	0	20	**0.72**
C	Daylighting	04_CDAYL	23700	10	41714	2	0	20	**0.56**
R	Air-Air Heat Pump (replacing resistive heat)	04_HP	3000	0.3	7439	2	0	17	**0.53**
C	High-Performance Glazings	04_CGLAZ	25800	10	41714	2	0	10	**0.52**
R	Air-to-Air Heat Exchangers	04_RATA	1200	0.247	261	2	0	20	**0.44**
C	Window Shading and Films	04_CWIND	36200	10	41714	2	0	10	**0.37**
R	Gas Oven/Range Purchase Incentive	04_GCOOK	335	0.06	600	2	0	20	**0.37**
R	Gas Clothes Drier Purchase Incentive	04_GSDRY	339	0.09	900	2	0	12	**0.33**
R	Convection Ovens	04_RCONV	300	0.02	180	2	0	20	**0.19**

Exhibit DSM-5

Annual Budget

Residential Setback/DLC Thermostat Program

Program Cost	2005	2006	2007	2008	2009	2010	2011
Direct Program Labor	-	-	-	-	-	-	-
Office Supplies & Expenses	500	500	500	500	500	500	500
Data Processing	5,000	1,000	1,000	1,000	1,000	1,000	1,000
Advertising	10,000	-	-	-	-	-	-
Outside Services/Install	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-
Maintenance of Equipment	-	-	-	-	-	-	-
Rebates/Incentives	-	-	-	-	-	-	-
Market Research	15,000	-	-	-	-	-	-
Program Evaluation	-	15,000	-	15,000	-	-	15,000
Total Program Expenses	30,500	16,500	1,500	16,500	1,500	1,500	16,500

Program Labor assumes 0.25 FTE.
Advertising- $10K to develop marketing piece plus $25/participant.
Outside Services based on installation cost of $150/switch plus $10,000 annual fee.
Equipment expense based on cost of $200/switch. 1.3 per customer
No free riders - Thermostat is DLC switch
Maintenance expense base on QA cost of $35/switch on 10% of participants per year.

	Number of Customers						
	2005	2006	2007	2008	2009	2010	2011
Annual	1,500	2,000	2,000	2,000	2,000	2,000	2,000
Cumul.	1,500	3,500	5,500	7,500	9,500	11,500	13,500

Annual Budget

Residential Smart Thermostat Program

Program Cost	2005	2006	2007	2008	2009	2010	2011
Direct Program Labor	-	-	-	-	-	-	-
Office Supplies & Expenses	500	500	500	500	500	500	500
Data Processing	5,000	1,000	1,000	1,000	1,000	1,000	1,000
Advertising	25,000	-	-	-	-	-	-
Outside Services/Install	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Equipment	-	-	-	-	-	-	-
Maintenance of Equipment	-	-	-	-	-	-	-
Rebates/Incentives	-	-	-	-	-	-	-
Market Research	15,000	-	-	-	-	-	-
Program Evaluation	20,000	50,000	10,000	5,000	-	-	30,000
Total Program Expenses	89,500	75,500	35,500	30,500	25,500	25,500	55,500

Program Labor assumes 0.5 FTE.
Advertising- $25K to develop marketing piece plus $40/participant.
Outside Services based on installation cost of $200/switch plus $24,000 annual fee.
Equipment expense based on cost of $120/switch.
Customer Cost- $150 equip. + $178 meter - both in monthly svc charge
Maintenance expense base on QA cost of $50/switch on 10% of participants per year.

	Number of Customers						
	2005	2006	2007	2008	2009	2010	2011
Annual	100	500	1,000	1,500	1,700	1,800	1,800
Cumul.	100	600	1,600	3,100	4,800	6,600	8,400

Exhibit DSM-7

Annual Budget

Commercial A/C Tune Up

Program Cost	2005	2006	2007	2008	2009	2010	2011
Direct Program Labor	-	-	-	-	-	-	-
Office Supplies & Expenses	500	500	500	500	500	500	500
Data Processing	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Advertising	15,000	5,000	5,000	5,000	5,000	5,000	5,000
Outside Services/Install	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Equipment	-	-	-	-	-	-	-
Maintenance of Equipment	-	-	-	-	-	-	-
Rebates/Incentives	-	-	-	-	-	-	-
Market Research	-	-	-	-	-	-	-
Program Evaluation	-	10,000	-	2,000	-	-	2,000
Total Program Expenses	28,500	28,500	18,500	20,500	18,500	18,500	20,500

Program Labor assumes 0.2 FTE.
Advertising- $10K to develop marketing piece plus $5K/year.
Outside Services based on analysis cost of $175/AC, $500 correct/AC @ 60%, plus $12,000 annual fee.
Customer Cost- $50 analysis + $150 repair @ 60% of customers
10% free riders

	Number of Customers						
	2005	2006	2007	2008	2009	2010	2011
Annual	100	200	300	400	500	500	500
Cumul.	100	300	600	1,000	1,500	2,000	2,500
Annual Installations	60	120	180	240	300	300	300

Annual Budget

Residential Efficient Indoor Lighting Program

Program Cost	2005	2006	2007	2008	2009	2010	2011
Direct Program Labor	-	-	-	-	-	-	-
Office Supplies & Expenses	500	500	500	500	500	500	500
Data Processing	1,000	-	-	-	-	-	-
Advertising	12,000	2,000	2,000	2,000	2,000	2,000	2,000
Outside Services/Install	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-
Maintenance of Equipment	-	-	-	-	-	-	-
Rebates/Incentives	-	-	-	-	-	-	-
Market Research	-	-	-	-	-	-	-
Program Evaluation	5,000	-	-	-	-	-	5,000
Total Program Expenses	18,500	2,500	2,500	2,500	2,500	2,500	7,500

Program Labor assumes 0.1 FTE.
Advertising- $10K to develop marketing piece plus $2K/year.
Outside Services based on installation cost of $15/customer
Equipment expense based on cost of $3/lar assume 60% @ 6 each
Customer Cost- $5/lamp assume 60% @ 6 each

	Number of Customers						
	2005	2006	2007	2008	2009	2010	2011
Audits	1500	1500	1500	1500	1500	1500	1500
Annual	900	900	900	900	900	900	900
Cumul.	900	1,800	2,700	3,600	4,500	5,400	6,300

Exhibit DSM-9

Annual Budget

Commercial PROA

Program Cost	2005	2006	2007	2008	2009	2010	2011
Direct Program Labor	-	-	-	-	-	-	-
Office Supplies & Expenses	500	500	500	500	500	500	500
Data Processing	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Advertising	15,000	5,000	6,000	8,000	10,000	10,000	10,000
Outside Services/Install	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Equipment	-	-	-	-	-	-	-
Maintenance of Equipment	-	-	-	-	-	-	-
Rebates/Incentives	-	-	-	-	-	-	-
Market Research	5,000	-	-	-	-	-	-
Program Evaluation	15,000		5,000	-	2,000	-	15,000
Total Program Expenses	48,500	18,500	24,500	21,500	25,500	23,500	38,500

Program Labor assumes 0.2 FTE.
Advertising- $10K to develop
Outside Services based on cost of $500/AC, 2 A/C's each, plus $12,000 annual fee.
Customer Cost- $500

	Number of Customers						
	2005	2006	2007	2008	2009	2010	2011
Annual	50	100	300	400	500	500	500
Cumul.	50	150	450	850	1,350	1,850	2,350

Exhibit DSM-10

Assumptions and Results of Phase II Quantitative Screening Process

Customer Class	Program Description	Program Name in DSManager	Per Participant: Peak kw Reduction	Per Participant: Annual kWh Reduction	% Free Riders	Measure Lifetime	Phase II B/C Ratios: Participants	Phase II B/C Ratios: TRC
R	Setback Thermostats	042RSBAK	1.17	1926	0	15	inf.	**2.28**
R	Smart Thermostats (TOU rate)	042RSMRT	1.60	1920	0	15	2.99	**1.42**
C	A/C Tune-Up	042COMTU	2.20	2494	5	10	5.53	**1.20**
R	Energy Efficient Indoor Lighting	042RLITE	0.06	642.0	5	7	6.91	**1.14**
C	Polarized Refrigerant Oxidant Agent	042CPROA	2.20	2494	0	10	2.59	**1.13**
R	Duct Sealing A/C	042ACDUC	0.46	482	0	10	5.27	**0.93**
C	Duct Sealing	042CDUCT	1.54	1746	0	10	4.77	**0.88**
C	Geothermal Heat Pump (new construction)	042CGEHP	7.00	9558	0	20	1.43	**0.85**
R	Heat Pump Tune-Up	042HPTUP	0.46	1481	5	10	4.83	**0.82**
R	High-Performance Glazings	042RGLAZ	0.38	1235	0	15	3.67	**0.77**
R	PROA H/P	042HPPRO	0.38	1255	0	10	1.75	**0.70**
R	Duct Sealing HP	042HPDUC	0.46	1482	0	10	4.84	**0.69**
R	A/C Tune-Up	042ACTUP	0.46	483	5	10	1.57	**0.51**
C	High Efficiency Motors/ASD Motors	042CMOTO	0.14	745	5	10	2.89	**0.36**
C	Cool Roofs (coatings, membranes)	042CCOOL	2.64	2993	0	20	1.18	**0.35**

Exhibit DSM-11