BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Kansas City Power & Light	)	
Company's 2008 Utility Resource Filing	)	Case No. EE-2008-0034
Pursuant to 4 CSR 240 - Chapter 22	)	

MISSOURI DEPARTMENT OF NATURAL RESOURCES

ENERGY CENTER REVIEW OF

KANSAS CITY POWER & LIGHT COMPANY'S

INTEGRATED RESOURCE PLAN FILING

Filed January 8, 2009

The Missouri Department of Natural Resources (MDNR), acting as an intervener in Case No. EE-2008-0034, submits the attached comments on KCPL's Integrated Resource Planning (IRP) compliance filing dated August 5, 2008. KCPL's filing was submitted pursuant to the requirements of 4 CSR 240-22. MDNR submits these comments pursuant to 4 CSR 240-22.080(6) and (8), which provide that:

> within one hundred twenty (120) days after an electric utility's compliance filing… any intervener may file a report or comments based on a limited review that identify any deficiencies in the electric utility's compliance with the provisions of this chapter, any deficiencies in the methodologies or analyses required to be performed by this chapter, and any other deficiencies which …the intervener believes would cause the utility's resource acquisition strategy to fail to meet the requirements identified in 4 CSR 240-22.010(2)(A)–(C)… [The parties] shall work with the electric utility…to reach, within forty-five (45) days of the date that the report or comments were submitted, a joint agreement on a plan to remedy the identified deficiencies.

In MDNR's view, the process established by 4 CSR 240-22.080(6) - (8) should provide an opportunity for comprehensive review of the utility's resource planning process and resource acquisition strategy.

MDNR prepared these comments with the assistance of two consulting firms, Synapse Energy Economics, Inc. and Optimal Energy. Synapse's assistance focused on issues related to utility-scale renewable supply-side resources, and Optimal's assistance focused on issues related to demand-side resources.

The compliance filing submitted by KCPL on August 5, 2008, consists of eight volumes and numerous appendices. MDNR's comments focus primarily on topics covered in Volumes 1, 4, 5, 6 and 7 of the compliance filing. Volume 1 is the executive summary, and Volumes 4-7 correspond to the supply-side, demand-side, integration and risk analysis requirements contained in 4 CSR 240-22.040 through 4 CSR 240-22.070.

In addition to the compliance filing, MDNR reviewed the following sources of information when preparing these comments:

- Non-Unanimous Stipulation and Agreement filed February 13, 2007 in Case No. EO-2007-0008;
- Two sets of KCPL waiver requests filed in Case No. EE-2008-0034, approved by the Commission on October 5, 2007 and March 30, 2008;
- KCPL's draft supplemental filing Volume 1-S submitted with six appendices on December 10, 2008; and
- KCPL's response to data requests (DRs) submitted by MDNR and other parties.

MDNR staff also participated in post-filing informational meetings for stakeholders that KCPL presented on October 28 and 30, 2008. Subject matter experts from the two consulting firms participated in the October 30 meeting. The department wishes to emphasize that while its comments have been informed by these meetings as well as participation in previous KCPL collaborative processes, they are based on the contents of the documents actually filed in Case No. EE-2008-0034.

In these comments, citation of sources is as follows:

- The main volumes that were included in KCPL's August 5, 2008 compliance filing are cited by volume number, for example, “Volume 1, page 1.”
- The appendices that were included in KCPL's August 5, 2008 compliance filing are cited by the appendix number designated by KCPL, for example, “Appendix 1A, page 1.”
- Responses to data requests (DRs) are cited based on the party originating the request and a number based on the order in which the party submitted requests, for example, “MDNR DR #1, page 1.”
- Citations of other sources are based on commonly-accepted practice.

MDNR appreciates the spirit of cooperation that KCPL has displayed in collaborative processes and the utility's progress in implementing DSM as part of its resource mix.

However, MDNR has identified three key concerns that are reflected in these comments, as follows:

- KCPL underestimates the potential of DSM programs to meet or reduce its load requirements - see Deficiencies 2, 3, 4, 10, 11, 12 and 14;
- KCPL understates the potential of wind and other renewables to meet new load requirements or replace existing supply-side resources that could be retired - see Deficiencies 6, 7 and 19; and

- In its risk and uncertainty analysis, KCPL failed to give sufficient consideration to the potential impact of a Renewable Portfolio Standard (RPS) requirement and failed to provide adequate analysis of resources that could be used to comply with an RPS requirement - see Deficiencies 24 and 25.

For the deficiencies listed above, MDNR is proposing remedies that include actions to be completed prior to the end of the Sustainable Resource Strategy process that KCPL proposes in its compliance filing. KCPL has proposed to initiate a "comprehensive and collaborative energy planning process that will result in what will be called KCP&L's Sustainable Resource Strategy or SRS." This process will take place prior to KCPL's next IRP filing, probably under a Commission docket established in 2009.

MDNR believes it is necessary to deal with the above three concerns during the SRS process because this process could result in a regulatory plan and because these deficiencies, if not addressed, could cause the utility's resource acquisition strategy to fail to meet the requirements identified in 4 CSR 240-22.010(2)(A)–(C). Moreover, KCPL intends the SRS to include collaborative discussion of resource issues directly related to the three listed above, including possible plant retirements (Volume 1, p 3) and "the timing and scope of recommended wind additions." (Volume 1, p. 22).

MDNR is also very concerned that KCPL's filing remains deficient with regard to the contingency planning requirements of 4 CSR 240-22.070(10). (See Deficiencies 27-

30.) In Point 30 of its Stipulation and Agreement pursuant to Case No. EO-2007-0008, KCPL specifically agreed to comply with these requirements in its 2008 filing.

MDNR's proposed remedies for these contingency planning deficiencies include actions to be accomplished prior to completion of the SRS process. This is appropriate because KCPL envisions contingency planning as an important component of the SRS process (Volume 1, pages 4, 26). Furthermore, MDNR believes there is little justification for repeatedly deferring compliance with this rule provision to the next filing.

Rule 4 CSR 240-22.010 (1) – "The commission's policy goal…is to set minimum standards to govern…the resource planning process that is required of electric utilities subject to its jurisdiction…"

Deficiency #1. KCPL's analysis of Demand Side Management (DSM) resources[1] is aggregated across its service territory in two states and does not permit Missouri specific analysis of its plan.

The KCPL submission aggregates demand side programs across its service territories in Kansas and Missouri. MDNR requested disaggregated information for Missouri, the territory within the commission's jurisdiction, and received the following response.

> Where appropriate and available, data will be provided for the Missouri service territory only. Not all data utilized in the IRP evaluations was

[1] KCPL uses the term "demand-side management" (DSM) in some circumstance to mean "demand response" (DR) as distinguished from energy efficiency (EE). In this analysis the use of the term DSM is consistent with the definitions in 4 CSR 240-22.010(10) & (15) and refers to both DR and EE.

developed with disaggregated information separating KS and Missouri service territories and therefore not all data is available in this form.[2]

In its supplemental filing, in response to a request for Missouri data by MDNR, KCPL states that it is not supplying the data because the utility "does not segment its supply requirement by state and we followed the same principle in our demand analysis." (Volume 1-S, p. 43) In this response, KCPL did not state that it could not supply the data requested.

Prior to submitting its supplemental filing, KCPL provided a file (MMP_MO Summary.xls) that disaggregated the energy savings apparently based on Missouri's percentage of customers for residential sales and Missouri's percentage of sales for commercial and industrial customers.

This approach is deficient in that it does not provide sufficient detailed information for the Commission to determine the costs and benefits for the territory under its jurisdiction. Treating both states as one may make sense from KCPL's point of view as administratively efficient. However, it requires the stakeholders and the Commission to accept the premise that there is no significant difference between the blended service territory in two states and the Missouri service territory. Avoided costs, regulatory requirements, customer demographics, equipment saturation and efficiency, and a host of other factors would have to be effectively identical for this premise to be valid, as well as the allocation of costs and benefits between both states.

[2] Response to MDNR Data Request #1 in MDNR_20080909-f.13-Answer.doc rec'd 9/30/08.

KCPL's own documentation shows that the proportions of residential, commercial and industrial customers differ between KCPL's Kansas and Missouri service territories.[3]

The table below shows substantial differences between the two states in terms of customer class average usage for KCPL's service territory.[4]

Table 1 – Average Annual Electricity Sales per Customer (MWh) in KCPL's Missouri and Kansas Service Territories, 2006

	Residential	Commercial	Industrial
MO	10.9	140.3	1,492.7
KS	13.7	120.4	419.3

KCPL has not offered any argument to justify integration of these two different states in its filing to the Missouri PSC.

Remedy # 1. Before completion of the Sustainable Resource Strategy (SRS) process, KCPL should develop and adopt a plan to provide Missouri-specific DSM information, including market assessments, marketing, evaluation and program delivery mechanisms, costs and benefits and project load impacts and energy impacts, with completion dates sufficiently early to permit the information to be used in KCPL's next IRP filing. KCPL should present and discuss the plan with the parties during the SRS process. Following the completion of the SRS process, KCPL should provide periodic updates to the parties regarding completion of the plan's major milestones.

[3] MMP_MO Summary.xls, response to MDNR#9.
[4] Data from EIA Form 861 Report File 2, 2006.

Rule 4 CSR 240-22.010 (2) – "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…" (Emphasis added).

Deficiency # 2. KCPL's integrated resource plan fails to achieve the lowest cost energy services for its customers.

KCPL's IRP submission contains a systematic deficiency that is documented in this Deficiency # 2, as well as in the following Deficiencies # 3 and # 4. KCPL's plan seeks to acquire only a very limited portion of system requirements from demand-side resources. KCPL neglects a significant portion of the available demand-side resources. Failure to acquire demand-side resources that cost less, are more reliable, and less financially risky than supply side resources increases costs for consumers. The table below summarizes KCPL's objectives. (NOTE: The planning horizon is truncated in the table below to allow presentation in this document.)

Table 2 – Projected Incremental and Cumulative Load Savings from DSM Programs in KCPL's Preferred Plan, 2010-2025

KCPL DSM Savings as % of Forecast Requirements																	
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cumulative	Energy (kWh)	0.62%	1.16%	1.72%	2.20%	2.67%	2.45%	2.23%	1.97%	1.79%	1.63%	1.42%	1.21%	1.10%	0.98%	0.84%	0.80%
	Capacity (kW)	1.15%	2.00%	2.88%	3.58%	4.28%	3.99%	3.70%	3.30%	3.01%	2.73%	2.39%	2.04%	1.91%	1.77%	1.60%	1.54%
Incremental	Energy (kWh)		0.55%	0.58%	0.51%	0.51%	-0.17%	-0.18%	-0.23%	-0.16%	-0.13%	-0.18%	-0.20%	-0.10%	-0.11%	-0.13%	-0.04%
	Capacity (kW)		0.86%	0.90%	0.73%	0.74%	-0.24%	-0.26%	-0.37%	-0.26%	-0.25%	-0.31%	-0.34%	-0.12%	-0.13%	-0.15%	-0.05%

It is significant that at no point do the incremental energy savings exceed 0.58 percent nor do the cumulative savings exceed 2.67 percent of requirements. This table also illustrates the impact of the cessation of DSM programs in 2014 on savings, discussed in detail in Deficiency # 3 below.

Figures 1 and 2 below graphically illustrate the impact of KCPL's failure on both peak load and energy requirements over the planning horizon.

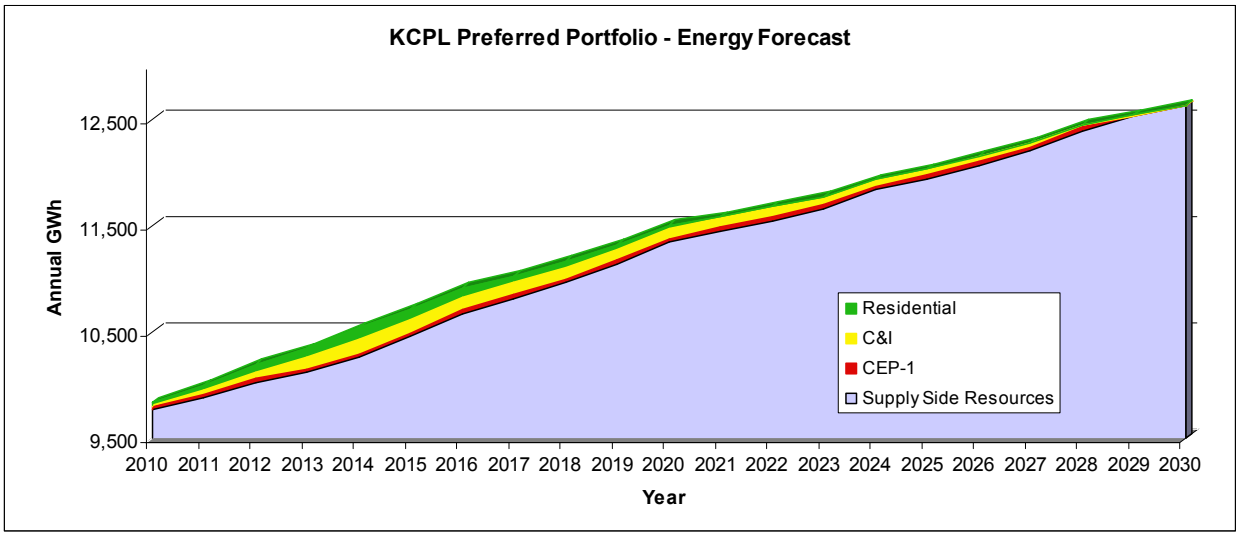

Figure 1 - KCPL Preferred Plan - Energy Forecast

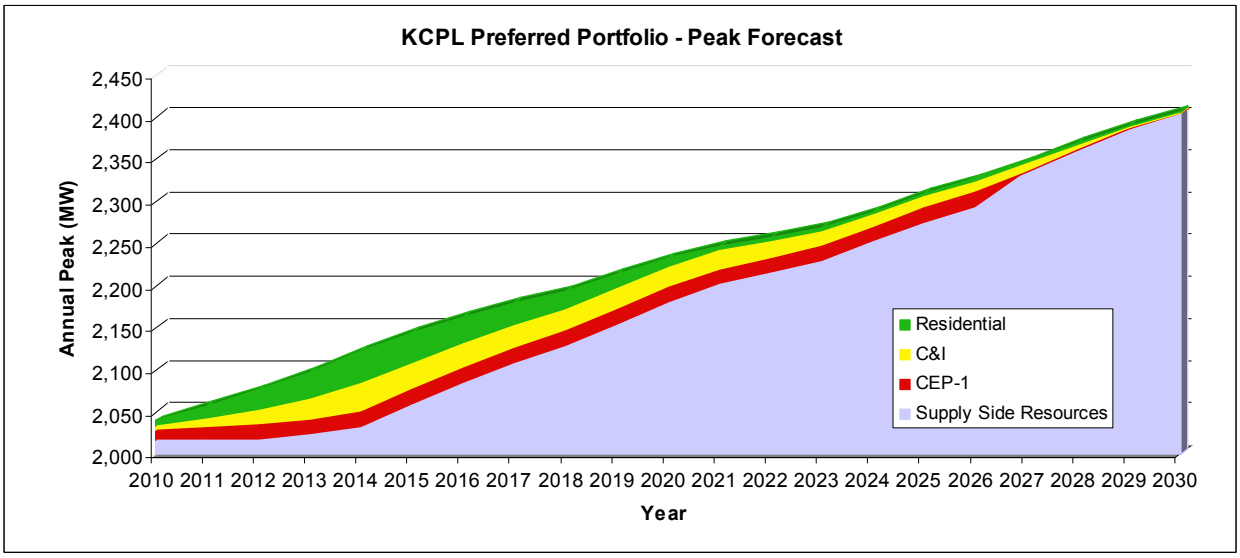

Figure 2 - KCPL Preferred Plan - Capacity Forecast

In comparison, Figure 3 below, from a study OEI performed for the state of Texas, represents what is the typical shape of supply forecasts in today's energy markets.[5]

[5] Natural Resources Defense Council and Ceres, *The Power to Save: An Alternative Path to Meet Electric Needs in Texas.* 2007, Bristol, VT. Optimal Energy, Incorporated.

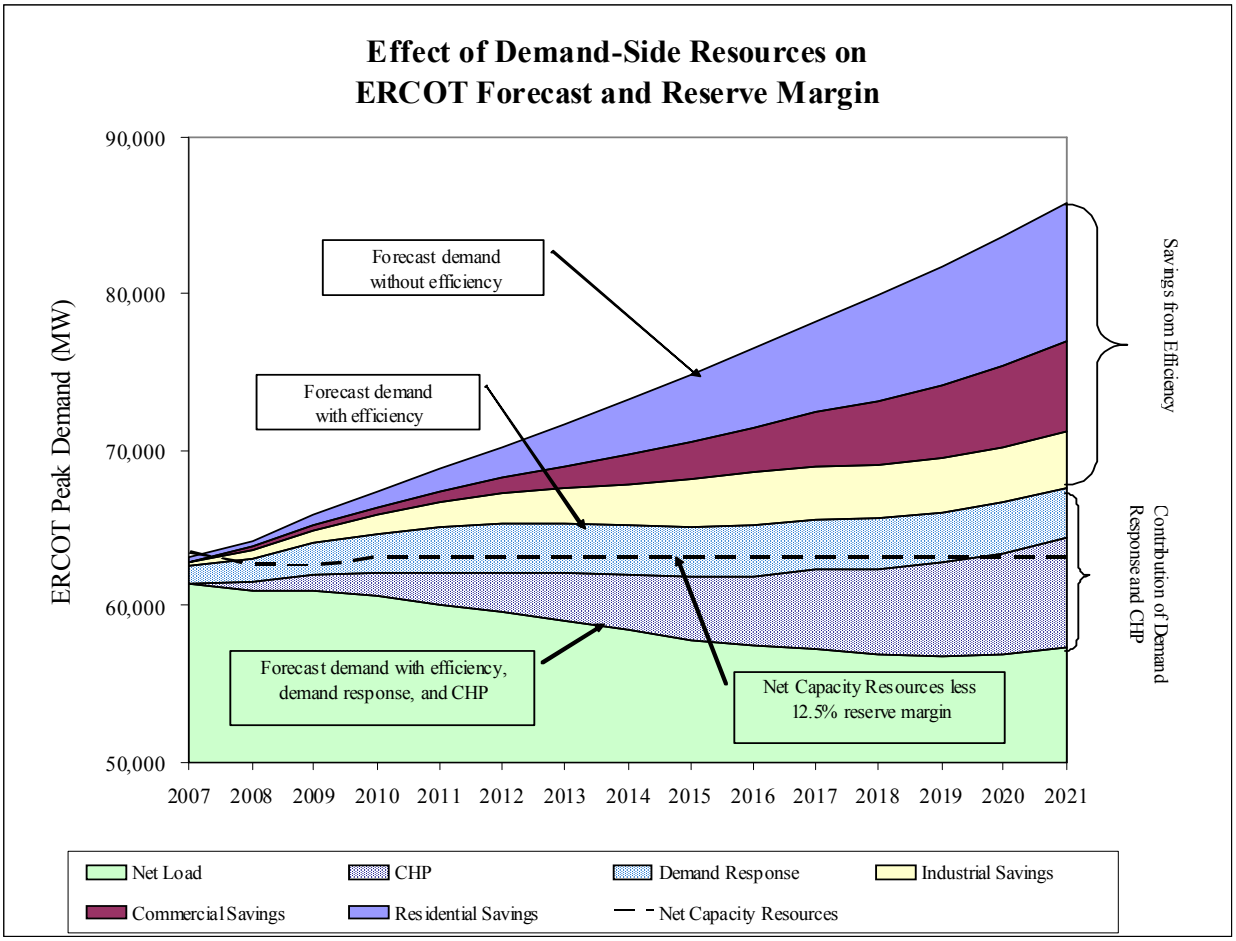

Figure 3 - Comparative Energy Forecast

Regulators and implementers around the nation are setting one percent of annual load as the threshold for energy efficiency program performance and cumulative goals of 15% to 20% of requirements over the planning horizon. Table 3 below is an example of these initiatives and is by no means comprehensive.

Table 3 – Summary of Energy Efficiency Savings Targets in Other Jurisdictions

Jurisdiction	Target - % of load	Reference/Authority
Illinois	10% reduction by 2017 and ramp up to 2%/yr incremental	Public Act 095-0481
Iowa	1.5% of annual retail sales by 2011	IUB Order Docket 199 IAC 35.4(1) (EEP-02-38, EEP-03-1, EEP-03-4)
Maryland	Reduce energy used by 15% by 2015	EmPower Maryland
Massachusetts	All load growth & 25% of electric load by 2020 with demand side resources, inc DG and CHP	Section 105 of chapter 169 of Acts of 2008 – Green Communities Act
Michigan	1% annually of total sales by 2012	Senate Bill 213, 2008
New Jersey	Reduce energy use by 20% by 2020	New Jersey Energy Master Plan
New York	1.9% per year	Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard, Case 07-M-0548,
Southwest	2% per year	The New Mother Lode: The Potential for More Efficient Electricity Use in the Southwest.
Vermont	2% per year	Efficiency Vermont Annual Plan 2007-2008
Western States	1.4% per year	Western Governors' Association, Clean and Diversified Energy Initiative

Remedy # 2.

- Before completion of the SRS process, KCPL should develop and analyze: (i) an alternative resource plan based on Alternative Plan 19 that projects for each year in the 20 year planning period an incremental reduction in energy sales of one percent (1%) resulting from the ongoing implementation of demand side programs; and (ii) an alternative resource plan that similarly projects annual incremental energy impacts of 1.5% throughout the 20 year planning horizon due to DSM programs. KCPL should apply sufficient analysis to the new alternative resource plans to

compare them to the twenty-six (26) existing plans with respect to NPVRR and other planning objectives. KCPL should provide its analysis to the parties in the SRS process.

- In KCPL's next IRP filing, the utility's integrated resource analysis should include two or more alternative resource plans that, beginning in 2012 and continuing throughout the 20 year planning horizon, are projected to acquire at least an additional 1% of energy requirements per year through demand side programs as defined in 4 CSR 240-22.020(11). The utility should include in its integrated resource analysis the alternative resource plans that achieve this goal while attempting to achieve NPVRR minimization and other resource planning objectives.

Rule 4 CSR 240-22.010 (2)(A) – "Consider and analyze demand-side efficiency and energy management measures on an equivalent basis with supply-side alternatives in the resource planning process;"

Deficiency #3. KCPL does not analyze DSM on an equivalent basis with supply-side resources.

The KCPL analysis treats demand-side efficiency and energy management measures as a fixed capacity single resource which does not reflect their real nature. KCPL describes its approach to these resources as follows:

For the twenty-six alternative resource plans evaluated, one of the following levels of energy efficiency (EE) was applied: 1) No EE; 2) Residential EE only; 3) Normal Commercial and Industrial (C&I) EE only;

4) Aggressive C&I EE only; 5) Residential and Normal levels of C&I EE; and 6) Residential and Aggressive levels of C&I EE.[6]

In comparison, KCPL modeled supply-side resources as separable and scalable. For example, the Preferred Resource Plan (Plan 19) includes 400 MW of wind added in 100 MW increments. It also includes 159 MW of combustion turbines added as needed.

KCPL used the MIDAS™ model, which includes a Capacity Expansion Module (CEM). They note that, "The CEM function allows the model to select economic resource additions under various future scenarios."[7] The DSM inputs KCPL provided for the model did not treat these resources on an equivalent basis with supply-side resources. For supply-side resources, the analysis considered the requirements and the cost and then optimized the investment to meet these requirements. For the demand side, however, the analysis started with a limited number of options at a fixed investment and did not allow for expansion of these resources if cost effective.

In its supplemental filing, KCPL notes that, "Parties questioned why only one level of residential DSM programs was included in the alternatives." (Volume 1-S, p. 45). KCPL states that "most [residential] program spending was capped at a certain level of penetration and the resulting energy impacts were believed to be fairly well defined." By contrast, customer response and impacts of C&I

[6] Volume 1 HC – page 21.
[7] Volume 6 HC – page 3.

programs was considered more uncertain, and therefore two levels of C&I programs were analyzed. (Volume 1-S, pp. 45-46). This response does not address the key question: why the higher levels of program implementation were not analyzed.

The KCPL analysis further treats DSM differently by assuming that there are no programs beyond the demand response offerings after the fifth year. Equivalent treatment would require that these resources are considered throughout the analysis period. The preferred plan includes the addition of 157 megawatts of combustion turbine capacity in or by 2029, but no EE after 2013.

Remedy # 3. In KCPL's next IRP filing, the utility's integrated resource analysis should include alternative resource plans that provide for expansion of DSM resources in incremental steps throughout the 20 year planning horizon. The alternative resource plans should not be limited to one "Aggressive" C&I resource portfolio, but should incorporate a series of portfolios with increasing savings and, if necessary, increasing per unit cost. This series should be sufficient to acquire at least an additional 1% of energy requirements per year through demand side programs.

Rule 4 CSR 240-22.010 (2)(B) – "Use minimization of the present worth of long-run utility costs as the primary selection criterion in choosing the preferred resource plan;"

Deficiency #4. KCPL does not minimize the present worth of long run costs by failing to include sufficient cost-effective DSM in their plan.

The probable environmental cost of the least expensive supply-side option examined in the supply-side analysis is **$ per megawatt hour (nominal cost) **.[8] The probable environmental cost of DSM is not included in Appendix 6.A. "Technology Cost Data Inputs." As a proxy, the levelized, nominal cost of DSM resources in the preferred plan is calculated at $42.33 per megawatt hour, about ****% of the cost of the least expensive supply side option.[9] In its failure to consider the potential DSM portfolio enhancements that fall between these costs, KCPL has not effectively used the minimization of costs as the primary selection criteria.

Remedy #4. In KCPL's next IRP filing, the utility's integrated resource analysis should include alternative resource plans that contain a demand side portfolio that captures no less than 95 percent of actual levelized avoided costs of supply resources so that every demand side resource that costs less than supply is acquired before the more expensive supply resources.

Rule 4 CSR 240-22.020(10) – "Demand-Side measure is synonymous with end-use measure."

Rule 4 CSR 240-22.020(15) – "End-use measure means an energy efficiency measure or an energy management measure."

Deficiency # 5. KCPL's initial filing is inconsistent in its use of terms related to Demand-Side Resources.

[8] Volume 4 HC – Table 7, page 28.

[9] The levelized cost calculation is based on data provided in response to MDNR's data requests in the files named DR016_Figure 11 Total DSM EE for Preferred Plan.xls and DR017_Budgets_HC.xls for savings and budgets respectively and the utility's discount rate of 8.25% from tool input spreadsheets.

In Volume 6, page 3, second full paragraph, and in Volume 6, Tables 3 through 9, KCPL uses the term "demand side management" in a manner that is not consistent with common usage or the definitions in 4 CSR 240-22.020. In the pages cited, the term "demand side management programs" was used as if it consisted exclusively of demand response programs and excluded energy efficiency programs.

The rule defines the terms "demand-side resources," "demand-side measure" and "demand-side programs" to include energy efficiency measures and programs. The rule does not define the term "demand-side management" or its acronym "DSM." However, in common usage, these terms are also understood to include energy efficiency measures and programs.

Subsequent responses by KCPL affirmed the common usage definition of these terms. In its response to MDNR DR #35, KCPL acknowledges inconsistencies in the use of these terms in different portions of the IRP filing. In its supplemental filing, KCPL states that, "For purposes of this supplemental filing and future IRP-related documentation, DSM includes both Demand Response (DR) and end-use Energy Efficiency (EE) measures or programs." (Volume 1-S, p. 7)

Remedy #5. KCPL resolved inconsistencies in use of the term "demand side management" in its supplemental filing, and no further action is required at this time. In its next IRP filing, KCPL agrees to use terms as defined in 4 CSR 240-22.020 unless a waiver is granted by the Commission.

Rule 4 CSR 240-22.040 (1) – "The utility shall collect generic cost and performance information for each of these potential resource options."

Rule 4 CSR 240-22.040 (2) (A) "Cost rankings shall be based on estimates of the installed capital costs plus fixed and variable operation and maintenance costs levelized over the useful life of the resource…"

(The above rule citation applies to Deficiencies #6, #7 and #8, which follow.)

Deficiency #6. The cost projections used by KCPL for wind resources are too high, and the performance projections used for wind resources are too low. The cost projections for solar photovoltaic systems also are too high.

KCPL collected cost information for wind resources based on the response to its wind RFP, and KCPL has assessed industry trends. However, KCPL does not directly or appropriately apply this cost information, or carefully assess real cost trends when projecting the capital costs of new wind resources. KCPL has used a "base" wind capital cost of $2,594/kW, which is based on a 15% increase to its "low" capital cost value of $2,256/kW. KCPL does not support its assumptions that market costs will lead to this cost for wind projects for its system. Rather, it arbitrarily increases the projected cost of this resource. Furthermore, KCPL's Appendix 4.A.8 indicates a cost of $2,274/kW, which is also inconsistent with KCPL's use of the higher value in the IRP.

A recent Black and Veatch report for the American Wind Energy Association[10] states the following:

> Black & Veatch developed the cost and performance assumptions for wind in consultation with wind turbine manufacturers, developers, and NREL.

[10] Black and Veatch, *20% Wind Energy Penetration in the United States, A Technical Analysis of the Energy Resource*, Final Report, October 2007. Prepared for the American Wind Energy Association. Page 1-5. This report can be downloaded at http://www.20percentwind.org/Black_Veatch_20_Percent_Report.pdf.

Black & Veatch established estimates that are optimistic but possibly based on identifiable technology improvements. Black & Veatch estimates wind capital costs will decline in real terms by 10 percent from 2010 through 2030, and capacity factors will improve 12 - 23 percent from 2005 through 2030.

In a recent report regarding wind energy in the U.S. electric supply, the U.S. Department of Energy (USDOE) includes the Black and Veatch analyses when reporting on the feasibility of wind providing 20% of retail energy needs.[11] The USDOE shows projected real costs of wind technologies declining over time, as shown in Table 4 below. This table illustrates that for all wind class areas, real costs of wind technologies are projected to decline, not rise as KCPL assumed in its analysis.

[11] The U.S. DOE July 2008 report, entitled "20% Wind Energy by 2020, Increasing Wind Energy's Contribution to U.S. Electricity Supply", can be downloaded at http://www1.eere.energy.gov/windandhydro/pdfs/41869.pdf.

Table 4 – USDOE Wind Technology Cost and Performance Projections, 2010-2030

Wind Resource Power Class at 50 m	Year Installed	Capacity Factor (%)	Cost ($/kW)	Fixed O&M ($/kW-yr)	Variable O&M ($/MWh)
3	2005	32	1,650	11.5	7.0
3	2010	35	1,650	11.5	5.5
3	2015	36	1,610	11.5	5.0
3	2020	38	1,570	11.5	4.6
3	2025	38	1,530	11.5	4.5
3	2030	38	1,480	11.5	4.4
4	2005	36	1,650	11.5	7.0
4	2010	39	1,650	11.5	5.5
4	2015	41	1,610	11.5	5.0
4	2020	42	1,570	11.5	4.6
4	2025	43	1,530	11.5	4.5
4	2030	43	1,480	11.5	4.4
5	2005	40	1,650	11.5	7.0
5	2010	43	1,650	11.5	5.5
5	2015	44	1,610	11.5	5.0
5	2020	45	1,570	11.5	4.6
5	2025	46	1,530	11.5	4.5
5	2030	46	1,480	11.5	4.4
6	2005	44	1,650	11.5	7.0
6	2010	46	1,650	11.5	5.5
6	2015	47	1,610	11.5	5.0
6	2020	48	1,570	11.5	4.6
6	2025	49	1,530	11.5	4.5
6	2030	49	1,480	11.5	4.4
7	2005	47	1,650	11.5	7.0
7	2010	50	1,650	11.5	5.5
7	2015	51	1,610	11.5	5.0
7	2020	52	1,570	11.5	4.6
7	2025	52	1,530	11.5	4.5
7	2030	53	1,480	11.5	4.4

Note: MWh = megawatt-hour

Source: Table B-10, “Land-based wind technology cost and performance projections, US$2006”, page 182 from the USDOE “20% Wind Energy by 2020”, original source: Black and Veatch, 2007

As noted in the USDOE report, the expected declining cost trend would arise from a combination of improved technological performance, increases in manufacturing investment, and renewable energy policy stabilization.

These improvements are expected even though wind costs have increased since 2002. According to the USDOE report, the cost increases of the past were due to four elements[12]:

- Shortages of turbines and components;
- Weakening of the dollar with respect to the Euro, as turbines and turbine components are currently sourced predominately from Europe;
- Rises in material commodity costs; and
- Production Tax Credit (PTC) uncertainty.

Such potential declines in the real cost of wind resources are not reflected in KCPL's assessment. While KCPL's ranking still results in wind being the first supply-side resource, its use of cost values that are high may be limiting the quantity of wind it has included in its preferred plans.

Remedy #6. When assessing supply side costs during the SRS process and in its next filing, KCPL should use lower wind cost projections based on substantial and credible sources such as the following.

KCPL should determine and obtain the most up-to-date governmental or private sources of cost estimates for wind projects .If KCPL has current wind RFP response data or other specific regional wind development market data, this data should be used in lieu

[12] Ibid. Section 2.2.3, pages 27-28.

of projections. If projections must be used, they should be based on a credible and substantial source, such as the most recent data available from US DOE assessments of the current costs and the projected trends in prices, as seen in the July 2008 publication referenced in the comments, or similar credible sources.

KCPL should conduct additional research into the availability of regional cost projections, or should contact respondents to the wind RFP to determine if they have additional information that would provide information concerning regional market cost trends. This research should be sensitive to the potential impact of current economic conditions on financing options for wind developments.

Deficiency #7. KCPL has used a capacity factor for wind as the main "performance" metric when considering new wind supply resources that is too low.

KCPL has used a 38 percent capacity factor for wind as the main "performance" metric when considering new wind supply resources. This value is likely too low for planning purposes. Relatively small movement in the annual capacity factor of a wind resource can have a significant effect on the levelized costs and the optimum amount of wind to choose for a preferred portfolio. The Spearville project has an estimated average annual wind capacity factor of ****, and the aggregate of all wind projects resulting from the wind RFP is over ****. KCPL does not adequately support its assertion that "sites with the potential to produce the greatest capacity factors will be taken first," nor does KCPL support the related assertion that "it was assumed that each year beyond 2009, the capacity factor expected for available future wind site locations will decrease" (response to MDNR DR #22). As noted in the Black and Veatch report and the USDOE report,

average wind resource capacity factor performance is expected to increase by 12 to 23 percent between 2005 and 2030.

Remedy #7. When assessing wind as a potential supply side resource during the SRS process and in its next filing, KCPL needs to use higher projected capacity factors for future wind resources based on substantial and credible sources.

KCPL should base its estimate of capacity factors on up-to-date governmental or private sources of capacity estimates for wind projects, including at least the following two sources: 1) the current record of wind RFP responses, which is a reasonable survey of regional capacity factor potential; and 2) up-to-date performance and associated annual average capacity factor projections for wind resources in the KCPL region, based on recent, credible industry or government reports, such as the July 2008 US DOE report.

Research efforts in support of obtaining up-to-date information on cost trends, described in the Proposed Remedy for MDNR Deficiency #6, should be leveraged to also obtain performance projections.

Deficiency #8. Based on the significant cost differentials for solar photovoltaic (PV) systems used in the IRP and those seen in the USDOE report and the KCPL IRP, the solar PV option should not have been excluded from supply-side consideration at the pre-screening stage.

Given the solar set-aside quantity in the Clean Energy Initiative passed by Missouri voters on November 4, 2008, it is important that solar costs are properly reflected in the IRP. The projected costs for solar PV systems used in the IRP are considerably higher than values published by the USDOE Solar Energy Technologies

Program[13]. Given the significant cost differentials between those seen in the USDOE report and the KCPL IRP, it is possible that the solar PV option should not have been excluded from supply-side consideration at the pre-screening stage. The IRP used "low" values of $9,050/kW ($2007) and "base" values of $10,408/kW (Appendix 4.A.7). KCPL per unit PV nominal costs were over 40 cents per kWh. The following Figure 4 is from the USDOE's 2008 Solar Energy Technologies Program Multi-Year Program Plan, 2008, and shows targets for 2015 and 2020 PV costs of 6 to 10 cents per kWh. The likelihood that the projected cost trends shown here would occur increased with the passage of the November 2008 law, increasing the financial benefits of solar PV through changes to the investment tax credit provisions of the law.

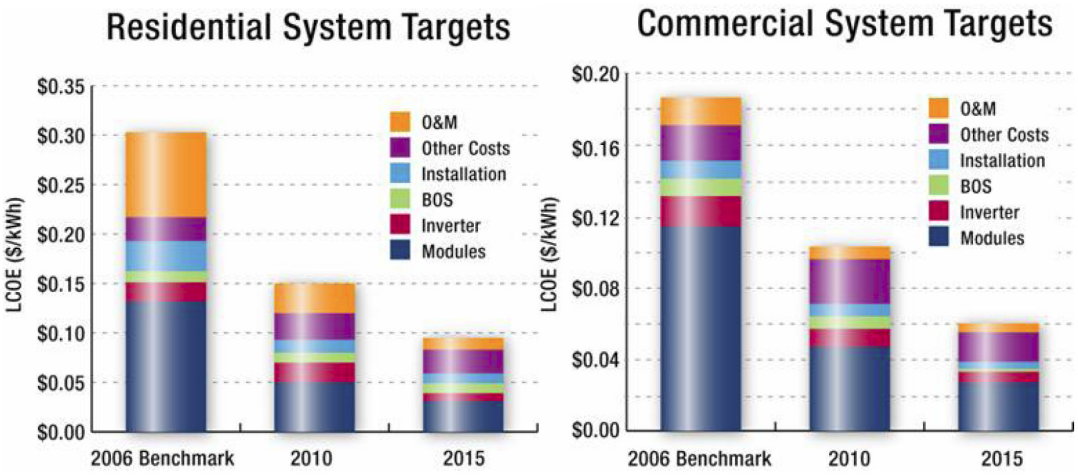

Figure 4. Residential and Commercial System Targets

[13] US DOE Solar Energy Technologies Program, Multi-Year Program Plan, 2008-2012, April 15, 2008. Report available at http://www1.eere.energy.gov/solar/pdfs/solar_program_mypp_2008-2012.pdf.

Source: Figure 2.1-4, "Benchmark data for reference system with 2010 and 2015 projections, from the USDOE "Solar Energy Technologies Program – 2008-2012 Multi-Year Program Plan.

The steep downward cost trend for the technology coupled with potential carbon legislation could result in solar PV technologies becoming an economically attractive supply side resource option in the medium-term time frame of 2011 through 2020, even beyond the level mandated by the recent Clean Energy Initiative.

Remedy #8. Prior to its next IRP filing, KCPL should undertake a detailed study of current and projected photovoltaic costs. The study should include the full 20-year planning cycle and should include both utility-scale and customer-sited photovoltaic generation.

In its next IRP filing, KCPL should file updated information on solar photovoltaic costs and as appropriate, incorporate the effect of the newly-legislated solar set-aside in the resource plans evaluated. KCPL should use up-to-date information on solar photovoltaic costs when screening the technology.

4 CSR 240-22.050 (1)(A) – "All major customer classes including…. interruptible."

Deficiency #9. KCPL's plan lacks analysis for interruptible customers, a major class specified in the rule.

Rule 4 CSR 240-22.050 (1)(A) identifies interruptible customers as a specific major customer class. KCPL's analysis of measures and programs for this class is stated as:

1.1.3 Interruptible Customers

Interruptible customers were identified as either belonging to the residential or C&I customer classes and having the capability to reduce or shift load.

KCPL assumes that interruptible customers will be offered the same end use measures and programs as all other customers in their sectors. However, they may require specific equipment, as in the case of direct load control for residential air conditioning. Different incentive structures may be necessary, such as rates that reflect the foregone value of full requirements power. This demand-side measure may also require a different analytical approach--one that properly establishes the net value of the interaction between efficiency measures that are always present and capacity savings that come from interruptible measures. Defining interruptible customers as part of other customer classes is not sufficient to meet the requirements of the rule, which specifies interruptible customers as a major customer class.

Remedy #9. Prior to the deadline for requesting waivers or variances for its next IRP filing, KCPL should study the issue described above in designing a DSM program tailored to interruptible customers. For its next IRP filing, KCPL should identify and analyze the end-use measures and programs that are suitable for interruptible customers, or request a waiver from this section of the rule.

4 CSR 240-22.050 (1)(C): "Identification of End-use Measures. The analysis of Demand-Side resources shall begin with the development of a menu of energy efficiency and energy management measures that provide broad coverage of…(C) All major end uses…"

Deficiency #10. KCPL fails to include consumer electronics ("plug loads"), a significant end use, in its planning.

Rule 4 CSR 240-22.050 (1) through (4) require the utility to identify, screen, and estimate the technical potential of end-use measures. The IRP rule requires that the analysis of demand-side measures provide broad coverage of "all major end uses, including at least…" a list of specified end uses.

Deficiencies #10, #12 and #14 all address KCPL's failure to identify and screen end-use measures that arguably represent significant technical potential for cost-effective energy savings. Because these were not screened, they are not included in the DSM programs in KCPL's preferred resource plan even though most of them have been implemented in DSM programs elsewhere in the U.S.

To comply with 4 CSR 240-22.050 (1), KCPL is required to develop "a menu of energy efficiency and energy management measures that provide broad coverage of (A) All major customer classes …; (B) All significant decision makers…; (C) All major end uses …; [and] (D) Renewable energy sources and energy technologies that substitute for electricity at the point of use, … "

In its response to MDNR DR #5, KCPL describes its method for identifying end-use measures as follows:

> When developing our list of end-use measures and programs, KCP&L relied on advice from the consulting firms: Summit Blue, RLW Analytics and Morgan Marketing Partners, who have extensive experience in this area. They reviewed

our current programs and helped us to develop a list of end-use measures and programs that is comprehensive in nature

One significant end-use category not included in these lists is consumer electronics and plug loads. This end-use includes:

a) small AC/DC converters and other plug loads;

b) consumer electronics, e.g. televisions, set-top boxes, audio equipment; and

c) computer and home office equipment.

These loads constitute approximately 10 percent to 15 percent of all residential electricity consumption.[14] These devices are significant contributors to load due to both the number in use and the amount of energy they consume when in "standby" mode, which is what "off" is for many devices on the market and in homes today. Nationally, these devices account for between 114 and 146 billion kWh per year, which is 3 to 4 percent of all energy use. It is estimated that 40 percent of this energy is used while the devices are nominally "off." This is a significant and expanding energy end-use with technical potential for significant energy savings through more efficient use.

MDNR DR # 5 raised this issue, and KCPL provided two responses. One stated that its consultants did not recommend this end use and that a review of exemplary programs by the American Council for an Energy Efficient Economy (ACEEE), "indicated that there were no programs for small plug-load electronics."[15] In a second

[14] Sources: California Energy Commission Public Interest Energy Research Program, http://www.comed.com/homesavings/tips/energydoctor/faq_appliance.htm; US EPA Energy Star program, http://www.energystar.gov/index.cfm?c=products.es_at_home_tips_renters10; Commonwealth Edison, http://www.esource.com/esource/getpub/public/pdf/cec/CEC-TB-32_HsholdElectronics.pdf;
[15] MDNR_20080909-f.13-Answer.doc

response to the same query, KCPL expanded its response to state that its consultant, Morgan Marketing Partners, advised that purchasers in this end use category look for other features and that market transformation is best handled by the EnergyStar program.[16]

MDNR has two concerns with this response. First, it appears that the consultant eliminated this end use measure from measure screening based on the consultant's beliefs about program effectiveness. This process of elimination is not documented in the filing, but is apparent from the utility's response to MDNR DR #5. The elimination of potentially significant end use measures prior to screening in this fashion is not consistent with provisions of 4 CSR 240-22.050 (1) through (4) of the rule. The rule requires the utility to identify and screen major end use measures and assess their technical potential for energy savings prior to designing and assessing the cost effectiveness of programs that incorporate the end use measures that passed screening. Arguments can be made for the relative merits of the bottom-up screening process required by the rule versus a more streamlined "best practices" approach. However, KCPL did not request a waiver from the rule requirements. KCPL apparently eliminated promising end use measures from candidacy for screening without documenting that they were eliminated, or the reason for their elimination.

Second, if "plug loads" had been included in the menu of end use measures, passed screening and shown significant technical potential for energy savings, MDNR is not convinced that an effective demand side program would be beyond KCPL's reach.

[16] MDNR_20080909-f.16-Answer-2_5_9_10_14.doc

There is an EnergyStar program addressing this particular market. The ACEEE has extensive information on these end uses in its published and on-line versions of The Consumer Guide to Home Energy Saving. California's Database of Energy Efficiency Resources (DEER) also includes a separate category for these measures, and several of the programs include these measures in their portfolios. [17]

An excerpt from one program conducted since 2006 by Efficiency Vermont, is shown below for reference:

> Power supplies convert high voltage AC to low voltage DC for use by the computer. Although sized to provide a maximum of 200–400 watts of DC output, conventional power supplies often require up to 300–650 watts of maximum AC input converting the rest to heat. They typically waste 30–45% of all the electricity that passes through them, or about 125–150 kWh annually. Advanced new power supply designs offer more than 80% efficiency across a wide range of load conditions and often need no cooling fan. [18]

In addition to its established program, Efficiency Vermont intends to introduce another market transformation program for this end use in 2009.

Remedy #10.

---

[17] EnergyStar website (http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductCategory&pcw_code=HEF) ACEEE website: http://aceee.org/consumerguide/electronics.htm#supplies. DEER website: http://www.energy.ca.gov/deer/.

[18] Efficiency Vermont. *Technical Reference User Manual: Measure Savings Algorithms and Cost Assumptions. No. 2008-53.*Page 330.

- In its next IRP filing, KCPL should adhere to the requirements of 4 CSR 240-22.050 that require the utility to complete a bottom-up identification and screening of end-use measures prior to identifying and screening demand side programs, or should seek a waiver from the rule's provisions.
- In its next IRP filing, if KCPL eliminates a potentially significant end use measure from consideration prior to measure screening, KCPL should document which measures have been eliminated and the reasons for eliminating them. KCPL should extend this requirement to consultants who assist the utility in this task.
- KCPL should screen plug load measures prior to the completion of the SRS process. By Program Year 2011, KCPL should incorporate the measures that pass screening and that fit readily into programs already in the DSM portfolio for the preferred resource plan. Prior to the completion of the SRS process, KCPL should communicate to parties its plans for accomplishing this. In the DSM analysis in KCPL's next IRP filing, KCPL should include plug load measures that pass screening and have not been incorporated into existing programs and should design a program to capture energy savings from these measures.

Rule 4 CSR 240-22.050 (1)(D) – "Renewable energy sources and energy technologies that substitute for electricity at the point of use."

Deficiency #11. KCPL does not include cost-effective renewable resources in its portfolio.

The PSC IRP rule requires that "technologies [are to be considered] that substitute for electricity at the point of use." Appendix 5E – A Renewable Energy System Performance Analysis Report for Kansas City Power & Light evaluates two solar hot water systems and two solar hot air systems as having paybacks well within the measure life. These systems achieve this even under the assumptions that the net metering buy-back rate is 2.04 cents/kWh (compared to a minimum charge of 8 cents/kWh for the first 600 kWh) and that the only incentive is the existing $2,000 maximum per system tax credit. Table 5 summarizes the analysis below.

Table 5 – Summary of Solar Analysis by the Energy Savings Store

System	Location	IRR & ROI	Years to positive cashflow
Solar Hot Water	Northeast	8%	11.8
Solar Hot Water	Southwest	8%	11.8
Solar Hot Air	Northeast	18.5%	7
Solar Hot Air	Southwest	18.5%	7

Appendix 5F – Kansas City Power & Light Renewables Cost Effective Analysis with regard to these programs states, "With administrative costs included for a program and adjusted incentives, these technologies have potential to be offered under a KCP&L program. For example, for solar domestic hot water, if the program assumes a 30% rebate (down from 50% assumed above) and that the program implementation cost equals half the rebate amount, the UTC (spell out) score is over 1. Further analysis and program discussions would be needed to finalize these numbers for a program design." It appears

that KCPL's consultant, Morgan Marketing Partners, in effect, is stating the measures might be cost effective if screened with appropriate inputs.

MDNR DR # 7 queried the reason for excluding these measures from the portfolio. KCPL's response, in total, was "Although the analysis indicates a favorable cash flow to the customer, these measures did not pass the screening test." KCPL did not provide the inputs or outputs of the model to justify its assertion.

KCPL's plan is deficient with regard to inclusion of renewable energy sources and energy technologies that substitute for electricity.

Remedy #11. Prior to the conclusion of the SRS process, .KCPL should review its screening of customer-sited solar heat measures. Based on the quote from Appendix 5F above, it is possible that a revision of the measure and program specifications with a lower incentive level would suffice to successfully screen these measures and provide the basis for developing programs to capture the potential of these resources. KCPL should include cost-effective customer-sited solar heat measures in its program no later than Program Year 2011.

Rule 4 CSR 240-22.050 (1)(D) – "Renewable energy sources and energy technologies that substitute for electricity at the point of use."

Deficiency #12. KCPL fails to include customer-sited combined heat and power resources that substitute for electricity at the point of use in its plan.

KCPL did not analyze the opportunity for combined heat and power ("CHP") applications, a significant and cost-effective demand-side resource. In the year 2000, an

analysis for the USDOE estimated that the potential for CHP in the commercial and institutional sector alone was over 1,000 MW.[19] In 2006, the last year with a complete data set, KCPL accounted for almost 15% of Missouri's commercial sales, 10.9% of the Missouri's peak load and 12.7% of Missouri's total retail sales.[20] Table 6 summarizes a recent review by Optimal Energy of CHP potential studies showed that an average of 11.3% of peak load could be saved by this resource.

Table 6 – Summary of CHP Potential Studies for Industrial and Commercial/Institutional Sectors

Summary of CHP Potential Study Results for Industrial & Commerical/Institutional Sectors							
State	Peak Load (MW)	Technical Potential (MW)	Base Mkt Potential (MW)	Intervention Potential (MW)	Tech % of Peak	Base Mkt % of Peak	Intervention % of Peak
CT	6,734	1,673	N/A	N/A	24.8%	N/A	N/A
ID	3,738	1,055	76	427	28.2%	2.0%	11.4%
MA	7,122	4,685	N/A	N/A	65.8%	N/A	N/A
MI	20,435	5,598	198	633	27.4%	3.5%	11.3%
NJ	17,275	4,557	1,367	2,734	26.4%	7.9%	15.8%
NY	38,262	8,477	764	2,169	22.2%	2.0%	5.7%
OR	25,043	3,452	384	1,831	13.8%	1.5%	7.3%
WA	17,476	4,860	731	2,847	27.8%	4.2%	16.3%
AVERAGE					29.5%	3.5%	11.3%

The energy source for CHP installations can range from opportunity fuels such as process wastes to renewables and fossil fuels. Regardless of the energy source, CHP reduces demand on the transmission and distribution system, reduces the need for imported and central station generation and often has positive economic and environmental impacts for both the customer and the load serving entity.

Remedy # 12. Prior to the conclusion of the SRS process, KCPL should analyze the potential for cost-effective CHP in its service territory and provide its analysis to the parties involved in the SRS process. If cost effective, KCPL should include CHP

[19]USDOE Energy Information Administration. *The Market and Technical Potential for Combined Heat and Power in the Commercial/Institutional Sector.* 2000, Washington, DC. : ONSITE SYCOM Energy Corporation.
[20] USDOE EIA Form 861 filing, accessed on 11/3/08 - http://www.eia.doe.gov/cneaf/electricity/page/eia861.html

measures in its custom C&I program no later than Program Year 2011. In its next IRP filing, KCPL should consider additional programs to acquire cost-effective CHP resources.

Rule 4 CSR 240-22.050 (6)(A) – "Identify market segments that are numerous and diverse enough to provide relatively complete coverage of the classes and decision-makers."

Deficiency #13. KCPL failed to include the multi-family residential market sector in its plan.

KCPL's plan includes measures that generically apply to the residential class as a whole but does not offer a program targeted at the multi-family residential market segment. This market faces specific barriers, in particular "split incentives," the disparity between responsibility for operating costs and capital costs. Owners are often motivated to reduce up-front costs while tenants benefit from reducing ongoing energy costs. The plan fails to provide coverage for this market segment.

KCPL reports that multi-family residences **** in megawatt hour sales of the segments identified.[21] They accounted for over **** percent of the total sales and ****percent of the peak load in 2006. This market segment has features in common with both the C&I and single-family residential segment and requires a targeted and flexible approach to capturing the vast potential it offers.

Remedy #13. In its next IRP filing, KCPL should develop and screen a program element focused on the multi-family residential market segment. Prior to conclusion of

[21] Volume 5 HC, page 40

the SRS process, KCPL should identify any information necessary to develop an effective program and present to parties its plan for acquiring the necessary information. Features from its current and proposed offerings from both the residential and C&I sectors can be integrated to achieve significant savings. These should include, at a minimum:

- Targeted outreach and market channel involvement;
- Technical assistance (e.g. audits) and financial analysis (e.g. cash flow projects and capital packaging);
- Meaningful financial incentives; and
- Relationship building through account management or efficiency staff.

The program should be designed to overcome the combination of barriers unique to this market segment.

Rule 4 CSR 240-22.050 (6)(C) - "Assemble menus of end-use measures that are appropriate to the shared characteristics of each market segment and cost-effective as measured by the screening test."

Deficiency #14. The KCPL plan failed to screen several appropriate and cost-effective end use measures.

KCPL failed to include a significant number of commonly implemented appropriate energy efficiency measures as detailed in Table 7.

Table 7 – Additional Unscreened Demand-Side Measures with Potential for Cost Effectiveness

End-Use (Sector)	Measures
Data Centers (C&I)	efficient thermal regulation scaling server design power management
Food Service (C&I)	Hot water boost heaters Efficient hood systems Efficient fryolators Efficient Ovens (combination, convection, conveyor, rack) Efficient steam cookers & griddles Insulated holding cabinets Scroll and discus compressors Zero Energy Doors (refrigeration)
Lighting & HVAC (C&I)	Integrated energy management systems Daylighting design Dual Enthalpy Economizer
Compressed Air (C&I)	Efficient compressors Cycling dryers No Loss Condensate Drains Air Receivers for Load/No Load Compressors Air system audits and leak elimination Compressed Air Controls
Transformers (C&I)	Energy Star Transformers
Accommodations (C&I)	Occupancy sensors Key activated systems
Domestic Hot Water (Res)	Fuel Switch from electric to fossil
HVAC (Res)	Efficient furnace fans (ECM, variable speed, etc.) Efficient ceiling fan Efficient ventilation fans
Clothes Dryer (Res)	Clothes dryer fuel switch
Waterbed (Res)	Replace waterbed with conventional mattress

In response to a request to list end use measures that may have been considered but rejected prior to the screening required by 4 CSR 240-22.050, KCPL lists "end-use measures rejected" in Volume 1-S, p. 37 of its supplemental filing. None of the measures

listed in Table 7 are included in KCPL's list. Therefore, we presumed that KCPL never considered these measures.

Remedy # 14. KCPL should screen the measures listed in Table 7 prior to the completion of the SRS process. By Program Year 2011, KCPL should incorporate into its DSM portfolio the measures that pass screening and that fit readily into programs already in the DSM portfolio for the preferred resource plan. Prior to the completion of the SRS process, KCPL should communicate to parties its plans for accomplishing this. The DSM analysis in KCPL's next IRP filing should include the measures from Table 7 that have not been incorporated into existing programs.

Rule 4 CSR 240-22.050 (9) – The utility shall develop evaluation plans for all Demand-Side programs that are included in the preferred resource plan… (A) Process Evaluation… shall address …at least the following questions about program design…

1. What are the primary market imperfections that are common to the target market segment?
2. Is the target market segment appropriately defined or should it be further subdivided or merged with other segments?
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 segment?
4. Are the communication channels and delivery mechanisms appropriate for the target segment? and

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 end-use measure included in the program?

Deficiency #15. The KCPL plan fails to sufficiently address process evaluation for new programs included in its preferred resource plan.

KCPL states that "Section 9.1.1 [of Volume 5] fulfills the requirements of Rule 22.050 (9)(A)." However, statements that there will be a process evaluation plan do not constitute an evaluation plan.

KCPL documents in Volume 5, Section 9.1, and its appendices that process evaluation plans have been developed for KCPL's existing DSM programs. However, the rule also requires the utility to document that it has developed process evaluation plans for all new DSM programs included in its preferred resource plan. KCPL fails to provide this documentation.

In Section 9.1.1, KCPL states that "evaluation plans are developed by KCP&L's evaluation contractor(s)." KCPL does not indicate that the utility has chosen contractors or discussed process evaluation requirements with contractors selected for process evaluation of the new DSM programs included in the preferred resource plan.

In Section 9.1.1, KCPL does not state when process evaluation plans will be developed for these programs. DSM program evaluation is most useful and effective when program implementers are aware of evaluation plans. KCPL indicates its awareness of this, stating that "process evaluation is meant to inform the program implementers." However, in its filing, KCPL does not provide specific information or

commitments about when evaluators will be selected or when evaluation plans will be available.

In Section 9.1.1, KCPL states that the process evaluation plans will have four sections, but not how they will answer the specific questions posed by 4 CSR 240-22.050 (9)(A) (1)-(5). KCPL's summary paragraph that describes the goals of process evaluation is not sufficient to meet the specific requirement of the rule.[22]

Remedy #15.

- For each new DSM program or program enhancement included in its preferred resource plan:
    - (i) Prior to selecting a contractor to develop process evaluation plans, KCPL should submit to the parties and the PSC an explanation of how the utility will assure that the process evaluation will "inform the program implementers" and will address the five questions listed in the rule.
    - (ii) No later than three months after implementation of the new or enhanced program, KCPL should submit to the parties and the PSC a detailed process evaluation plan for the program and market sector that describes the means for "informing the program implementers" and addressing the questions raised in 4 CSR 240-22.050 (9)(A)(1)-(5).

[22] Volume 5 HC, page 47.

- In its next IRP filing, KCPL should meet the requirements of 4 CSR 240-22.050 (9)(A), or request a variance from specific rule requirements.

Rule 4 CSR 240-22.050 (9) (B) (2) – Impact Evaluation "shall develop load-impact measurement protocols that are designed to make the most cost-effective use of the following types of measurements."

Deficiency #16. The KCPL plan fails to sufficiently address impact evaluation.

In Volume 5, Section 9.1.2 of its filing, KCPL includes a high level discussion of the goals of impact evaluation, but fails to specify who will collect the data, the type of data they will collect, how it will be integrated, and how they will collect it cost-effectively. Section 9.1.2 does not specifically state whether KCPL intends to rely on a contractor for impact evaluation and if so, when and how they would be selected.

Remedy #16. For each new DSM program or program enhancement included in its preferred resource plan, KCPL should submit to the parties and the PSC a detailed impact evaluation plan specifying which of the measurement types in 4 CSR 240-22.050 (9) (B) (2) will be used, how the data will be collected, and the rationale for determining that it has chosen a cost-effective approach by a date certain, but no later than three months after implementation of revised programs.

In its next IRP filing, KCPL should meet the requirements of 4 CSR 240-22.050 (9)(B), or request a variance from specific rule requirements.

Rule 4 CSR 240-22.050(9) (C)- "The utility shall develop protocols to collect data regarding demand-side program market potential, participation rates, utility costs, participant costs and total costs.

Deficiency #17. The KCPL plan fails to specify the protocols for data collection on DSM programs.

KCPL states that Section 9.1.3 meets this requirement of the rule cited above. KCPL refers to the International Performance Measurement and Verification Protocol ("IPMVP"), noting that it is "a widely accepted standard for conducting on-site measurement and verification."[23] KCPL also notes that "it is not readily applicable for all programs." The section does not address the protocol for collecting any of the data specified in the rule and only states that if on-site evaluation is required, the plan should comply with IPMVP.

Remedy #17. KCPL should submit to the parties and the PSC the protocols it will use to collect the data specified in subsection (C) by a date certain, but no later than three months after implementation of revised programs.

Rule 4 CSR 240-22.050(11)(H) The utility shall provide "A tabulation of the incremental and cumulative number of participants, load impacts, utility costs and program participant costs in each year of the planning horizon for each demand-side program."

Deficiency #18. KCPL has failed to provide certain information about the demand side management program as required by the rule.

[23] Volume 5 HC, page 50

KCPL's initial filing and responses to data requests, and supplemental documents include hundreds of spreadsheets, tables and figures, but not the single unified tabulation necessary to meet the requirements of 4 CSR 240-22.050(11)(H). Despite the multitude of files provided by the utility, some of the data points required by the rule could only be determined by applying conversion factors developed from analysis of other files.[24]

Furthermore, numbers are not consistent across the variety of files produced. For example, the cumulative annual savings for the residential, aggressive C&I, and the CEP-1 programs, which comprise the preferred plan portfolio, are not consistent from one file to the next. The variance is not great, but the fact that there is variance at all should be documented and explained. Finally, the mix of units (e.g. kWh, MWh, and GWh) used across, and sometimes within, a variety of files hinders the transparency of the filings.

In response to stakeholder request, KCPL provided several new tables in Volume 1-S, Section 3.2 of its supplemental filing. In MDNR's view, the new tables do not meet the requirement in 4 CSR 240-22.050(11)(H) for a single unified tabulation, for the following reasons. Energy impacts are tabulated only for years 2008-2012. No tabulation is provided for (1) incremental and cumulative number of participants for each program; or (2) participant costs for each program. Finally, the information that KCPL provides in the supplemental filing is for its entire service territory, both Missouri and Kansas. This is inappropriate for reasons discussed in MDNR Deficiency #1.

[24] Subsequent to a conference call on October 30, 2008, KCPL provided a file transmitted to MDNR on 11/3/08 with the name "example format.xls" which was incomplete despite the fact that MDNR had provided a detailed template. This file contained MWh and MW savings by sector and program, MWh savings for the portfolio, and system peak and total sales on separate sheets.

Remedy #18. In a supplemental filing, KCPL should file a single unified tabular presentation of the data required by 4 CSR 240-22.050(11)(H). The tabulation of load impacts should include both energy impacts and capacity requirements. This should be specific to KCPL's service territory in Missouri and be extensively annotated as to the source of all data.

Rule 4 CSR 240-22.060 (3) – Development of Alternative Resource Plans. The utility shall use appropriate combinations of candidate demand-side and supply-side resources to develop a set of alternative resource plans, each of which is designed to achieve one (1) or more of the planning objectives identified in 4 CSR 240-22.010 (2).

4 CSR 240-22.010 (2) …provide the public with energy services that are safe, reliable and efficient, at just and reasonable rates, in a manner that serves the public interest.

Deficiency #19. The supply-side resource plans exclude scenarios with wind resources greater than 400 MW. The scenarios also exclude biomass retrofit alternatives.

The alternative plans do not include any wind resource beyond the 2015 period, and none of the alternative plans contain more than 400 MW in total of new wind resource. It is unclear why no alternative plans with higher levels of wind penetration were considered or analyzed. The response to MDNR DR # 29 indicated that the "Ventyx modeling…did not select more than ** MW** [of wind]," but this determination is not supported in the filing. At the planned level of wind integration (400 MW), KCPL will meet roughly 7.5 percent of its energy needs with wind in 2015, declining to 6.4 percent of needs by 2030. Current technically feasible wind penetration

levels are on the order of 20 to 25 percent of retail sales.[25] Given the high variable costs of operating coal-fired resources when carbon costs are taken into account[26], (i.e., even higher than all-in costs of wind), it is unclear why including successively larger amounts of cost-effective wind was not explored as alternative resource plans.

While not a technical deficiency because it occurred subsequent to the IRP filing, the recent passage of an RPS requirement on November 4, 2008, results in a KCPL-Missouri renewable energy need of 15 percent by 2021. This could be met with wind, biomass, solar, or renewable energy credits (RECs). If wind resources were used to meet this requirement, roughly 816-859 MW of wind would be needed by 2021, more than double KCPL's current plan. Use of biomass fuels, addressed in Deficiency #20, would reduce the amount of wind required to meet any renewable targets. For example, a 10 percent co-fire retrofit at all units of the Montrose plant would reduce the need for 130 MW of otherwise installed wind capacity to meet renewable energy targets (based on a 510 MW Montrose plant, 51 MW of biomass co-fire and a 39 percent capacity factor for wind).

The table on the following page illustrates the level of wind currently planned for, and what would be needed under the new RPS requirements (presuming the requirement

[25] Based on the 2006 Minnesota Department of Commerce Study on Wind Integration, December 2006. Other studies indicate similar possibilities. It may be necessary for Southwestern Power Pool (SPP) control area consolidation to enable such penetration for the KCPL system. SPP is considering such consolidation.

[26] KCPL's supply-side presentation of October 30, 2008 indicated that the range of "probable environmental costs" of existing coal plants sometimes exceeded the all-in costs of new wind power on a per MWh basis. This would indicate that it could be less expensive to buy or build new wind resources and reduce energy output of existing coal facilities.

was met with wind).[27] It also illustrates the amount of wind to consider if 20 to 25 percent of retail sales were met with wind. As noted, biomass co-fire would reduce these wind amounts for meeting renewable targets. A portion of the requirement will also be met with solar, as required in the law.

Table 8 – Potential Contribution of Wind to Meeting KCPL Projected Load and Renewable Requirements, 2007-2030

	2007	2010	2011	2015	2020	2021	2025	2030
KCPL Missouri Net peak demand, MW	3,696	3,613	3,621	3,739	3,881	3,902	3,996	4,174
KCPL - Missouri Net system energy, GWh	16,287	17,029	17,295	18,527	19,893	20,026	20,803	21,836
Estimate of system losses, %	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Estimate of energy sales, GWh	15,511	16,218	16,471	17,645	18,946	19,073	19,812	20,796
New RPS Requirement			2%			15%		
RPS level GWh - Rough			329			2,861		
Wind MW to meet RPS at 40% CF			94			816		
Wind MW to meet RPS at 38% CF			99			859		
Wind MW - 20% of retail sales, 2020, 40% CF					1,081			
Wind MW - 25% of retail sales, 2025, 40%CF							1,414	
Planned Installed Wind, MW:		200	300	400	400	400	400	400
Planned Installed wind, Annual Energy, GWh:		666	999	1,332	1,332	1,332	1,332	1,332
Planned wind, rough share of retail sales:		4.1%	6.1%	7.5%	7.0%	7.0%	6.7%	6.4%

Remedy #19.

- Before the completion of the SRS process, KCPL should analyze, report and review with stakeholders the costs, benefits and implementation requirements for expediting the addition of 400 MW of wind prior to 2015. The analysis should consider the possibility of retiring less efficient coal-fired plants whose continued operation would require major environmental upgrades.
- In its next IRP filing, KCPL should evaluate alternative resource plans that include installation of more than 400 MW of new wind:

[27] KCPL states in Volume 1-S, p. 9 that "The wind resources included in the Preferred Plan meet the requirements of the Missouri RPS." This statement is ambiguous and may be incorrect. It is correct that the wind would be an eligible resource but not that the amount of wind in the Preferred Resource Plan would suffice to meet the 2021 requirement.

- KCPL should evaluate at least one plan in which installed wind resource are sufficient to meet the new RPS requirements in 2021 The wind resource required to meet this goal would be on the order of 800-900 MW.
- KCPL should also evaluate resource plans with wind resources greater than that sufficient to meet the RPS requirement. KCPL should consider alternative resource plans in which wind energy displaces the most expensive coal-fired energy. KCPL should also consider alternative resource plans in which wind resource installations are ramped up over time to the current technical penetration maximums, for example, to meet up to 20 percent of KCPL's retail energy needs in 2020 (1,081 MW of wind) and 25 percent of KCPL's retail energy needs in 2025 (1,414 MW of wind).

Deficiency #20. Retrofit of existing KCPL coal-fired units to accommodate either fractional or 100 percent firing of biomass fuels is not included in the alternative resource plans.

The alternative resources plans listed by KCPL in Volume 6 on pages 12-14, do not include retrofitting existing KCPL coal-fired units to accommodate either fractional or 100 percent firing of biomass fuels even though the supply-side analysis in Volume 4 indicates that biomass technologies were included in the second level prescreening. Newly-constructed biomass plants are listed in the final ranking of supply alternatives, but the relative differences between new biomass plant options and fractional or full retrofit options is unclear. Given the recent passage of the RPS legislation, the likelihood

of carbon regulation and the ability of biomass alternatives to provide some fraction of required renewable energy, it is unclear why the alternative resource plans do not include retrofit alternatives in at least one of the 26 plans for which PVRR is computed. Furthermore, the text on page 33 of Volume 4 (bullet point 4) indicates that adequate biomass fuel is assumed to be available for a new fluidized bed unit, but not for a 50% co-fired option (bullet point 1). It is unclear why this is the case.

Remedy #20.

- Before the completion of the SRS process, KCPL should analyze, report and review with stakeholders (i) the extent of biomass fuel availability within appropriate transportation range of any existing coal-fired plant that could accommodate co-firing or 100% retrofit for biomass fuels; and (ii) the relative economics of new biomass generation, co-firing at an existing coal-fired plant and retrofit of an existing coal-fired plant.
- In its next IRP filing KCPL should analyze a comprehensive list of commercially available biomass generation alternatives and should model at least one alternative resource plan that includes each biomass technology that passes screening.

Rule 4 CSR 240-22.060 (4) – The analysis shall cover a planning horizon of at least twenty (20) years.

Deficiency #21. KCPL did not meet the requirement of the rule to use a twenty-year planning horizon for all resources.

KCPL used a planning horizon of twenty years for investment in supply-side resources pursuant to the rule. It used a planning horizon of only 5 years for demand-side resources. Its modeling shows only five years of implementation budget for DSM programs.

The planning horizon is defined at 4 CSR 240-22.020 (43) and referenced in several sections of 4 CSR 240-22.050, including sections (7), (8) and (11).

Remedy #21. In its next IRP filing, KCPL's resource acquisition strategy should include plans for demand side resource acquisition for the full 20-year planning horizon.

Deficiency #22. In its initial filing, KCPL failed to provide documentation of alternative resource plans as required by 4 CSR 240-22.060(6)(A).

In Volume 6, page 16, KCPL states that Tables 6 through 9 meet the requirements of 4 CSR 240-22.060(6)(A). These requirements include "a description of each alternative resource plan including the type and size of each resource addition and a listing of the sequence and schedule for retiring existing resources and acquiring each new resource addition." As noted in MDNR DR #34, for certain plans and resources listed in Tables 6 through 9, some of the required information is missing.

Remedy #22.

This issue has been resolved by the tables included in Appendix 1-S.1, "Twenty-Six Resource Plans."

Rule 4 CSR 240-22.070(2) - Before developing a detailed decision tree representation of each resource plan, the utility shall conduct a preliminary sensitivity

analysis to identify the uncertain factors that are critical to the performance of the resource plan.

Deficiency #23. KCPL failed to identify the critical uncertain factors based on an analysis of their impact on performance as required by 4 CSR 240-22.070(2).

Rule 4 CSR 240-22.070(2), requires the utility to identify the "critical uncertain factors." These are to be identified on the basis of "sensitivity analysis to identify the uncertain factors that are critical to the performance of the resource plan." In this context of the rule, "performance" is evaluated based on a "set of quantitative measures for assessing the performance of alternative resource plans" that was identified pursuant to 4 CSR 240-22.060(2). Volume 6, page 2 identifies the following list of eight performance criteria that can be used for this purpose:

1. Present worth of utility revenue requirements.
2. Present worth of probable environmental costs.
3. Present worth of out-of-pocket costs to participants of demand-side programs.
4. Levelized annual average rates.
5. Maximum single-year increase in annual average rates.
6. Pretax interest coverage.
7. Ratio of total debt to total capital.
8. Ratio of net cash flow to capital expenditures.

Identification of the critical uncertain factors is a crucial step in the IRP analysis because many of the rule's risk analysis and strategy selection requirements hinge on this.

These include requirements stated in 4 CSR 240-22.070(1), (2), (3), (8), (10) and (11), which depend on knowing the identity of the "critical uncertain factors." The statement of purpose for 4 CSR 240-22.070 underlines that clear identification of the critical uncertain factors is essential to fulfilling the purpose of this portion of the IRP rule:

4 CSR 240-22.070 Risk Analysis and Strategy Selection. PURPOSE: This rule requires the utility to identify the critical uncertain factors that affect the performance of resource plans, establishes minimum standards for the methods used to assess the risks associated with these uncertainties and requires the utility to specify and officially adopt a resource acquisition strategy.

KCPL's supplemental filing Volume 1.S Sections 2.1 and 2.2 identifies eight critical uncertain factors. Five of these were previously identified in Volume 7, Section 2.1, p. 12 as "key uncertainties" on the basis of a sensitivity analysis of their impact on performance of alternative resource plans.

1. natural gas prices;
2. environmental allowance prices;
3. coal prices;
4. CO_2 allowance prices (identified in Volume 7, page 12 as " Greenhouse gas regulation; and CO2 price"); and
5. Load growth (identified in Volume 7, p. 12 as "load").

In Volume 1-S, Section 2, p. 13, KCPL identifies the following three factors as critical uncertain factors.

1. Financial markets

2. Stakeholder support for the Preferred Plan

3. DSM cost recovery

In identifying these as critical uncertain factors, KCPL fails to provide sensitivity analyses as required by 4 CSR 240-22.070(2). In place of this, the utility provides brief discussions of the justification for how it considers these to be critical uncertain factors. KCPL's discussion of the potential impact of these three factors on DSM programs (Volume 1-S, Section 4.1, pp. 26-28) provides additional explanation of KCPL's view of the potential impact of these three factors. MDNR's comments on these discussions are as follows:

- In general, KCPL makes no effort to formulate these factors in a form that is suitable for sensitivity or other systematic quantitative analysis. Furthermore in its discussion of potential adverse impacts related to these factors, KCPL makes no effort to systematically consider the performance measures that the utility identified pursuant to 4 CSR 240-22.060(2).
- Financial markets: KCPL variously defines the issue as "the ability to finance projects" (Volume 1-S, p. 13) and "the ability to obtain economic financing". When KCPL develops the analysis to demonstrate that this is a critical factor, KCPL needs to clearly define “economic financing." "Economic" financing for demand side and supply side investments needs to be evaluated in an even-handed manner. In an economic downturn,

scalable investments in efficiency that delay larger non-scalable investments in supply are increasingly valuable.

- Stakeholder support for the Preferred Plan: KCPL has not clearly defined "stakeholders" or proposed how "stakeholder support" is to be measured. In MDNR's opinion, customer response to DSM programs should not be included in "stakeholder response" as KCPL does in Volume 1-S, pp. 27-28. Customer support of DSM programs is largely based on program efficacy and efficiency and should not be considered an exogenous factor. The industry is well established, and benchmark best practices are widely available.

DSM cost recovery: KCPL states that "Adequate cost recovery including recovery of lost margins is required for KCP&L to implement the proposed DSM programs." In its discussion of this factor, KCPL references Section 7.4, "Request for Non-Traditional Rate Making, (Rule 22.080(2))," which in the draft version of Volume 1-S is simply a placeholder with no text provided. The meaning of "adequate cost recovery" and "lost margins" is not clear in the draft version of Volume 1-S, but presumably will be clarified when KCPL provides text for Section 7.4. To justify its position that this is a critical uncertain factor, KCPL would need to show that levels of cost recovery affect the performance of the preferred resource plan as measured by the performance criteria that KCPL identified pursuant to 4 CSR 240-22.070(2). MDNR notes that investor profit is not one of these criteria.

Remedy #23. Prior to its next IRP filing, for any factor that KCPL proposes to add to the list of five critical uncertain factors identified in Volume 7, Section 2.1, p. 12, the utility should provide a sensitivity analysis or other systematic analysis that demonstrates that the new factor is critical to the performance of the resource plan. This analysis should measure performance by the performance factors identified in Volume 6, page 2.

In its next IRP filing, KCPL should clearly and unambiguously identify the critical uncertain factors being considered when meeting the requirements of 4 CSR 240-22.070 (1), (2), (3), (8), (10) and (11). For each critical uncertain factor that is identified, KCPL should provide an analysis that demonstrates that the factor is "critical to the performance of the resource plan" pursuant to 4 CSR 240-22.070(2)

Deficiency # 24. KCPL failed to assess all pertinent uncertain factors.

The IRP rule requires the utility to assess any uncertain factor that might prove to be critical to resource planning. While these factors are to include "at least" the dozen factors listed in 4 CSR 240-22.070(2), the rule implicitly requires the utility to identify and assess any other uncertain factor that does not appear on the list, but might reasonably prove to be a significant factor in resource planning. This is also consistent with the fundamental objectives stated in 4 CSR 240-22.010 (2)(C).

KCPL implicitly acknowledges this requirement by including in its risk analysis a number of factors that are not specifically mentioned in the IRP rule: greenhouse gas restrictions, allowance prices for a number of pollutants other than CO_2, and the three

factors that KCPL added to the list of critical uncertain factors in its supplemental filing (Volume 1-S, p. 13).

However, in the current filing, KCPL barely considers the possible imposition by the state or federal government of Renewable Portfolio Standard (RPS) requirements. At the time the filing was being prepared, this should have been addressed as an uncertain factor that the utility might reasonably have considered a candidate for status as a critical uncertain factor. It would have been reasonable to consider that imposition of an RPS was a real possibility for the following reasons:

- Twenty-eight states have imposed RPS standards, and both chambers of Congress have seriously considered imposing federal RPS standards.
- Several months before the filing date, KCPL was aware of a strong effort by Missouri voters to place an RPS initiative, the Clean Energy Initiative (CEI), on the November 2008 ballot. KCPL endorsed the CEI initiative in April 2008, and therefore it may be presumed that KCPL believed that it had greater than zero probability of being enacted.

KCPL's initial IRP filing documents only two instances in which KCPL's analysis took into account the possible imposition of an RPS:

- When Ventyx modeled supply side technologies to determine which to include in second-level screening, the consultant included Compressed Air Energy Storage (CAES) "even though pre-screening results showed high capital and operating costs…due to the possibility for high renewable

generation requirements under potential Renewable Portfolio Standards (RPS). Under such requirements, the portfolio value of energy storage is expected to increase." CAES was ultimately eliminated from further consideration by the results of the second-level screening. Volume 4, p. 32)

- When developing alternative resource plans, KCPL included biomass in one plan even though the utility had eliminated biomass technologies in its second-level screening. KCPL explained in Volume 1, page 16, that "To meet potential Renewable Portfolio Standards (RPS)…. Plan 25 adds a 10% biomass co-fire option at Montrose to Plan 19."

Aside from these two instances, the filing does not document any consideration by KCPL that an RPS requirement could be imposed during the 20-year planning horizon.[28] Specifically, the filing does not document consideration of this uncertain factor in KCPL's risk analysis and strategy selection, or in KCPL's calculation of PVRR of the alternative resource plans.

KCPL should have systematically considered the possible impact of this uncertain factor through scenario development. A reasonable approach would have been to model its RPS scenario and alternative resource plans on the pending CEI initiative that KCPL supported. Had KCPL taken this approach, the utility would have given greater consideration to more aggressive renewable resource portfolios that are discussed in MDNR Deficiencies #2 and #3.

[28] The supplemental filing, distributed after Missouri's November general election, does state that RPS requirements could influence the level of wind and solar installations. Volume 1-S, p. 29.

As discussed in MDNR Deficiency #19, one approach to developing an alternative resource plan to meet RPS requirements in a CEI scenario would have been to increase reliance on wind resources. To meet the CEI requirements through wind alone, roughly 816-859 MW of wind would be needed by 2021, more than double the wind resources included in KCPL's preferred resource plan. Other resources that could have been included in the mix to meet RPS requirements in a CEI scenario include biomass and solar resources as discussed in MDNR Deficiency #20 and the purchase of renewable energy credits (RECs).

Consideration of a CEI scenario would have required KCPL to analyze future REC costs and assess whether REC costs is a critical uncertain factor. This was not done in the current filing.

KCPL states that when screening small customer-based renewable resources, the utility did review a relevant NREL report, Innovations in Wind and Solar PV Financing,[29] which is included in the filing as Appendix 5G. The report states, in part:

> In regions with adequate supply, RPS-compliance RECs can range from $3-30/MWh; while, in New England, supply\shortages of eligible RECs have led to REC prices near or at the penalty price. In Connecticut, Massachusetts and Rhode Island, spot REC prices are close to the alternative compliance price and have recently ranged from $48-56/MWh (Evolution Markets 2007).

As this excerpt indicates, future REC prices might fall within a fairly wide range. However, KCPL does not indicate whether or how this information was used in its

[29] Technical Report NREL/TP-670-42919, National Renewable Energy Laboratory (NREL), February 2008.

decision not to screen out small customer-based renewable resources. KCPL's filing does not discuss or document any analysis by the utility of future REC prices.

Remedy #24. KCPL should develop and analyze one or more scenarios that incorporate the requirements of the CEI initiative that was approved on November 4, 2008. Furthermore, KCPL should assess the significance of REC price uncertainty using sensitivity analysis or other systematic analysis that determines whether this factor is critical to the performance of the resource plan. This analysis should measure performance by the performance factors identified in Volume 6, page 2.. This analysis should be completed prior to the completion of the SRS process, and the results should be reported to stakeholders in the SRS process.

Rule 4 CSR 240-22.070(2) - The utility shall conduct a preliminary sensitivity analysis to identify the uncertain factors that are critical to the performance of the resource plan.

Rule 4 CSR 240-22.070(10)(D) – The utility shall develop, document and officially adopt a resource acquisition strategy…. The officially adopted resource acquisition strategy shall consist of the following components:…(D) A set of contingency options that are judged to be appropriate responses to extreme outcomes of the critical uncertain factors and an explanation of why these options are judged to be appropriate responses to the specified outcomes.

Deficiency #25. KCPL failed to adequately develop contingency options to deal with the imposition of a Renewable Portfolio Standard.

As discussed in MDNR Deficiency #23, KCPL failed to assess the sensitivity of resource requirements to the possible imposition of an RPS, or the concomitant uncertainty of future REC prices. Had the utility made this assessment, one of these might have been identified as a critical uncertain factor, which required contingency planning in accordance with 4 CSR 240-22.070(10)(D).

As noted in the discussion in Deficiency #23, alternative resource plan #25 does include a biomass co-firing component, which was included "To meet potential Renewable Portfolio Standards (RPS)." However, the discussion and the estimates in Table 8 demonstrate that this would be inadequate to meet the requirements of the RPS proposal that KCPL supported and that eventually was passed by the voters of Missouri. Meeting the RPS would require additional renewable resources, with the primary candidates being additional wind or additional biomass; or the purchase of RECs, dependent upon which would probably introduce significant uncertainties.

Remedy #25. KCPL should review the adequacy of its analysis of renewable resource availability and initiate an analysis of future REC prices. In view of the RPS requirement, KCPL should identify factors related to the new requirements, including future REC prices, that might invalidate the preferred resource plan included in its filing, should determine what range of values for these factors would indicate the need to shift to a different preferred resource plan, and identify contingency options that would be preferable to the current plan should those values be observed. Prior to the completion of the SRS process, KCPL should demonstrate significant progress in this effort and should communicate to stakeholders its plans for completing the process. In its next IRP filing,

KCPL's risk analysis and contingency planning should fully incorporate factors related to the RPS.

Rule 4 CSR 240-22.070(11)(A)(2) – To demonstrate compliance with the provisions of this rule, and pursuant to the requirements of 4 CSR 240-22.080, the utility shall furnish at least the following information…(A)(2) An explanation of how the critical uncertain factors were identified, how the ranges of potential outcomes for each uncertain factor were determined and how the subjective probabilities for each outcome were derived[.]

Deficiency #26. In its initial filing, KCPL failed to document the derivation of subjective probabilities for the outcomes of critical uncertain factors.

The rule requires the utility to document for each critical uncertain factor, "how the subjective probabilities for each outcome were derived." These subjective probabilities are supposed to be "assigned by utility decision makers." 4 CSR 240-22.070(1), 4 CSR 240-22.070(5)

The demonstration of compliance with 4 CSR 240-22.070(11)(A) is contained in Volume 7, pp.25-30. Figure 2 (p. 26) and Figure 3 (p. 29) show the probabilities that were assigned to outcomes of the critical uncertain factors, but the text does not mention or discuss the derivation of these probabilities.

KCPL's response to MDNR DR #40 states that for each critical uncertain factor, a high, base and low outcome was forecast, and the following probabilities were assigned: 25 percent for the high outcome; 50 percent for the base outcome; and 25 percent for the low outcome. However, the response to MDNR DR #40 does not explain how these

probabilities were assigned. Specifically, the response to MDNR DR #40 does not document that they were assigned based on subjective assessment of utility decision makers.

Remedy #26. This issue was resolved by the information contained in the supplemental filing (Volume 1-S, Section 2.1.1, pages 10-12.)

Rule CSR 240-22.070(11)(G) –To demonstrate compliance with the provisions of this rule, and pursuant to the requirements of 4 CSR 240-22.080, the utility shall furnish at least the following information:…(G) The fully documented resource acquisition strategy that has been developed and officially adopted pursuant to the requirements of section (10) of this rule.

CSR 240-22.070(10) – …The officially adopted resource acquisition strategy shall consist of the following components:

(A) A preferred resource plan selected pursuant to the requirements of section (6) of this rule;

(B) An implementation plan developed pursuant to the requirements of section (9) of this rule;

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

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

why these options are judged to be appropriate responses to the specified outcomes; and

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

Deficiency #27. KCPL failed to officially adopt all of the required elements of the Resource Acquisition Strategy.

The rule requirement is to "officially adopt a resource acquisition strategy." The corporate approval statement on Volume 1, page 30 states in part that "KCPL intends to implement the preferred plan as it might be modified by the SRS process." This would be sufficient if the Resource Acquisition Strategy consisted only of a preferred resource plan and implementation strategy. However, the Resource Acquisition Strategy does not have the three additional elements identified in MDNR Deficiencies #28, #29, and #30 below.

Remedy #27. If the remedies proposed for Deficiencies #5, # 6 and #7 are implemented, the remaining three required elements of a Resource Acquisition Plan will be incorporated into the SRS process. In that case, implementation of the preferred resource plan "as modified by the SRS process" will be sufficient to meet the rule requirement.

Deficiency #28. KCPL failed to document acceptable limits for critical uncertain factors under the preferred resource plan as required by 4 CSR 240-22.070 (11)(G) and 4 CSR 240-22.070(10)(C).

As part of its officially adopted resource acquisition strategy, the rule requires the utility to 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 an explanation of how these limits were determined."

KCPL's initial filing states that compliance with this requirement is documented in Volume 1, Section 5. However, in response to MDNR DR #41, KCPL acknowledges that, "The specified range or combination of outcomes for the critical uncertain factors that defines the limit within which the preferred resource plan is judged to be appropriate is not directly identified in the documents." Volume 1-S, Section 4.1 of the supplemental filing also does not address this requirement.

Remedy #28. The identification of "extreme outcomes" for the critical uncertain factors identified by the utility should be completed prior to the completion of the SRS process. The results should be reported to stakeholders in the SRS process. Finally, updated results should be included in KCPL's next IRP filing.

Deficiency #29. KCPL failed to document contingency options for each critical uncertain factor.

As part of its officially adopted resource acquisition strategy, the rule requires the utility to specify "a set of contingency options that are judged to be appropriate responses to extreme outcomes of the critical uncertain factors and an explanation of why these

options are judged to be appropriate responses to the specified outcomes." Need rule citation. A "contingency option" is defined in 4 CSR 240-22.020(6) as "an alternative choice, decision or course of action designed to enhance the utility's ability to respond quickly and appropriately to events or circumstances that would render the preferred resource plan obsolete."

KCPL's initial filing states that compliance with this requirement is documented in Volume 1, Section 5. This was supplemented by a general discussion in Volume 1-S, Section 4.1, of strains that developments related to the critical uncertain factors might place on implementation of the preferred resource plan. The department respectfully submits that the text in this section falls short of the rule's requirement to document contingency plans for the critical uncertain factors identified by KCPL.

- Greenhouse gas regulation and CO2 price: Volume 1, page 32, cites four contingency options that would increase KCPL's ability to utilize wind and other renewable resources, nuclear generation and carbon sequestration in order to mitigate the risk associated with this critical uncertain factor. The department agrees that the contingency options would increase the utility's ability to respond quickly and appropriately to unexpected changes in greenhouse gas regulation. Volume 1-S, p. 27 indicates that the level of DSM implementation could be affected by CO_2 price, but provides no specific analysis.

- Coal price and natural gas price: KCPL points out that one of the four options (early development of wind) serves as a contingency option for dealing with commodity price risk. MDNR agrees that addition of wind serves as a contingency option by decreasing the utility's dependence on fossil fuels. However, in MDNR's view, there is not much evidence that KCPL attempted a systematic survey of possible contingency options for high commodity prices. Such a system review might have considered, for example, commodity purchasing and hedging policies that could offer a greater buffer against price increases. There is no discussion of possible impacts of coal price on the level of DSM implementation.
- Load growth: KCPL identifies no contingency options to deal with unexpectedly high or low levels of load growth.
- Allowance prices for other pollutants: KCPL identifies no contingency options to deal with unexpectedly high allowance prices for pollutants other than CO_2. Volume 1-S, p. 27 of the supplemental filing provides only a general description of the impact of this factor on the level of DSM implementation.
- Additional three critical uncertain factors: Volume 1-S, Section 4, of the supplemental filing provides several general comments on how variation in these factors might affect the level of DSM implementation and wind installations. This discussion tends to focus on cataloguing adverse

circumstances that might lead to a reduced commitment to DSM or renewable resources rather than on developing a cohesive plan of action.

- For all eight critical uncertain factors, KCPL fails to identify the "extreme outcomes" that would require the utility to develop or implement contingency options.

Remedy #29. The development of contingency options for all critical uncertain factors identified by KCPL should be completed prior to the completion of the SRS process. The results should be reported to stakeholders in the SRS process. Updated results should be included in KCPL's next IRP filing.

Deficiency #30. Failure to document monitoring and reporting processes for critical uncertain factors.

As part of its officially adopted resource acquisition strategy, the rule requires the utility to specify "a process for monitoring the critical uncertain factors on a continuous basis and report significant changes in a timely fashion to those managers or officers who have the authority to direct the implementation of contingency options when the specified limits for uncertain factors are exceeded."

KCPL states that compliance with this requirement is documented in Volume 1, Section 5. The department was able to identify only two statements that are even marginally relevant to this rule requirement. Volume 1, Section 5, states that "on-going planning will be required to monitor uncertainties and provide improvements to the plan as more is learned regarding key uncertainties…" KCPL's response to MDNR DR #41

states that "the Sustainable Resource Strategy (SRS) process…will include updates to major assumptions and further resource plan analysis." Neither the initial nor supplemental filing provides any documentation of the monitoring and reporting process as required by the rule.

Remedy #30. KCPL should develop and document the monitoring and reporting process required by the rule. The documentation provided to stakeholders should identify the data that is monitored, the names and positions of staff responsible for monitoring the data, and the names and positions of managers or officers who will receive data reports. This documentation should be provided to stakeholders prior to the completion of the SRS process. Updated results should be included in KCPL's next IRP filing.

Additional errors that should be corrected by filing an errata sheet are noted below. These errors were corrected in KCPL's supplemental filing but were not identified in the supplemental filing as being incorrect in the initial filing.

Volume 4, page 33, contains a reference to "100% biomass co-firing." Presumably KCPL intended to refer to 10% co-firing. Co-firing only takes place when the biomass content is less than 100 percent. The supplemental filing correctly refers to 10% biomass co-firing in its description of Plan 25 (Volume 1-S, p. 32). Even if KCPL considers that this error has been corrected in the supplemental filing, the original error should be included in an errata sheet.

Volume 6, Table 9 lists resource additions for Plan 25 that differ from the resource additions listed for Plan 25 in Volume 1, Table 7. As KCPL has noted in its response to MDNR DR #36, Plan 25 in Volume 6, Table 9, inadvertently left off the 10 percent

biomass option at Montrose that was modeled in Plan 25. This error was corrected by the above-referenced statement in Volume 1-S, p. 32.

WHEREFORE, MDNR submits its review of KCPL's Integrated Resource Plan filed August 5, 2008.

Respectfully submitted,

JEREMIAH W. (JAY) NIXON
Attorney General

/s/ Shelley A. Woods
Shelley A. Woods
Assistant Attorney General
P.O. Box 899
Jefferson City, Missouri 65102
Bar No. 33525
573-751-8795
573-751-8464 (fax)
shelley.woods@ago.mo.gov

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed, hand-delivered, transmitted by facsimile or e-mailed to all counsel of record this 8th day of January, 2009.

Lewis Mills
Office of Public Counsel
P.O. Box 2230, Suite 650
Jefferson City, Missouri 65102

Kevin Thompson
General Counsel
Missouri Public Service Commission
P.O. Box 2230
Jefferson City, Missouri 65102

Curtis D. Blanc
Kansas City Power & Light Company
1201 Walnut—20th Floor
Kansas City, Missouri 64106

Stuart Conrad
3100 Broadway, Suite 1209
Kansas City, MO 64111

/s/ Shelley A. Woods
Shelley A. Woods