2009 IRP SUPPLEMENTAL FILING

KCP&L GREATER MISSOURI OPERATIONS COMPANY (GMO)

INTEGRATED RESOURCE PLAN

CASE NO. EE-2009-0237

** PUBLIC **

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SECTION 1: INTRODUCTION

KCP&L Greater Missouri Operations Company (GMO) filed an Integrated Resource Plan (IRP) on August 5th, 2009. Subsequent to the filing, GMO met with Parties on five separate occasions to present overviews of the major sections of the filing and to provide further clarification when necessary. During the presentations, Parties requested additional information, and GMO agreed to provide corrected or missing information that was discovered after the filing was submitted. Information is provided by subject matter: supply-side resource analysis, demand-side resource analysis, integrated resource analysis, and risk analysis and strategy selection. No additional information was requested regarding the load analysis and forecasting submittal.

SECTION 2: SUPPLY-SIDE RESOURCE ANALYSIS

As noted at the Supply-Side meeting on October 1st, 2009 Table 18 in Volume 4: Supply-Side Resource Analysis was incorrect. The corrected table was provided in the October 1st PowerPoint © presentation and is shown below:

Table 1: Technology Ranking By Nominal Probable Environmental Cost
No. 1-20 ** Highly Confidential **

RANK	Technology	Capacity Factor (%)	Nominal Probable Environmental
1	Municipal Solid Waste (MSW) Gasification	[redacted]	[redacted]
2	Municipal Solid Waste (MSW) Incinerator		
3	Wind		
4	Nuclear GE ESBWR		
5	Nuclear GE ABWR		
6	Nuclear Westinghouse AP1000		
7	Nuclear US EPR		
8	Nuclear ACR-1000		
9	USCPC PRB WFGD		
10	SCPC PRB SDA		
11	CAES		
12	SCPC ILL #6 WFGD		
13	Landfill Gas		
14	USCPC PRB WFGD CO2 Cap		
15	Fluidized Bed Combustion		
16	NaS Batteries		
17	SCPC ILL #6 WFGD CO2 CAP		
18	IGCC ILL #6 Cop		
19	Combined Cycle Full Owner Offer		
20	Combined Cycle Partial Owner Offer		

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SECTION 3: DEMAND-SIDE RESOURCE ANALYSIS

3.1 IDENTIFICATION OF END-USE MEASURES

Rule 22.050 (1) (D) Renewable energy sources and energy technologies that substitute for electricity at the point of use.

Referred to in the August 5th, 2009 IRP submittal was a cost study of small-scale renewable technologies. The results of the study produced by The Energy Savings Store entitled "A Renewable Energy System Performance Analysis Report for Kansas City Power and Light Company and Greater Missouri Operations Company" has been attached as Appendix 1.

Also, a screening of small-scale renewables cost effectiveness has been attached as Appendix 2.

3.2 PROGRAM MEASURES

At the Demand-Side Resource Analysis meeting held September 18th, 2009 in Jefferson City, a request was made to provide a listing of end-use measures in the existing and proposed demand-side management programs:

3.2.1 LOW INCOME AFFORDABLE NEW HOMES PROGRAM

GMO provides incentives to builders who implement energy efficiency measures during the building stage of qualified new homes

Measures include:

Energy efficient central cooling equipment (14 SEER or greater)

Insulation upgrades R42 Attic, R25 Floor or R19 Crawlspace

Energy Star-rated refrigerator

Energy Star-rated lighting fixtures

3.2.2 LOW INCOME WEATHERIZATION PROGRAM

The Weatherization Assistance Program enables low-income families to permanently reduce their energy bills by making their homes more energy efficient. Typical measures include:

Installing insulation,

Caulking windows, and

Conducting repairs to heating and central cooling systems.

3.2.3 CHANGE A LIGHT PROGRAM

Energy Star qualified compact fluorescent lamps.

3.2.4 HOME PERFORMANCE WITH ENERGY STAR® PROGRAM

Home Performance with ENERGY STAR is a collaboration between Missouri Gas Energy, KCP&L, GMO, and the Kansas City Metropolitan Energy Center. The program is sponsored by the Missouri Department of Natural Resources and is part of the government's ENERGY STAR program. This program is for Missouri customers only. Qualifying energy saving measures include;

Attic and ceiling insulation $\geq$ R49.

Wall insulation $\geq$ R13

Floor insulation $\geq$ R19

Ductwork insulation $\geq$ R13

Windows and doors Energy Star qualified with U-factor $\geq$ 0.30 and Solar Heat Gain Co-Efficient (SHGC) $\geq$ 0.30

Reduce infiltration between indoors and outdoors by 20%

Reduce air leakage between ductwork and outdoors by 20%

3.2.5 ENERGY STAR® NEW HOMES PROGRAM

To earn the ENERGY STAR, a home must meet guidelines for energy efficiency set by the U.S. Environmental Protection Agency. These homes are at least 15% more energy efficient than homes built to the 2004 International Residential Code (IRC), and include additional energy-saving features that typically make them 20–30% more efficient than standard homes. More information about the program can be found on the Energy Star website,

http://www.energystar.gov/index.cfm?c=new_homes.nh_features

Qualifying energy savings measures include:

Effective Insulation

Properly installed and inspected insulation in floors, walls, and attics ensures even temperatures throughout the house, reduced energy use, and increased comfort.

High-Performance Windows

Energy-efficient windows employ advanced technologies, such as protective coatings and improved frames, to help keep heat in during winter and out during summer.

Tight Construction and Ducts

Sealing holes and cracks in the home's "envelope" and in heating and cooling duct systems helps reduce drafts, moisture, dust, pollen, and noise.

Efficient Heating and Cooling Equipment

A list of qualified Energy Star heating, cooling and mechanical ventilation equipment can be found on the Energy Star website.

http://www.energystar.gov/index.cfm?c=new_homes.nh_features

Efficient Products

ENERGY STAR qualified homes may also be equipped with ENERGY STAR qualified products — lighting fixtures, compact fluorescent bulbs, ventilation fans, and appliances, such as refrigerators, dishwashers, and washing machines. A list of Energy Star qualified appliances, lighting systems and water heaters can be found on the Energy Star website.

http://www.energystar.gov/index.cfm?c=new_homes.nh_features

Third-Party Verification

With the help of independent Home Energy Raters, ENERGY STAR builder partners choose the most appropriate energy-saving features for their homes. Additionally, raters conduct onsite testing and inspections to verify the energy efficiency measures, as well as insulation, air tightness, and duct sealing details.

3.2.6 BUILDING OPERATOR CERTIFICATION (BOC) PROGRAM

BOC is a professional development program for building operators and maintenance staff which offers a series of seven courses on energy-efficient and resource-efficient operation of buildings. Successful completion of these courses qualifies the participant for certification. The goal of the program is to train individuals responsible for day-to-day operations to achieve measurable energy savings in the operation of buildings. Visit Midwest Energy Efficiency Alliance for more information on the program.

http://www.boccentral.org/page.php?content=about

3.2.7 ENERGY OPTIMIZER PROGRAM

This program offers a free programmable thermostat, including installation, for participating GMO residential and small commercial customers to help manage energy consumption throughout the year.

3.2.8 MPOWER PROGRAM

This summer load-management program incents commercial and industrial customers to reduce peak electric usage.

3.2.9 APPLIANCE TURN-IN PROGRAM

Incentive payments for;

Refrigerators,

Freezers,

Room air-conditioners, and

Dehumidifiers

3.2.10 RESIDENTIAL BLUE LINE, IN-HOME ENERGY DISPLAY PROGRAM

Participants receive an energy usage monitoring device that displays energy usage in real-time.

3.2.11 COOL HOMES PROGRAM

Cool Homes is a rebate program that helps KCP&L customers maintain the operating efficiency of central A/C systems and offsets the cost of upgrading to a new high-efficiency system. KCP&L customers may have their existing central air-cooling system tested by Check-Me!-trained HVAC contractors to see if it can be brought back to manufacturers' specifications – or receive a rebate if it needs to be replaced with a high-efficiency A/C or heat pump. Program measures include;

Re-commissioning of existing system back to 8.0 Energy Efficiency Rating (EER).

If the existing system can not be re-commissioned to an 8.0 EER than the participant could qualify for an incentive payment to replace the system. Existing system must be operational and replacement unit must have a Seasonal Energy Efficiency Rating (SEER) of 14 or higher.

3.2.12 ON LINE AUDIT PROGRAM

Residential participants can complete an on-line energy usage profile and audit which will identify historical usage and make recommendations for saving energy. Participants will also receive an energy savings kit upon completion of the on-line audit. This kit includes six compact fluorescent lamps, an LED night light and two switch/ outlet gaskets.

3.2.13 C&I CUSTOM REBATE PROGRAM

This energy efficiency programs helps reduce operating costs and increase efficiency - necessary for operating any successful businesses - by providing incentives that lower the cost of identifying and purchasing energy-efficient equipment for use in the participant's facilities. Projects are evaluated on a case by case basis and can be for new construction or facility retrofit. Proposed energy savings measures are evaluated by an independent engineering consultant. Participants are eligible for equipment rebates up to the lesser of 50% of the incremental equipment cost, or an amount that reduces the incremental cost to a two-year simple payback, and is also subject to an annual per customer maximum payment.

Qualifying energy efficient equipment includes but is not limited to;

1. High-efficiency lighting,
2. Air conditioning,

3. Heating systems,

4. Motors,

5. Refrigeration,

6. Energy management systems, etc.

An energy audit incentive is also available in this program. The energy audit rebate will be set at 50% of the audit cost up to $300 for customers with facilities less than 25,000 square feet and up to $500 for customers with facilities over 25,000 square feet. Customers with multiple buildings are eligible for multiple audit rebates.

3.2.14 C&I PRESCRIPTIVE INCENTIVE PROGRAM

Measures included in the C&I prescription program were provided in Volume 5 of the August 5, 2009 filing as Tables 5, 13, 17, 42 and 49. These tables are also shown below:

Table 2: C&I Lighting Measures

ID#	Potential Situation	Improvement	Quantity
C&I L1	T12 - 20W -2' 1 Lamp - Magnetic	T8 - 17W -2' 1 Lamp - Electronic	1 Fixture
C&I L2	T12 - 20W -2' 2 Lamp - Magnetic	T8 - 17W -2' 2 Lamp - Electronic	1 Fixture
C&I L3	T12 - 20W -2' 3 Lamp - Magnetic	T8 - 17W -2' 3 Lamp - Electronic	1 Fixture
C&I L4	T12 - 20W -2' 4 Lamp - Magnetic	T8 - 17W -2' 4 Lamp - Electronic	1 Fixture
C&I L5	T12 - 30W -3' 1 Lamp - Magnetic	T8 - 25W -3' 1 Lamp - Electronic	1 Fixture
C&I L6	T12 - 30W -3' 2 Lamp - Magnetic	T8 - 25W -3' 2 Lamp - Electronic	1 Fixture
C&I L7	T12 - 30W -3' 3 Lamp - Magnetic	T8 - 25W -3' 3 Lamp - Electronic	1 Fixture
C&I L8	T12 - 30W -3' 4 Lamp - Magnetic	T8 - 25W -3' 4 Lamp - Electronic	1 Fixture
C&I L9	T12- 34W - 4' 1 Lamp - Magnetic	T8 32W - 4' 1 Lamp - Electronic	1 Fixture
C&I L10	T12- 34W - 4' 2 Lamp - Magnetic	T8 32W - 4' 2 Lamp - Electronic	1 Fixture
C&I L11	T12- 34W - 4' 3 Lamp - Magnetic	T8 32W - 4' 3 Lamp - Electronic	1 Fixture
C&I L12	T12- 34W - 4' 4 Lamp - Magnetic	T8- 32W - 4' 4 Lamp - Electronic	1 Fixture
C&I L13	T12 - 60W - 8' 1 Lamp - Magnetic	T8 - 59W - 8' 1 Lamp - Electronic	1 Fixture
C&I L14	T12 - 60W - 8' 2 Lamp - Magnetic	T8 - 59W - 8' 2 Lamp - Electronic	1 Fixture
C&I L15	T12 - 95W - 8' 1 Lamp - Magnetic - HO	T8 - 86W - 8' 1 Lamp - HO - Electronic	1 Fixture
C&I L16	T12 - 95W - 8' 2 Lamp - Magnetic - HO	T8 - 86W - 8' 2 Lamp - HO - Electronic	1 Fixture
C&I L17	32 W T8 Lamp	Low Watt T8 Lamp	1 Lamp
C&I L18	T12- 34W - 4' 1 Lamp - Magnetic	T5 - 4' 1 Lamp - 28 watt	1 Fixture
C&I L19	T12- 34W - 4' 2 Lamp - Magnetic	T5 - 4' 2 Lamp - 28 watt	1 Fixture
C&I L20	T12- 34W - 4' 3 Lamp - Magnetic	T5 - 4' 3 Lamp - 28 watt	1 Fixture
C&I L21	T12- 34W - 4' 4 Lamp - Magnetic	T5 - 4' 4 Lamp - 28 watt	1 Fixture
C&I L22	T12- 34W - 4' 2 Lamp - Magnetic	T5 - 4' 1 Lamp HO - 54 watt	1 Fixture
C&I L23	T12 - 60W - 8' 2 Lamp - Magnetic	T5 - 4' 2 Lamp HO - 54 watt	1 Fixture
C&I L24	T12- 34W - 4' 4 Lamp - Magnetic	T5 - 4' 2 Lamp HO - 54 watt	1 Fixture
C&I L25	T12 - 8' and 4' Avg	T5 - 4' 2 Lamp HO - 54 watt	1 Fixture
C&I L26	T12 - 95W - 8' 2 Lamp - Magnetic - HO	T5 - 4' 3 Lamp HO - 54 watt	1 Fixture
C&I L27	T12 - 60W - 8' 4 Lamp - Magnetic	T5 - 4' 4 Lamp HO - 54 watt	1 Fixture
C&I L28	T12 - 95W - 8' 2 Lamp - Magnetic - HO	T5 - 4' 4 Lamp HO - 54 watt	1 Fixture
C&I L29	T12 - 95W - 8' 2 Lamp - Magnetic - VHO	T5 - 4' 4 Lamp HO - 54 watt	1 Fixture
C&I L30	T12 - 95W - 8' 2 Lamp - Magnetic - HO - VHO Avg	T5 - 4' 4 Lamp HO - 54 watt	1 Fixture
C&I L31	Hi-Bay 250 W Hi Intensity Discharge	Hi-Bay 3L T5 HO Fluorescents	1 Fixture
C&I L32	Hi-Bay 400 W Hi Intensity Discharge	Hi-Bay 4L T5 HO Fluorescents	1 Fixture
C&I L33	Hi-Bay 400W Hi Intensity Discharge	Hi-Bay 6L T5 HO Fluorescents	1 Fixture
C&I L34	Hi-Bay 1000W Hi Intensity Discharge	Hi-Bay 2-6L T5 HO Fluorescents	1 Fixture
C&I L35	Hi-Bay 250 W Hi Intensity Discharge	Hi-Bay 4L F32 T8 Fluorescents	1 Fixture
C&I L36	Hi-Bay 400 W Hi Intensity Discharge	Hi-Bay 6L F32 T8 Fluorescents	1 Fixture
C&I L37	Hi-Bay 400W Hi Intensity Discharge	Hi-Bay 8L F32 T8 Fluorescents	1 Fixture
C&I L38	Hi-Bay 1000W Hi Intensity Discharge	Hi-Bay 2-8L F32 T8 Fluorescents	1 Fixture
C&I L39	Hi-Bay 400 W Hi Intensity Discharge	Hi-Bay 8L 42W CFL	1 Fixture
C&I L40	Hi-Bay 400 W Hi Intensity Discharge	Hi-Bay 320 Watt Metal Halide - Pulse Start	1 Fixture
C&I L41	Hi-Bay 400 W Hi Intensity Discharge	Hi-Bay 350 Watt Metal Halide - Pulse Start	1 Fixture
C&I L42	Hi-Bay 400 W Hi Intensity Discharge	Hi-Bay 400 Watt Metal Halide - Pulse Start	1 Fixture
C&I L43	60W Inc	15W CFL	1 Lamp
C&I L44	2-60W Inc Fixture	2-13 W CFL Fixture	1 Fixture
C&I L45	Exit Signs have CFLs	Retrofit to LED EnergyStar Exit sign	1 Fixture
C&I L46	Standard lighting switch	Install Occupancy Sensor	1 switch
C&I L47	Traffic Signal, Incandescent	Install EnergyStar Rated LED Traffic Signal	1 Fixture
C&I L48	No Skylight or light tube	Install Light Tube Commercial Skylight	1 Fixture
C&I L49	No centralized lighting controls	Install centralized lighting controls	Per Sq. Ft
C&I L50	No lighting controls	Install Multilevel Lighting Controls	Per Sq. Ft
C&I L51	No lighting controls	Install Daylight Lighting Control Sensors	Per Sq. Ft

Table 3: Refrigeration And Food Service Measures

ID#	Potential Situation	Improvement	Quantity
C&I Refrig 1	No Controls on Vending Machine	Install Cold Beverage Vending Machine Controllers	1 each
C&I Refrig 2	No anti-sweat heater control	Install Anti-sweat heater controls	per door
C&I Refrig 3	Standard condenser	Install Efficient Refrigeration Condenser	40 Ton capacity
C&I Refrig 4	No covers on food cases	Install Night Covers for Food Cases	Per lineal Ft
C&I Refrig 5	No compressor head controls	Install compressor head controls	Per Ton
C&I Refrig 6	Standard Commercial Solid Door Refrigerators less than 20ft3	ENERGY STAR Commercial Solid Door Refrigerators less than 20ft3	per unit
C&I Refrig 7	Standard Commercial Solid Door Refrigerators 20-48 ft3	ENERGY STAR Commercial Solid Door Refrigerators 20-48 ft3	per unit
C&I Refrig 8	Standard Commercial Solid Door Refrigerators more than 48ft3	ENERGY STAR Commercial Solid Door Refrigerators more than 48ft3	per unit
C&I Refrig 9	Standard Commercial Solid Door Freezers less than 20ft3	ENERGY STAR Commercial Solid Door Freezers less than 20ft3	per unit
C&I Refrig 10	Standard Commercial Solid Door Freezers 20-48 ft3	ENERGY STAR Commercial Solid Door Freezers 20-48 ft3	per unit
C&I Refrig 11	Standard Commercial Solid Door Freezers more than 48ft3	ENERGY STAR Commercial Solid Door Freezers more than 48ft3	per unit
C&I Refrig 12	Standard Ice Machines less than 500 lbs	Energy Efficient Ice Machines less than 500 lbs	per unit
C&I Refrig 13	Standard Ice Machines 500-1000 lbs	Energy Efficient Ice Machines 500-1000 lbs	per unit
C&I Refrig 14	Standard Ice Machines more than 1000 lbs	Energy Efficient Ice Machines more than 1000 lbs	per unit

Table 4: HVAC Measures

ID	Potential Situation	Improvement	Quantity
C&I HVAC 1	AC 65,000 1 Ph, 66 kWh/ton	AC 65,000 1 Ph, 59 kWh/ton	per Ton
C&I HVAC 2	AC 65,000 3 Ph, 49 kWh/ton	AC 65,000 3 Ph, 44 kWh/ton	per Ton
C&I HVAC 3	AC 65,000 - 135,000, 77 kWh/ton	AC 65,000 - 135,000, 60 kWh/ton	per Ton
C&I HVAC 4	AC 135,000 - 240,000, 120 kWh/ton	AC 135,000 - 240,000, 107 kWh/ton	per Ton
C&I HVAC 5	AC 240,000 - 760,000, 63 kWh/ton	AC 240,000 - 760,000, 56 kWh/ton	per Ton
C&I HVAC 6	AC >760,000, 93 kWh/ton	AC >760,000, 83 kWh/ton	per Ton
C&I HVAC 7	HP 65,000 1 Ph, 96 kWh/ton	HP 65,000 1 Ph, 99 kWh/ton	per Ton
C&I HVAC 8	HP 65,000 3 Ph, 58 kWh/ton	HP 65,000 3 Ph, 57 kWh/ton	per Ton
C&I HVAC 9	HP 65,000 - 135,000, 108 kWh/ton	HP 65,000 - 135,000, 108 kWh/ton	per Ton
C&I HVAC 10	HP 135,000 - 240,000, 119 kWh/ton	HP 135,000 - 240,000, 124 kWh/ton	per Ton
C&I HVAC 11	HP >240,000, 150 kWh/ton	HP >240,000, 153 kWh/ton	per Ton
C&I HVAC 12	Ground Source HP Closed Loop <135,000, 9 kWh/ton	Ground Source HP Closed Loop <135,000, 7 kWh/ton	per Ton
C&I HVAC 13	WLHP <17,000, 24 kWh/ton	WLHP <17,000, 22 kWh/ton	per Ton
C&I HVAC 14	WLHP 17,000-65,000, 21 kWh/ton	WLHP 17,000-65,000, 19 kWh/ton	per Ton
C&I HVAC 15	WLHP 65,000-135,000, 21 kWh/ton	WLHP 65,000-135,000, 19 kWh/ton	per Ton
C&I HVAC 16	PTAC, 28 kWh/ton	PTAC, 24 kWh/ton	per Ton
C&I HVAC 17	PTAC-HP, 45 kWh/ton	PTAC-HP, 48 kWh/ton	per Ton
C&I HVAC 18	Economizer, 159 kWh/ton	Economizer, 109 kWh/ton	per Ton
C&I HVAC 19	Tuneup - Refrigerant Charge, 145 kWh/ton	Tuneup - Refrigerant Charge, kWh/ton	per Ton
C&I HVAC 20	No ES Sleeve AC over 14,000 Btu hr	Install ES Sleeve AC over 14,000 Btu hr	1 Each
C&I HVAC 21	No ES Sleeve AC under 14,000 Btu hr	Install ES Sleeve AC under 14,000 Btu hr	1 Each
C&I HVAC 22	No Setback_Programmable Thermostat	Install Setback_Programmable Thermostat	1 Each
C&I HVAC 23	Chilled Water Reset Air Cooled 0-100 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 24	Chilled Water Reset Air Cooled 100-200 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 25	Chilled Water Reset Air Cooled 200-300 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 26	Chilled Water Reset Air Cooled 300-400 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 27	Chilled Water Reset Air Cooled 400-500 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 28	Chilled Water Reset Water Cooled 0-1000 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 29	Chilled Water Reset Water Cooled 1000-2000 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 30	Chilled Water Reset Water Cooled 2000-3000 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 31	Air Cooled Chillers	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 32	Water Cooled Chillers less than 150 ton	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 33	Water Cooled Chillers 150 - 300 ton	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 34	Water Cooled Chillers more than 300 ton	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 35	No Window Film	Install Window Film	per Sq. Ft.
C&I HVAC 36	Electric Water heater	HP Water Heater 500 gal_day	Gal per day
C&I HVAC 37	Electric Water heater	HP Water Heater 1000 gal_day	Gal per day
C&I HVAC 38	Electric Water heater	HP Water Heater 1500 gal_day	Gal per day

Table 5: Pumps and Variable Frequency Drive (VFD) Measures

ID3	Potential Situation	Improvement	Quantity
CI Motive Power 1	Std. EPACT Motors 1-5 HP	NEMA Premium Motors 1-5 HP	per HP
CI Motive Power 2	Std. EPACT Motors 7.5-20 HP	NEMA Premium Motors 7.5-20 HP	per HP
CI Motive Power 3	Std. EPACT Motors 25-100 HP	NEMA Premium Motors 25-100 HP	per HP
CI Motive Power 4	Std. EPACT Motors 125-250 HP	NEMA Premium Motors 125-250 HP	per HP
CI Motive Power 5	Std. Pump HP 1.5	Hi Efficiency Pump HP 1.5	per HP
CI Motive Power 6	Std. Pump HP 2	Hi Efficiency Pump HP 2	per HP
CI Motive Power 7	Std. Pump HP 3	Hi Efficiency Pump HP 3	per HP
CI Motive Power 8	Std. Pump HP 5	Hi Efficiency Pump HP 5	per HP
CI Motive Power 9	Std. Pump HP 7.5	Hi Efficiency Pump HP 7.5	per HP
CI Motive Power 10	Std. Pump HP 10	Hi Efficiency Pump HP 10	per HP
CI Motive Power 11	Std. Pump HP 15	Hi Efficiency Pump HP 15	per HP
CI Motive Power 12	Std. Pump HP 20	Hi Efficiency Pump HP 20	per HP
CI Motive Power 13	No Variable Frequency Drive HP 1.5	Install Variable Frequency Drive HP 1.5	per HP
CI Motive Power 14	No Variable Frequency Drive HP 2	Install Variable Frequency Drive HP 2	per HP
CI Motive Power 15	No Variable Frequency Drive HP 3	Install Variable Frequency Drive HP 3	per HP
CI Motive Power 16	No Variable Frequency Drive HP 5	Install Variable Frequency Drive HP 5	per HP
CI Motive Power 17	No Variable Frequency Drive HP 7.5	Install Variable Frequency Drive HP 7.5	per HP
CI Motive Power 18	No Variable Frequency Drive HP 10	Install Variable Frequency Drive HP 10	per HP
CI Motive Power 19	No Variable Frequency Drive HP 15	Install Variable Frequency Drive HP 15	per HP
CI Motive Power 20	No Variable Frequency Drive HP 20	Install Variable Frequency Drive HP 20	per HP
CI Motive Power 21	No Variable Frequency Drive HP 25	Install Variable Frequency Drive HP 25	per HP
CI Motive Power 22	No Variable Frequency Drive HP 30	Install Variable Frequency Drive HP 30	per HP
CI Motive Power 23	No Variable Frequency Drive HP 40	Install Variable Frequency Drive HP 40	per HP
CI Motive Power 24	No Variable Frequency Drive HP 50	Install Variable Frequency Drive HP 50	per HP

Table 6: Other Office Equipment

Potential Situation	Improvement	Quantity
No Plug Load Occupancy Sensors Document Stations	Plug Load Occupancy Sensors Document Stations	Per Unit
Std. Power Supply_Desktop Unit	80Plus Power Supply_Desktop Unit	Per Unit
Std. Power Supply_Server Unit	80Plus Power Supply_Server Unit	Per Unit
No Computer Power Manager	Computer Power Manager	Per Unit

3.3 END-USE MEASURE TECHNICAL POTENTIAL

22.050 (4) The utility shall estimate the technical potential of each end-use measure that passes the screening test. There were errors in two paragraphs in Volume 5, Page 166 beginning with the paragraph "The total estimated commercial and industrial..."The corrected paragraphs are:

"The total estimated commercial and industrial energy efficiency potential over the 20 year forecast period is about 2,264 GWh and 511 peak MW. Approximately half of this energy efficiency potential is projected to come from energy efficient lighting products, about 19% is projected to come from energy efficient HVAC equipment and controls, and about 23% of the total potential is expected to come from custom and motors measures. The total C&I energy efficiency potential amounts to approximately 32% of GMO's forecast 2029 C&I energy consumption of about 6,790 GWh. This is equal to annual average energy savings of about 113 GWh, or 2.4% of GMO's forecast 2010 C&I sales.

The total C&I energy efficiency program costs over the 20 year forecast period are estimated at about ** $[redacted]**, or about ** $[redacted]** per year on average."

3.4 REPORTING REQUIREMENTS

22.050 (11) (D) 4 (I) The results of the utility cost test and the total resource cost test for each demand-side program developed pursuant to section (6) of this rule;. The utility cost test and the total resource cost analysis for the complete DSM portfolio is shown in Table 7 below:

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Table 7: Utility Cost Test and Total Resource Cost Test for the DSM Portfolio ** Highly Confidential **

Complete DSM Portfolio	
Tests	
	Benefit / Cost Test Results
Utility Test	[redacted]
TRC Test	
RIM Test	
Societal Test	
Participant Test	
NPV Lost Revenues, Costs,	
Lost Revenue (Electric)	
Participant Costs (net free)	
Avoided Electric Production with Adders	
Cost-Based Avoided Electric Capacity	
Avoided T&D Electric	
Total	
NPV Administration Costs	
NPV Implementation / Participation Costs	
NPV Incentives	
NPV Total	
Environmental Benefits	

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SECTION 4: INTEGRATED RESOURCE ANALYSIS

4.1 ALTERNATIVE RESOURCE PLANS

At the Integrated Resource Analysis and Risk Analysis and Strategic Selection meeting held October 2nd, 2009 in Jefferson City, a request was made to provide addition information regarding the methodology of the development of alternative resource plans. The following is a discussion of the methodology used:

After the resource option screening conducted as part of Rule 22.040 was completed, resource options that passed screening were included in the preliminary sensitivity analysis required by Rule 22.070 (2). This analysis was conducted using a linear programming based model from Ventyx called System Optimizer®. This model uses as input a fixed set of future market assumptions on load growth, fuel and allowance prices, etc. It also uses as an input a set of supply, DSM and retirement options. For our analysis we used the screened supply options as our set of inputs, with DSM options and retirements of two coal-fired units.

The model takes these options and selects from among them to build a long-term least cost expansion plan for the utility for a given set of future market assumptions. This model is ideally situated to test the company's risk sensitivity to uncertain factors. The output however is the lowest cost plan possible, given market conditions and alternatives for supply, DSM and retirements.

The company used the System Optimizer® output for the case where all market conditions were assumed at the Mid level of uncertain factor risk. The results of this case should be very similar to the results of the integrated analysis on an expected value basis. The first set of 11 alternative plans were based on this information and adhering to three additional criteria. The plans would include enough renewable energy resources to comply with Missouri Prop C targets for renewable energy and solar energy. The plans would keep maintain margins for the company above 12% in order to comply with SPP requirements. The

company would not exceed 25% reserve margin for any year in the planning timeframe.

The first set of plans focused on timing and amount of renewable energy development, verified DSM impacts, tested retirements of coal units, and evaluated the feasibility of biomass retrofits.

An additional request was made to provide the twenty-four alternative resource plans showing the "All DSM" data in terms of annualized additions. Also requested was disaggregating "All DSM" into Demand Response and Energy Efficiency program types. The plans are as shown in Table 8 through Table 31 below:

Table 8: Alternative Resource Plan 1

	Plan 1: Install Prop C Wind and Solar, CT's, and All DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				22.3	9.5
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100		1.7	2.7
2017	0	0.08			1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	154	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32			2.0	-2.4
2025	0	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	154	0.32			2.3	-5.3
2028	0	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 9: Alternative Resource Plan 3

	Plan 2: Install Prop C Wind and Solar, CT's, and No DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				0.0	0.0
2010	0				0.0	0.0
2011	0	1.79			0.0	0.0
2012	0	0.03			0.0	0.0
2013	0	0.02			0.0	0.0
2014	154	2.80			0.0	0.0
2015	0	0.05			0.0	0.0
2016	0	0.11	100		0.0	0.0
2017	0	0.08			0.0	0.0
2018	0	5.02	100		0.0	0.0
2019	0	0.15			0.0	0.0
2020	0	0.20			0.0	0.0
2021	0	5.33	100		0.0	0.0
2022	154	0.24			0.0	0.0
2023	0	0.24	100		0.0	0.0
2024	0	0.32			0.0	0.0
2025	0	0.26			0.0	0.0
2026	0	0.32			0.0	0.0
2027	154	0.32			0.0	0.0
2028	0	0.35			0.0	0.0
2029	0	0.25			0.0	0.0

Table 10: Alternative Resource Plan 3

	Plan 3: Install Prop C Wind and Solar, CT's, Additional 200 MW Wind Above Prop C beginning in 2017, and All DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100		1.7	2.7
2017	0	0.08		100	1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	154	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32		100	2.0	-2.4
2025	0	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	154	0.32			2.3	-5.3
2028	0	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 11: Alternative Resource Plan 4

	Plan 4: Install Prop C Wind and Solar, CT's, Additional 100 MW Wind Above Prop C beginning in 2014, and No DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				0.0	0.0
2010	0				0.0	0.0
2011	0	1.79			0.0	0.0
2012	0	0.03			0.0	0.0
2013	0	0.02			0.0	0.0
2014	0	2.80		100	0.0	0.0
2015	154	0.05			0.0	0.0
2016	0	0.11	100		0.0	0.0
2017	0	0.08			0.0	0.0
2018	0	5.02	100		0.0	0.0
2019	0	0.15			0.0	0.0
2020	0	0.20			0.0	0.0
2021	0	5.33	100		0.0	0.0
2022	0	0.24			0.0	0.0
2023	154	0.24	100		0.0	0.0
2024	0	0.32			0.0	0.0
2025	0	0.26			0.0	0.0
2026	0	0.32			0.0	0.0
2027	154	0.32			0.0	0.0
2028	0	0.35			0.0	0.0
2029	0	0.25			0.0	0.0

Table 12: Alternative Resource Plan 5

	Plan 5: Install Prop C Wind and Solar, CT's, All DSM, 100% Biomass CFB (less Prop C Wind Needed Due to 100% Biomass CFB)						
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	100% Biomass	Demand Response Annualized	Energy Efficiency Annualized
2009	0					5.6	0.3
2010	0					16.7	9.2
2011	0	1.79				21.4	10.9
2012	0	0.03				13.4	11.9
2013	0	0.02				9.0	10.9
2014	0	2.80				3.3	10.2
2015	0	0.05				1.5	2.9
2016	0	0.11			50	1.7	2.7
2017	0	0.08				1.7	1.6
2018	0	5.02	100			1.6	2.0
2019	0	0.15				1.7	1.8
2020	0	0.20				1.8	-0.4
2021	0	5.33	100			1.8	-1.0
2022	0	0.24				1.8	-1.7
2023	154	0.24	100			1.8	-2.0
2024	0	0.32				2.0	-2.4
2025	0	0.26				2.2	-4.8
2026	0	0.32				2.2	-5.1
2027	154	0.32				2.3	-5.3
2028	0	0.35				2.2	-6.3
2029	0	0.25				2.3	-6.8

Table 13: Alternative Resource Plan 6

	Plan 6: Install Prop C Wind and Solar, CT's, All DSM, and Sibley 1&2 converted to using 10% biomass					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100		1.7	2.7
2017	0	0.08			1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	154	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32			2.0	-2.4
2025	0	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	154	0.32			2.3	-5.3
2028	0	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 14: Alternative Resource Plan 7

	Plan 7: Retire Sibley 1&2, Install Prop C Wind and Solar, CT's, and All DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	154	0.05			1.5	2.9
2016	0	0.11	100		1.7	2.7
2017	0	0.08			1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	154	0.32			2.0	-2.4
2025	0	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	154	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 15: Alternative Resource Plan 8

	Plan 8: Retire 108 MW Coal, Install Prop C Wind and Solar, CT's, and No DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	154	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100		1.7	2.7
2017	154	0.08			1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	154	0.32			2.0	-2.4
2025	0	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	154	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 16: Alternative Resource Plan 9

	Plan 9: Retire 108 MW Coal, Install Prop C Wind and Solar, CT's, Additional 200 MW Wind Above Prop C beginning in 2017, and All DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	154	0.05			1.5	2.9
2016	0	0.11	100		1.7	2.7
2017	0	0.08		100	1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32		100	2.0	-2.4
2025	154	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	154	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 17: Alternative Resource Plan 10

	Plan 10: Retire 108 MW Coal, Install Prop C Wind and Solar, CT's, Additional 100 MW Wind Above Prop C beginning in 2014, and No DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80		100	3.3	10.2
2015	154	0.05			1.5	2.9
2016	0	0.11	100		1.7	2.7
2017	154	0.08			1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32			2.0	-2.4
2025	154	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	0	0.35			2.2	-6.3
2029	154	0.25			2.3	-6.8

Table 18: Alternative Resource Plan 11

	Plan 11: Retire 108 MW Coal, Install Prop C Wind and Solar, CT's, All DSM, 100% Biomass						
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	100% Biomass	Demand Response Annualized	Energy Efficiency Annualized
2009	0					5.6	0.3
2010	0					16.7	9.2
2011	0	1.79				21.4	10.9
2012	0	0.03				13.4	11.9
2013	0	0.02				9.0	10.9
2014	0	2.80				3.3	10.2
2015	0	0.05			50	1.5	2.9
2016	0	0.11				1.7	2.7
2017	154	0.08				1.7	1.6
2018	0	5.02	100			1.6	2.0
2019	0	0.15				1.7	1.8
2020	0	0.20				1.8	-0.4
2021	0	5.33	100			1.8	-1.0
2022	0	0.24				1.8	-1.7
2023	0	0.24	100			1.8	-2.0
2024	0	0.32				2.0	-2.4
2025	154	0.26				2.2	-4.8
2026	0	0.32				2.2	-5.1
2027	0	0.32				2.3	-5.3
2028	0	0.35				2.2	-6.3
2029	154	0.25				2.3	-6.8

Table 19: Alternative Resource Plan 12

	Plan 12: Install Prop C Wind and Solar, CT's, Additional 400 MW Wind Above Prop C beginning in 2017, and All DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0.0				5.6	0.3
2010	0.0				16.7	9.2
2011	0.0	1.8			21.4	10.9
2012	0.0	0.0			13.4	11.9
2013	0.0	0.0			9.0	10.9
2014	0.0	2.8			3.3	10.2
2015	0.0	0.0			1.5	2.9
2016	0.0	0.1	100		1.7	2.7
2017	0.0	0.1		100	1.7	1.6
2018	0.0	5.0	100		1.6	2.0
2019	0.0	0.2		100	1.7	1.8
2020	0.0	0.2		100	1.8	-0.4
2021	0.0	5.3	100		1.8	-1.0
2022	0.0	0.2			1.8	-1.7
2023	0.0	0.2	100		1.8	-2.0
2024	154.0	0.3		100	2.0	-2.4
2025	0.0	0.3			2.2	-4.8
2026	0.0	0.3			2.2	-5.1
2027	0.0	0.3			2.3	-5.3
2028	154.0	0.3			2.2	-6.3
2029	0.0	0.2			2.3	-6.8

Table 20: Alternative Resource Plan 13

	Plan 13: Install Prop C Wind and Solar, CT's, Coal w/CCS, and All DSM						
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Coal with CCS	Demand Response Annualized	Energy Efficiency Annualized
2009	0					5.6	0.3
2010	0					16.7	9.2
2011	0	1.79				21.4	10.9
2012	0	0.03				13.4	11.9
2013	0	0.02				9.0	10.9
2014	0	2.80				3.3	10.2
2015	0	0.05				1.5	2.9
2016	0	0.11	100			1.7	2.7
2017	0	0.08				1.7	1.6
2018	0	5.02	100			1.6	2.0
2019	0	0.15				1.7	1.8
2020	0	0.20			150	1.8	-0.4
2021	0	5.33	100			1.8	-1.0
2022	0	0.24				1.8	-1.7
2023	0	0.24	100			1.8	-2.0
2024	0	0.32				2.0	-2.4
2025	0	0.26				2.2	-4.8
2026	0	0.32				2.2	-5.1
2027	154	0.32				2.3	-5.3
2028	0	0.35				2.2	-6.3
2029	0	0.25				2.3	-6.8

Table 21: Alternative Resource Plan 14

	Plan 14: Install Prop C Wind and Solar, CT's, Additional 400 MW Wind Above Prop C beginning in 2016, and All DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100	100	1.7	2.7
2017	0	0.08		200	1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	154	0.32		100	2.0	-2.4
2025	0	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	154	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 22: Alternative Resource Plan 15

	Plan 15: Install Prop C Wind and Solar, CT's, Additional 400 MW Wind Above Prop C beginning in 2017, and DSM only comprised of Existing DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				0.3	5.6
2010	0				1.0	16.7
2011	0	1.79			1.7	21.4
2012	0	0.03			1.7	13.4
2013	0	0.02			1.5	9.0
2014	0	2.80			0.0	3.3
2015	154	0.05			0.0	1.5
2016	0	0.11	100		0.0	1.7
2017	0	0.08		100	0.0	1.7
2018	0	5.02	100		0.0	1.6
2019	0	0.15		100	0.0	1.7
2020	0	0.20		100	0.0	1.8
2021	0	5.33	100		0.0	1.8
2022	0	0.24			0.0	1.8
2023	0	0.24	100		0.0	1.8
2024	0	0.32		100	0.0	2.0
2025	154	0.26			0.0	2.2
2026	0	0.32			0.0	2.2
2027	0	0.32			0.0	2.3
2028	0	0.35			0.0	2.2
2029	154	0.25			0.0	2.3

Table 23: Alternative Resource Plan 16

	Plan 16: Install Prop C Wind and Solar, CT's, Additional 400 MW Wind Above Prop C beginning in 2017, and DSM at 1% of retail energy level					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				22.7	22.3
2010	0				23.2	21.4
2011	0	1.79			23.7	13.4
2012	0	0.03			24.1	9.0
2013	0	0.02			24.5	3.3
2014	0	2.80			24.9	1.5
2015	0	0.05			25.4	1.7
2016	0	0.11	100		25.7	1.7
2017	0	0.08		100	26.1	1.6
2018	0	5.02	100		26.5	1.7
2019	0	0.15		100	0.0	0.0
2020	0	0.20		100	4.2	1.8
2021	0	5.33	100		4.1	1.8
2022	0	0.24			4.1	1.8
2023	0	0.24	100		4.1	1.8
2024	0	0.32		100	4.3	2.0
2025	0	0.26			4.3	2.2
2026	0	0.32			4.4	2.2
2027	0	0.32			4.6	2.3
2028	0	0.35			4.8	2.2
2029	0	0.25			4.8	2.3

Table 24: Alternative Resource Plan 17

	Plan 17: Install Prop C Wind and Solar, CT's, Additional 400 MW Wind Above Prop C beginning in 2012, and All DSM					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03		100	13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100	100	1.7	2.7
2017	0	0.08		200	1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32		100	2.0	-2.4
2025	154	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	154	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 25: Alternative Resource Plan 18

Plan 18: Install Prop C Wind and Solar, CT's, Additional 500 MW Wind Above Prop C beginning in 2010, and All DSM						
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0			100	16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100	100	1.7	2.7
2017	0	0.08		200	1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32		100	2.0	-2.4
2025	154	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	154	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 26: Alternative Resource Plan 19

Plan 19: Install Prop C Wind and Solar, CT's, Additional 500 MW Wind Above Prop C beginning in 2010, All DSM, and Sibley 1&2 converted to using 10% biomass usage						
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0			100	16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03			13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100	100	1.7	2.7
2017	0	0.08		200	1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32		100	2.0	-2.4
2025	154	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	154	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 27: Alternative Resource Plan 20

Plan 20: Install Prop C Wind and Solar, CT's, Additional 500 MW Wind Above Prop C beginning in 2010, All DSM, and Coal w/CCS							
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Coal with CCS	Demand Response Annualized	Energy Efficiency Annualized
2009	0					5.6	0.3
2010	0			100		16.7	9.2
2011	0	1.79				21.4	10.9
2012	0	0.03				13.4	11.9
2013	0	0.02				9.0	10.9
2014	0	2.80				3.3	10.2
2015	0	0.05				1.5	2.9
2016	0	0.11	100	100		1.7	2.7
2017	0	0.08		200		1.7	1.6
2018	0	5.02	100			1.6	2.0
2019	0	0.15				1.7	1.8
2020	0	0.20			150	1.8	-0.4
2021	0	5.33	100			1.8	-1.0
2022	0	0.24				1.8	-1.7
2023	0	0.24	100			1.8	-2.0
2024	0	0.32		100		2.0	-2.4
2025	0	0.26				2.2	-4.8
2026	0	0.32				2.2	-5.1
2027	0	0.32				2.3	-5.3
2028	154	0.35				2.2	-6.3
2029	0	0.25				2.3	-6.8

Table 28: Alternative Resource Plan 21

Plan 21: Install Prop C Wind and Solar, CT's, Additional 500 MW Wind Above Prop C beginning in 2010, All DSM, Coal w/CCS, and Sibley 1&2 converted to 10% biomass usage							
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Coal with CCS	Demand Response Annualized	Energy Efficiency Annualized
2009	0					5.6	0.3
2010	0			100		16.7	9.2
2011	0	1.79				21.4	10.9
2012	0	0.03				13.4	11.9
2013	0	0.02				9.0	10.9
2014	0	2.80				3.3	10.2
2015	0	0.05				1.5	2.9
2016	0	0.11	100	100		1.7	2.7
2017	0	0.08		200		1.7	1.6
2018	0	5.02	100			1.6	2.0
2019	0	0.15				1.7	1.8
2020	0	0.20			150	1.8	-0.4
2021	0	5.33	100			1.8	-1.0
2022	0	0.24				1.8	-1.7
2023	0	0.24	100			1.8	-2.0
2024	0	0.32		100		2.0	-2.4
2025	0	0.26				2.2	-4.8
2026	0	0.32				2.2	-5.1
2027	0	0.32				2.3	-5.3
2028	154	0.35				2.2	-6.3
2029	0	0.25				2.3	-6.8

Table 29: Alternative Resource Plan 22

	Plan 22: Install Prop C Wind and Solar, CT's, Additional 500 MW Wind Above Prop C beginning in 2012, All DSM, and Sibley 1&2 converted to 10% biomass usage					
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Demand Response Annualized	Energy Efficiency Annualized
2009	0				5.6	0.3
2010	0				16.7	9.2
2011	0	1.79			21.4	10.9
2012	0	0.03		100	13.4	11.9
2013	0	0.02			9.0	10.9
2014	0	2.80			3.3	10.2
2015	0	0.05			1.5	2.9
2016	0	0.11	100	100	1.7	2.7
2017	0	0.08		200	1.7	1.6
2018	0	5.02	100		1.6	2.0
2019	0	0.15			1.7	1.8
2020	0	0.20			1.8	-0.4
2021	0	5.33	100		1.8	-1.0
2022	0	0.24			1.8	-1.7
2023	0	0.24	100		1.8	-2.0
2024	0	0.32		100	2.0	-2.4
2025	154	0.26			2.2	-4.8
2026	0	0.32			2.2	-5.1
2027	0	0.32			2.3	-5.3
2028	154	0.35			2.2	-6.3
2029	0	0.25			2.3	-6.8

Table 30: Alternative Resource Plan 23

	Plan 23: Install Prop C Wind and Solar, CT's, Additional 500 MW Wind Above Prop C beginning in 2012, All DSM, and Coal w/CCS						
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Coal with CCS	Demand Response Annualized	Energy Efficiency Annualized
2009	0					5.6	0.3
2010	0					16.7	9.2
2011	0	1.79				21.4	10.9
2012	0	0.03		100		13.4	11.9
2013	0	0.02				9.0	10.9
2014	0	2.80				3.3	10.2
2015	0	0.05				1.5	2.9
2016	0	0.11	100	100		1.7	2.7
2017	0	0.08		200		1.7	1.6
2018	0	5.02	100			1.6	2.0
2019	0	0.15				1.7	1.8
2020	0	0.20			150	1.8	-0.4
2021	0	5.33	100			1.8	-1.0
2022	0	0.24				1.8	-1.7
2023	0	0.24	100			1.8	-2.0
2024	0	0.32		100		2.0	-2.4
2025	0	0.26				2.2	-4.8
2026	0	0.32				2.2	-5.1
2027	0	0.32				2.3	-5.3
2028	154	0.35				2.2	-6.3
2029	0	0.25				2.3	-6.8

Table 31: Alternative Resource Plan 24

	Plan 24: Install Prop C Wind and Solar, CT's, Additional 500 MW Wind Above Prop C beginning in 2012, All DSM, Coal w/CCS, and Sibley 1&2 converted to 10% biomass usage						
Date	Install CT's	Install Solar	Install Prop C Wind	Install Other Wind	Coal with CCS	Demand Response Annualized	Energy Efficiency Annualized
2009	0					5.6	0.3
2010	0					16.7	9.2
2011	0	1.79				21.4	10.9
2012	0	0.03		100		13.4	11.9
2013	0	0.02				9.0	10.9
2014	0	2.80				3.3	10.2
2015	0	0.05				1.5	2.9
2016	0	0.11	100	100		1.7	2.7
2017	0	0.08		200		1.7	1.6
2018	0	5.02	100			1.6	2.0
2019	0	0.15				1.7	1.8
2020	0	0.20			150	1.8	-0.4
2021	0	5.33	100			1.8	-1.0
2022	0	0.24				1.8	-1.7
2023	0	0.24	100			1.8	-2.0
2024	0	0.32		100		2.0	-2.4
2025	0	0.26				2.2	-4.8
2026	0	0.32				2.2	-5.1
2027	0	0.32				2.3	-5.3
2028	154	0.35				2.2	-6.3
2029	0	0.25				2.3	-6.8

SECTION 5: RISK ANALYSIS AND STRATEGIC SELECTION

5.1 SCHEDULE OF DSM PROGRAMS

22.070 (9) (B) A schedule and description of ongoing and planned demand-side programs, program evaluations and research activities

As noted on the teleconference meeting on October 15th, 2009 Figure 1 and Figure 2 in Appendix 7A: Implementation Plan and Acquisition Strategy were incorrect. The corrected figures are shown in Figure 1 and Figure 2 below:

Figure 1: Existing Energy Efficiency and Demand Response Programs

	Budgets approved and tariffs filed	Program Launch	EM&V Report Due
Existing Energy Efficiency Programs - Residential			
Change a Light	Jan-07	Jan-07	Jul-09
Home Performance with Energy Star®	Apr-08	Apr-08	Oct-10
Low Income Weatherization	Mar-08	Mar-08	Sep-10
Low Income Affordable New Homes	Mar-08	Mar-08	Sep-10
Energy Star New Homes	Mar-08	Mar-08	Sep-10
On-Line Energy Information and Analysis	Oct-08	Oct-08	Apr-11
Cool Homes	Oct-08	Oct-08	Apr-11
Existing Energy Efficiency Programs - C&I			
Building Operator Certification	Mar-08	Mar-08	Sep-10
Energy Audit and Energy Savings Measures	Apr-08	Apr-08	Oct-10
Existing Demand Response Programs			
Energy Optimizer	Oct-08	Oct-08	Apr-11
MPower	Oct-08	Oct-08	Apr-11

Figure 2: Proposed Energy Efficiency and DSM Research Activities

	Programs in IRP	Budgets approved and tariffs filed	Program Launch	EM&V Report Due
Proposed Energy Efficiency Programs - Residential				
Appliance Turn In	Jan-10	Jan-10	Apr-10	Jul-12
Energy Use Monitor (Blue Line)	Jan-10	Jan-10	Apr-10	Jul-12
Cool Homes - Enhanced	Jan-10	Jan-10	Apr-10	Jul-12
Home Performance with Energy Star® - Enhanced	Jan-10	Jan-10	Apr-10	Jul-12
On-Line Energy Information and Analysis Plus	Jan-10	Jan-10	Apr-10	Jul-12
Proposed Energy Efficiency Programs - Commercial & Industrial				
Custom & RFP Rebate	Jan-10	Jan-10	Apr-10	Jul-12
Prescriptive Rebate	Jan-10	Jan-10	Apr-10	Jul-12
		Research Completed		
Research Activities				
Evaluation of Financing Efficiency Programs		Oct-09		
Evaluation of Street Lighting and Other Outdoor Lighting Programs		Oct-10		
Multi-family Dwelling Energy Efficiency Study		Feb-10		
Time of Use, Peak Pricing and Demand Response Tariff Evaluation		Jun-10		

5.2 SMARTGRID

Also noted on the teleconference meeting on October 15th, 2009 the August 5th filing did not include any reference to Smart Grid technology. Prior to the August 5th filing of the GMO IRP, an internal discussion was held to decide whether to include information regarding SmartGrid initiatives. The concern was that current SmartGrid initiatives are within the KCP&L service territory, not the GMO service territory. After the October 15th teleconference with Parties, the following information is being submitted - noting that the information is based upon current KCP&L initiatives but could extend to GMO in the future:

KCP&L is proposing a five year SmartGrid Demonstration Project that truly creates an end-to-end SmartGrid – from SmartGeneration to SmartEnd-Use – built around a major SmartSubstation. It introduces new technologies, business models, applications, and protocols that will be tested and refined in this "laboratory". The project will include detailed analysis and testing to demonstrate the benefits of optimizing energy and information flows and utility operations across supply and demand resources, T&D operations, and customer end-use programs. Done successfully, the demonstration project will quantify smart grid costs, benefits and cost-effectiveness, verify SmartGrid technology viability, and validate new SmartGrid business models, at a scale that can be readily adapted and replicated to both the KCP&L and GMO service areas.

Additional SmartGrid information has been attached as Appendix 3.

5.3 RANGES OF CRITICAL UNCERTAIN FACTORS

22.070 (10) (C) A specification of the ranges or combinations of outcomes for the critical uncertain factors that define the limits within which the preferred resource plan is judged to be appropriate and an explanation of how these limits were determined;

At the Integrated Resource Analysis and Risk Analysis and Strategic Selection meeting held October 2nd, 2009 in Jefferson City, a request was made to provide additional discussion regarding determination of ranges for the critical uncertain factors. The following is an additional discussion:

In order to calculate ranges of critical uncertain factors, a scenario in which a plan other than the Preferred Plan would be the lowest-NPVRR plan. To perform this calculation the mid-case scenario would be compared to the scenario which the critical uncertain factor alone was extreme. Due to the robust nature of the Preferred Plan, it was lowest-NPVRR on many of the scenarios in which only one Critical Uncertain Factor was at an extreme value.

To allow for calculation of ranges to occur, scenarios had to be selected in which an alternative resource plan was lowest-NPVRR. The company selected scenarios that were representative of the extreme case of the critical uncertain factor but included a different lowest-NPVRR Alternative Resource Plan other than the Preferred Plan.

Table 32 below documents which scenarios contain the isolated extreme case of the Critical Uncertain Factor and which scenario was used in the calculations.

Table 32: Critical Uncertain Factor Sensitivity vs. Scenario

Sensitivity	Isolated CUF	Utilized Scenario
High CO2	Scenario 23	Scenario 21
High Natural Gas	Scenario 28	Scenario 28
High Load Growth	Scenario 7	Scenario 4
High Construction	Scenario 16	Scenario 18
High Coal	Scenario 31	Scenario 26
High Interest	Scenario 32	Scenario 37
Low CO2	Scenario 43	Scenario 42
Low Natural Gas	Scenario 38	Scenario 37
Low Load Growth	Scenario 59	Scenario 61
Low Construction	Scenario 50	Scenario 47
Low Coal	Scenario 35	Scenario 29

5.4 CONTINGENCY OPTIONS

22.070 (10) (D) A set of contingency options that are judged to be appropriate responses to extreme outcomes of the critical uncertain factors and an explanation of why these options are judged to be appropriate responses to the specified outcomes

in Appendix 7A: the Implementation Plan and Acquisition Strategy included the following table to highlight which alternative plans may become the low NPVRR plan in the event of an extreme change in a critical uncertain factor value:

Table 33: Original Alternative Plans for Each Critical Uncertain Factor

Sensitivity	Plan06	Plan07	Plan21	Plan23	Plan24
High CO2			X		X
High Gas			X	X	X
High Load Growth				X	X
High Construction	X	X			X
High Coal					X
High Interest	X	X			X
Low CO2	X	X			
Low Gas	X	X			
Low Load Growth		X			X
Low Construction		X	X		
Low Coal		X		X	

This table was meant to be qualitative, showing which plans would be reviewed as a critical uncertain factor value became extreme.

Parties requested that the table be modified to include the effects of the Preferred Plan and to quantify relative frequency of a plan being lowest-NPVRR under extreme cases. The modified table is shown below:

Table 34: Alternative Plans for Each Critical Uncertain Factor

Sensitivity	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Total
High CO2	-	-	9.1%	63.2%	-	27.7%	100.0%
High Gas	-	-	9.1%	27.0%	36.2%	27.7%	100.0%
High Load Growth	-	-	-	81.3%	9.1%	9.6%	100.0%
High Construction	9.1%	9.1%	-	81.3%	-	0.6%	100.0%
High Coal	-	-	-	81.3%	-	18.7%	100.0%
High Interest	8.3%	8.3%	-	82.9%	-	0.5%	100.0%
Low CO2	26.9%	1.1%	-	72.0%	-	-	100.0%
Low Gas	9.0%	28.0%	-	63.0%	-	-	100.0%
Low Load Growth	-	10.1%	-	80.9%	-	9.0%	100.0%
Low Construction	-	1.1%	18.0%	80.9%	-	-	100.0%
Low Coal	-	1.1%	-	89.9%	9.0%	-	100.0%

5.5 MONITORING CRITICAL UNCERTAIN FACTORS

22.070 (10) (E) A process for monitoring the critical uncertain factors on a continuous basis and reporting significant changes in a timely fashion to those managers or officers who have the authority to direct the implementation of contingency options when the specified limits for uncertain factors are exceeded.

At the Integrated Resource Analysis and Risk Analysis and Strategic Selection meeting held October 2nd, 2009 in Jefferson City, a request was made to further explain the process used to monitor Critical Uncertain Factors. The following is the expanded explanation:

In the course of reviewing the long term value of a Critical Uncertain Factor, if the Energy Resource Management (ERM) department has determined that its value has exceeded the range under which the Preferred Plan would still be optimal, the ERM department will initiate an update of the Integrated Analysis. The Critical Uncertain Factor will be adjusted to its new level while all other Critical Uncertain Factors will be updated with new forecasts.

The update of the Integrated Analysis will compare the Preferred Plan to the pre-determined alternative resource plans listed in Table 9, Alternative Plans for

Each Uncertain Factor, in Appendix 7A, Implementation Plan and Resource Acquisition Strategy.

Should the results of the updated Integrated Analysis show that the Preferred Plan remains optimal, the ERM department will communicate its findings to the company's Senior Strategy Team(SST). If an Alternative Resource Plan is found to be optimal, the ERM department will communicate its findings to the SST and to the Regulatory Department. The Regulatory Department will provide guidance on the method and requirements to communicate this information to parties.

Based upon the differences inherent within the plans, SST, ERM, Regulatory and Parties may require varying levels of documenting the changes to the Preferred Plan. For example, if the change to the Preferred Plan occurs within the time-frame of the Implementation Plan and Resource Acquisition Strategy, a full review of the IRP may be required by Parties. If the changes occur in the later years of the IRP timeframe, Parties may simple request documentation of the updated Integrated Analysis.