VOLUME 7

RESOURCE ACQUISITION STRATEGY SELECTION

KCP&L GREATER MISSOURI OPERATIONS COMPANY (GMO)

INTEGRATED RESOURCE PLAN

4 CSR 240-22.070

APRIL, 2015

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PURPOSE: This rule requires the utility to select a preferred resource plan, develop an implementation plan, and officially adopt a resource acquisition strategy. The rule also requires the utility to prepare contingency plans and evaluate the demand-side resources that are included in the resource acquisition strategy.

SECTION 1: PREFERRED RESOURCE PLAN

(1) The utility shall select a preferred resource plan from among the alternative resource plans that have been analyzed pursuant to the requirements of 4 CSR 240-22.060. The utility shall describe and document the process used to select the preferred resource plan, including the relative weights given to the various performance measures and the rationale used by utility decision-makers to judge the appropriate tradeoffs between competing planning objectives and between expected performance and risk. The utility shall provide the names, titles, and roles of the utility decision–makers in the preferred resource plan selection process.

GMO Preferred Plan Selection:

Key decisions faced by GMO in this filing were when to cease burning coal at the Lake Road 4/6 and Sibley Station generating units and the level and timing of DSM portfolio to implement. A range of plans were developed to evaluate these decisions. A total of twenty-five plans were evaluated.

Five different levels of DSM portfolios were modeled in the alternative resource plans for this GMO filing. MAP, RAP and a third portfolio labeled as DSM “C”, were originally developed, and these were briefly discussed with stakeholders in January. MAP and RAP portfolios were developed from GMO’s Potential Study

(August 2013) by Navigant, and were adjusted as to the new implementation timelines for this filing, as well as the changes for roll-off measures and opt-outs. DSM “C” was developed for GMO by AEG, as a less than RAP level option. The DSM “D” level was a plan with no new DSM programs being implemented, which provided a baseline for comparison. A DSM “E” portfolio begins with the DSM “C” levels for the 2016 – 2018 period, then transitions to the adjusted Potential Study RAP levels.

Plan GBBEG, which includes DSM “E “programs, ceasing burning coal at Sibley 1 and 2 in 2019, convert Lake Road 4/6 to natural gas in 2016 followed by retirement in 2020, 310 MW in wind additions, 10 MW solar addition, combustion turbine addition in 2034, was selected as the Preferred Plan for this filing. It is the second ranked plan based upon the 20-year NPVRR rankings. This plan has the same basic underlying assumptions as the top ranked 20-year NPVRR plan GBBBA, with the differences of the level of DSM portfolio and the 2034 combustion turbine addition. The Preferred Plan has a slower implementation of DSM, but results in a lower 20-year levelized rate impact and lower NPVRR impact for much of the 20-year period.

Table 1: Performance Measures for Top-Ranked Plans

Plan	NPVRR ($MM)	Probable Environmental costs ($MM)	DSM Performance Incentive Costs ($MM)	Levelized Annual Rates ($/KW-hr)	Maximum Rate Increase
GBBBA	10,167	333	57	0.133	8.21%
GBBEG	10,206	334	47	0.130	7.19%

The 8.21% maximum rate increase for GBBBA occurs in 2016 and is driven by the implementation of RAP DSM. The maximum rate increase for the Preferred Plan GBBEG occurs in 2034, driven by the addition of the combustion turbine generation.

DSM should be implemented in a manner that ensures that all cost effective programs will be adopted at the optimal time. The Preferred Plan has the benefit of holding rates lower in the earlier years, while progressing towards the optimal long-term energy efficiency goals. The following table illustrates the benefit of a DSM portfolio that is flexible in its implementation design.

Table 2: NPVRR Rankings

Study	5-yr NPVRR	10-yr NPVRR	15-yr NPVRR	20-yr NPVRR	5-yr Ranking	10-yr Ranking	15-yr Ranking	20-yr Ranking
GBBBA	3,493	6,402	8,560	10,167	8	3	1	1
GBBEG	3,446	6,377	8,564	10,206	4	1	2	2
GCBBA	3,465	6,465	8,608	10,207	5	6	3	3
GAABA	3,495	6,438	8,634	10,272	9	4	4	4
GBBBB	3,571	6,541	8,735	10,363	21	17	10	5
GBBCG	3,436	6,400	8,681	10,399	3	2	5	6
GCBCB	3,485	6,502	8,704	10,402	6	10	6	7
GCBEB	3,496	6,569	8,770	10,406	10	20	14	8
GBBCB	3,513	6,446	8,706	10,408	12	5	7	9
GCBEG	3,418	6,537	8,768	10,428	2	16	12	10
GCBCG	3,408	6,474	8,712	10,440	1	7	8	11
GBBCA	3,529	6,478	8,749	10,461	16	8	11	12
GAACB	3,516	6,482	8,726	10,467	13	9	9	13
GBBCD	3,545	6,528	8,791	10,499	19	14	16	14
GCBCA	3,501	6,551	8,780	10,503	11	18	15	15
GAACA	3,532	6,514	8,769	10,521	17	11	13	16
GBBCF	3,522	6,517	8,793	10,553	14	12	17	17
GBBCC	3,560	6,535	8,859	10,603	20	15	19	18
GAACF	3,524	6,552	8,867	10,614	15	19	20	19
GBBDA	3,489	6,520	8,847	10,638	7	13	18	20
GAACE	3,540	6,585	8,913	10,672	18	21	21	21
GCBAA	3,697	6,808	9,058	10,703	22	22	22	22
GBBCW	3,839	6,843	9,212	10,861	25	23	23	23
GBBAA	3,725	6,934	9,316	11,042	23	24	24	24
GAAAA	3,727	6,969	9,389	11,145	24	25	25	25

The preferred resource plan shall satisfy at least the following conditions:

(A) In the judgment of utility decision-makers, strike an appropriate balance between the various planning objectives specified in 4 CSR 240-22.010(2);
GMO has used the minimization of the present worth of the long-run utility costs as the primary selection criteria in the selection of this Preferred Plan. As noted in the above section, this approach would require GMO to start new DSM programs at a lower than RAP level, but this will be ramped up as it becomes more cost effective to implement higher levels. This will also lower the customer rate increases during the entire 20-year IRP period.

(B) Invest in advanced transmission and distribution technologies unless, in the judgment of the utility decision-makers, investing in those technologies to upgrade transmission and/or distribution networks is not in the public interest;
See response in Rule 070(1)(D)
(C) Utilize demand-side resources to the maximum amount that comply with legal mandates and, in the judgment of the utility decision-makers, are consistent with the public interest and achieve state energy policies; and

See response in Rule 070(1)(D)

(D) In the judgment of the utility decision-makers, the preferred plan, in conjunction with the deployment of emergency demand response measures and access to short-term and emergency power supplies, has sufficient resources to serve load forecasted under extreme weather conditions pursuant to 4CSR 240-22.030(8)(B) for the implementation period. If the utility cannot affirm the sufficiency of resources, it shall consider an alternative resource plan or modifications to its preferred resource plan that can meet extreme weather conditions.

The Preferred Plan that has been selected for GMO is shown in Table 3 below:

Table 3: GMO Preferred Plan

Year	CT's (MW)	Wind (MW)	Solar (MW)	DSM (MW)	Retire (MW)	Existing Capacity (MW)
2015	0			55		2143
2016	0		5	50		2143
2017	0	260		91		2135
2018	0			116		2135
2019	0	50		153		2038
2020	0			208	96	1942
2021	0			265		1942
2022	0			322		1942
2023	0			379		1942
2024	0			435		1942
2025	0			460		1942
2026	0		5	483		1942
2027	0			505		1942
2028	0			527		1942
2029	0			546		1942
2030	0			564		1942
2031	0			579		1942
2032	0			595		1942
2033	0			610		1942
2034	207			624		1942

Based in part upon current Missouri RPS rule requirements, the Preferred Plan includes 10 MW of solar additions and 310 MW of wind additions over the twenty-year planning period. It should be noted that the solar resource addition in 2016 is expected to consist of ownership of 2 MW of Commercial and Industrial rooftop installations and 3 MW of a central station solar facility. The 260 MW wind addition in expected to be in service in 2017. The 50 MW wind addition in 2019 represents the balance of the Gray County wind facility at which GMO currently holds a 60 MW share. DSM resources consist of a suite of twenty Energy Efficiency and five Demand Response programs. The Preferred Plan reflects Sibley Units 1 and 2 ceasing to burn coal in 2019 and the 96 MW Lake Road 4/6 converting to natural gas in 2016 and then retiring in 2020. The environmental drivers that contributed to the discontinuing of burning of coal, and the Lake Road 4/6 retirement, include Mercury and Air Toxics Standards Rule, Ozone National Ambient Air Quality Standards (NAAQS), PM NAAQS, Clean

Water Act Section 316(a) and (b), Effluent Guidelines, Coal Combustion Residuals Rule, and Clean Power Plan. These rules will be monitored by GMO to determine if the decision to retire Lake Road 4/6 by 2020 continues to be prudent.

The Preferred Plan was not the lowest cost plan from a Net Present Value of Revenue Requirement (NPVRR) perspective. The Alternative Resource Plan GBBBA had the lowest expected NPVRR of all modeled plans which also retired Lake Road 4/6 in 2020 and incorporated a Realistic Achievable Potential DSM level.

The next lowest Alternative Resource Plan assuming DSM E is GCBEB which includes reflects Sibley Units 1 and 2 ceasing to burn coal in 2019, Sibley Unit 3 ceasing to burn coal in 2020 and the 96 MW Lake Road 4/6 converting to natural gas in 2016 and then retiring in 2020.

The Preferred Plan also meets the fundamental planning objectives as required by Rule 22.010(2) to provide the public with energy services that are safe, reliable, and efficient, at just and reasonable rates, in compliance with all legal mandates, and in a manner that serves the public interest and is consistent with state energy and environmental policies. The Preferred Resource Plan was reviewed and approved by Terry D. Bassham, President and Chief Executive Officer, and Kevin Noblet, Vice President – Generation.

The Forecast of Capacity Balance worksheet associated with the GMO Preferred Plan is shown in Table 4 below. It should be noted that the “Peak Forecast” data is based upon an extreme weather forecast. The Capacity Balance shows that reserve obligations are met each year.

Table 4: GMO Forecast of Capacity Balance - Preferred Plan ** Highly Confidential **

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The Preferred Plan was tested under extreme weather conditions as defined by Rule 240-22.030(8)(B). There is no unserved energy under this extreme condition. The performance measure effects and annual amount of unserved energy given extreme weather conditions are provided below.

Table 5: Performance Measure Impact - Extreme Weather ** Highly Confidential **

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Table 6: Extreme Weather Unserved Energy

Year	Unserved Energy (MWh) Extreme Weather
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
2024	0
2025	0
2026	0
2027	0
2028	0
2029	0
2030	0
2031	0
2032	0
2033	0
2034	0

SECTION 2: RANGES OF CRITICAL UNCERTAIN FACTORS

The utility shall specify 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 explain how these limits were determined. The utility shall also describe and document its assessment of whether, and under what circumstances, other uncertain factors associated with the preferred resource plan could materially affect the performance of the preferred resource plan relative to alternative resource plans.

The ranges of critical uncertain factors are calculated by finding the value at which the critical uncertain factor needs to change in order for the Preferred Resource Plan to no longer be the preferred. The values of the NPVRR for the Preferred Resource Plan and the lowest cost plan under extreme conditions are compared and by using linear interpolation a crossover point value is found and expressed as a percent of the range of the critical uncertain factor. These percentages are superimposed on the high, mid and low forecasts for each critical uncertain factor to develop the resulting ranges.

In the analysis, the Preferred Plan, GBBEG and one other plan GCBEB proved to be the lowest cost plans under different risk scenarios. The values of these two plans NPVRR under each of these risks are detailed in the following table.

Table 7: Risk Scenario NPVRR

Assuming Low CO2						
NPVRR ($MM)	**High Load**	**High NG**	**Low CO2**	**EV**	**Low NG**	**Low Load**
GCBEB	10,208	10,388	10,068	10,406	9,732	9,938
GBBEG	9,904	9,906	9,773	10,206	9,638	9,648
Assuming High CO2						
NPVRR ($MM)	**High Load**	**High NG**	**High CO2**	**EV**	**Low NG**	**Low Load**
GCBEB	11,087	11,214	10,920	10,406	10,599	10,765
GBBEG	11,019	11,024	10,862	10,206	10,658	10,713

The uncertain factors which may cause the company to modify the Preferred Plan are limited to high CO_2, and low natural gas prices. Details of the calculations for range of uncertain factors are given in the following sections.

2.1 CRITICAL UNCERTAIN FACTOR: CO_2

The uncertain factor range calculation is detailed in Table 8 below. As projected CO_2 prices approach the high forecast, Alternative Resource Plan GCBEB becomes a lower cost plan than the Preferred Plan.

Table 8: CO_2 Uncertain Factor Range

CO2		
Plan	Low	High
GCBEB	9,732	10,599
GBBEG	9,638	10,658
Percent	from Low	
Upper %	61.5%	

The resulting limits of the range of this critical uncertain factor are detailed in the Figure 1 below.

Figure 1: CO_2 Uncertain Factor Range Limits ** Highly Confidential **

2.2 CRITICAL UNCERTAIN FACTOR: LOAD

The uncertain factor range calculation is detailed in Table 9 below. The load growth forecast does not cause the contingency plan to out-perform the Preferred Plan.

Table 9: Load Uncertain Factor Range

Load		
Plan	**Mid**	**High**
GBBEG	9,773	9,904
GBBEG	9,773	9,904
Percent	**from Mid**	**from Low**
Upper %	N/A	N/A

Plan	**Mid**	**Low**
GBBEG	9,773	9,648
GBBEG	9,773	9,648
Percent	**from Mid**	**from Low**
Lower %	N/A	N/A

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Figure 2: Peak Demand Range Limit ** Highly Confidential **

Figure 3: Energy Range Limit ** Highly Confidential **

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2.3 CRITICAL UNCERTAIN FACTOR: NATURAL GAS

The uncertain factor range calculation is detailed in Table 10 below. At a lower than mid-case natural gas prices scenario (and high CO_2), Alternative resource Plan GCBEB becomes a lower cost plan than the Preferred Plan.

Table 10: Natural Gas Uncertain Factor Range

Natural Gas		
Plan	**Mid**	**High**
GBBEG	10,862	11,024
GBBEG	10,862	11,024
Percent	**from Mid**	**from Low**
Upper %	N/A	N/A

Plan	**Mid**	**Low**
GCBEB	10,920	10,599
GBBEG	10,862	10,658
Percent	**from Mid**	**from Low**
Lower %	-49.5%	25.2%

The resulting limits of the range of this critical uncertain factor are detailed in Figure 4 below.

Figure 4: Natural Gas Uncertain Factor Range Limit ** Highly Confidential **

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SECTION 3: BETTER INFORMATION

The utility shall describe and document its quantification of the expected value of better information concerning at least the critical uncertain factors that affect the performance of the preferred resource plan, as measured by the present value of utility revenue requirements. The utility shall provide a tabulation of the key quantitative results of that analysis and a discussion of how those findings will be incorporated in ongoing research activities.

The Company calculated the value of better information for each of the critical uncertain factors identified in the preliminary sensitivity test. For each uncertainty, the Preferred Plan NPVRR for the specific uncertainty scenarios (or endpoints) was compared to the better plan under each extreme uncertainty condition. The comparison was made on an expected value basis assuming that only those three particular scenarios (high value uncertainty, mid value and low value uncertainty) would occur. Baye's Theorem was applied to the endpoint probabilities to develop conditional probabilities for the calculation scenarios. The difference between the expected value of the Preferred Plan and the expected value of the better information results is the expected value of better information.

The results for these calculations are shown in below.

Table 11: Better Information - CO_2

CO2 Under Low Gas						
Preferred Plan	**Endpoint**	**Plan**	**NPVRR**	**EP Prob**	**Cond. Prob**	**Expected Value**
High CO2	11	GBBEG	10,658	5.00%	40.00%	10,046
Low CO2	12	GBBEG	9,638	7.50%	60.00%	
Better Information	**Endpoint**	**Plan**	**NPVRR**	**EP Prob**	**Cond. Prob**	**Expected Value**
High CO2	11	GCBEB	10,599	5.00%	40.00%	10,022
Low CO2	12	GBBBA	9,638	7.50%	60.00%	
Expected Value of Better Information			24	Million		

Table 12: Better Information - Load

Load						
Preferred Plan	**Endpoint**	**Plan**	**NPVRR**	**EP Prob**	**Cond. Prob**	**Expected Value**
High Load	4	GBBEG	9,904	7.50%	25.00%	9,774
Mid	10	GBBEG	9,773	15.00%	50.00%	
Low Load	16	GBBEG	9,648	7.50%	25.00%	
Better Information	**Endpoint**	**Plan**	**NPVRR**	**EP Prob**	**Cond. Prob**	**Expected Value**
High Load	4	GBBEG	9,904	7.50%	25.00%	9,774
Mid	10	GBBEG	9,773	15.00%	50.00%	
Low Load	16	GBBEG	9,648	7.50%	25.00%	
Expected Value of Better Information			-	Million		

Table 13: Better Information - Natural Gas

Natural Gas Under High CO2						
Preferred Plan	**Endpoint**	**Plan**	**NPVRR**	**EP Prob**	**Cond. Prob**	**Expected Value**
High Natural Gas	7	GBBEG	11,024	5.00%	25.00%	10,852
Mid	9	GBBEG	10,862	10.00%	50.00%	
Low Natural Gas	11	GBBEG	10,658	5.00%	25.00%	
Better Information	**Endpoint**	**Plan**	**NPVRR**	**EP Prob**	**Cond. Prob**	**Expected Value**
High Natural Gas	7	GBBEG	11,024	5.00%	25.00%	10,837
Mid	9	GBBEG	10,862	10.00%	50.00%	
Low Natural Gas	11	GCBEB	10,599	5.00%	25.00%	
Expected Value of Better Information			15	Million		

SECTION 4: CONTINGENCY RESOURCE PLANS

The utility shall describe and document its contingency resource plans in preparation for the possibility that the preferred resource plan should cease to be appropriate, whether due to the limits identified pursuant to 4 CSR240-22.070(2) being exceeded or for any other reason.

(A) The utility shall identify as contingency resource plans those alternative resource plans that become preferred if the critical uncertain factors exceed the limits developed pursuant to section (2).

GMO has identified a contingency plan should the critical uncertain factors exceed the limits specified. The Contingency Resource Plan is shown in the table below:

Table 14: Contingency Resource Plan

Plan Name	DSM Level	Facility	Year to Cease Burning Coal	Renewable Additions		Generation Addition (if needed)
GCBEB	Option E - MEEIA to RAP	Sibley-1 Sibley-2	2019	Solar: 2016 - 5 MW 2026 - 5 MW	Wind: 2017 - 260 MW 2019 - 50 MW	207 MW Existing CC in 2016 414 MW CT in 2020
		Lake Road 4/6	2020 (convert to NG in 2016)			
		Sibley-3	2020			

The contingency plan was identified through evaluation of the relative cost performance of each alternative resource plan under different combinations of the critical uncertain factors. The combination of the critical uncertain factors under which this contingency plan is projected to be lower cost than the Preferred Plan is as follows:

Low Gas, High CO_2 Price Scenario: Under this scenario, the Alternative Resource Plan shown in Table 14 is the Contingency Plan. Under all other combinations of Gas and CO_2 pricing, the Preferred Plan performed best.

(B) The utility shall develop a process to pick among alternative resource plans, or to revise the alternative resource plans as necessary, to help ensure reliable and low cost service should the preferred resource plan no longer be appropriate for any reason. The utility may also use this process to confirm the viability of contingency resource plans identified pursuant to subsection (4)(A).

The process used to select alternative resource plans was derived from the analysis of risks imposed on the GMO stand-alone utility. The Contingency Plan was chosen as the plan that could perform better than the Preferred Plan, should certain extreme conditions of risk factors arise. These factors are described in the response to Rule 240-22.070(2) in this Volume.

(C) Each contingency resource plan shall satisfy the fundamental objective in 4 CSR240-22.010(2) and the specific requirements pursuant to 4 CSR 240-22.070(1).

The Contingency Plan GCBEB meets the considerations of Rule 240.22.010(2) as one of the alternative resource plans developed and conformed in the response to Rule 240-22.060(3) in Volume 6 of this filing.

As for concurrence with Rule 240.070(1), Plan GCBEB conforms by meeting Rule 240.010(2), considered investments in advanced transmission and distribution technologies, utilizes the amount of DSM that conforms to legal mandates and demonstrates adequate access to emergency short-term power supply.

SECTION 5: LOAD –BUILDING PROGRAMS

Analysis of Load-Building Programs. If the utility intends to continue existing load building programs or implement new ones, it shall analyze these programs in the context of one (1) or more of the alternative resource plans developed pursuant to 4 CSR 240- 22.060(3) of this rule, including the preferred resource plan selected pursuant to 4 CSR240-22.070(1). This analysis shall use the same modeling procedure and assumptions described in 4 CSR 240-22.060(4). The utility shall describe and document—

(A) Its analysis of load building programs, including the following elements:

1. Estimation of the impact of load building programs on the electric utility's summer and winter peak demands and energy usage;

2. A comparison of annual average rates in each year of the planning horizon for the resource plan(s) with and without the load building program;

3. A comparison of the probable environmental costs of the resource plan(s) in each year of the planning horizon with and without the proposed load-building program;

4. A calculation of the performance measures and risk by year; and

5. An assessment of any other aspects of the proposed load-building programs that affect the public interest; and

(B) All current and proposed load-building programs, a discussion of why these programs are judged to be in the public interest, and, for all resource plans that include these programs, plots of the following over the planning horizon:

1. Annual average rates with and without the load-building programs; and

2. Annual utility costs and probable environmental costs with and without the load-building programs. At this time, GMO does not have any load-building programs.

SECTION 6: IMPLEMENTATION PLAN

The utility shall develop an implementation plan that specifies the major tasks, schedules, and milestones necessary to implement the preferred resource plan over the implementation period. The utility shall describe and document its implementation plan, which shall contain—

6.1 LOAD ANALYSIS - SCHEDULE AND DESCRIPTION

(A) A schedule and description of ongoing and planned research activities to update and improve the quality of data used in load analysis and forecasting;

GMO plans to conduct its next Residential Appliance Saturation Survey in 2016-2017. GMO is also looking at the option of expanding the survey to the commercial sector in 2016-2017. The last residential survey was completed in 2013. The results were used to calculate appliance saturations and these saturations were used to calibrate DOE forecasts of appliance saturations for use in GMO's load forecasting models. GMO also plans to match the responses with the customers' billing records and to conduct a conditional demand study to measure the unit energy consumption (UEC) for each major appliance.

GMO is in the process of developing a framework for incorporating photovoltaic (PV) impacts into the energy forecast in order to capture PV energy impacts. The goal would be for inclusion in the next IRP update.

GMO is developing a new industrial model that will allow the utility to create an industrial intensity index which would be calibrated to the GMO service area based on employment. It will be implemented in the 2015.

The timeline currently expected for the Residential Appliance Saturation Survey is shown in the following table:

Table 15: Appliance Saturation Survey Schedule

Appliance Saturation Survey Initiative	Date Range
Issue Appliance Saturation Survey Request for Proposal (RFP)	06/2015 - 12/2015
Evaluate Conducting a C&I Survey	1/2015 - 12/2015
Conduct Residential Appliance Saturation Survey	01/2016-06/2016
Tabulation Appliance Saturation Survey Results	06/2016-12/2016
Conduct Conditional Demand Study	01/2017-5/2017
Implement Survey Result in Load Forecast	05/2017-7/2017

6.2 DEMAND-SIDE PROGRAMS – SCHEDULE AND DESCRIPTION

(B) A schedule and description of ongoing and planned demand-side programs and demand-side rates, evaluations, and research activities to improve the quality of demand-side resources;

The current schedule for ongoing and planned DSM programs is shown in the two tables below:

Table 16: DSM Program Schedule – Existing Programs

Program Name	Program Type	Status	Segment	Program Implemented	Annual Report	EM&V Completed and draft report available
Low-Income Weatherization	Energy Efficiency	Existing	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Energy Star® New Homes	Energy Efficiency	Discontinued	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Cool Homes	Energy Efficiency	Existing	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Home Performance with Energy Star®	Energy Efficiency	Existing	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Commercial and Industrial Rebate	Energy Efficiency	Existing	C&I	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Mpower	Demand Response	Existing	C&I	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Energy Optimizer	Demand Response	Existing	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Building Operator Certification	Educational	Existing	C&I	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Home Energy Analyzer	Educational	Existing	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Business Energy Analyzer	Educational	Existing	C&I	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Appliance Turn-In	Energy Efficiency	Existing	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Commercial and Industrial Prescriptive Rebate	Energy Efficiency	Existing	C&I	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Multi-Family Rebate	Energy Efficiency	Discontinued	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Residential Energy Reports	Energy Efficiency	Existing	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year
Residential Lighting and Appliance	Energy Efficiency	Existing	Residential	Jan. 26, 2013	90-days following Plan Year	1-Yr following Plan Year

Table 17: DSM Program Schedule – Planned Programs

Program Name		New or Existing	Segment	Tariff Filing Date	MEEIA and DSM program approved	Program Implemented	Annual Report	EM&V Completed and draft report available
Home Lighting Rebate	Energy Efficiency	New	Residential	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Home Appliance Recycling Rebate	Energy Efficiency	New	Residential	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Home Energy Report	Energy Efficiency	New	Residential	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Online Home Energy Audit	Educational	New	Residential	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Whole House Efficiency	Energy Efficiency	New	Residential	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Income-Eligible Multi-Family	Energy Efficiency	New	Residential	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Income-Eligible Weatherization	Energy Efficiency	New	Residential	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Residential Programmable Thermostat	Demand Response	New	Residential	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Business Energy Efficiency Rebate - Prescriptive	Energy Efficiency	New	C&I	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Business Energy Efficiency Rebate - Custom	Energy Efficiency	New	C&I	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Strategic Energy Management	Energy Efficiency	New	C&I	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Block Bidding	Energy Efficiency	New	C&I	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Online Building Energy Audit	Educational	New	C&I	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Small Business Direct Install	Energy Efficiency	New	C&I	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Commercial Programmable Thermostat	Demand Response	New	C&I	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year
Demand Response Incentive	Demand Response	New	C&I	Jun., 2015	Oct., 2015	Jan., 2016	90-days following Plan Year	1-Yr following Plan Year

6.3 SUPPLY-SIDE – SCHEDULES AND DESCRIPTIONS

(C) A schedule and description of all supply-side resource research, engineering, retirement, acquisition, and construction activities, including research to meet expected environmental regulations;

Based on the 2015 Preferred Plan for GMO, retrofits are currently being undertaken at Sibley Station and Lake Road 4/6. While the Preferred Plan calls for Sibley 1 and 2 to cease burning coal by 2020 and Lake Road 4/6 to be retired, minor retrofits are needed by 2016 for MATS compliance at Sibley Station and Lake Road 4/6 is installing Fuel Oil backup. A draft schedule of major milestones for these retrofit projects are provided in a draft schedule of major milestones for expected retrofit projects are provided in Table 15 below:

Table 15: Retrofit Milestone Schedule

Retrofit Project	Milestone Description	Date Range
Sibley 3 ACI	Studies/Specification/Bid/Award	03/2014 - 06/2015
Sibley 3 ACI	Engineering/Procurement/Construction	07/2015 - 12/2015
Sibley 3 ACI	Checkout/Startup/Tuning/Testing	01/2016 - 02/2016
Sibley 3 Cooling Tower	Studies/Specification/Bid/Award	01/2016 - 4/2018
Sibley 1, 2, and 3 ESP Improvements	Studies/Specification/Bid/Award	03/2014 - 02/2015
Sibley 1, 2, and 3 ESP Improvements	Engineering/Procurement/Construction	03/2015 - 12/2015
Sibley 1, 2, and 3 ESP Improvements	Checkout/Startup/Tuning/Testing	01/2016 - 02/2016
Sibley 3 SFC	Engineering/Procurement/Construction	02/2015 - 05/2016
LR 4/6 Fuel Oil Backup	Studies/Specification/Bid/Award	01/2015 - 06/2015
LR 4/6 Fuel Oil Backup	Engineering/Procurement/Construction	07/2015 - 12/2015
LR 4/6 Fuel Oil Backup	Checkout/Startup/Tuning/Testing	01/2016 - 02/2016
ACI : Activated Carbon Injection ESP: Electrostatic Precipitator SFC: Submerged Flight Conveyor		

Also, The Preferred Plan includes solar resource additions in 2016 consisting of ownership in 2 MW Commercial and Industrial rooftop installations and 3 MW of a central station solar facility. A draft schedule of the major milestones for this solar initiative is provided in the following table:

Table 16: Solar Initiatives

Solar Initiatives	Date Range
Issue Central Solar Request for Proposal (RFP)	04/2015 - 06/2015
Evaluate Central Solar RFP Responses/Select Developer(s)	07/2015 - 09/2015
Site Design/Obtain Permits	10/2015 - 12/2015
Central Solar Site Mobilization/Construction	01/2016 - 5/2016
Commercial Operation for Central Solar and Rooftop Installations	05/2016 - 06/2016

In addition, GMO is working towards procuring additional wind resources.

6.4 MILESTONES AND CRITICAL PATHS

(D) Identification of critical paths and major milestones for implementation of each demand-side resource and each supply-side resource, including decision points for committing to major expenditures;

Critical paths and major milestones for implementation of each demand-side resource are shown above, in Section 6.2. In addition, more detail about the implementation plan for the DSM preferred plan can be found in Volume 5. It includes the descriptions of the programs, the implementation strategy, a discussion of risk management, the incentive levels used for planning purposes, energy and peak demand savings goals, and budget estimates. GMO will file an application under the Missouri Energy Efficiency Investment Act (MEEIA) requesting Commission approval of demand-side programs for a program implementation period of 2016 to 2018 in mid-2015.

6.5 COMPETITIVE PROCUREMENT POLICIES

(E) A description of adequate competitive procurement policies to be used in the acquisition and development of supply-side resources;

GMO has competitive procurement policies in place to adequately gather and analyze potential acquisition and development of supply-side resources, including both ownership and power purchase agreements (PPAs). The following is a general overview of these policies and the associated timeline.

- A draft Request For Proposal (RFP) is developed and circulated internally with the appropriate parties for review and suggested edits.
- The final RFP document, edited for any agreed changes as a result of the above process, is made available to the appropriate audience for an opportunity to submit a proposal.
- In general, proposals are required to be submitted back to GMO within 30-60 days of the RFP being distributed.
- The proposals are gathered, summarized, and analyzed by the Energy Resource Management group, with appropriate modeling of the alternatives as required.
- After the proposals have been ranked, GMO develops a 'short-list' to identify those projects or proposals that will continue to be considered.
- Those proposals that do not make the short list are notified via a 'regret letter' that they are no longer being considered.

From the 'short-list', the winning bidder/project is chosen and final contracts are completed with the assistance of internal and/or external legal counsel.

6.6 MONITORING CRITICAL UNCERTAIN FACTORS

(F) 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 resource plans when the specified limits for uncertain factors are exceeded; and

Each critical uncertain factor is reviewed on an individual basis due to the varied nature of the information sources used in its review. This IRP analysis will be updated on an annual basis reflecting any changes to these critical uncertain factors. Results will be distributed to the V.P. of Generation.

Critical Uncertain Factor: CO_2

CO_2 credit prices are reviewed on a continual basis. The data sources used are third party views predicting the price of the credits. Most of these third party studies are sparked by proposed legislation or are updated up to a quarterly basis. This review and update is conducted by the Fuels department with a full review conducted on an annual basis.

Critical Uncertain Factor: Load

Load forecasts are updated on an annual basis as part of the company's annual budgeting process.

Critical Uncertain Factor: Natural Gas

Natural Gas forecasts are updated weekly with executive updates provided on a monthly basis.

6.7 MONITORING PREFERRED RESOURCE PLAN

(G) A process for monitoring the progress made implementing the preferred resource plan in accordance with the schedules and milestones set out in the implementation plan and for reporting significant deviations in a timely fashion to those managers or officers who have the authority to initiate corrective actions to ensure the resources are implemented as scheduled.

GMO has processes in place to monitor its Demand-Side Management programs and track and report their performance compared to the planned implementation schedule.

The PPA's that are anticipated to meet Southwest Power Pool reserve requirements will be procured based upon the procedure outlined in Section 6.5 above per Rule 240-22.070(6)(E).

Wind development activities are reported to the Vice President, Generation on an ongoing basis and solar initiatives are reported to executive management on a weekly basis.

SECTION 7: RESOURCE ACQUISITION STRATEGY

The utility shall develop, describe and document, officially adopt, and implement a resource acquisition strategy. This means that the utility's resource acquisition strategy shall be formally approved by an officer of the utility who has been duly delegated the authority to commit the utility to the course of action described in the resource acquisition strategy. The officially adopted resource acquisition strategy shall consist of the following components:

7.1 PREFERRED RESOURCE PLAN

(A) A preferred resource plan selected pursuant to the requirements of section (1) of this rule;

The Preferred Resource Plan is outlined in Section 1 above per Rule 240-22.070(1).

7.2 IMPLEMENTATION PLAN

(B) An implementation plan developed pursuant to the requirements of section (6) of this rule; and

The Implementation Plan is outlined in Section 6 above per Rule 240-22.070(6).

7.3 CONTINGENCY RESOURCE PLANS

(C) A set of contingency resource plans developed pursuant to the requirements of section (4) of this rule and identification of the point at which the critical uncertain factors would trigger the utility to move to each contingency resource plan as the preferred resource plan.

The Contingency Resource Plan is outlined in Section 4 above per Rule 240-22.070(4).

KCP&L GREATER MISSOURI OPERATIONS COMPANY

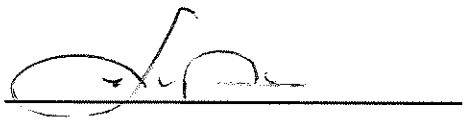
INTEGRATED RESOURCE PLAN – 2015 TRIENNIAL FILING

CORPORATE APPROVAL AND STATEMENT OF COMMITMENT FOR

RESOURCE ACQUISITION STRATEGY

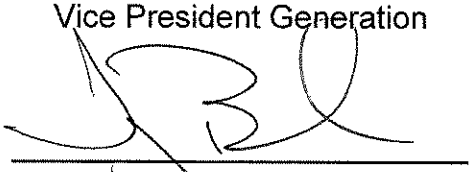
In accordance with Missouri Public Service Commission rules found in 4 CSR 240-22 and 4 CSR 240-22.080(3), KCP&L Greater Missouri Operations Company ("GMO") now officially adopts for implementation the resource acquisition strategy contained in this Triennial filing.

With the objective of providing the public with energy services that are safe, reliable, and efficient at just and reasonable rates, GMO is committed to the full implementation of the Resource Acquisition Strategy contained herein.



Kevin Noblet

Vice President Generation



Terry D. Bassham

President and Chief Executive Officer

SECTION 8: EVALUATION OF DEMAND-SIDE PROGRAMS AND DEMAND-SIDE RATES

(8) The utility shall describe and document its evaluation plans for all demand-side programs and demand-side rates that are included in the preferred resource plan selected pursuant to 4 CSR 240-22.070(1). Evaluation plans required by this section are for planning purposes and are separate and distinct from the evaluation, measurement, and verification reports required by 4 CSR 240-3.163(7) and 4 CSR 240-20.093(7); nonetheless, the evaluation plan should, in addition to the requirements of this section, include the proposed evaluation schedule and the proposed approach to achieving the evaluation goals pursuant to 4 CSR 240-3.163(7) and 4 CSR 240-20.093(7). The evaluation plans for each program and rate shall be developed before the program or rate is implemented and shall be filed when the utility files for approval of demand-side programs or demand-side program plans with the tariff application for the program or rate as described in 4 CSR 240-20.094(3). The purpose of these evaluations shall be to develop the information necessary to evaluate the cost-effectiveness and improve the design of existing and future demand-side programs and demand-side rates, to improve the forecasts of customer energy consumption and responsiveness to demand-side programs and demand-side rates, and to gather data on the implementation costs and load impacts of demand-side programs and demand-side rates for use in future cost-effectiveness screening and integrated resource analysis.

GMO will prepare a request for proposal ("RFP") to conduct an evaluation, measurement and verification ("EM&V") of all demand-side programs and demand-side rates that are approved by the Commission.

<u>EM&V Process Evaluation</u>

The scope of work for the RFP will require that the Vendor conduct a process evaluation pursuant to requirements of 4 CSR 240-22.070 (8) (A) and require the

Vendor to provide answers to questions 1 through 5 of this rule section in the EM&V final report ("Report").

EM&V Impact Evaluation

The scope of work for the EM&V RFP will require that the Vendor conduct the impact evaluation pursuant to requirements of 4 CSR 240-22.070 (8) (B) and require the Vendor to provide answers to questions 1 and 2 of this rule section in the Report.

EM&V Data Collection

The scope of work for the EM&V RFP will require that the Vendor collect EM&V participation rate data, utility cost data, participant cost data and total cost data pursuant to requirements of 4 CSR 240-22.070 (8) (C).

EM&V Reporting Requirements

The scope of work for the EM&V RFP will also require that the Vendor perform, and report EM&V of each commission-approved demand-side program in accordance with 4 CSR 240-3.163 (7).

GMO will provide the Missouri Public Service Commission ("Commission") Staff and other stakeholders with an opportunity to review and comment on the RFP prior to issuance of the EM&V RFP.

The proposed EM&V RFP will be available for Commission staff and stakeholder review three months after Commission approval of these demand-side resources pursuant to 4 CSR 240-20.094 and the approval GMO's demand-side program investment mechanism ("DSIM") pursuant to 4 CSR 240-20.093 ("Approval Date"). The proposed RFP may be modified to incorporate any important issues or concerns raised by the Commission staff or stakeholders. The EM&V RFP will be issued five months after the Commission Approval Date. Vendor selection will be seven months after the Commission Approval Date.

An EM&V for all demand-side programs and demand-side rates that are included in GMO's preferred resource plan will begin after the completion of each program year.

The EM&V RFP will require the selected vendor to evaluate and prepare an annual program performance report. Preliminary EM&V reports will be available by August 1 following the program year. Commission Staff and stakeholders will be provided with an opportunity to review, and comment on the preliminary report. The final EM&V report will be available by October 1 following the completion of each program year.

EM&V Schedule and Budget

The EM&V budget shall not exceed five percent (5%) of the total budget for all approved demand-side program costs. A tentative EM&V schedule is shown in Table 17 below. This schedule will be updated when GMO files for new programs under MEEIA.

Table 17: Estimated EM&V Schedule

Estimated EM&V Schedule	
Commission Approval of Programs	Estimated Dec, 2015
EM&V RFP ready for review	4/1/2016
Issue EM&V RFP	6/1/2016
EM&V Vendor Selected	8/1/2016
1st Annual EM&V Begins	1/1/2017
1st Annual Draft Report	8/1/2017
1st Annual Program Report	10/1/2017
2nd Annual EM&V Begins	1/1/2018
2nd Annual Draft Report	8/1/2018
2nd Annual Program Report	10/1/2018
3rd Annual EM&V Begins	1/1/2019
3rd Annual Draft Report	8/1/2019
3rd Annual Program Report	10/1/2019

8.1 PROCESS EVALUATION

(A) Each demand-side program and demand-side rate that is part of the utility's preferred resource plan shall be subjected to an ongoing evaluation process which addresses at least the following questions about program design.

1. What are the primary market imperfections that are common to the target market segment?

See the response to Section 8, above.

2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?

See the response to Section 8, above.

3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?

See the response to Section 8, above.

4. Are the communication channels and delivery mechanisms appropriate for the target market segment?

See the response to Section 8, above.

5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each enduse measure included in the program?

See the response to Section 8, above.

8.2 IMPACT EVALUATION

(B) The utility shall develop methods of estimating the actual load impacts of each demand-side program and demand-side rate included in the utility's preferred resource plan to a reasonable degree of accuracy.

1. Impact evaluation methods. At a minimum, comparisons of one (1) or both of the following types shall be used to measure program and rate impacts in a manner that is based on sound statistical principles:

A. Comparisons of pre-adoption and post-adoption loads of program or demand-side rate participants, corrected for the effects of weather and other intertemporal differences; and

See the response to Section 8, above.

B. Comparisons between program and demand-side rate participants' loads and those of an appropriate control group over the same time period.

See the response to Section 8, above.

2. The utility shall develop load-impact measurement protocols that are designed to make the most cost-effective use of the following types of measurements, either individually or in combination:

A. Monthly billing data, hourly load data, load research data, end-use load metered data, building and equipment simulation models, and survey responses; or

See the response to Section 8, above.

B. Audit and survey data on appliance and equipment type, size and efficiency levels, household or business characteristics, or energy-related building characteristics.

See the response to Section 8, above.

8.3 DATA COLLECTION PROTOCOLS

(C) The utility shall develop protocols to collect data regarding demand-side program and demand-side rate market potential, participation rates, utility costs, participant costs, and total costs.

See the response to Section 8, above.