MISSOURI PUBLIC SERVICE COMMISSION

STAFF REPORT ON

KCP&L GREATER MISSOURI OPERATIONS COMPANY

ELECTRIC UTILITY RESOURCE PLANNING
COMPLIANCE FILING

FILE NO. EO-2015-0252

August 31, 2015

JEFFERSON CITY, MISSOURI

**** Denotes Highly Confidential Information ****

NP

Table of Contents

Summary of Staff's Review and Recommendations 1
List of Staff's Deficiencies 4
List of Staff's Concerns 6
GMO's Chapter 22 Filing 7
4 CSR 240-22.030 Load Analysis and Load Forecasting 12
4 CSR 240-22.040 Supply-Side Resource Analysis 13
4 CSR 240-22.045 Transmission and Distribution Analysis 15
4 CSR 240-22.050 Demand-Side Resource Analysis 16
4 CSR 240-22.060 Integrated Resource Analysis 27
4 CSR 240-22.070 Risk Analysis and Strategy Selection 36
4 CSR 240-22.080 Filing Schedule and Requirements 38

Summary of Staff's Review and Recommendations

On April 1, 2015,[1] KCP&L Greater Missouri Operations Company ("GMO") made its Chapter 22 triennial compliance filing in Case No. EO-2015-0252 as required by the Commission's revised Chapter 22 Electric Utility Resource Planning Rules,[2] which became effective on June 30, 2011. Staff recognizes and appreciates the Company's significant effort to make its triennial compliance filing under the Commission's Chapter 22 Rules.[3]

GMO performed its electric utility resource planning for the Filing: a) for GMO as a stand-alone electric utility, and b) for GMO and Kansas City Power and Light Company ("KCPL") operating as if a single company. GMO's adopted preferred resource plan, Plan GBBEG,[4] represents GMO's "allocated" portion of a "combined company" candidate resource plan, Plan CBBFA.[5] Plan GBBEG includes the demand-side management ("DSM") programs contained in GMO's Option E DSM portfolio, as well as supply-side resources including 10 megawatts ("MW") of solar additions and 310 MW of wind additions over the 20-year planning period. Solar resource additions in 2016 are expected to consist of ownership in 2 MW of commercial and industrial rooftop installations and 3 MW of a utility-scale solar facility. The 260 MW wind addition is expected to be in service in 2017. The 50 MW wind addition in 2019 represents the balance of the Gray County wind facility of which GMO currently holds a 60 MW share. DSM resources consist of a suite of twelve residential and nine commercial programs. The Preferred Plan reflects the retirement of Sibley Units 1 and 2 in 2019 and converting the 96 MW Lake Road 4/6 coal-fired unit to natural gas in 2016 and then retiring it in 2020.

The 20-year risk adjusted present value of revenue requirements ("PVRR") of GMO's adopted preferred resource plan is $10.21 billion, which is $39 million more than GMO's lowest cost alternative resource plan, Plan GBBBA. Plan GBBBA is the same as GMO's

[1] GMO's previous triennial compliance filing was filed on April 9, 2012, in Case No. EO-2012-0324. This is GMO's second Chapter 22 triennial compliance filing under the Commission's revised Chapter 22 rules.
[2] GMO requested in Docket No. EE-2014-0328 - and the Commission approved - a variance from the Commission Rules 4 CSR 240-22.045(3)(B)2 and 4 CSR 240-22.045(3)(B)3 requiring regional transmission organization expansion plan analysis specific to Missouri customers.
[3] The Commission's Chapter 22 Rules were first effective on May 6, 1993, and remained unchanged until they were revised effective June 30, 2011.
[4] See Volume 1, page 18, for the naming convention for the G alternative resource plans.
[5] GMO developed and analyzed eight (8) alternative resource plans that are based upon GMO and KCP&L combining resources as discussed on pages 10 – 12 of Volume 6. See Volume 6, page 10, for the naming convention for the alternative resource plans on a combined company basis.

preferred resource plan, except that for Plan GBBBA GMO would implement its realistic achievable potential ("RAP") demand-side resources portfolio over the entire 20-year planning horizon while with its preferred resource plan (Plan GBBEG) GMO would implement the Option E demand-side portfolio, which mirrors Option C[6] for 2016-2018 and then transitions to adjusted RAP level annual impacts.

Staff performed its review of GMO's Chapter 22 triennial compliance filing in the context of the Commission's revised Chapter 22 Rules, the Missouri Renewable Energy Standard ("RES"), the Commission's RES Rule, the Missouri Energy Efficiency Investment Act of 2009 ("MEEIA") and the Commission's MEEIA Rules. Staff performed its review this way, because the policy objectives of Chapter 22, RES and MEEIA are inseparable for electric utilities, as discussed more fully in this Report and in Addendum A attached to it.

As a result of its limited review of the GMO's filing, Staff finds that the methodologies and models GMO used are generally well established and can produce technically correct calculations for the numerous required analyses. However, as discussed in more detail in this Staff Report, Staff finds that GMO's filing does not comply with the Chapter 22 requirement to describe and document a large number of the triennial compliance filing requirements and does not achieve the "fundamental objective" of the Commission's Chapter 22 Rules as a result of the following significant deficiencies and concerns:

1. There are many instances where GMO is required to describe and document specific filing requirements as defined in rule 4 CSR 240-22.020(14):

> *Describe and document refers to the demonstration of compliance with each provision of this chapter. Describe means the provision of information in the technical volume(s) of the triennial compliance filing, in sufficient detail to inform the stakeholders how the utility complied with each applicable requirement of Chapter 22, why that approach was chosen, and the results of its approach. The description in the technical volume(s), including narrative text, graphs, tables, and other pertinent information, shall be written in a*

[6] Option C is a level of demand-side resources lower than realistic achievable potential and reflects the following assumptions that are not considered in the 2014 Potential Study: (1) recent program developments, evaluations, and new technology, (2) an update of the net-to-gross (NTG) ratios for measures (programs) indicated in KCPL-GMO's 2013 EMV, (3) cost effectiveness that does not include the impacts from natural gas savings, (4) new EISA baselines that are effective in 2020, (5) commercial and industrial opt-outs, and (6) after a review of GMO's existing programs and the 2014 Potential Study, as well as interviews with GMO program managers and staff, the programs were modified.to enhance their performance and incorporate the updated measure characteristics. AEG performed industry standard cost-effectiveness tests in order to gauge the economic merits of the measures, programs and portfolio. The end-use measures most likely to achieve cost-effective savings were then selected and bundled into programs.

manner that would allow a stakeholder to thoroughly assess the utility's resource acquisition strategy and each of its components. Document means the provision of all of the supporting information relating to the filed resource acquisition strategy pursuant to 4 CSR 240-22.080(11).
(Emphasis added)

However, GMO very often did not describe and document its triennial compliance filing requirements information in the technical volumes, but rather cited the Chapter 22 rule requirement and then merely stated, "The […] can be found in the work paper 'GMO IRP Filing […].'" This approach falls far short of the requirement of rule 4 CSR 240-22.020(14) to describe and document;

2. KCPL and GMO's joint company basis electric utility resource planning complies with relatively few of the requirements of rule 4 CSR 240-22.060 Integrated Resource Plan and Risk Analysis and 4 CSR 240-22.070 Resource Acquisition Strategy Selection, and describes and documents relatively few of the Chapter 22 filing requirements for each of the eight (8) combined/joint candidate resource plans;

3. GMO's stand-alone electric utility resource planning does not comply with many of the requirements of rules 4 CSR 240-22.060 Integrated Resource Plan and Risk Analysis and 4 CSR 240-22.070 Resource Acquisition Strategy Selection, and fails to describe and document many of the Chapter 22 filing requirements for each of the twenty-five (25) GMO candidate resource plans;

4. KCPL and GMO are separate subsidiaries of Great Plains Energy, Inc. and do not have operating agreements and/or contracts in place to permit the joint operations assumed by the joint company planning.[7] Also there is the matter of the separate rates and rate designs of KCPL and GMO, let alone the matter of the separate rates and rate designs of the MPS and L&P rate districts of GMO. The appropriateness of joint KCPL / GMO electric resource planning absent a merger of those two entities is a question for the Commission;

5. GMO did not supply a compliance benchmark plan which minimally complies with renewable mandates. ** _____ _____ ** Because there is

[7] The following is from the top of page 12 of the ***Joint Operating Agreement between Kansas City Power & Light Company and Aquila, Inc. dba KCP&L Greater Missouri Operations Company Case No. EM-2007-0374: "***KCP&L and KCP&L GMO will be *operated and planned for as separate control areas* with wholesale transactions governed by applicable FERC tariffs and rules, until and unless otherwise determined by the parties and approved by all applicable regulatory bodies. [Emphasis added]

NP

little variation in mixes and timing of renewable supply-side resource additions, GMO has not demonstrated that the planned renewable resources optimally comply with RES mandates; and

6. GMO is noncompliant with rules 4 CSR 240-22.010(2)(C) and 4 CSR 240-22.070(1), because it did not use minimization of the present worth of long-run utility costs as the only selection criterion in choosing its adopted preferred resource plan, and did not describe and document the process its decision-makers used to select GMO's adopted preferred resource plan, including the relative weights given to the various performance measures, and the rationale the decision-makers used to judge the appropriate tradeoffs between competing planning objectives, and between expected performance and risk.

All of Staff's identified deficiencies and concerns are listed in the next two sections of this Staff Report, respectively.

As a result of its limited review, Staff recommends that the Commission:

1. Order GMO to comply as a stand-alone utility with all of the requirements of rules 4 CSR 240-22.060 Integrated Resource Plan and Risk Analysis and 4 CSR 240-22.070 Resource Acquisition Strategy Selection for its April 1, 2018, Chapter 22 triennial compliance filing;

2. Order GMO to provide a single compliance bench mark plan which minimally complies with the RES legal mandates in its April 1, 2016 annual update filing; and

3. Order GMO to describe and document each and every triennial compliance filing requirement in its April 1, 2018 Chapter 22 triennial compliance filing.

List of Staff's Deficiencies

A *deficiency*, as defined in rule 4 CSR 240-22.020(9), means a deficiency in the electric utility's compliance with the provisions of Chapter 22, any major deficiency in the methodologies or analyses required to be performed by Chapter 22, and anything that would cause the electric utility's resource acquisition strategy to fail to meet the requirements identified in Chapter 22. As a result of its limited review, Staff finds the following deficiencies with GMO's Chapter 22 triennial compliance filing:

Deficiency 1 - GMO did not provide a summary table in technical Volume 4 showing each potential supply-side resource option and an assessment of whether

each potential supply-side resource option qualifies as a utility renewable energy resource as required by rule 4 CSR 240-22.040(2)(C)1.
Deficiency 2 – Staff was unable to find in technical volume 4 that GMO described and documented the costs of ancillary and/or back-up sources of supply required to achieve necessary reliability levels in connection with intermittent and/or uncontrollable sources of generation (i.e., wind and solar) as required by rule 4 CSR 240-22.040(2)(A).

Deficiency 3- Staff was unable to find that GMO described and documented the potential supply-side resource option purchased power from bi-lateral transactions and from organized capacity and energy markets required by rule 4 CSR 240-22.040(1).

Deficiency 4 - GMO did not perform a comprehensive analysis to optimize investments in advanced distribution technologies pursuant to rule 4 CSR 240-22.045(4) (C).

Deficiency 5 – The only requirements of Rule 4 CSR 240-22.060 Integrated Resource Plan and Risk Analysis that are satisfied, and described, and documented[8] for each of GMO's eight (8) combined/joint candidate resource plans are for integrated resource analysis and the calculation of PVRR for each plan.

Deficiency 6 - Compliance Benchmark Plan - GMO did not provide a compliance bench mark plan which minimally complies with legal mandates for renewable energy resources [9], and is therefore deficient.

Deficiency 7 - Optimal Compliance Resource Plan – GMO did not supply a compliance benchmark plan which minimally complies with renewable mandates. ** _____ ** Because there is little variation in mixes and timing of renewable supply-side resource additions, Staff believes GMO has not demonstrated that the planned renewable resources optimally comply with renewable mandates.[11]

[8] Rule 4 CSR 240-22.020(14): "Describe and document refers to the demonstration of compliance with each provision of this chapter. Describe means the provision of information in the technical volume(s) of the triennial compliance filing, in sufficient detail to inform the stakeholders how the utility complied with each applicable requirement of Chapter 22, why that approach was chosen, and the results of its approach. The description in the technical volume(s), including narrative text, graphs, tables, and other pertinent information, shall be written in a manner that would allow a stakeholder to thoroughly assess the utility's resource acquisition strategy and each of its components. Document means the provision of all of the supporting information relating to the filed resource acquisition strategy pursuant to 4 CSR 240-22.080(11)".
[9] Section 393.1030, RSMo, Supp. 2014.
[10] Response to Staff Data Request 6 and Tables 8-14 in *KCP&L Greater Missouri Operations Integrated Resource Plan* - Volume 6, Pages 17-23
[11] Section 393.1030, RSMo, Supp. 2014.

NP

Deficiency 8 – All of the filing requirements of rules 4 CSR 240-22.070(2) and 4 CSR 240-22.070(3) were not described and documented for any of the GMO candidate resource plans.

Deficiency 9 – The only requirements of rule 4 CSR 240-22.070 Resource Acquisition Strategy Selection that were satisfied and described and documented for each of the eight (8) combined/joint candidate resource plans are: 1) analysis and specification of ranges for critical uncertain factors, and 2) the expected value of better information related to the critical uncertain factors (CO_2, load forecast and natural gas prices).

Deficiency 10 - GMO's resource acquisition strategy selection process used to select Plan GBBEG as its adopted preferred resource plan does not comply with the minimum requirements of: a) rule 4 CSR 240-22.010(2)(C), because it does not *explicitly identify and, where possible, quantitatively analyze any other considerations which are critical to meeting the fundamental objective of the resource planning process, but which may constrain or limit the minimization of the present worth of expected utility costs*, and b) rule 4 CSR 240-22.070(1), because it does not *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.* [Emphasis added]

List of Staff's Concerns

A *concern*, as defined by 4 CSR 240-22.020(6), means a concern with the electric utility's compliance with the provisions of Chapter 22, any major concern with the methodologies or analyses required to be performed by Chapter 22, and anything that, while not rising to the level of a deficiency, may prevent the electric utility's resource acquisition strategy from effectively fulfilling the objectives of Chapter 22. As a result of its limited review, Staff finds the following concerns with GMO's Chapter 22 triennial compliance filing:

Concern A- GMO has indicated that the wind capacity factor is 54% in several tables that include tables 13, 14 and 15. Staff believes that this value is too high. The wind capacity factor is indicated to be 32% in table 11 in technical volume 1. Staff believes that this value is more reasonable. Staff is unable to verify what capacity factor value for wind GMO utilized in its supply-side resource analysis and modeling. Staff is concerned that GMO may have used a value greater than 32%.

Concern B – Utility-scale Solar PV and distributed Solar PV - GMO did not differentiate between ** _____ **, and yet intends to pursue distributed Solar PV in its preferred resource plan.

Concern C – Renewable planning environment - Recent changes to GMO's planning environment, particularly the impact of the Clean Power Plan and associated incentives may alter the timing of the planned additions. The final Clean Power Plan includes incentives for wind and solar additions which occur after the State submits their final plan to EPA (or after September 6, 2018) and generate MWhs during 2020 and/or 2021

Concern D – Timing of Solar additions - ** _____

_____

_____ ** The addition of a solar resource in 2016, rather than a later date, results in expiration of solar RECs. A portion of the projected surplus of solar RECs will expire and the potential value of selling solar RECs is low. For example, GMO purchased solar RECs at $2.10/solar REC[12] for 2014 compliance.**

Concern E – Retail Rate Impact Calculation -
Although Staff is aware of recent advantageous wind pricing, GMO has failed to meet the goal outlined in 4 CSR 240-22.060(3), to develop substantively different mixes of supply-side resources and variations in the timing of resource acquisitions, and Staff is therefore concerned that GMO has not fully demonstrated that there is an economic benefit to the planned wind resource additions[13] or fully justified its exclusion of wind resources from the retail rate impact calculation of 4 CSR 240-20.100(5).

Concern F – KCPL and GMO do not have the proper operating agreements and/or contracts in place to correctly analyze joint company planning. In the absence of proper operating agreements and/or contracts, joint company planning must be performed in the context of a comprehensive plan to merge KCPL and GMO, and no such plan to merge the two companies exists at this time.

GMO's Chapter 22 Filing

On April 1, 2015, GMO filed its triennial compliance filing in File No. EO-2015-0252. Approximately one year earlier, GMO requested, in File No. EE-2014-0328, a variance from the requirements of Commission rules 4 CSR 240-22.045(3)(B)2 and 4 CSR 240-22.045(3)(B)3 that a regional transmission organization expansion plan analysis

[12] GMO reported the purchase of 8,700 S-RECs in 2014, page 4 GMO 2014 RES Compliance report; Response to Staff Data Request 4 in EO-2015-0264 indicates there was one purchase from Costco in 2014 for $18,705.00
[13] Above those included in the 2013 Notification of Preferred Plan Change

specific to Missouri customers be included in the triennial compliance filing. The Commission approved GMO's request for good cause, since the Southwest Power Pool's plans are evaluated on a utility/transmission owner's costs and benefits basis and a Missouri-specific analysis is not available.

As part of its electric utility resource planning process, GMO gave its decision-makers a set of twenty-five (25) KCPL candidate resource plans and a risk analyses for each candidate resource plan for the decision-makers to use during their strategy selection process. GMO also conducted resource planning as if GMO and KCPL were operating as a single company. GMO's allocated portion of the two (2) combined company candidate resource plans with the lowest PVRRs over the 20-year planning horizon resulting from the integrated resource analysis for the eight (8) combined company resource plans were included among the twenty-five (25) GMO candidate resource plans. Plan GBBEG is GMO's allocated portion of combined company Plan GBBBA. All of GMO's candidate resource plans include renewable energy resources that can supply energy and generate renewable energy credits ("RECs") GMO may use to comply with the Missouri RES requirements set out in rule 4 CSR 240-20.100(2)(C) Electric Utility Renewable Energy Standard Requirements in each year of the 20-year planning horizon.

GMO's decision tree has just eighteen (18) branches, and joint probabilities for each of the unique combinations of three critical uncertain factors.[14]

[14] See Volume 6, page 156.

Endpoint	Load Growth	Natural Gas	CO_2	Endpoint Probability
1	High	High	Yes	2.5%
2	High	High	No	3.8%
3	High	Mid	Yes	5.0%
4	High	Mid	No	7.5%
5	High	Low	Yes	2.5%
6	High	Low	No	3.8%
7	Mid	High	Yes	5.0%
8	Mid	High	No	7.5%
9	Mid	Mid	Yes	10.0%
10	Mid	Mid	No	15.0%
11	Mid	Low	Yes	5.0%
12	Mid	Low	No	7.5%
13	Low	High	Yes	2.5%
14	Low	High	No	3.8%
15	Low	Mid	Yes	5.0%
16	Low	Mid	No	7.5%
17	Low	Low	Yes	2.5%
18	Low	Low	No	3.8%

The following table contains a summary of all twenty-five (25) GMO candidate resource plans and the risk adjusted 20-year PVRR and other key performance metrics for each plan. The risk adjusted PVRR is calculated using the MIDAS® model accounting for the high, base and low case impacts of three critical uncertain factors (load forecast, natural gas prices and CO_2 prices). GMO chose to not include any uncertain factors in its decision tree in the MIDAS® model, other than the three (3) critical uncertain factors.

Plan	NPVRR ($MM)	Probable Environmental Costs ($MM)	DSM Performance Incentive Costs ($MM)	Levelized Annual Rates ($/KW-hr)	Maximum Rate Increase	Times Interest Earned	Total Debt to Capital	Cap Ex to FFO
GBBBA	10,167	332.93	57.42	0.133	8 21%	3.68	47.70	1 52
GBBEG	10,206	333.51	47.10	0.130	7.19%	3.67	47.70	1.40
GCBBA	10,207	51.46	57.42	0.133	13.89%	3.67	47.70	1 82
GAABA	10,272	371.17	57.42	0.135	8 22%	3.69	47.70	1.49
GBBBB	10,363	331.31	57.42	0.135	11.59%	3.68	47.70	1 53
GBBCG	10,399	334.81	23.49	0.127	9.16%	3.62	47.70	1 23
GCBCB	10,402	51 51	23.49	0.126	12.50%	3.60	47.70	1.44
GCBEB	10,406	51 53	47.10	0.132	13.74%	3.64	47.70	1.77
GBBCB	10,408	343.75	23.49	0.126	9.10%	3.62	47.70	1 24
GCBEG	10,428	51.45	47.10	0.133	18.50%	3.65	47.70	1 80
GCBCG	10,440	51.43	23.49	0.127	17.34%	3.61	47.70	1.48
GBBCA	10,461	334.82	23.49	0.127	9.76%	3.62	47.70	1 24
GAACB	10,467	371.22	23.49	0.127	9.11%	3.62	47.70	1 20
GBBCD	10,499	334.24	23.49	0.127	9.76%	3.62	47.70	1 26
GCBCA	10,503	51.45	23.49	0.127	13.01%	3.60	47.70	1.45
GAACA	10,521	373.58	23.49	0.128	9.77%	3.62	47.70	1 20
GBBCF	10,553	402.29	23.49	0.128	9.11%	3.63	47.70	1.19
GBBCC	10,603	331.89	23.49	0.129	10.70%	3.59	47.70	1.14
GAACF	10,614	440.28	23.49	0.129	9.11%	3.63	47.70	1.16
GBBDA	10,638	335.87	0.00	0.124	8.75%	3.59	47.70	1 02
GAACE	10,672	444.91	23.49	0.129	9.11%	3.63	47.70	1.16
GCBAA	10,703	51.45	154.43	0.147	14.91%	3.93	47.71	2 82
GBBCW	10,861	331.13	23.49	0.130	24.76%	3.64	47.70	1 81
GBBAA	11,042	331.07	154.43	0.153	15.08%	3.91	47.70	2 33
GAAAA	11,145	368.81	154.43	0.155	15.08%	3.91	47.70	2 26

The 20-year risk adjusted PVRR of GMO's adopted preferred resource plan, Plan GBBEG, is $10.21 billion, which is $39 million more than GMO's lowest cost alternative resource plan, Plan GBBBA. Plan GBBBA is the same as GMO's preferred resource plan, except that for Plan GBBBA GMO would implement its RAP demand-side resources portfolio over the entire 20-year planning horizon, while with its preferred resource plan (Plan GBBEG) GMO would implement Option E demand-side portfolio, which mirrors Option C for 2016-2018 and then transitions to adjusted RAP level annual impacts.

A high level description of Plan GBBEG[15] and Plan GBBEG's capacity balance sheet follow:

[15] Table 15 is located on page 23 of Volume 1 of the Filing. However, Table 15 erroneously omits the retirements of 50 MW and 47 MW for Sibley 2 and Sibley 3, respectively, in 2019.

Table 15: GMO Preferred Resource Plan

Plan GBBEG Option E DSM							
Year	CT's (MW)	Wind (MW)	Solar (MW)	DSM (MW)	Retire (MW)	Total Capacity (MW)	Reserve Margin
2015	0			55		2343	14%
2016	0		5	50		2369	15%
2017	0	260		91		2341	15%
2018	0			116		2316	14%
2019	0	50		153		2285	14%
2020	0			208	96	2239	14%
2021	0			265		2214	15%
2022	0			322		2164	14%
2023	0			379		2114	14%
2024	0			435		2089	15%
2025	0			460		2089	15%
2026	0		5	483		2064	14%
2027	0			505		2089	15%
2028	0			527		2089	15%
2029	0			546		2089	15%
2030	0			564		2114	14%
2031	0			579		2114	14%
2032	0			595		2139	15%
2033	0			610		2139	14%
2034	207			624		2146	14%

This Table

Is Deemed

Highly Confidential

In Its Entirety

4 CSR 240-22.030 Load Analysis and Load Forecasting

Summary

The stated purpose of rule 4 CSR 240-22.030, Load Analysis and Load Forecasting, is for setting the "minimum standards for the maintenance and updating of historical data, the level of detail required in analyzing and forecasting loads, and for the documentation of the inputs, components and methods used to derive the load forecasts."

NP

The revised *Load Analysis and Load Forecasting Rule* is less prescriptive than the original rule regarding the analytical methods the utility is to use, allowing multiple methods and leaving more discretion to the utility to choose the methods by which it achieves the stated purpose of the rule.

GMO did not request any relief (variances) from specific provisions of this rule.

In Staff's limited review of GMO's load analysis and energy and demand forecasts, Staff found no deficiencies concerning compliance with this rule.

Staff Expert Witness: David Roos

4 CSR 240-22.040 Supply-Side Resource Analysis

Summary

Rule 4 CSR 240-22.040 – The Supply-Side Resource Analysis Rule requires the utility to evaluate all supply-side resource options, and also the required transmission and distribution requirements for each supply-side resource, to ensure that the full cost of each resource type is factored into the analysis. The rule also requires the consideration of transmission constraints in the supply-side resource screening process.

GMO did not request any relief (variances from rule 4 CSR 240-22.040 as a part of this Chapter 22 filing.

Deficiencies

> **Deficiency 1 - GMO did not provide a summary table in technical Volume 4 showing each potential supply-side resource option and an assessment of whether each potential supply-side resource option qualifies as a utility renewable energy resource as required by rule 4 CSR 240-22.040(2)(C)1.**

To resolve this deficiency, GMO should provide this information in its April 1, 2018, triennial compliance filing.

> **Deficiency 2 – Staff was unable to find in technical volume 4 that GMO described and documented the costs of ancillary and/or back-up sources of supply required to achieve necessary reliability levels in connection with intermittent and/or uncontrollable sources of generation (i.e., wind and solar) as required by rule 4 CSR 240-22.040(2)(A) .**

To resolve this deficiency, GMO should provide this information in its April 1, 2018, triennial compliance filing.

Deficiency 3- Staff was unable to find that GMO described and documented the potential supply-side resource option purchased power from bi-lateral transactions and from organized capacity and energy markets required by rule 4 CSR 240-22.040(1).

To resolve this deficiency, GMO should provide this information in its April 1, 2018 triennial compliance filing.

Concern

Concern A- GMO has indicated that the wind capacity factor is 54% in several tables that include tables 13, 14 and 15. Staff believes that this value is too high. The wind capacity factor is indicated to be 32% in table 11 in technical volume 1. Staff believes that this value is more reasonable. Staff is unable to verify what capacity factor value for wind GMO utilized in its supply-side resource analysis and modeling. Staff is concerned that GMO may have used a value greater than 32%.

To resolve this concern, GMO should provide a discussion and justification (including a comparison to the SPP allowable capacity value for wind) for the wind capacity values indicated in the tables and the value used in the supply-side resource analysis modeling in its April 1, 2018 triennial compliance filing.

Staff Expert Witness: Randy Gross

Supply Side Resources & the Missouri Renewable Energy Standard (RES)

Rule 4 CSR 240-22.040, Supply-Side Resource Analysis, requires GMO to review a wide variety of supply-side resource options, including a wide variety of renewable generation technologies and technologies for distributed generation.

GMO included the following renewable technologies, which have the potential to be eligible for Missouri RES compliance, in its supply-side analysis:

- Solar PV[16] (Fixed axis and tracking)
- Solar Thermal (Trough and Dish)
- Wind
- Biomass BFB[17] Boiler
- Landfill Gas

GMO selected Fixed-axis Solar PV and Wind as final candidate resource options to represent renewable options.

[16] Photovoltaic.
[17] Bubbling Fluidized Bed

<u>Concern B – Utility-scale Solar PV and distributed Solar PV</u> - GMO did not differentiate between ** _____ **, and yet intends to pursue distributed Solar PV in its preferred resource plan.

To resolve this concern, GMO should include both utility-scale Solar PV and distributed Solar PV as two distinct supply-side resource options in its April 1, 2016 annual update filing. If GMO believes there is ** _____ _____ **, it should provide its reasoning and all pertinent information in its April 1, 2016 annual update filing[18].

Staff Expert Witness: Claire Eubanks

4 CSR 240-22.045 Transmission and Distribution Analysis

Summary

Rule 4 CSR 240-22.045 Transmission and Distribution Analysis specifies the minimum standards for the scope and level of detail required for transmission and distribution network analysis and reporting. The rule does not prescribe how the analyses are to be done, but allows a utility to conduct its own analyses or adopt the RTO or Independent Transmission System Operator (ISO) transmission plan. It does require documentation of the RTO/ISO transmission projects and requires the electric utility to review transmission and distribution for the reduction of power losses, interconnection of new generation facilities, facilitation of sales and purchases, and incorporation of advance technologies for the optimization of investment in transmission and distribution resources.

GMO requested and the Commission granted it relief from complying with the requirements of Rule 4 CSR 240-22.045(3)(B)2 and Rule 4 CSR 240-22.045(3)(B)3.

Deficiency

Deficiency 4 - GMO did not perform a c omprehensive analysis to optimize investments in advanced distribution technologies pursuant to rule 4 CSR 240-22.045(4) (C).

[18] ** _____ **

To resolve this deficiency, GMO should provide this comprehensive analysis in its April 1, 2018 triennial compliance filing or request relief from complying with this requirement.

Staff Expert Witness: Randy Gross

4 CSR 240-22.050 Demand-Side Resource Analysis

Summary

Rule 4 CSR 240-22.050, *Demand-Side Resource Analysis*, "specifies the principles by which potential demand-side resource options shall be developed and analyzed for cost-effectiveness, with the *goal of achieving all cost-effective demand-side savings*." (Emphasis added). This rule identifies the objectives demand-side programs and portfolios are to achieve, and gives each utility the option of developing demand-side programs or portfolios from the top down (starting with a program designs and filling in the cost-effective measures) or from the bottom up (starting by screening a comprehensive menu of measures and ending with program designs). The rule clarifies the distinction between demand-side programs and demand-side rates, and now places more emphasis on demand-side rates than it previously did. It is less prescriptive than the original rule in that it does not specify how the screening analysis is to be conducted or how the avoided costs are to be calculated. It does require the use of the calculation of the Total Resource Cost ("TRC") test, a test which meets the requirement of the MEEIA (Section 393.1075.4 RSMo Supp. 2014). The rule requires documentation regarding how the potential demand-side resources were analyzed and screened to identify demand-side candidate resource options to advance to the integrated resource analysis. The requirements for the evaluation of demand-side programs are removed from this rule, but are included in the revised resource acquisition strategy selection rule.

Finally, rule 4 CSR 240-22.050 requires the selection of demand-side candidate resource options that are subjected to the integrated resource analysis required by rule 4 CSR 240-22.060, where their technical potentials, maximum achievable potentials ("MAP"), and realistic achievable potentials ("RAP") are assessed.

GMO's 2015 Chapter 22 triennial filing improves and expands GMO's overall consideration and evaluation of demand-side resources from its previous 2012 Chapter 22 filing.

Primary improvements include the knowledge gained from (1) the actual program implementation; (2) evaluation, measurement and verification ("EM&V") experience for the previous and the current demand-side programs; (3) research of previously implemented demand-side programs from other utilities[19]; and (4) GMO's MEEIA filing on December 22, 2011 which was implemented on January 26, 2013. GMO is communicating with stakeholders, meeting on a regular basis with significant decision makers,[20] and meeting quarterly with its DSM advisory group.

GMO did not request any relief from rule 4 CSR 240-22.050 for this Chapter 22 filing.

Demand-Side Management Programs

GMO includes in its demand-side management portfolio "Option E," thirteen (13) energy efficiency ("EE") programs, five (5) educational programs, two (2) affordable programs for low-income customers, and three (3) demand response ("DR") programs that it considers to have realistically achievable capacity and energy levels[21] and which are included in GMO's preferred resource plan, Plan GBBEG[22]. GMO developed the "Option E" portfolio based upon the DSM analysis that Applied Energy Group ("AEG") completed. The objectives of AEG's analysis were to (1) design programs that have a TRC cost effectiveness ratio greater than 1.0, (2) seek programs that have high peak demand impacts in order to reduce supply-side capacity needs, (3) increase customer satisfaction by delivering DSM programs with a positive customer experience in mind, and (4) consider additional programs and measures such as whole building approaches, multi-family, and LED street lighting initiatives.

GMO developed a fourth DSM scenario ("Option E") that includes the same DSM levels as Option C for 2016-2018 and then transitions quickly to the adjusted Potential Study RAP level annual impacts for 2019-2034.

GMO engaged Navigant Consulting, Inc. (Navigant) to conduct a DSM Resource Potential Study Potential Study in January 2012. Navigant delivered that study to GMO in August 2013. It included both a RAP level of DSM and a MAP level of DSM, as defined in

[19] Volume 5, Demand –Side Resource Analysis", page 60, Section 3.1, "Previously Implemented Demand-Side Programs From Other Utilities."
[20] Volume 5, , "Demand –Side Resource Analysis", page 7, Section 1.1.2, "Decision-Maker Coverage."
[21] Volume 1, "Executive Summary", page 23, Section 4.2, "Selection of Preferred Resource Plans"
[22] Volume 1, "Executive Summary", page 26, Section 5, "Critical Uncertain Factors."

the Chapter 22 rules. This Potential Study was used as the basis for the scenarios GMO evaluated in its integrated analysis.

Staff reviewed GMO's demand-side management portfolio "Option E," which consists of thirteen (13) EE programs, five (5) educational programs, two (2) affordable programs for low-income customers, and three (3) DR programs. A brief description of each program follows.

1. EE Programs

a. Commercial & Industrial ("C&I") Custom Rebates

This program encourages and assists non-residential customers to improve the energy efficiency of existing facilities through a broad range of options that address all major end uses and processes. The program is designed for non-prescriptive retrofit and replacement projects and offers financial incentives, paid on a fixed kWh basis, based on the project's first year energy savings.

b. C&I Prescriptive Rebates

This program encourages and assists non-residential customers to improve the energy efficiency of existing facilities through a broad range of options that address all major end uses and processes. The program offers fixed, per-unit rebates to customers and engages equipment suppliers and contractors to promote eligible equipment.

c. C&I New Construction

This program is set up to work with design professionals and construction contractors to influence prospective building owners and developers to construct high-performance buildings that provide improved energy efficiency, systems' performance, and comfort. Energy saving targets will be accomplished by stimulating incremental efficiency improvements. The program seeks to capture synergistic energy savings by encouraging the design and construction of buildings as integrated systems.

d. Small Business Direct Install

The purpose of this program is to encourage and assist small businesses to improve the energy efficiency of their facilities through turn-key installation and rapid project completion. The program includes lighting, refrigeration, air-conditioning, water heating, and control measures that are typically low-cost with reliable,

prescriptive energy savings and costs per unit. The program is designed to assist small business owners to overcome barriers to achieving energy efficiency, including time constraints, capital constraints, lack of energy efficiency awareness, and lack of labor resources.

The Small Business Direct Install Program offers customers an energy assessment that includes information on potential energy savings and anticipated payback, as well as incentives that cover up to 70% percent of the equipment and installation costs. Eligible measures include, but are not limited to, occupancy sensors, LED exit signs, and T5 lamps. The program works best if the assessment and applicable equipment/measure installations can be completed on the same day.

GMO selects an implementation contractor who provides a lighting audit and information on lighting incentives. Incentives are assigned directly to the contractor, so that the value of utility incentives is directly reduces the net project cost to the customer. The program is part of a long-term strategy to raise awareness of energy savings opportunities among business customers and to help them take action using incentives GMO offers.

e. Home Performance with Energy Star®

This program coordinates the development of a statewide network of independent contractors trained and mentored on the delivery of comprehensive energy analysis and measure installations under the Home Performance with Energy Star® model. This is accomplished by training contractors to Building Performance Institute standards on building science, and offering marketing and incentive packages to accelerate customer awareness and demand. Customers pay a market-based fee for the analysis, and receive partial reimbursement when recommendations are implemented.

f. Efficient Products

This program promotes the use of Energy Star® appliances, lighting and home electronics. The program also promotes products that are energy efficient, for which there are not yet Energy Star® labels, products such as solid state lighting (LEDs).

g. Multifamily Rebate

This program offers property owners a comprehensive service for reducing common area energy use and helps residents to reduce energy use in their living units.

Property owners have the opportunity to participate in either or both components of the program.

h. Cool Homes

This program influences customers toward the installation of high-efficiency heating, cooling and water heating technologies through a combination of market push and pull strategies that stimulate demand, while simultaneously increasing market provider investment in promoting high-efficiency products. The program stimulated demand by educating customers about the energy and money-saving benefits associated with efficient equipment and by providing financial incentives to overcome the first cost hurdle. The program stimulates market provider investment in stocking and promoting efficient products by offering HVAC contractors several services, including training, educational materials, cooperative advertising and sales brochures.

i. Home Appliance Recycling Rebate

The program incents residential customers to stop using inefficient refrigerators and freezers and to dispose of them in an environmentally safe and responsible manner. The refrigerator or freezer must be in working conditioner, between 10 and 32 cubic feet in size, and a 2002 model or older. The refrigerators and freezers are picked-up at no cost to the customer.

Room air conditioners and dehumidifiers may be picked-up free of charge during a scheduled trip for a qualifying refrigerator and/or freezer. Customers are limited to two (2) refrigerator and/or freezer rebates and three (3) room air conditioners and/or dehumidifiers per household per year.

j. Energy Star® Homes

This program provides education and rebates to inform and encourage architects, builders, and home buyers on the benefits of Energy Star® homes, as well as the requirements for gaining Energy Star® certification.

k. Home Lighting Rebate

The Home Lighting Rebate Program incents the purchase and installation of efficient lighting by utilizing an upstream strategy to lower retail customers' out-of-pocket costs for qualifying CFL and LED light bulbs at participating retailers.

Customers receive an instant incentive at the point-of-purchase. The incentives vary depending upon the type of light bulb, manufacturer and the associated retail cost.

l. Whole House Efficiency

The Whole House Efficiency Program consists of three (3) tiers:

- Tier 1: Customer Audit - Customer receives a home energy audit and direct installation of low-cost measures. The audit identifies potential efficiency improvements. The low-cost measures to be installed include: faucet aerator, low-flow showerhead, advanced power strip, water heater tank wrap, hot water pipe insulation and CFLs/LEDs.
- Tier 2: Infiltration Measures - Customers that have completed Tier 1 are eligible to receive incentives for the purchase and installation of air sealing, insulation, and Energy Star® windows.
- Tier 3: HVAC Equipment - Customers are eligible to receive incentives for qualifying HVAC equipment installed by a participating contractor. Customers are not required to participate in Tier 1 or 2. Qualifying measures include heat pump water heaters, ECM furnace fans, heat pump ductless mini splits, central air conditioners, and heat pumps. Early retirement incentives are provided to customers with operable central air conditioners and/or heat pumps that are at least 5 years old.

Residential customers that rent a residence must receive the written approval of the homeowner/landlord to participate in the program. The program goals include:

- Demonstrate persistent energy savings.
- Encourage energy saving behavior and whole house improvements.
- Help residential customers reduce their electricity bills.
- Educate customers about the benefits of installing high efficiency HVAC equipment.
- Develop partnerships with HVAC contractors to bring efficient systems to market.

m. Block Bidding

The Block Bidding Program seeks to purchase blocks of electric savings by issuing a Request for Proposal ("RFP") to eligible customers and third-party suppliers. The RFP details the proposal requirements as well as the electric savings to be achieved. Customers and/or third parties submit proposals to deliver the requested

block of cost-effective electric savings. The electric savings may be achieved in a variety of ways; for non-exclusive examples, one customer may install energy efficient equipment at one facility, or a bundle of projects across multiple sites, and multiple customers may aggregate the installation of energy efficient equipment. Bidder proposals are reviewed to:

- Verify customer eligibility;
- Ensure completeness and accuracy of proposed energy savings; and
- Screen the proposed measures for cost-effectiveness. All projects must have a Total Resource Cost Test benefit-cost ratio of greater than 1.0.

Qualifying and cost-effective bidder proposals are ranked based upon the proposed cost per kWh saved ($/kWh). Program funds are awarded to bidders starting with the lowest cost per kWh saved until the funding is depleted. GMO enters into contracts with the bidders that receive program funding. All projects must be inspected pre- and post-implementation to verify the existing and upgraded equipment. The acquired savings may differ from the expected savings stated in the contract based upon actual performance and the post-implementation inspection.

2. Educational Programs

a. Building Operator Certification ("BOC")

This program provides a training and certification program for operations and maintenance staff working in commercial, institutional, or industrial buildings. Operators attend training and complete project assignments in their facilities. BOC achieves energy savings by training individuals directly responsible for the maintenance of energy-using building equipment and day-to-day building operations.

b. Home Energy Reports

This program provides residential customers with an energy report that provides an analysis of their household energy usage information along with a comparison of that usage to that of similar customers or "neighbors." The intention of the energy report is to provide information that will influence customers' behavior in such a way that they lower their energy usage.

The Home Energy Report Program provides individualized energy use information to customers while simultaneously offering recommendations on how to

save energy and money by making small changes to energy consuming behaviors. Energy reports are sent periodically to customer households to give them self-awareness and a peer comparison of their energy usage. Customers are also provided access to an online tool to track energy consumption and offer tips to reduce usage. Social competitiveness encourages energy consumption reduction behavior.

c. Energy Education

This program provides a curriculum, teacher training, and supplies for in-class instruction for how to use energy efficiently at home. The program targets students in 5^{th} through 8^{th} grades, providing education and a "take-home" kit that raises awareness about how individual actions and low-cost measures can provide significant reductions in electricity and water consumption.

d. Online Home Energy Audit

The program provides customers access to a free online tool to analyze the energy efficiency of their homes, educational materials regarding energy efficiency and conservation, and information on GMO's DSM Programs. The program goals include:

- Increase awareness of household energy consumption;
- Educate residential customers about the benefits of energy efficiency and the opportunities to reduce energy consumption; and
- Increase awareness of and participation in other GMO DSM programs.

e. Online Building Energy Audit

This program provides customers access to a free online tool to analyze the energy efficiency of their businesses, educational materials regarding energy efficiency and conservation, and information on GMO's DSM Programs. The program goals include:

- Increase awareness of business and building energy consumption;
- Educate commercial customers about the benefits of energy efficiency and the opportunities to reduce energy consumption;
- Increase awareness of and participation in other GMO DSM programs.

3. Low-Income Programs

a. Low-Income Weatherization

This program includes 2 tiers:

- Tier 1: Kits - Direct installation of low-cost measures for low-income homeowners and renters, at no cost to the customer. The measures installed include: faucet aerator, low-flow showerhead, advanced power strip, hot water pipe insulation, hot water heater tank wrap and CFLs/LEDs.
- Tier 2: Weatherization - Installation of ceiling, duct and/or wall insulation, at no cost to the participant. Customers work with local community action agencies to participate.

b. Income-Eligible Multi-Family

This program consists of 2 tiers:

- Tier 1: Multi-Family Kits - Direct installation of low-cost measures for low-income homeowners and renters in multi-family housing, at no cost to the customer. The measures installed include: faucet aerator, low-flow showerhead, advanced power strip, hot water pipe insulation and CFLs/LEDs.
- Tier 2: Multi-Family Common Areas - Installation of lighting measures in multi-family common areas, at no cost to the customer.

4. DR Programs

a. **Residential Programmable Thermostat**.

The Residential Programmable Thermostat program reduces peak demand by controlling participant cooling equipment during periods of system peak demand and when there may be delivery constraints within certain areas (load zones). This is done by way of a remotely communicating, programmable thermostat. During a program event, the program operations center sends a radio frequency signal to the thermostat to adjust its set-point by two to degrees F (2-4°F) such that the system will consume less energy and run less frequently throughout the three-to-six (3-6) hour event duration.[23]

[23] Volume 5: Demand-Side Resource Analysis, page 21, Table 10.

b. Commercial Programmable Thermostat.

The Commercial Programmable Thermostat program reduces peak demand by controlling participant cooling equipment during periods of system peak demand and when there may be delivery constraints within certain load zones. This is done by way of a remotely communicating, programmable thermostat. During a program event, the program operations center sends a radio frequency signal to the thermostat to adjust its set-point by two to four degrees F (2-4°F) such that the system will consume less energy and run less frequently throughout the three-to-six (3-6) hour event duration.[24]

c. Demand Response Initiative.

The Demand Response Incentive program provides firm contractual arrangements with customers for periodic curtailments at times of system peak demand. Customers enter into a contract for a one-, three- or five-year term and receive a payment/bill credit based upon the curtailable load, the contract term and number of consecutive years under contract. Participants receive notification of an event at least four (4) hours prior to the start time. Curtailment events may occur between June 1 through September 30, Monday through Friday, between the hours of 12 pm and 10 pm (holidays are excluded). Event durations are typically three-to-six (3-6) hours per day, for a maximum of 15 events per year. Customers receive a fixed, capacity-reserve payment in terms of $/kW, based on the number of curtailable kilowatt-hours (kW), the contract term, and number of consecutive years the customer has had contract with GMO to curtail load. The fixed payment is supplemented by a performance payment on a $/kWh basis, calculated from the customer's actual load curtailment relative to the customer's baseline load, as calculated by program management.[25]

[24] Volume 5: Demand-Side Resource Analysis, page 31, Table 17.
[25] Volume 5: Demand-Side Resource Analysis, page 32, Table 18.

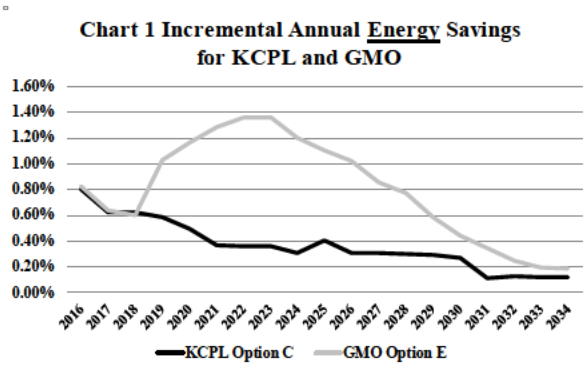
Table 1 summarizes the results of each cost-effectiveness test for GMO's programs.

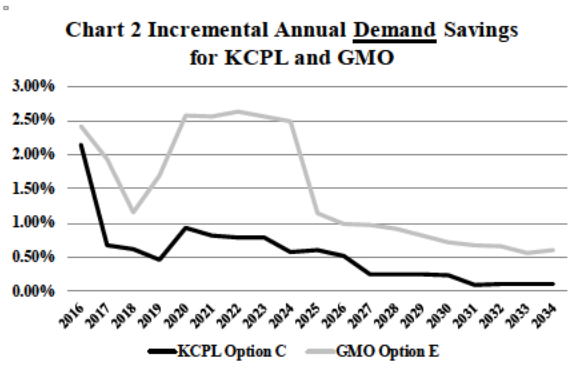
<Table 1>
Cost-Effectiveness Test Summary

Program	TRC	UCT
Home Lighting Rebate	1.25	5.56
Home Appliance Recycling Rebate	1.17	14.29
Home Energy Report	0.60	n/a
Online Home Energy Audit	n/a	n/a
Whole House Efficiency	1.57	3.10
Income-Eligible Multi-Family	0.18	n/a
Income-Eligible Weatherization	0.31	n/a
Residential Programmable Thermostat	18.83	1.00
Business Energy Efficiency Rebate - Standard	1.92	5.18
Business Energy Efficiency Rebate - Custom	1.82	3.46
Strategic Energy Management	1.11	11.67
Block Bidding	2.16	3.37
Online Building Energy Audit	n/a	n/a
Small Business Direct Install	1.13	6.29
Commercial Programmable Thermostat	19.21	1.00
Demand Response Incentive	3.38	60.00

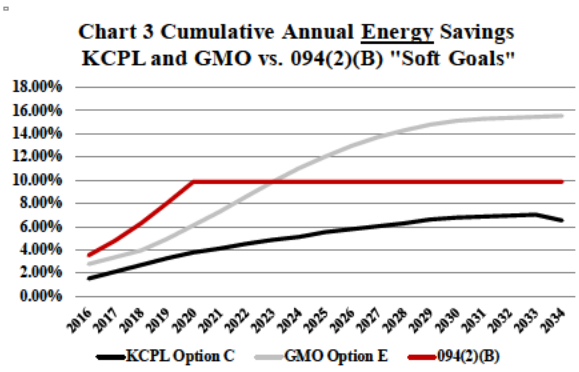
Chapter 22 requires that electric utility resource planning be performed for a planning horizon of at least twenty (20) years. GMO's demand-side resource portfolio Option E represents Option C for 2016-2018, and then transitions to adjusted RAP level annual impacts over the remaining years of the 20-year planning horizon.

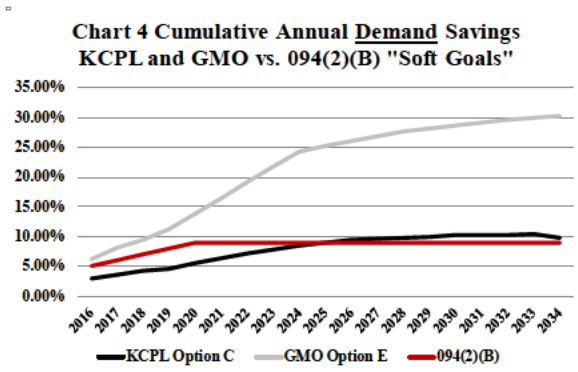
Chart 1 and Chart 2 present the incremental annual energy savings of the resource plans KCPL and GMO prefer (their "preferred resource plans"), respectively, as a percentage of base load forecast levels for energy and demand.





Charts 3 and 4 present the progress of both KCPL and GMO relative to the "soft goals" for cumulative annual energy savings and cumulative annual demand savings stated in rule 4 CSR 240-20.094(2)(B). The cumulative annual energy and demand savings in Charts 3 and 4 include the cumulative annual energy and demand savings targets the Commission approved for KCPL's and GMO's first MEEIA Cycles, respectively. For Charts 3 and 4, Staff "fixed" the "soft goals" from rule 4 CSR 240-20.094(2)(B) at the 2020 level therein for illustrative purposes only.





Staff has also identified no deficiencies or concerns for this rule.

Staff Expert Witnesses: Randy Gross & Jason Huffman

4 CSR 240-22.060 Integrated Resource Analysis

Summary

Rule 4 CSR 240-22.060 requires the utility to design alternative resource plans to meet the planning objectives identified in Rule 4 CSR 240-22.010(2) and sets minimum standards for the scope and level of detail required in that resource plan analysis. Rule 4 CSR 240-22.060 also requires the utility to design logically consistent and economically equivalent

alternative resource plans. The utility is to identify the critical uncertain factors that affect the performance of alternative resource plans and also establish the methods used to assess the risks associated with these critical uncertain factors.

The utility shall develop cases for analysis that maximize reliance on energy efficiency and renewable energy resources, and then develop optimal cases. The rule requires the development of alternative resource plans based on normal conditions, and also to assess the robustness of each plan under more extreme conditions (high and low cases). The rule requires inclusion of performance measures of present worth of utility revenue requirements, with and without any financial performance incentives the utility is planning to request. The rule also requires analysis of financial parameters and, if required, description of any changes in legal mandates and cost recovery mechanisms necessary for the utility to maintain an investment grade credit rating. The rule also requires documentation of the methods, analyses, judgments and data the utility chooses.

Deficiency

> **Deficiency 5 – The only requirements of Rule 4 CSR 240-22.060 Integrated Resource Plan and Risk Analysis that are satisfied, and described, and documented[26] for each of GMO's eight (8) combined/joint candidate resource plans are for integrated resource analysis and the calculation of PVRR for each plan.**

To resolve this deficiency, GMO should comply with all requirements of rule 4 CSR 240-22.060 Integrated Resource Plan and Risk Analysis for its April 1, 2018 triennial compliance filing.

As of June 25, 2015 Staff did not renew its license for Midas Gold. Midas Gold is used by GMO and KCPL to model the revenue requirements of their various integrated resource plans. As a result, Staff no longer has the capability to view GMO's or KCPL's results from Midas Gold when reviewing their integrated resource plans. Staff intends to discuss this issue further with GMO, KCPL and their stakeholders in the future.

[26] Rule 4 CSR 240-22.020(14): "Describe and document refers to the demonstration of compliance with each provision of this chapter. Describe means the provision of information in the technical volume(s) of the triennial compliance filing, in sufficient detail to inform the stakeholders how the utility complied with each applicable requirement of Chapter 22, why that approach was chosen, and the results of its approach. The description in the technical volume(s), including narrative text, graphs, tables, and other pertinent information, shall be written in a manner that would allow a stakeholder to thoroughly assess the utility's resource acquisition strategy and each of its components. Document means the provision of all of the supporting information relating to the filed resource acquisition strategy pursuant to 4 CSR 240-22.080(11)".

Staff Expert Witness: Matthew J. Barnes

Missouri Renewable Energy Standard (RES)

The Missouri RES requires each investor-owned utility in Missouri to use eligible renewable energy resources to meet of 15% of its annual retail sales by 2021. Missouri's RES includes a carve-out for solar electricity and a credit multiplier for in-state generation. Compliance with the RES can be achieved through the development or procurement of renewable energy resources or by acquiring renewable energy credits[27] (RECs). RECs expire for Missouri compliance after three (3) years from the date of generation[28].

The Missouri RES includes a provision which allows an investor-owned utility to adjust its RES compliance downward, if the cost of compliance with the standard would increase its retail electricity rates by more than one percent. The retail rate impact is determined by estimating and comparing the electric utility's cost of compliance with least-cost renewable generation and the cost of continuing to generate or purchase electricity from entirely nonrenewable sources. The Missouri RES allows investor-owned utilities to invest in additional renewable resources, beyond those used for compliance, by excluding those resources from the retail rate impact calculation.[29]

In Missouri, investor-owned utilities are required to file annual compliance reports and annual compliance plans which describe how they will meet the standard for the current and two subsequent years. GMO most recently filed its compliance plan in April 2015 (Case No. EO-2015-0266).

In its 2015 RES Compliance Plan GMO outlined its plan to utilize existing renewable resources[30] to comply with the Missouri RES from 2015 through 2017. In its RES Compliance Plan GMO identified the following planned renewable energy resource additions:

[27] A REC represent that 1 MWh has been generated by a renewable energy resource
[28] RECs can be retired for compliance if valid at any time during the compliance year.
[29] 4 CSR 240-20.100(5)(A)
[30] Gray County wind PPA, Ensign wind PPA, St. Joseph Landfill Gas Facility

Table 2 (HC): Planned Renewable Energy Resources Additions

Name	Type	Location	Total nameplate capacity (MW)	Contract Duration	Expected Operational Date
Gray County Extension	Wind PPA	KS	110	15	n/a
** ____ ____ **	** _____ **	MO	** ___ **	** __ **	** _____ ____ **
Solar Initiative	GMO owned rooftop and utility-scale solar	MO	2 MW 3 MW	n/a	2016

The following table includes GMO's forecasted Missouri RES requirements (solar and non-solar), existing REC production, and an estimation of when GMO's REC bank would be depleted. GMO is capable of complying with the non-solar RES requirements through 2020 with its existing non-solar renewable resources. GMO is also capable of meeting its solar requirements through 2026, primarily through S-RECs acquired from its customer-generators.

NP

Table 3 (HC): Forecasted RES requirements and Estimated End-of-year REC Bank

This Table

Is Deemed

Highly Confidential

In Its Entirety

Recent changes that may impact GMO's planned renewable additions are the release of EPA's final Clean Power Plan on August 3, 2015. The final Clean Power Plan includes incentives for wind and solar additions which occur after the State submits their final plan to EPA (or after September 6, 2018) and generate MWhs during 2020 and/or 2021, see further discussion in the integrated resource plan discussion.

Integrated Resource Plan and Risk Analysis & the Missouri Renewable Energy Standard (RES)

Rule 4 CSR 240-22.060, Integrated Resource Plan and Risk Analysis, requires GMO to develop alternative resource plans to meet the planning objectives identified in rule 4 CSR

NP

240-22.010(2). The goal outlined in 4 CSR 240-22.060(3) is to develop substantively different mixes of supply-side resources and demand-side resources and variations in the timing of resource acquisitions.

This section of Staff's report will focus on the interrelation of the Missouri Renewable Energy Standard (4 CSR 240-20.100) with the Integrated Resource Plan (4 CSR 240-22.060). For Chapter 22 filings, GMO is required to develop at least one alternative resource plan which incorporates renewable energy mandates for each of the following cases:

1) A compliance benchmark plan, minimally comply with legal mandates for demand-side and renewable energy resources (4 CSR 240-22.060(3)(A)1.);
2) An aggressive renewable energy resource plan, utilize only renewable energy resources, up to the maximum potential capabilities of renewable resources in the planning horizon (4 CSR 240-22.060(3)(A)2.); and
3) An optimal compliance resource plan, optimally comply with legal mandates for demand-side resources and renewable energy resources (4 CSR 240-22.060(3)(A)3.).

<u>Deficiency 6 - Compliance Benchmark Plan</u> - GMO did not provide a compliance bench mark plan which minimally complies with legal mandates for renewable energy resources [31], and is therefore deficient.

GMO did not provide a compliance bench mark plan which minimally complies with legal mandates for renewable energy resources, and is therefore deficient. Although all of the alternative resource plans comply with the Missouri RES requirements, the planned resource additions are in excess of a minimally compliant plan. Further, GMO may simply purchase RECs for both Missouri RES compliance; therefore, the minimally compliant plan could also represent no new renewable supply-side resource additions.

** _____
_____
_____
_____
_____ _____ _____

[31] Section 393.1030, RSMo, Supp. 2014.
[32] Excluding all IRP wind additions except the 50 MW Gray County PPA extension

_____ _____ _____

_____

_____ _____

_____

_____

_____ **

** _____

_____

_____ **

[33] For the purposes of estimating the MW of renewable resource additions required for Missouri RES requirements it was assumed the additions would consist of wind resources with a capacity factor of ** ___ **; substituting other types of renewable resources or varying capacity factors will change the required MW to comply with the RES. ** _____ **

See response to Staff Data Request 7

Chart 5 (HC): Forecasted Non-solar RES requirement vs Production

This Chart

Is Deemed

Highly Confidential

In Its Entirety

Although Staff does not disagree with the level of solar renewable additions attributed to compliance with the Missouri RES solar requirements, Staff notes that compliance with the solar portion of the RES can occur by purchasing solar RECs from current and future GMO customer-generators[35] or from out-of-state sources.

To resolve this deficiency, GMO should include a single minimally compliant alternative resource plan, to serve as the compliance benchmark plan, which should include low or no-renewable additions in its April 1, 2016 annual update filing.

Deficiency 7 - Optimal Compliance Resource Plan – GMO did not supply a compliance benchmark plan which minimally complies with renewable mandates. **

[35] HB142 allowed GMO the right to customer-generated SRECs for a period of 10-years as a condition of receiving a solar rebate when GMO's right to those S-RECs expire, there is nothing preventing GMO from offering a standard offer contract to purchase S-RECs from its current and future customer-generators.

[36] Response to Staff Data Request 6 and Tables 8-14 in *KCP&L Greater Missouri Operations Integrated Resource Plan* - Volume 6, Pages 17-23

NP

_____ ** Because there is little variation in mixes and timing of renewable supply-side resource additions, Staff believes GMO has not demonstrated that the planned renewable resources optimally comply with renewable mandates.[37]

To resolve this deficiency, GMO should include alternative resource plans which vary the timing and mixes of renewable supply-side resource additions in its April 1, 2016 annual update filing. These alternative resource plans should vary the mixes and timing of both solar and non-solar renewable resource additions.

Concern C – Renewable planning environment - Recent changes to GMO's planning environment, particularly the impact of the Clean Power Plan and associated incentives may alter the timing of the planned additions. The final Clean Power Plan includes incentives for wind and solar additions which occur after the State submits their final plan to EPA (or after September 6, 2018) and generate MWhs during 2020 and/or 2021

To resolve this concern, GMO should include alternative resource plans which vary the timing of renewable energy resources such that they occur at a time in which GMO can take advantage of the CEIP.

Concern D – Timing of Solar additions - ** _____

_____

____ ** The addition of a solar resource in 2016, rather than a later date, results in expiration of solar RECs. A portion of the projected surplus of solar RECs will expire and the potential value of selling solar RECs is low. For example, GMO purchased solar RECs at $2.10/solar REC[38] for 2014 compliance.

To resolve this concern, GMO should include alternative resource plans that vary the timing of solar resource additions, considering the potential expiration of solar RECs and renewable incentives such as the production tax credit and the CEIP. These alternative resource plans should be used to demonstrate that the chosen preferred plan consists of least-cost renewable generation (RSMo 393.1030(1)). Additionally, GMO should demonstrate and fully discuss that its planned solar additions are the least-cost way to comply[39] with the Missouri RES in its 2016 RES Compliance Plan and utilize the April 1, 2016 annual update as the basis for its discussion.

[37] Section 393.1030, RSMo, Supp. 2014.
[38] GMO reported the purchase of 8,700 S-RECs in 2014, page 4 GMO 2014 RES Compliance report; Response to Staff Data Request 4 in EO-2015-0264 indicates there was one purchase from Costco in 2014 for $18,705.00
[39] 4 CSR 240-20.100(7)(B)1.E.

NP

Concern E – Retail Rate Impact Calculation - Although Staff is aware of recent advantageous wind pricing, GMO has failed to meet the goal outlined in 4 CSR 240-22.060(3), to develop substantively different mixes of supply-side resources and variations in the timing of resource acquisitions, and Staff is therefore concerned that GMO has not fully demonstrated that there is an economic benefit to the planned wind resource additions[40] or fully justified its exclusion of wind resources from the retail rate impact calculation of 4 CSR 240-20.100(5).

GMO has excluded the planned wind resource additions (see Table 1 above) from the retail rate impact calculation because it believes the planned additions are economic.[41] The Missouri RES allows investor-owned utilities to invest in additional renewable resources, beyond those used for compliance with the RES requirements[42], by excluding those resources from the retail rate impact calculation[43]. Staff is concerned with the assertion that these wind contracts are economic in light of the above identified Deficiencies 6 and 7.

To resolve this concern, GMO should include a minimally compliant (low renewable or no-renewable) alternative resource plan in its April 1, 2016 annual update filing and discuss the results and provide all pertinent information in the text of its April 1, 2016 annual update filing and 2016 RES Compliance Plan. Additionally, GMO should fully discuss and support its exclusion of its planned wind resource additions from the retail rate impact calculation in its 2016 RES Compliance Plan and utilize the April 1, 2016 annual update as the basis for its discussion.

Staff Expert Witness: Claire Eubanks

4 CSR 240-22.070 Risk Analysis and Strategy Selection

Summary

Rule 4 CSR 240-22.070 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.

The Resource Acquisition Strategy Selection Rule now requires an evaluation of demand-side programs, demand-side rates and load building programs in the strategy

[40] Above those included in the 2013 Notification of Preferred Plan Change
[41] Response to Staff Data Request 6
[42] 4 CSR 240-20.100(2)
[43] 4 CSR 240-20.100(5)(A)

selection process. It was also revised to clarify the requirement to identify and develop implementation plans and contingency resource plans. The current rule provides additional flexibility to exercise judgment when satisfying policy objectives of Chapter 22, but requires the selection of a preferred resource plan that invests in advanced transmission and distribution technologies, includes demand-side programs that meet legal mandates and includes sufficient resources to serve load forecasted under extreme weather conditions. The rule now requires the utility to officially adopt a preferred resource plan, contingency resource plans and resource acquisition strategy, including specific information to describe the implementation plan.

Deficiencies

> **Deficiency 8 – All of the filing requirements of rules 4 CSR 240-22.070(2) and 4 CSR 240-22.070(3) were not described and documented for any of the GMO candidate resource plans.**

To resolve this deficiency, GMO should comply with all of the requirements of rules 4 CSR 240-22.070(2) and 4 CSR 240-22.070(3) for its April 1, 2018 triennial compliance filing.

> **Deficiency 9 – The only requirements of rule 4 CSR 240-22.070 Resource Acquisition Strategy Selection that were satisfied and described and documented for each of the eight (8) combined/joint candidate resource plans are: 1) analysis and specification of ranges for critical uncertain factors, and 2) the expected value of better information related to the critical uncertain factors (CO2, load forecast and natural gas prices).**

To resolve this deficiency, GMO should comply with all of the requirements of 4 CSR 240-22.070 Resource Acquisition Strategy Selection, which includes satisfying, describing and documenting each, for its April 1, 2018 triennial filing.

> **Deficiency 10 - GMO's resource acquisition strategy selection process used to select Plan GBBEG as its adopted preferred resource plan does not comply with the minimum requirements of: a) rule 4 CSR 240-22.010(2)(C), because it does not *explicitly identify and, where possible, quantitatively analyze any other considerations which are critical to meeting the fundamental objective of the resource planning process, but which may constrain or limit the minimization of the present worth of expected utility costs*, and b) rule 4 CSR 240-22.070(1), because it does not *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. [Emphasis added]

To remedy the current noncompliance with rules 4 CSR 240-22.010(2)(C) and 4 CSR 240-22.070(1), GMO should utilize a decision scorecard whenever GMO does not use minimization of the present worth of long-run utility costs as the only selection criterion in choosing its adopted preferred resource plan. That scorecard should describe and document the process used to select the adopted 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 (1) between competing planning objectives and (2) between expected performance and risk.

Staff Expert Witness: John Rogers and David Roos

4 CSR 240-22.080 Filing Schedule and Requirements

Summary

Rule 4 CSR 240-22.080 specifies the requirements for electric utility filings to demonstrate compliance with Chapter 22. The purpose of the compliance review required by Chapter 22 is not Commission approval of the substantive findings, determinations, or analyses contained in the filing. The purpose of the compliance review required by Chapter 22 is to determine whether the utility's resource acquisition strategy meets the requirements of Chapter 22. However, if the Commission determines that the filing substantially meets these requirements, the Commission may further acknowledge that the preferred resource plan or resource acquisition strategy is reasonable in whole, or in part, at the time of the finding. This rule also establishes a mechanism for the utility to solicit and receive stakeholder input to its resource planning process.

The current rule requires Kansas City Power & Light Company, KCP&L Greater Missouri Operations Company, Union Electric Company and The Empire District Electric Company to file April 1 of each year either a triennial compliance filing or a more informal annual update. The annual updates are coupled with a stakeholder workshop to communicate changing conditions and utility plans and to seek comments and suggestions from stakeholders during the planning process. Preliminary plans are reviewed with stakeholders to receive input regarding potential concerns and deficiencies. However, once plans are filed,

stakeholders again have the opportunity to identify potential concerns and deficiencies. The Commission, with input from stakeholders, identifies special contemporary issues each year for each utility to analyze during its planning process. To make the resource planning process more meaningful, the revised rule requires action from the utility if its business plan or acquisition strategy becomes inconsistent with its most recently filed preferred resource plan. The revised rule also requires certification that any request of action[44] from the Commission is consistent with the utility's adopted preferred resource plan.

Concern

> **<u>Concern F</u> – KCPL and GMO do not have the proper operating agreements and/or contracts in place to correctly analyze joint company planning. In the absence of proper operating agreements and/or contracts, joint company planning must be performed in the context of a comprehensive plan to merge KCPL and GMO, and no such plan to merge the two companies exists at this time.**

To resolve this concern, KCPL and GMO should file either 1) a detailed proposal for allocating capacity and energy between KCPL and GMO, and if GMO's MPS and L&P rate districts are not eliminated, between GMO's MPS and L&P rate districts; or 2) a definitive plan for merging KCPL and GMO into one electrical corporation prior to any future Chapter 22 electric utility resource planning filing for which KCPL requests Commission acknowledgement that it is reasonable for KCPL and GMO to plan on a consolidated company basis.

An alternative available to KCPL and GMO may involve KCPL and GMO entering into a long-term contract for KCPL to supply capacity and energy to GMO after GMO issues a RFP for a long-term PPA and evaluates the responses it receives. If KCPL's bid was the low cost solution, then the contract between KCPL and GMO would have to meet the requirements of rule 4 CSR 240-20.015 Affiliate Transactions.

Staff Expert Witness: John Rogers

[44] 4 CSR 240-22.080(18): In all future cases before the commission which involve a requested action that is affected by electric utility resources, preferred resource plan, or resource acquisition strategy, the utility must certify that the requested action is substantially consistent with the preferred resource plan specified in the most recent triennial compliance filing or annual update report. If the requested action is not substantially consistent with the preferred resource plan, the utility shall provide a detailed explanation.

Linkage between Chapter 22 Rules, the MEEIA and MEEIA Rules [John]

Staff performed its review of the Filing in the context of the Commission's revised Chapter 22 Rules, the MEEIA and the Commission's MEEIA Rules. Staff performed its review of the Filing in this way, because the policy objectives of Chapter 22 and of MEEIA are inseparable for electric utilities, since Rule 4 CSR 240-22.010(2) states:

> The fundamental objective of the resource planning process at electric utilities *shall* be 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.* …
>
> [Emphasis added]

And MEEIA establishes the following state energy policy for valuing demand-side resources and supply-side resources and for the cost recovery of these resources for Missouri's electrical corporations[1] in Section 393.1075.3 and .4:

> 3. It shall be the policy of the state to value demand-side investments equal to traditional investments in supply and delivery infrastructure and allow recovery of all reasonable and prudent costs of delivering cost-effective demand-side programs. In support of this policy, the commission shall:
>
> (1) *Provide timely cost recovery for utilities;*
>
> *(2) Ensure that utility financial incentives are aligned with helping customers use energy more efficiently and in a manner that sustains or enhances utility customers' incentives to use energy more efficiently; and*
>
> *(3) Provide timely earnings opportunities associated with cost-effective measurable and verifiable efficiency savings.*
>
> 4. The commission shall permit electric corporations to implement commission-approved demand-side programs proposed pursuant to this section *with a goal of achieving all cost-effective demand-side savings.* Recovery for such programs shall not be permitted unless the programs are approved by the commission, result in energy or demand savings and *are beneficial to all customers in the customer class in which the programs are proposed, regardless of whether the programs are utilized by all customers.*
>
> [Emphasis added]

Although electric utilities are not required to request Commission approval of demand-side programs and a DSIM under MEEIA and the Commission's MEEIA rules, electric utilities

[1] Rule 4 CSR 240-22.020(16): "Electric utility or utility mean any electrical corporation as defined in section 386.020, RSMo, which is subject to the jurisdiction of the commission."

are required to comply with the Commission's Chapter 22 Rules which establish that the fundamental objective of the electric utility resource planning process at each electric utility shall be 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. Because MEEIA establishes state energy policy, each electric utility is required – as part of its electric utility resource planning - to develop candidate resource plans and to analyze and document DSIM's which can allow the electric utility to make reasonable progress toward an expectation that the electric utility can achieve a goal of all cost-effective demand-side savings.[2]

It is important to also note the linkages between MEEIA Rules and Chapter 22 Rules included in Rule 4 CSR 240-20.094(3)(A):

> (A) For demand-side programs and program plan that have a total resource cost test ratio greater than one (1), the commission shall approve demand-side programs or program plans, and annual demand and energy savings targets for each demand-side program it approves, provided it finds that the utility has met the filing and submission requirements of 4 CSR 240-3.164(2) and the demand-side programs and program plans-
>
> 1. Are consistent with a goal of achieving all cost-effective demand-side savings;
> 2. Have reliable evaluation, measurement, and verification plans; and
> 3. Are included in the electric utility's preferred plan or have been analyzed through the integration process required by 4 CSR 240-22.060 to determine the impact of the demand-side programs and program plans on the net present value of revenue requirements of the electric utility.

Of less significance - but still important - is the linkage between Chapter 22 Rules and MEEIA Rules in Rule 4 CSR 240-22.070(8):

> Evaluation of Demand-Side Programs and Demand-Side Rates. 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

[2] *See* Rule 4 CSR 240-20.094(2) "Guideline to Review Progress Toward an Expectation that the Electric Utility's Demand-Side Programs Can Achieve a Goal of All Cost-Effective Demand-Side Savings."

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).

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Resource Plan of KCP&L Greater Missouri Operations Company	)))	File No. EO-2015-0252

AFFIDAVIT OF CLAIRE M. EUBANKS

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Claire M. Eubanks, of lawful age, on oath states: that she participated in the preparation of the foregoing Staff Report, to be presented in the above case; that the information in the Staff Report was provided to her; that she has knowledge of the matters set forth in such Staff Report; and that such matters are true to the best of her knowledge and belief.

Claire M Eubanks
Claire M. Eubanks

Subscribed and sworn to before me this 31st day of August, 2015.

SUSAN L. SUNDERMEYER
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: October 28, 2018
Commission Number: 14942086

Susan L Sundermeyer
Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Resource Plan of KCP&L Greater Missouri Operations Company	)))	File No. EO-2015-0252

AFFIDAVIT OF MATTHEW J. BARNES

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Matthew J. Barnes, of lawful age, on oath states: that he participated in the preparation of the foregoing Staff Report, to be presented in the above case; that the information in the Staff Report was provided to him; that he has knowledge of the matters set forth in such Staff Report; and that such matters are true to the best of his knowledge and belief.

Matthew J. Barnes

Subscribed and sworn to before me this 31st day of August, 2015.

Notary Public

SUSAN L. SUNDERMEYER
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: October 28, 2018
Commission Number: 14942086

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Resource Plan of KCP&L Greater Missouri Operations Company	)))	File No. EO-2015-0252

AFFIDAVIT OF JOHN A. ROGERS

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

John A. Rogers, of lawful age, on oath states: that he participated in the preparation of the foregoing Staff Report, to be presented in the above case; that the information in the Staff Report was provided to him; that he has knowledge of the matters set forth in such Staff Report; and that such matters are true to the best of his knowledge and belief.

John A. Rogers

Subscribed and sworn to before me this 31st day of August, 2015.

SUSAN L. SUNDERMEYER
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: October 28, 2018
Commission Number: 14942086

Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Resource Plan of KCP&L Greater Missouri Operations Company	)))	File No. EO-2015-0252

AFFIDAVIT OF DAVID C. ROOS

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

David C. Roos, of lawful age, on oath states: that he participated in the preparation of the foregoing Staff Report, to be presented in the above case; that the information in the Staff Report was provided to him; that he has knowledge of the matters set forth in such Staff Report; and that such matters are true to the best of his knowledge and belief.

David C. Roos

Subscribed and sworn to before me this 31st day of August, 2015.

SUSAN L. SUNDERMEYER
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: October 28, 2018
Commission Number: 14942086

Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Resource Plan of KCP&L Greater Missouri Operations Company	)))	File No. EO-2015-0252

AFFIDAVIT OF RANDY S. GROSS

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Randy S. Gross, of lawful age, on oath states: that he participated in the preparation of the foregoing Staff Report, to be presented in the above case; that the information in the Staff Report was provided to him; that he has knowledge of the matters set forth in such Staff Report; and that such matters are true to the best of his knowledge and belief.

Randy S. Gross

Subscribed and sworn to before me this 31st day of August, 2015.

SUSAN L. SUNDERMEYER
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: October 28, 2018
Commission Number: 14942086

Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Resource Plan of KCP&L Greater Missouri Operations Company	)))	File No. EO-2015-0252

AFFIDAVIT OF JASON HUFFMAN

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Jason Huffman, of lawful age, on oath states: that he participated in the preparation of the foregoing Staff Report, to be presented in the above case; that the information in the Staff Report was provided to him; that he has knowledge of the matters set forth in such Staff Report; and that such matters are true to the best of his knowledge and belief.

Jason Huffman

Subscribed and sworn to before me this 31st day of August, 2015.

SUSAN L. SUNDERMEYER
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: October 28, 2018
Commission Number: 14942086

Notary Public