

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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|---------------------------------------|---|-----------------------|
| In the Matter of the Resource Plan of |) | |
| KCP&L Greater Missouri Operations |) | File No. EO-2013-0538 |
| Company |) | |

COMMENTS OF SIERRA CLUB

Intervenor Sierra Club hereby submits these comments on KCP&L Greater Missouri Operations Company (“GMO”) 2013 Integrated Resource Plan (“IRP”) Annual Update Report. Although GMO did not make this filing during a triennial compliance year, because the Commission issued an order on December 19, 2012 in Case No. EO-2012-0324 that declined to approve GMO’s 2012 IRP and specifically directed the company to address all of the parties’ unresolved deficiencies and concerns in this year’s annual update filing, GMO’s 2013 IRP update filing effectively replaces the company’s 2012 IRP and must be judged by the standards that apply to triennial compliance filings.

GMO’s 2013 IRP analysis falls well short of those standards, for the reasons set forth below and in the attached technical memorandum from Synapse Energy Economics (“Attachment A”), which is incorporated herein by reference. First and foremost, GMO did not select as its preferred resource plan the least-cost plan that it modeled, and the company does not adequately describe and document its reasons for not doing so, as required by the IRP rules. Moreover, as described below and in Attachment A, GMO’s modeling results for its preferred Plan AICGA appear to reflect errors in how the company modeled its proposed conversion of the Lake Road plant to run solely on natural gas and fuel oil. Sierra Club also identifies below and

in Attachment A numerous other deficiencies and concerns with GMO's IRP analysis here, including the following:

- the company's choice of which plans to model;
- the company's failure to support its conclusion that its Sibley Station can comply with Mercury and Air Toxics Standards ("MATS") acid gas requirements using only low chlorine coal and without any additional fuel or operating costs;
- the company's failure to evaluate the vulnerability of its Sibley Station if the Cross-State Air Pollution Rule ("CSAPR") is reinstated;
- the company's assumptions about future carbon prices in light of the Obama Administration's intent to finalize regulation of greenhouse gases at existing power plants by 2015;
- the company's failure to report assumptions about revenue generated through off-system sales;
- the company's failure to evaluate the declining costs of wind resources; and
- unexplained discrepancies in the revenue requirements for combined vs. individual company plans.

Sierra Club respectfully requests that the Commission issue an order pursuant to 4 CSR 240-22.080(16) that establishes a procedural schedule for discovery and a hearing on the numerous deficiencies and concerns with GMO's 2013 IRP analysis that have been identified by Sierra Club and the other intervenors.

I. GMO Has Not Adequately Justified Selection of a Preferred Resource Plan that Is Not the Least-Cost Plan.

The primary deficiency in GMO's IRP update filing is that the company has failed to adequately justify selecting a preferred resource plan that does not "[u]se minimization of the

present worth of long-run utility costs as the primary selection criterion” 4 CSR 240-22.010(2)(B). The company identifies a desire to own its own capacity rather than purchase capacity on the market as justifying its decision to prefer Plan AICGA, in which the Lake Road plant would be converted to run solely on natural gas and fuel oil, over the least-cost plan that the company modeled, Plan AEFGA, which would retire the Lake Road plant (*see* GMO 2013 IRP Update at 11), despite the fact that there is an approximately \$13 million NPVRR benefit to ratepayers from the lower-cost plan. (*Compare* GMO 2013 IRP Update at 63 *with* Appendix F.)

There are two main problems with the company’s decision here. First, GMO’s explanation falls short of the standard in the IRP rules that “the utility shall describe and document the process and rationale used by decision-makers to assess the tradeoffs and determine the appropriate balance between minimization of expected utility costs and these other considerations in selecting the preferred resource plan and developing the resource acquisition strategy.” 4 CSR 240-22.010(2)(C). GMO’s desire to own its own capacity benefits GMO’s shareholders, but it does not benefit ratepayers if that capacity has a higher revenue requirement than market purchases. GMO’s invocation of the risk of rising market prices is similarly unpersuasive. There is always a risk that market prices will be higher than a company’s projections; there is also a risk that they will be lower than the company’s projections. GMO here has done nothing to describe and document why hedging against the risk of rising prices justifies choosing a resource plan that its modeling shows will be more expensive for ratepayers. At a minimum, GMO should have provided specific evidence to justify its apparent position that market prices are more likely to be higher than its modeling projects than lower, but the company did not do so here. GMO’s failure to describe and document its evaluation of these

tradeoffs renders its selection of Plan AICGA over Plan AEFGA deficient under 4 CSR 240-22.010(2)(C).

The second problem with GMO's selection of Plan AICGA is that an evaluation of GMO's modeling results appears to indicate that the Lake Road plant is projected to operate at an unexpectedly higher capacity factor over the planning period than would be expected from a peaking resource that has a poor heat rate and high dispatch cost relative to other generating units. (Attachment A at 17-19.) Given these economic realities, GMO's modeling results under Plan AICGA showing capacity factors for Lake Road of between ** _____ ** over the planning period simply do not make sense and raise a concern that the company made errors in modeling the Lake Road plant's proposed fuel conversion. (Attachment A at 17-19.) Because Sierra Club has not been provided GMO's modeling input files, it is impossible for our experts to evaluate this issue independently. But if the modeling results for GMO's preferred resource plan do in fact contain such a significant error, that would call into question not only GMO's selection of Plan AICGA, but all of the company's modeling results in this proceeding.

II. There Are Numerous Issues on Which Discovery and a Hearing Are Needed To Evaluate the Adequacy of GMO's IRP Update.

The deficiencies and concerns identified above with GMO's selection of Plan AICGA over Plan AEFGA as its preferred resource plan highlights the lack of information provided by GMO in support of its IRP analysis here. In light of the significant gaps in the record created to date relating to the "tradeoffs and . . . appropriate balance between minimization of expected utility costs and . . . other considerations in selecting the preferred resource plan and developing the resource acquisition strategy," 4 CSR 240-22.010(2)(C), additional fact finding by the Commission is needed to ensure that GMO's IRP analysis adequately conforms to the requirements in 4 CSR 240-22. *See* 4 CSR 240-22.080(16). The Commission should issue an

order pursuant to 4 CSR 240-22.080(16) that establishes a procedural schedule for discovery and a hearing on the numerous deficiencies and concerns with GMO's IRP analysis that have been identified by Sierra Club and the other intervenors.

In addition to the above deficiencies and concerns that directly relate to GMO's decision to select Plan AICGA over Plan AEFGA, Sierra Club has identified a number of other deficiencies and concerns with GMO's IRP analysis, on which further fact-finding is needed:

- **Choice of Which Plans to Model:** In evaluating GMO's IRP analysis, Synapse has identified a number of alternative resource plans that were not modeled by GMO but may result in a lower NPVRR than either the company's preferred Plan AICGA or the least-cost plan that the company did model, Plan AEFGA. (*See* Attachment A at 20-23.) In particular, these potential alternative resource plans evaluate additional scenarios for the possible retirement of Sibley Unit 3, which GMO acknowledges "would be the next retirement unit" after the company retires Sibley Units 1 and 2 and either retires Lake Road or converts it to burn solely natural gas and fuel oil (*see* GMO IRP Update at 115).
- **Ability of Sibley to Comply with MATS Acid Gas Requirements Using Only Low-Chlorine Coal:** GMO assumes that it can comply with the MATS rule at Sibley with approximately **_____** in capital expenditures by 2016 to install an Activated Carbon Injection system and upgrade the plant's Electro-Static Precipitators. (GMO 2013 IRP Update at 124.) These new controls are required to comply with the MATS rule's mercury and particulate matter limits. (GMO 2013 IRP Update at 114.) With respect to separate MATS requirements to reduce acid gas emissions, the company states that it will use "low-chlorine coal" as a compliance option. (*Id.*)

The Burns & McDonnell “MEGA Study” includes no analysis of the use of low-chlorine coal to comply with MATS acid gas requirements at Sibley Station, finding instead that GMO must perform stack testing to evaluate this at the plant. (Attachment A at 11-12.) GMO does not include any stack testing results in the IRP update filing and has not provided any stack testing results to Sierra Club to date, nor any other indication that the company has evaluated this issue separately from the Burns & McDonnell MEGA Study. Accordingly, GMO’s claim that it can comply with MATS acid gas requirements at Sibley without investing in additional environmental controls is wholly unsupported by the record.

This is an important issue because if it turns out that GMO is required under MATS to install additional controls such as a Dry Sorbent Injection system at the Sibley plant in order to continue operating, such a requirement would likely render Units 1 and 2 uneconomic, and possibly Unit 3 as well, and compel GMO to retire them by 2016 instead. GMO’s failure to present the Commission with any evidence that the “probable environmental costs” for continuing to operate the Sibley Station after 2016 do not include additional controls such as a Dry Sorbent Injection system to meet MATS acid gas requirements is inconsistent with the IRP rule requirement in 4 CSR 240-22.040(2)(B) that GMO “describe and document” this portion of its analysis.

Additionally, GMO appears to assume that relying on low-chlorine coal to comply with MATS acid gas requirements will result in no additional operating costs at the Sibley plant. (Attachment A at 12.) This assumption is equally unsupported by the record. As GMO is relying on a specific coal blend to meet regulatory requirements that are essential to its ability to operate the Sibley plant, the company will be highly

vulnerable to any price increases or lack of availability of the specific coal blend that it intends to rely upon. Nevertheless, GMO's variable operations and maintenance ("O&M") cost projections do not appear to have been impacted in any way by its decision to rely solely on a specific fuel blend. (Attachment A at 12.) GMO's failure to "describe and document" any analysis of this issue also renders its IRP analysis deficient under 4 CSR 240-22.040(2)(B).

Low-chlorine coal has also been documented to result in higher operating costs for Activated Carbon Injection systems. (Attachment A at 12.) GMO does not appear to have accounted for any additional O&M costs with respect to this issue either. This is yet another way in which GMO's IRP analysis is deficient under 4 CSR 240-22.040(2)(B).

- **Risks to Sibley if CSAPR is Reinstated:** GMO's preferred Plan AICGA is also highly vulnerable to the possible reinstatement of CSAPR, which is now being considered by the U.S. Supreme Court. (*See* Attachment A at 12; SCOTUSblog, *Environmental Protection Agency v. EME Homer City Generation*, Docket No. 12-1182, at <http://www.scotusblog.com/case-files/cases/environmental-protection-agency-v-eme-homer-city-generation/>.) Plan AICGA calls for GMO to install an Activated Carbon Injection system and upgrade Electro-Static Precipitators at all three Sibley units, but none of these retrofits would address sulfur dioxide ("SO₂") or nitrogen oxide ("NO_x") emissions that would be restricted under a reinstated CSAPR. (Attachment A at 12.) Moreover, unlike under current regulations, GMO would not be allowed to rely on banked emission allowances to aid in CSAPR compliance. (Attachment A at 12.) Thus, if CSAPR is reinstated, the market for SO₂ and NO_x allowances could increase substantially, making GMO's preferred Plan AICGA significantly more costly and

possibly requiring the company to install additional air pollution controls at Sibley.

(Attachment A at 12, 27.) GMO does not describe or document this risk at all in its 2013 IRP update.

- **Carbon Price Assumptions:** GMO assumes that any carbon price that results from EPA greenhouse gas regulations will not go into effect until ****_____****. (Attachment A at 4-5.) This assumption may no longer be reasonable in light of recent developments that confirm that the Obama Administration intends to finalize new Clean Air Act New Source Performance Standards for greenhouse gases in the next two years. (Attachment A at 4-6.)

On June 25, 2013, President Obama announced a comprehensive plan to cut the carbon pollution that causes climate change and endangers public health.¹ Noting that nearly 40 percent of this pollution is produced by the power sector, the President directed the EPA to revise its proposal for carbon pollution standards for new power plants by September 20, 2013, to issue proposed standards, regulations, or guidelines addressing carbon pollution from existing power plants by June 1, 2014, and to finalize those limits within a year.²

The President's announcement only confirmed and publicized a regulatory process that has been underway for years. In 2007, the Supreme Court held that carbon dioxide and other greenhouse gases are covered by the Clean Air Act's broad definition of "air pollutant" and that the EPA must decide whether greenhouse gases endanger

¹ The White House, Fact Sheet: President Obama's Climate Action Plan (June 25, 2013), *available at* <http://www.whitehouse.gov/the-press-office/2013/06/25/fact-sheet-president-obama-s-climate-action-plan>; Executive Office of the President, The President's Climate Action Plan (June 2013), *available at* <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>.

² *Id.*; The White House, Presidential Memorandum – Power Sector Carbon Pollution Standards (June 25, 2013), *available at* <http://www.whitehouse.gov/the-press-office/2013/06/25/presidential-memorandum-power-sector-carbon-pollution-standards>.

public health. *Massachusetts v. Env'tl. Prot. Agency*, 127 S. Ct. 1438, 1462–63 (2007).

After analyzing the available climate science, the EPA issued a formal finding that current and projected emissions of six greenhouse gases, including CO₂, threaten the public health and welfare of current and future generations.³ This finding has since been upheld by the U.S. Court of Appeals for the District of Columbia Circuit. *See Coal. for Responsible Regulation v. Env'tl. Prot. Agency*, 684 F.3d 102, 120–22 (D.C. Cir. 2012). That court also confirmed that the Clean Air Act requires the EPA to address greenhouse gas emissions under its stationary source permitting programs. *Id.* at 134–36. As confirmed by these decisions, Section 111 of the Clean Air Act requires the EPA to issue performance standards for air pollutants from both new and existing electric generating units. *See* 42 U.S.C. § 7411(b) & (d).⁴ While the precise details of these rules are still uncertain, it is clear that utilities will need to meet new regulatory requirements (and their associated costs) in the near future.

While GMO models three different carbon price scenarios in its 2013 IRP update, none of the scenarios would establish a carbon price prior to ** ____ **. (Attachment A at 4-5.) GMO does not provide any explanation in the IRP update as to why the carbon prices it modeled are likely to reflect what EPA regulations, which could be finalized as early as 2015, are likely to require. GMO's failure to anticipate the "probable environmental costs" of this imminent regulation and "describe and document" its

³ U.S. EPA, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009).

⁴ 42 U.S.C. § 7411(d) provides that the EPA Administrator "shall prescribe regulations which shall establish a procedure" for states to submit proposed "standards of performance for any existing source for any air pollutant," such as CO₂, "for which air quality criteria have not been issued" but for which new source performance standards have been established. Then-Acting EPA Administrator Robert Perciasepe recently stated that he expects that the Agency will develop these standards of performance for carbon dioxide emissions from existing power plants during fiscal year 2014. Jean Chemnick, "EPA official: Carbon rules for existing power plants 'on the table' in 2014," *Environment & Energy Daily* (Apr. 12, 2013), available at <http://www.midwestenergynews.com/2013/04/12/epa-official-carbon-rules-for-existing-power-plants-on-the-table-in-2014/>.

analysis of those costs, in particular as they might apply to the Sibley plant, renders its IRP update deficient under 4 CSR 240-22.040(2)(B). (*See* Attachment A at 28-29.)

Furthermore, GMO's assumption that there is a **** __**** percent chance that there will be a carbon price of **** ____**** in its "low CO2" scenario needs to be re-evaluated in light of EPA's forthcoming regulations, as do GMO's assumptions in its "mid" and "high" price scenarios. (Attachment A at 4-6, 29.)

- Reporting of Off-System Sales:** As with KCP&L's IRP analysis, one major deficiency with GMO's analysis is that the amount of off-system sales revenue that was assumed to be generated under each resource plan was not tracked or reported, nor were the assumptions used in the modeling as to how that revenue would be counted toward calculating the NPVRR of alternative resource plans (and thus how this revenue would be allocated between ratepayers and company shareholders). (*See* Comments of Sierra Club on KCP&L IRP, Dkt. No. 29, Case No. EO-2012-0323, at 10-11 (Sept. 6, 2012).) In the 2013 IRP update and supporting materials, GMO does not provide any information regarding its off-system sales. As Sierra Club pointed out in its comments on last year's KCP&L IRP, "[a]n assumption that [. . .] Aging Coal Units should be retrofit in part because the excess energy they generate can be sold into the market at a profit represents a significant gamble. At a minimum, such gamble should be carefully explained and evaluated in an open and transparent way, not simply baked into complex modeling analyses." (Comments of Sierra Club, Dkt. No. 29, Case No. EO-2012-0323, at 10-11 (Sept. 6, 2012).) This is especially true in light of the fact that GMO has experienced declining off-system sales in recent years due to the company's coal-fired generating units being less competitive in changing wholesale energy markets. (Attachment A at

15.) GMO should be required to quantify the extent to which different alternative resource plans rely on assumptions about their ability to generate off-system sales revenue, as well as to explain those assumptions transparently, so that the Commission and stakeholders can readily evaluate the risk posed to the company’s resource plans from changes to wholesale electricity markets that may cause GMO’s coal-fired generating units to become less competitive.⁵

- **Accuracy of Assumed Cost of Wind Resources:** GMO does not appear to have fairly evaluated wind resources in its modeling. (*See* Attachment A at 16.) In particular, the company assumed “all-in” cost for wind of \$**__** per MWh is significantly higher than a number of recent reports from the U.S. Department of Energy’s Lawrence Berkeley National Laboratory documenting significantly lower prices for wind power purchase agreements (“PPAs”) – as low as \$31 per MWh. (*See* Attachment A at 16.) Moreover, GMO’s assumptions about wind costs over the study period do not take into account that wind costs have increasingly dropped year-on-year over time and are projected to continue doing so as the downward trend of capital and O&M costs for wind farm construction and operation continues. (*See* Attachment A at 16.) Pursuant to 4 CSR 240-22.040(1), GMO was required to “collect generic cost and performance information sufficient to fairly analyze and compare” wind resources to other supply-side alternatives, but there is no indication that the company evaluated this information about the increasing competitiveness of wind resources.

- **Unexplained Discrepancies between Combined and Individual Company Plans:**

Table 39 of the GMO 2013 IRP update provides the “Combined Company Total Revenue

⁵ Sierra Club sent a letter to KCP&L on August 9, 2013 requesting that additional information concerning the companies’ assumptions about off-system sales be provided to stakeholders before the comment deadline, but KCP&L never responded to the letter. (*See* Attachment B.)

Requirement” for five combined company alternative resource plans. (GMO 2013 IRP Update at 74.) For reasons completely unexplained in the IRP update, each of the combined company plans has greater revenue requirements than the sum of the two individual company plans that comprise them. (Attachment A at 25-27.) This is a fundamentally illogical result that appears to indicate an error in the companies’ resource planning. The purpose of reporting combined company resource plans is to pursue opportunities for co-optimization of those plans; the combined plans should never be more expensive than the sum of the individual plans, only the opposite. (Attachment A at 25-27.) This apparent error calls into question the accuracy of all of the companies’ IRP modeling.⁶

Each of the issues identified above requires additional fact-finding by the Commission in order to ensure that GMO’s IRP analysis adequately conforms to the requirements in 4 CSR 240-22. *See* 4 CSR 240-22.080(16). Through discovery and a hearing, the Commission and parties will have an opportunity to fully evaluate the numerous unresolved deficiencies and concerns – not to mention the numerous unanswered factual questions due to significant information gaps in the record – in order to ensure that GMO is appropriately following all of the requirements of 4 CSR 240-22 in conducting its resource planning.

III. Conclusion

For the reasons set forth above, Sierra Club respectfully requests that the Commission issue an order pursuant to 4 CSR 240-22.080(16) that establishes a procedural schedule for discovery and a hearing on the numerous deficiencies and concerns with GMO’s 2013 IRP analysis identified by Sierra Club and the other intervenors.

⁶ Sierra Club sent a letter to KCP&L on August 9, 2013 requesting that a clarification of this apparent discrepancy between the combined and individual company plans be provided to stakeholders before the comment deadline, but KCP&L never responded to the letter. (*See* Attachment B.)

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct PDF version of the foregoing was filed on EFIS
and sent by email on this 21st day of August, 2013, to all counsel of record.

/s/ Thomas Cmar
Thomas Cmar

Attachment A

Confidential Memorandum

TO: THOMAS CMAR, EARTHJUSTICE

FROM: DR. TOMMY VITOLO, PATRICK LUCKOW, JOSEPH DANIEL, SYNAPSE ENERGY ECONOMICS

DATE: AUGUST 21, 2013

RE: COMMENTS REGARDING THE MISSOURI 2013 IRP UPDATES OF KCP&L AND GMO

Introduction

The Kansas City Power & Light Company (KCP&L) and the KCP&L Greater Missouri Operations Company (GMO) are two distinct electric utility companies in the eyes of the Missouri Public Service Commission, though they are jointly owned by Great Plains Energy. Each have filed stand-alone updates to their respective Missouri 2012 integrated resource plans (IRPs).^{1,2} Each IRP update contains an overview of the 2012 and 2013 Preferred Plans, and each IRP update highlights both changes in model inputs and changes to the model formulation itself. Furthermore, both the KCP&L 2013 IRP Update and the GMO 2013 IRP Update contain identical combined-company resource plans. Both IRP updates detail alleged deficiencies and concerns raised by intervenors in the corresponding 2012 IRP case, and both contain the company's response to the alleged deficiency or concern.

Synapse Energy Economics, Inc. (Synapse) has reviewed the 2013 IRP updates, corresponding work papers, and related documents. Our analysis has raised a number of concerns about the KCP&L and GMO 2013 IRP updates, which we detail below. Regarding model inputs, we express concern about low CO₂ prices, faulty DSM planning, the risks associated with retrofits to achieve environmental compliance, dramatically reduced revenues from off-system sales, and poor assumptions about wind cost and construction. With respect to the modeling process, we detail KCP&L and GMO's failure to model all potential least-cost plans, failure to include plans identified as least-cost within the update document itself, and KCP&L and GMO's insufficient justification for choosing a plan known to be more expensive than the least-cost plan. We also identify a flaw in the company-wide computations, which suggest the NPVRR calculations may be incorrect throughout both companies' studies. Finally, we describe how those problems impact KCP&L's and GMO's plans for specific generating units.

¹ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013.

² KCP&L Greater Missouri Operations Company (GMO), "Integrated Resource Plan 2013 Annual Update." June 2013.

Model Inputs

Commodities Forecasts

Gas

KCP&L's and GMO's natural gas futures are based on forecasts from the Energy Information Administration (EIA), CERA/Global Insight, PIRA Energy Group, and Energy Ventures Analysis.³ In this update, the companies did not indicate that they factored NYMEX futures prices into the forecasts. Using NYMEX futures as the primary indicator for the first few years of a study period, rather than an aggregation of independent forecasts, is a widely accepted approach for developing the short-term component of a long-term gas production price forecast. The companies' gas forecast should rely heavily on NYMEX futures for the first few years.

Figure 1: Natural Gas Projections



Figure 1 plots KCP&L's and GMO's high, middle, and low projections for the price of natural gas, as well as EIA's Annual Energy Outlook (AEO) 2013 price projection for natural gas at Henry Hub and for the electric utilities in the Southwest Power Pool North (SPNO) Electricity Market Module (EMM) region.⁴ While the companies' middle gas price projection closely tracks NYMEX, the high forecast is considerably higher than NYMEX in the 2013-2016 timeframe, and the low projection is considerably lower. While EIA expects the Henry Hub price to decline and the SPNO price to remain steady through 2015,

³ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013.

⁴ U.S. Energy Information Administration, "Annual Energy Outlook 2013." Available at: <http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2012&subject=8-AEO2012&table=13-AEO2012®ion=0-0&cases=ref2012-d020112c>.

KCP&L/GMO's projections show the company expects the price to have a relatively steady price escalation over the next two decades. After 2016, the AEO price projections and the KCP&L/GMO middle price projection follow similar trajectories. In 2032, the companies' middle projection is closer to AEO SPNO, despite KCP&L/GMO's 2013 price being closer to the 2013 AEO Henry Hub price. It appears that the KCP&L/GMO near-term forecasts have far too wide a range given the robustness of NYMEX futures.

Coal

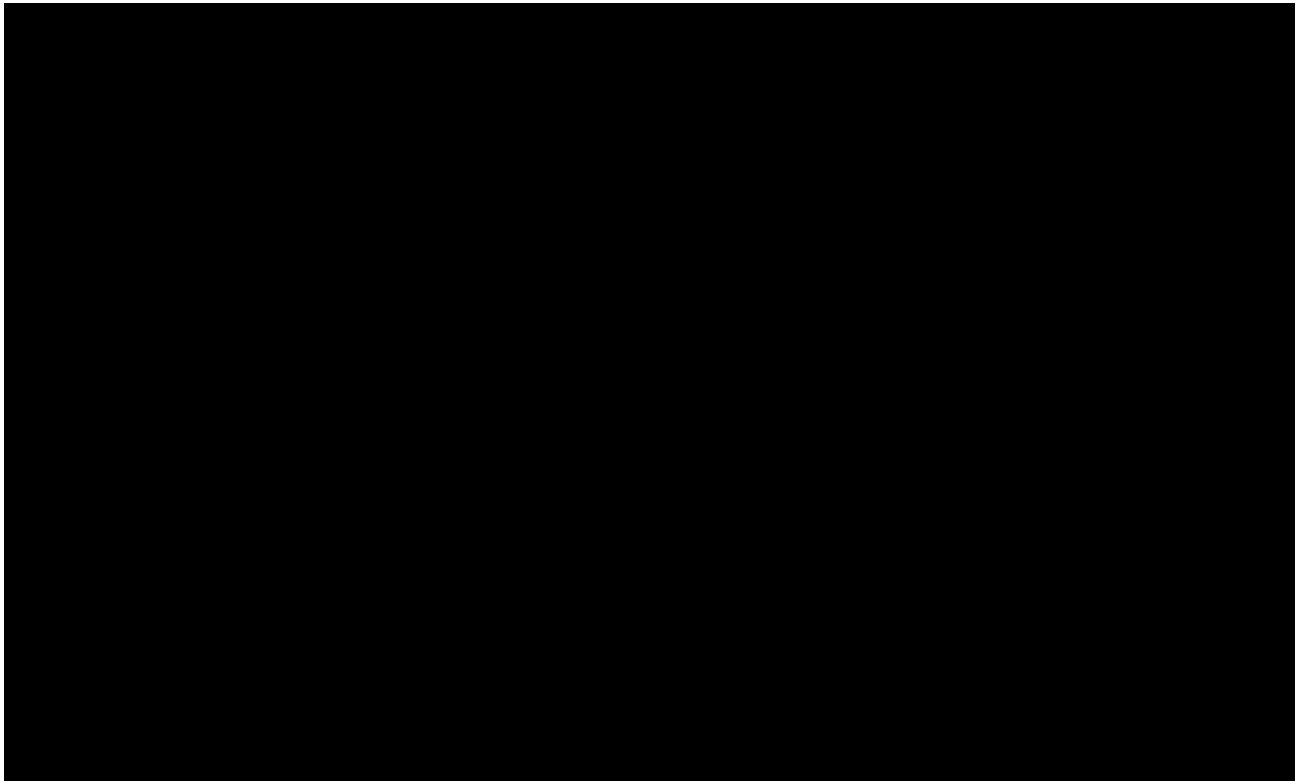
KCP&L and GMO state that their coal price projections reflect forecasts from EIA, Energy Ventures Analysis, JD Energy, SNL Financial, and Hanou Energy Consulting.⁵ Figure 2 plots all three of KCP&L/GMO's coal projections (high, middle, and low), along with the AEO price projections for the national average and SPNO.^{6,7} All of KCP&L/GMO's projections remain below the national average for delivered coal prices. Only the companies' high projection for coal prices is above average delivered coal prices for the SPNO region. KCP&L/GMO's low projection for coal prices in 2013 is **__** percent lower than its middle projection (**__** versus **__**) while the high projection for 2013 is more than **__** percent higher than its middle projection (**__** versus **__**).

Mine mouth prices have tended to be quite stable with a slight upward trend. Spot market coal prices have exhibited some volatility, but the majority of coal for electric generation is typically acquired under long-term contracts. Given this, it is odd that KCP&L and GMO project that much uncertainty in coal prices for the year 2013 and other near-term years. In the short run, KCP&L/GMO's high price projection shows an initial price decline; it is the only coal price projection that has year-on-year price decline. Qualitatively, the AEO national delivered coal price, the AEO SPNO regional delivered coal price, and KCP&L/GMO's middle coal price projection all have similar price escalations, though the companies' is slightly lower. In conclusion, the large spread both between high and medium projections and between medium and low projections in the short term raises concerns.

⁵ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013. Page 25.

⁶ U.S. Energy Information Administration, "Annual Energy Outlook 2013." Available at: <http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2013&subject=0-AEO2013&table=1-AEO2013®ion=0-0&cases=ref2013-d102312a>

⁷ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013. Page 25.



CO₂

Figure 3 plots KCP&L/GMO's high, middle, and low carbon price projections, along with Synapse's high, middle and low carbon price projections. Synapse's low projection has a carbon price of \$16.95 starting in 2020 and escalating to \$37.62 in 2032.⁸ KCP&L and GMO, on the other hand, use a ** _____ ** per ton CO₂ for the low carbon price forecast, which the companies' Monte Carlo analysis designates having a 25 percent probability of coming to fruition.⁹ This represents a prediction that there is a one-in-four chance that ** _____ ** (by way of tax, trading scheme, etc.) at either the state or federal level at any point between now and 2032. We believe this to be a rather poor assumption. President Obama announced his plan to cut emissions of carbon dioxide earlier this year.¹⁰ The White House specifically noted the power sector is responsible for nearly 40 percent of carbon pollution, and the President directed the EPA to revise its proposal for carbon pollution standards for new power plants, to issue proposed standards, regulations, or guidelines addressing carbon pollution at existing power

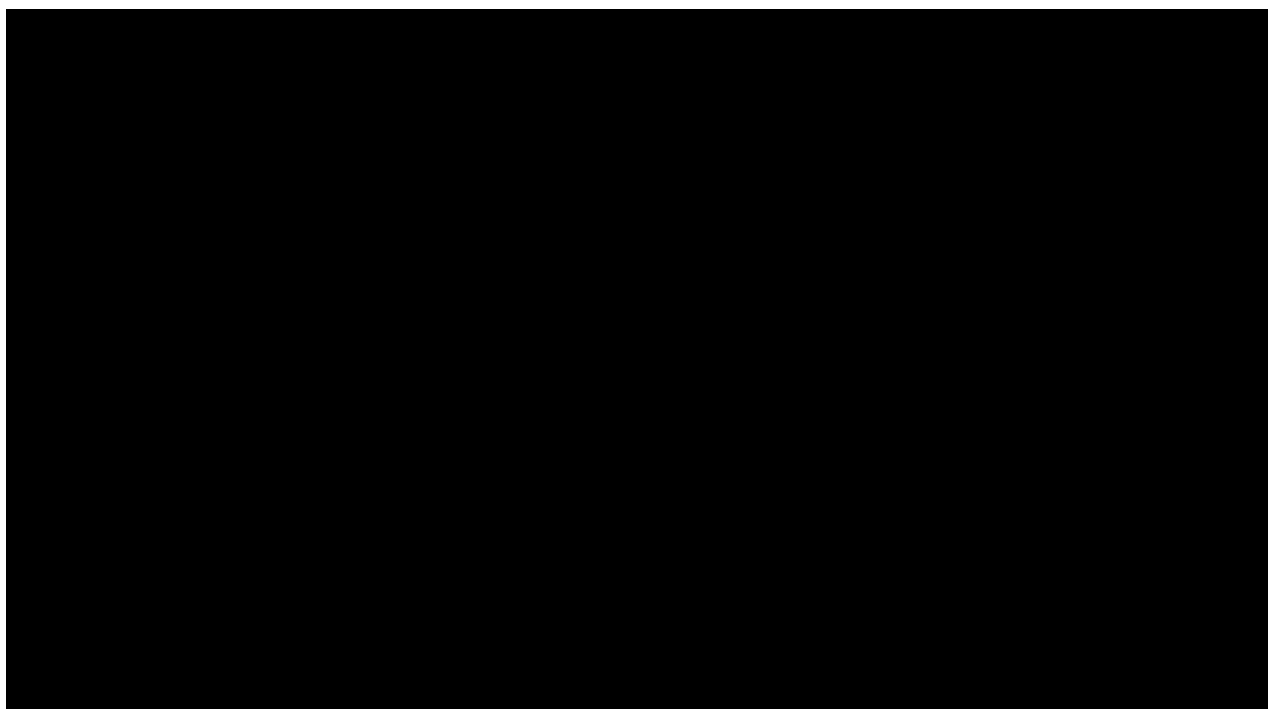
⁸ KCP&L reports all dollar figures in nominal values; Synapse adjusted real dollar results to allow for comparison. EIA's AEO 2013 inflation projections were used to calculate a compounded annual growth of 1.76 percent. This is used as the annual inflation rate for 2013 through 2032.

⁹ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013. Page 55.

¹⁰ The White House, "Fact Sheet: President Obama's Climate Action Plan." June 25, 2013. Available at: <http://www.whitehouse.gov/the-press-office/2013/06/25/fact-sheet-president-obama-s-climate-action-plan>. Executive Office of the President, "The President's Climate Action Plan." June 2013. Available at: <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>.

plants by June 1, 2014, and to finalize those standards within a year.¹¹ Given this announcement, KCP&L/GMO's assumption that there is a 25 percent chance of a carbon price of ** _____ ** (for the low projection) over the planning horizon appears to be an improper management of risk.

KCP&L/GMO's middle projection closely follows Synapse's low projection, though by 2032—the end of the study period—the companies' middle projection has a lower CO₂ price than Synapse's low projection of \$37.62. An unusual property of KCP&L/GMO's CO₂ projection is that it has consecutive years with a declining carbon price when reported in nominal dollars. This happens within two blocks of time for KCP&L/GMO's high projection, and for one block of time for the companies' middle projection.



KCP&L/GMO's results for carbon pricing call into question the methodology that was used to generate its forecasts. KCP&L and GMO state that their carbon price projections reflect forecasts from CERA/Global Insight, PIRA, Energy Ventures Analysis, Wood Mac (sic), JD Energy, and Synapse, but the companies have not provided any documentation or explanation of how its forecast was derived.¹² Moreover, the companies' assumption in their middle price forecast of a falling nominal price in some multi-year periods does not align with the dozens of proposals that have been suggested by utility owners or policymakers, nor does assigning a 25 percent chance of ** _____ ** carbon price at any time in the next 20 years. Given President Obama's direction to the EPA to complete regulations

¹¹ The White House, "Presidential Memorandum – Power Sector Carbon Pollution Standards." June 25, 2013. Available at: <http://www.whitehouse.gov/the-press-office/2013/06/25/presidential-memorandum-power-sector-carbon-pollution-standards>.

¹² Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013. Page 25.

of carbon dioxide emissions during his term in office, it would be wise and prudent for KCP&L and GMO to reconsider their high, middle, and low CO₂ forecasts.

Demand-Side Management

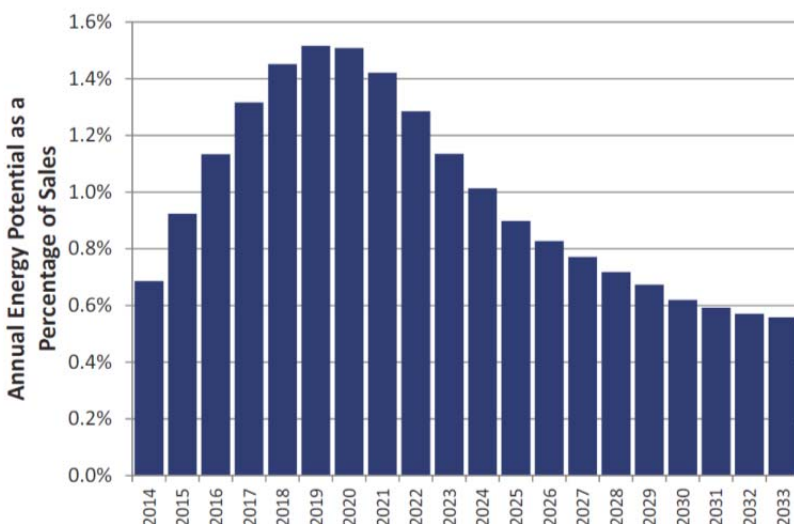
In developing demand-side management (DSM) forecasts for KCP&L and GMO, Navigant calculated the Realistic Achievable Potential (RAP) and Maximum Achievable Potential (MAP) in its Demand-Side Resource Potential Study Report.¹³ The key difference between these scenarios is the incentive level. MAP assumes incentives are set at 100 percent of the incremental cost for all measures. According to Navigant, this scenario will result in the most savings, but at a cost far exceeding most existing energy efficiency programs. The RAP scenario is more measure-specific and includes more realistic incentive level assumptions. Below a threshold of \$0.015 per kWh, incentives equal 100 percent of the incremental cost. Incentive levels decrease as costs increase beyond this threshold level. As a result, the RAP plan achieves savings at a much lower cost than MAP, and is the focus of this analysis. As a percent of baseline energy sales for GMO, MAP averages 1.65 percent per year over the first ten years, while RAP averages 1.3 percent per year over the first ten years. For KCP&L, MAP averages 1.6 percent per year over the first ten years, while RAP averages 1.19 percent per year over the first ten years. GMO has a somewhat more achievable savings potential as a result of its higher customer growth forecast.

Figure 4 reproduces the Navigant study's annual DSM energy potential for KCP&L's Missouri operations. Per the study, "potential ramps up over the first several years, peaks in about 2020, and tails off in the later years as the market for energy savings saturates and approaches its equilibrium value."¹⁴ According to Navigant, this tail remains positive for several reasons, including the addition of building stock and the rise of avoided costs, which make more measures economic. While the annual energy savings potential peaks and declines, the cumulative potential will continue to grow throughout the study period, provided that energy efficiency measures are replaced at the end of their useful life. The Navigant study's annual DSM energy potential for GMO reaches similar conclusions.

¹³ Navigant Consulting, Inc. "Demand-Side Resource Potential Study Report – Demand Response." Prepared for Kansas City Power and Light. Draft date: March 2013.

¹⁴ Ibid., page 46.

Figure 4: Annual RAP DSM potential for KCP&L, reproduced from Navigant DSM Study, page 50



In its Preferred Plan, KCP&L did not select the plan with the lowest NPVRR. Instead, it chose to use a modified energy efficiency plan based on reduced levels of DSM spending to reduce near-term rate impacts. The modified energy efficiency plan is referred to as MEEIA-RAP. In weighing the costs and benefits of MEEIA-RAP and RAP, KCP&L completed a rate impact analysis, provided in Appendix C of 2013 Annual Update Summary Report. This analysis factors in the addition program cost of the RAP plan, as well as reduced energy sales, concluding that RAP will result in an 8.3% rate increase, and MEEIA-RAP a 6.3% rate increase, this analysis ignores any difference in non-DSM related capital investment over the same period, such as the company's plan to install air pollution controls at its Montrose plant under the MEEIA-RAP scenario but not the RAP scenario.¹⁵ This unsophisticated method allows for an easy to follow comparison, but misses factors that a more detailed dispatch model might convey. Fortunately, KCP&L conducted modeling to this effect, and provided detailed results. In Table 1, we compare the modeled rate impacts associated with plan ADBKA (RAP DSM, Montrose 1,2 3 retire in 2016) to plan FDBKA (MEEIA-RAP DSM, Montrose 1,2,3 retire 2016).¹⁶ These values show the rate impacts directly associated with the DSM program alone, the only difference between these two plans. The rate impact is reduced from 2.00% to 0.48% when more detailed modeling is used. One factor contributing to this decrease in rate impact may be that with more DSM, KCP&L has more resources available to make wholesale sales after meeting their resale obligations.

¹⁵ Annual rates presented in Table 2 account for both changes in DSM and additional capital investments.

¹⁶ No modeling analyses was provided with RAP DSM and Montrose 1 retiring in 2016 and Montrose 2,3 retiring in 2021 (as in the preferred plan). This is the reason we completed the above analysis with M1,2,3 retiring in 2016.

Table 1: Rate increases for comparable RAP and MEEIA-RAP DSM plans, based on KCP&L modeling results

| | FDBKA | ADBKA | delta |
|-----------|-----------|--------|-------|
| DSM Level | MEEIA-RAP | RAP | |
| 2014 | | 0.91% | |
| 2015 | | 16.54% | |
| 2016 | | -3.51% | |
| 2017 | | 1.95% | |
| 2018 | | 1.57% | |
| 2019 | | 3.06% | |
| 2020 | | 8.82% | |

Thorough analysis makes it clear that the rate impact of DSM is not as dire as KCP&L has led implied in the IRP report. While near-term rate impacts are a relevant metric, the major figure of merit is NPVRR of each of the plans. Under the RAP DSM plan, total revenue requirements decrease \$75 million from the Preferred plan, \$20,797 million to \$20,722 million.¹⁷ The company is foregoing \$75 million in long-term savings in exchange for an additional \$13 million in near-term savings. While KCP&L does acknowledge in the IRP update that the Preferred Plan is not the lowest-cost plan, the company justifies the choice of MEEIA-RAP as the preferred DSM alternative purely on the basis that it reduces the rate impact over the next three years. No analysis is presented on the resulting rate impact over a longer period. In fact, by 2017 the cumulative rate impact is ** _____ ** for both plans. In 2020, the RAP plan has leveled annual rates of ** _____ ** per kWh, compared to ** _____ ** per kWh for the MEEIA-RAP plan—a savings of ** _ ** percent over the Preferred Plan.¹⁸ It appears that investing in DSM now will indeed have a rate impact, but will be smaller than KCP&L’s calculation in the IRP Summary Report, and mitigate the need for larger rate impacts down the road. These values are presented for the 2014 to 2020 period in Table 2 below.

¹⁷ This compares plan ADBKA (RAP DSM) to plan FDHKA (MEEIA-RAP DSM).

¹⁸ Annual rates presented in Table 2 account for both changes in DSM and additional capital investments

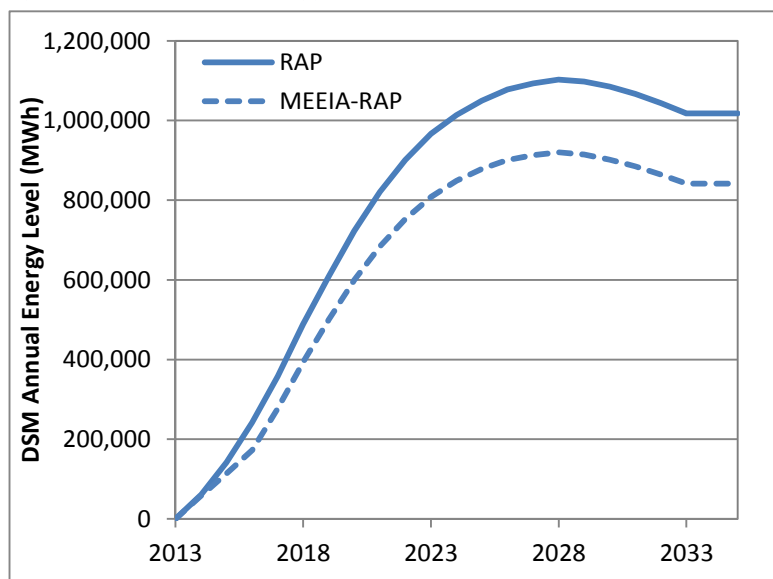
Table 2: Levelized annual rates (\$/kw-hr) for lowest-cost plans associated with MEEIA-RAP and RAP DSM levels

| | FDHKA | ADBKA |
|-----------|-----------|---------|
| DSM Level | MEEIA-RAP | RAP |
| 2014 | | \$0.096 |
| 2015 | | \$0.112 |
| 2016 | | \$0.108 |
| 2017 | | \$0.110 |
| 2018 | | \$0.112 |
| 2019 | | \$0.115 |
| 2020 | | \$0.125 |

In addition to rate impacts, another relevant metric when considering DSM programs is bill impacts. While commonly known as “ratepayers,” the customers are, in fact, *billpayers*. Has the company studied the impacts of various DSM levels on customer bills? While rates go up in both the MEEIA-RAP and RAP scenarios, the bill impact is likely to be less as a result of lower energy consumption.

KCP&L’s adjusted MEEIA-RAP forecast is compared to RAP in Figure 5. The reduced spending over a few early years cascades forward, resulting in substantially less cumulative DSM energy savings over the study period. This difference results in the substantial difference in costs and rates of the two plans discussed above.

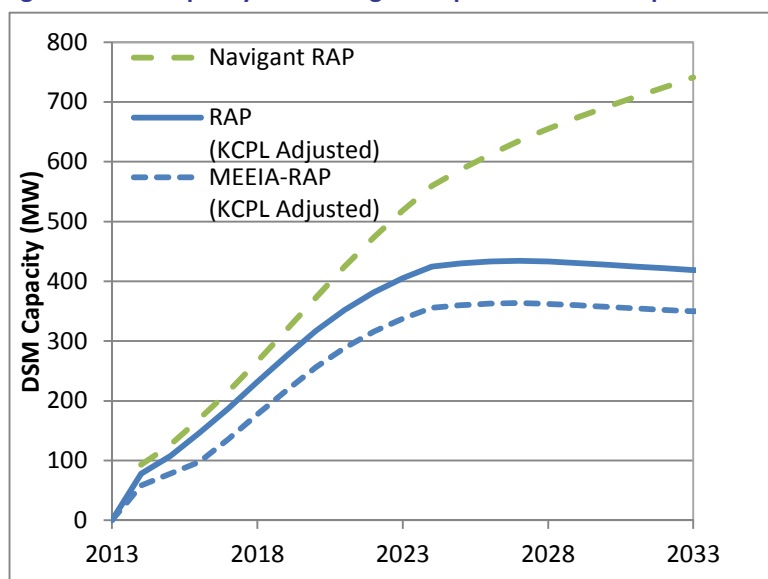
Figure 5: Annual DSM energy for RAP and MEEIA-RAP alternatives



KCP&L also adjusted the Navigant study downward based on the assumption that 15 percent of C&I customers will opt out of lower-cost DSM, as this is the percentage of GMO customers that have historically requested to opt out. This assumption is not adequately justified. Is the 15 percent opt-out for GMO based on a single year, or several? Perhaps the GMO DSM deployment did not include programs that were appealing to C&I customers, causing them to opt out, which the KCP&L program could improve on. In fact, data from EIA Form 861 indicates individual KCP&L industrial customers use substantially less energy than GMO customers—1,450 MWh per customer per year at KCP&L compared to 5,416 MWh per customer per year at GMO. This large difference in the average energy intensity of respective commercial and industrial customers suggests that using the same opt-out rate for both companies may not be a reasonable assumption.

In addition to being an essential low-cost energy resource, DSM also provides demand savings in the form of peak reductions. The cumulative demand savings potential from the Navigant study (Appendix L) grows every year, as shown in Figure 6, eventually rising to a total of 741 MW for KCP&L in the RAP scenario, including energy efficiency (EE), demand response (DR), and combined heat and power (CHP). KCP&L's Stakeholder Report (Appendix B) shows a peak DSM capacity of only 432 MW for the RAP scenario, and 363 MW for the MEEIA-RAP scenario. After the peak year in 2026, the capacity savings associated with DSM flattens and subsequently declines. It is unclear why this decline exists, given the Navigant study's finding of a steadily increasing potential out to 2033. While Navigant shows annual savings may decline as the market becomes more saturated (as indicated for energy in Figure 5), cumulative capacity should continue to increase.

Figure 6: DSM capacity from Navigant Report and KCP&L's plans



In calculating the rate impact comparison between the RAP and MEEIA-RAP plans, KCP&L had to make an assumption of fuel cost per MWh. This cost is used to calculate an aggregate average Gross Margin

Rate per MWh. This in turn is used to calculate the annual margin (in dollars) lost as a result of increased energy efficiency, of which KCP&L is allowed to recover 90 percent.¹⁹ We believe this margin should also include non-fuel variable costs of generation, as well as factor in any other future costs that may reduce the margin, such as emissions pricing, rising fuel prices, and costs associated with environmental retrofits.

Environmental Compliance

Compliance Timeline

KCP&L and GMO are planning for environmental retrofits at all of their existing coal units to meet near-term compliance requirements. This analysis will focus on the Montrose, LaCygne, Lake Road 4/6, and Sibley plants, representing 1,771 MW of coal capacity built between 1958 and 1977.

In order to comply with the EPA's Mercury and Air Toxics Standards (MATS) by April 2016, activated carbon injection (ACI) systems will be installed as relatively low capital cost measures to allow Montrose Units 2 & 3 to operate until retirement in 2021. The existing electrostatic precipitator (ESP) will be rebuilt at the same time. Sibley 1 & 2 will be similarly upgraded to allow for operation until retirement in 2019.

While the 2012 KCP&L IRP indicates the company had considered installing dry sorbent injection (DSI) systems to comply with MATS acid-gas requirements, KCP&L states in its IRP update filing that it plans to use low-chlorine coal to comply with the acid gas requirements of MATS.²⁰ The same is true for GMO.²¹ Many power plants use SO₂ as a proxy for hydrochloric acid (HCl); however, it appears KCP&L will measure HCl directly and use low-chlorine coal to reduce emissions. Neither the Burns & McDonnell MEGA study for Montrose nor for Sibley did shows MATS compliance with low-chlorine coal alone, despite KCP&L's contention that compliance with future environmental requirements is based on that study.²² Rather, the MEGA studies presuppose that Montrose and Sibley will be making the switch to low-chlorine Powder River Basin (PRB) coal, stating that "the design basis coal is 100% PRB with a 50% Antelope mine / 50% Caballo mine blend, defined in KCP&L's forecast of future fuel usage."²³

Furthermore, assuming switching to PRB will make the facility "natively" compliant is not supported by the MEGA study. Table 2.3 (on pages 2-6) estimates the HCl emissions limit under MATS as 0.0020 pounds per MMBtu, while Table 2.4 (on pages 2-7) describes the estimated chloride content for PRB coal as 0.012 pounds per MMBtu. Burns and McDonnell go on to suggest that "while DSI has the ability to significantly reduce acid gases, the alkalinity of Powder River Basin (PRB) fly ash can also significantly

¹⁹ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update Summary Report." June 2013. Appendix C.

²⁰ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013. Page 119.

²¹ KCP&L Greater Missouri Operations Company (GMO), "Integrated Resource Plan 2013 Annual Update." June 2013. Page 114.

²² Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013. Page 137.

²³ Burns & McDonnell, "Multi-Station Environmental and Generation Assessment (MEGA) Study: Results for Montrose Generating Station". March 2013. Page 3-1.

reduce HCl emissions. Consequently, many utilities that burn PRB have found their units to be ‘natively’ compliant with the MATS HCl limit. For this reason, it is suggested that KCP&L perform stack testing to confirm whether the Montrose units are natively compliant or require DSI to meet the MATS HCl limit as assumed herein.” The MEGA study suggests that the Montrose and Sibley stations may need dry sorbent injection systems in addition to low-chlorine coal; stack tests will be necessary before a final conclusion can be made.

Switching to low-chlorine coal to comply with MATS will affect the company’s fuel supply arrangements and costs in at least two ways: its current contracts for coal supply, and any future contracts it may procure for low-chlorine coal. KCP&L does not address if any current long-term coal supply contracts can be adjusted to provide low-chlorine coal, nor if there are any one-time associated costs or savings therein. Furthermore, KCP&L does not detail how low-chlorine coal price projections will differ from its current coal price projections. The Retrofit Variable O&M Estimates tables in the 2013 IRP Updates do not appear to reflect any variable O&M impacts from fuel supply that would result from changing coal supply sources in 2016.^{24,25}

Low-chlorine coal has also been shown to reduce the efficacy of untreated activated carbon injection in mercury removal.²⁶ This finding may imply a higher activated carbon injection rate for the same level of mercury removal, or higher costs for activated carbon. It is unclear whether KCP&L has accounted for this effect and its resulting impact on the variable operating costs at Montrose and Sibley.

In addition to MATS compliance, compliance with a reinstated version of EPA’s Cross-State Air Pollution Rule (CSAPR) also presents substantial risks for the company. Compliance with the Clean Air Interstate Rule (CAIR), the regulation in effect in the absence of CSAPR, could reasonably be achieved with banked SO₂ allowances, assuming KCP&L was able to bank substantial quantities in the last few years, given lower-than-expected loads. The Supreme Court is now considering CSAPR, which did not allow the use of banked SO₂ allowances, and could reinstate it.²⁷ The proposed retrofits to Sibley and Montrose would mitigate mercury and HCl, but do nothing to address SO₂ emissions. The 2013 IRP Update states that CSAPR compliance would be achieved primarily through “generation planning and allowance trading” and “anticipated control additions or generation planning associated with compliance with other rules (MATS, SO₂ NAAQS, etc) will also assist in compliance.”²⁸ Control additions planned for Montrose 2 & 3 and Sibley 1 & 2 would not address the SO₂ requirements of CSAPR. A dependence on allowance trading leaves KCP&L vulnerable to very high market prices for allowances, particularly if other utilities implement similar compliance strategies.

²⁴ Kansas City Power & Light Company, “Integrated Resource Plan 2013 Annual Update.” June 2013. Page 130.

²⁵ KCP&L Greater Missouri Operations Company (GMO), “Integrated Resource Plan 2013 Annual Update.” June 2013. Page 125.

²⁶ Machalek T et al. “Full-Scale Activated Carbon Injection for Mercury Control in Flue Gas Derived from North Dakota Lignite.” Combined Power Plant Air Pollutant Control Meg Symposium. 2004. Available at: http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/control-tech/pubs/MEGA_41989_stanton.pdf.

²⁷ Tejinder Singh, “More on today’s orders: Good news for the EPA,” SCOTUSblog. June 24, 2013, 5:51 PM. Available at: <http://www.scotusblog.com/2013/06/more-on-todays-orders-good-news-for-the-epa/>.

²⁸ KCP&L Greater Missouri Operations Company (GMO), “Integrated Resource Plan 2013 Annual Update.” June 2013. Page 123.



The units remaining after the initial wave of retirements face significant expenses related to Particulate Matter and SO₂ National Ambient Air Quality Standards (NAAQS), Clean Water Act 316(a) & 316(b), Effluent, and Coal Combustion Residuals (CCR). These policies were primary drivers in the decision to retire Sibley 1 & 2 and Montrose 1, 2, & 3, and to convert Lake Road 4/6.

In 2019, compliance with Clean Water Act 316(a) and 316(b) will necessitate the installation of cooling towers at Sibley, Lake Road 4/6, Iatan, and Hawthorn. In 2023, cooling towers will be installed at LaCygne, although the LaCygne MEGA study assumed a 2021 compliance date.²⁹ KCP&L failed to explain the discrepancy between the LaCygne MEGA study and its own assumptions in the IRP update.

There is uncertainty regarding the required compliance dates for Effluent and CCR evident in the 2013 KCP&L IRP Update itself. Table 64 of the update lists the expected compliance year as 2019, while the text on page 103 as well as the final plan indicates the company assumed the compliance year to be 2021. A final rule is expected in the first half of 2014; as currently proposed, the rule would require compliance with new Clean Water Act “Best Available Technology” treatment requirements for waste streams such as scrubber wastewater and coal ash transport water at a plant’s first permit renewal after July 2017.³⁰ EPA has considered providing some flexibility in compliance dates, allowing plants until up to July 2022 in exchange for implementing technologies and/or processes that achieve protections beyond that of the base rule.^{31,32} Page 103 of the IRP notes that the retirement date “could be delayed depending on future environmental regulations,” but KCP&L should also consider that planned retirement dates may be accelerated if new regulations come into effect in advance of its planning.

Finally, in 2023 more stringent PM and SO₂ National Ambient Air Quality Standards (NAAQS) will require the installation of a baghouse at Sibley 3.

Like many utilities, KCP&L and GMO face substantial environmental compliance obligations related to a number of pollutants and a number of different generating units. KCP&L and GMO must ensure that all upcoming regulations are modeled, incorporating all future costs, in order to adequately plan appropriate resource allocation.

Capital Costs

Non-environmental costs over the 2018-2020 period total ** _____ ** at Montrose station. KCP&L refers to these expenditures as part of its Life Assessment and Management Program (LAMP).³³ It is

²⁹ Burns & McDonnell, “Multi-Station Environmental and Generation Assessment (MEGA) Study: Results for La Cygne Generating Station.” March 2013. Page 1-3.

³⁰ Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 78 Fed. Reg. 34,432, 34,462 (June 7, 2013).

³¹ 78 Fed. Reg. at 34,467.

³² Rubrecht, Gale Lee. “EPA Favors Non-hazardous Management of Coal Combustion Residuals.” Jackson Kelly PLLC Energy & Environment Monitor. Aug 2, 2013. Available at: <http://eem.jacksonkelly.com/2013/08/epa-recently-provided-its-current-thinking-on-its-coal-combustion-residuals-ccrs-final-rule-that-is-not-expected-unti.html>.

³³ Non-environmental capital plans were not provided for years before 2018. This number may be higher than \$41 million if KCP&L intends for upgrades and maintenance in these earlier years.

unclear whether any of these expenses at Montrose or any other unit can be avoided in plans where those units will retire shortly, and KCP&L did not demonstrate an attempt to avoid capital expenditures for soon-to-be-retired units in its LAMP reporting. Furthermore, no projected LAMP expenditures before 2016 are provided in the update documents. For units retiring in 2016, it is important to know if these expenditures exist and could be avoided knowing retirement will follow very shortly.

Capital costs for environmental retrofits are summarized in Table 3, based on Table 65 of the GMO 2013 IRP Update and Table 68 of the KCP&L 2013 IRP Update.

Table 3: KCP&L/GMO environmental retrofit capital cost summary (\$M) (R indicates retired before compliance required)

| | Sibley 1 | Sibley 2 | Sibley 3 | LaCygne 1 & 2 | Montrose 2 | Montrose 3 | Hawthorn | Iatan 1 |
|--|-------------|-------------|-------------|------------------|---------------|---------------|----------|---------|
| MATS/ACI | | | | | | | | |
| MATS/ESP | | | | | | | | |
| PM&SO ₂ / Scrubber/ Baghouse | | | | | | | | |
| 316(b) Fish Screens | | | | | | | | |
| CCR Landfill | | | | | | | | |
| 316(a) Cooling Tower | | | | | | | | |
| CCR Dry Ash Handling | | | | | | | | |

While the Montrose MEGA study suggests a much higher cost for the ESP rebuild in particular (at a combined cost of \$65.6 million for Montrose 2 & 3), KCP&L projects upgrades to Montrose 2 & 3 to only cost ** ____ **. This substantial difference in estimated cost is not explained.

Clean Water Act (CWA) compliance will necessitate the addition of cooling towers at Sibley at an expense of ** ____ **. KCP&L's share of cooling towers at LaCygne 1 & 2 will be ** ____ **.

GMO's Preferred Plan on Figure 5 of its 2013 IRP Update indicates Lake Road 4/6 will also need cooling towers, the cost of which is not provided.³⁴

KCP&L and GMO face tremendous costs if each company is to retrofit units for compliance purposes. There are a number of discrepancies between the companies' projected costs and the MEGA studies. These costs must be well understood and modeled appropriately, and it is not apparent that either company has achieved that.

³⁴ KCP&L Greater Missouri Operations Company (GMO), "Integrated Resource Plan 2013 Annual Update." June 2013. Page 7.

Off-System Sales

KCP&L may sell excess generation from its power plants in the wholesale market to generate additional sales. The only mention of off-system sales in the 2013 IRP Update is KCP&L's response to our original comment, noting that "to the extent that KCP&L resources are available to make wholesales sales after all retail obligations are met, plan results include such sales."³⁵ Neither KCP&L nor GMO provided any details regarding how revenue from off-system sales is divided between the ratepayers and the shareholders. The companies also omitted how the sales revenue is modeled when calculating NPVRR. The ability to make such sales, and the revenue they generate, is dependent on historically volatile market prices. To the extent that Montrose 2 & 3 and Sibley 1 & 2 rely on these sales to justify their continued operation between now and their 2021 and 2019 retirement dates, this presents an additional risk to the company and its ratepayers. Furthermore, the off-system sales revenue must be appropriately shared with the ratepayers who are financing the environmental retrofits detailed in the 2013 IRP updates, and only the ratepayer benefit should appear in the NPVRR analysis.

KCP&L is a member of the Southwest Power Pool (SPP) regional transmission organization. When KCP&L sells power into the market (in the absence of bilateral contracts), it sells into the SPP market. Annual average day ahead on-peak prices in SPP have been steadily trending downward over the past five years. This is a result of declining natural gas prices, increased wind generation, and lower regional loads, which are still well below the 2008 peak. While these prices will almost certainly increase in the future, this trend lends substantial uncertainty to the revenue KCP&L can expect from off-system sales.

Table 4: Annual average day ahead on-peak prices in SPP (\$/MWh)³⁶

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|----------------|---------|---------|---------|---------|---------|
| Price (\$/MWh) | \$68.77 | \$32.94 | \$38.71 | \$36.41 | \$28.76 |

According to the direct testimony of KCP&L witness Terry Bassham (page 7, lines 2-6) in KCP&L's 2012 rate case (Case No. ER-2012-0174), declining revenue from off-system sales was one of the primary reasons for KCP&L's 2012 rate increase request:

"Changes in the wholesale energy market including a challenging economy and low natural gas prices, have significantly impacted KCP&L's ability to sell power outside its service territory. In addition to a reduction in off-system sales margins, in recent months KCP&L has also lost several long term wholesale contracts once they expired."

At the same time as benefits from off-system sales are declining, those declining market prices also mean that the cost for purchasing power to replace capacity from retiring Sibley and Montrose earlier than 2019 will decline, making market purchases a more attractive option and relying on off-system sales revenue a riskier position for the company and the ratepayers.

³⁵ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013. Page 144.

³⁶ FERC. "Southwest Power Pool Electric Market: Overview and Focal Points." July 2013. Available at: <http://www.ferc.gov/market-oversight/mkt-electric/spp/2013/07-2013-elec-spp-archive.pdf>.

Wind Generation Resource Planning

Wind generation contributes to a variety of important planning metrics, including capacity, energy, risk reduction, and RPS compliance. The capacity credit for wind in SPP is 8.15 percent,³⁷ and capacity factors are on the order of 38 percent.³⁸ Because wind doesn't require the purchasing of fuel, incorporating wind in a generating portfolio reduces risk by limiting the ratepayers' exposure to swings in fuel prices. Wind power also generates the renewable energy credits (RECs) necessary to comply with both the Kansas and Missouri renewable portfolio standards. Because wind contributes to a number of distinct planning requirements, it is important to consider carefully the holistic impacts of increasing wind generation as part of a preferred resource plan, even if wind is not the optimal generating resource for one particular criterion.

Costs

The all-in cost used by KCP&L and GMO to model future wind construction and operation is too high. The KCP&L and GMO 2013 IRP Updates both include supply-side technology options reported in dollars per MWh in Table 15 of each 2013 update; both tables list an "all-in cost of the supply side option ... including the components of capital cost, fixed O&M, variable O&M, fuel, and emissions."³⁹ For wind, the cost used by KCP&L and GMO is \$** __** per MWh. These costs are noticeably higher than the 2011 wind power prices in the region for 2010-2011 projects (approximately \$50 per MWh),⁴⁰ and substantially higher than the 2011-2012 levelized long-term wind PPA price for the Interior region (\$31 per MWh).⁴¹ Both capital and O&M costs for wind projects continue to decline year-on-year.^{42,43} Despite the downward trend of capital and O&M costs for wind farm construction and operation, KCP&L and GMO appear to use a constant price for wind for all future years.

While it's true that the *Wind Technologies Market Report* prices do not include integration costs, the integration costs KCP&L and GMO expect to face aren't detailed in their IRP updates, making comparisons impossible. Furthermore, those wind integration costs faced by KCP&L and GMO will decline as the Southwest Power Pool (SPP) implements its Integrated Marketplace. SPP's Integrated Marketplace will "provide participants with greater access to reserve energy, improve regional balancing of supply and demand, [and] facilitate integration of renewable resources."⁴⁴

³⁷ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update, Appendix B." June 2013.

³⁸ Ryan Wiser and Mark Bolinger, "2012 Wind Technologies Market Report." August 2013. Page 48. Available at: www2.eere.energy.gov/wind/pdfs/2012_wind_technologies_market_report.pdf.

³⁹ Kansas City Power & Light Company, "Integrated Resource Plan 2013 Annual Update." June 2013. Page 25. KCP&L Greater Missouri Operations Company (GMO), "Integrated Resource Plan 2013 Annual Update." June 2013. Page 26.

⁴⁰ Ryan Wiser and Mark Bolinger, "2011 Wind Technologies Market Report." August 2012, page 53. Available at: www2.eere.energy.gov/wind/pdfs/2011_wind_technologies_market_report.pdf.

⁴¹ Ibid.

⁴² Ibid., page 33, Figure 19.

⁴³ Ibid., page 39, Figure 25.

⁴⁴ Pete Hoelscher, "SPP 101." August 9, 2013. Available at: http://www.spp.org/publications/Intro_to_SPP.pdf.

Build-Out Timeline

Most of the plans in the KCP&L IRP have an identical wind build-out schedule: 50 MW in 2016, 150 MW in 2020, and 200 MW in 2024. Similarly, the GMO IRP plans have identical wind build-out schedules: 150 MW in 2019, 100 MW in 2021, and 100 MW in 2025. Neither KCP&L nor GMO explain the rationale for those quantities of wind built in those years, except to state that the total quantities of wind and solar are “based upon current Missouri RPS (sic) rule requirements.”⁴⁵

Even if the build-out is compliant with the Missouri RES, the companies have not demonstrated that the proposed size and construction timeline is optimal for a given portfolio. It is inappropriate to determine a resource, a quantity, or a specific year of construction *a priori* when doing resource planning; instead, KCP&L and GMO should have modeled the costs for wind generation (and other renewables) and allowed an optimization model to select the appropriate quantities and years, given the RES and RPS compliance requirements of Missouri and Kansas (see Table 5).

Table 5: Missouri Renewable Energy Standard and Kansas Renewable Portfolio Standard

| | Missouri RES | Kansas RPS |
|-------------|------------------|------------|
| 2011 | 2% (0.04% solar) | 10% |
| 2014 | 5% (0.1% solar) | -- |
| 2016 | -- | 15% |
| 2018 | 10% (0.2% solar) | -- |
| 2020 | -- | 20% |
| 2021 | 15% (0.3% solar) | -- |

Source: Database of State Incentives for Renewables & Efficiency (DSIRE), <http://www.dsire.org>

Implications of fuel conversion

GMO’s Preferred Plan (AICGA) includes the conversion of Lake Road 4/6 to natural gas/fuel oil use. This plan was \$12 million more expensive than the least-cost plan GMO discovered (AEFGA) on an NPVRR basis. The least-cost plan assumed retirement of Lake Road 4/6 in 2016. GMO argues that it would prefer to own this capacity, rather than purchase capacity on the market and face the risk of rising prices. After reviewing annual generation data provided by the company, it appears that Lake Road 4/6 is acting not only as a capacity resource, but as a substantial energy resource as well. Figure 7: Annual generation at Lake Road 4/6 after conversion to gas/oil, plan AICGA, mid load, gas, and CO₂ assumptions

plots annual generation at Lake Road 4/6 for the Preferred Plan, using the middle CO₂, gas, coal, and load growth assumptions. Capacity factors are in the 20-25 percent range for the first ten years following conversion, and rise above 40 percent in the final years of the study period.

⁴⁵ Kansas City Power & Light Company, “Integrated Resource Plan 2013 Annual Update.” June 2013. Page 87.

Synapse has been provided with very limited data on the Lake Road 4/6 conversion. Assuming the heat rate remains the same when operating as a gas-fired unit that it was as a coal-fired unit,⁴⁶ and the price of gas per MMBtu is roughly double the price of coal in 2017 (based on the company fuel forecasts in Figure 1 and Figure 2), the converted unit would have a dispatch cost of ** ____** per MWh. This estimation is based purely on changing fuel costs from the switch to natural gas firing, and does not include additional O&M requirements or savings. This dispatch cost is approximately double today's Lake Road 4/6 dispatch cost of ** ____** per MWh, according to Table 62 of the 2013 IRP update. The Lake Road MEGA Study estimates variable O&M costs would be ** ____** per MWh at the converted facility, which would further decrease any economic dispatch of the unit.⁴⁷ A dramatic increase in operating cost would presumably result in decreased utilization of the plant, yet the model projects that Lake Road 4/6 will operate substantially more often in future years.

While neither the IRP Update nor the Lake Road MEGA study provide current variable O&M costs at Lake Road 4/6, we believe at the Lake Road MEGA study estimation of \$** ____** per MWh cost represents a significant increase when compared to the current marginal cost of dispatch.⁴⁸ Figure 8 shows SPP daily average real time pricing; the number of hours with prices in excess of ** ____** per MWh is very limited (and even fewer are in the ** ____** per MWh range, accounting for increased variable O&M costs). Figure 7 shows that, in the absence of dramatic increases in market prices, the capacity of Lake Road 4/6 will remain well below the ** ____** percent range of capacity factors GMO modeling asserts.

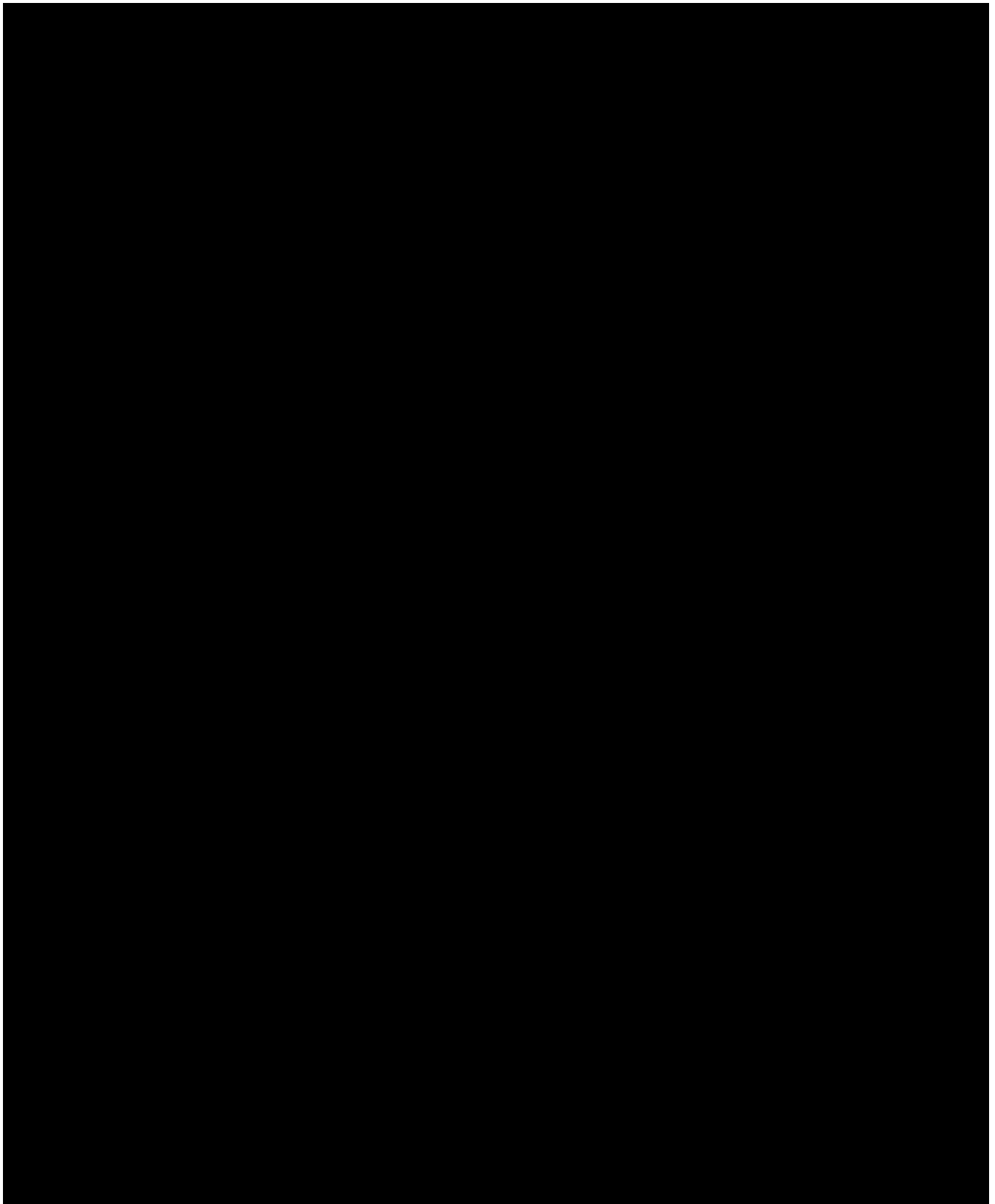
GMO did not provide its model input files to stakeholders for review. In the absence of a detailed explanation in the 2013 IRP Update, the unexpectedly high capacity factor for Lake Road 4/6 in the company's modeling results (reproduced in Figure 7) generates several questions about the modeling methodology. The Lake Road MEGA study asserts a heat rate of ** ____** Btu per kWh after conversion, which is poor in comparison to the company's other coal and gas units.⁴⁹ Perhaps the Lake Road 4/6 heat rate input was improperly modeled by a failure to correctly adjust the properties associated with the fuel change. How does the Lake Road 4/6 dispatch cost compare to market prices? It is important to understand why GMO models the unit operating as frequently as it does in light of its relatively poor heat rate. GMO is pursuing a more expensive plan by not retiring Lake Road 4/6, but this level of operation raises questions about the model inputs directly related to Lake Road 4/6.

⁴⁶ The Lake Road MEGA Study indicates a minimal heat rate increase of 13 btu per kWh after conversion, less than 0.1 percent. See Burns & McDonnell, "Lake Road MEGA Study." Draft date: March 5, 2013. Table 1.5.

⁴⁷ Burns & McDonnell, "Lake Road MEGA Study." Draft date: March 5, 2013. Page 1-9.

⁴⁸ Variable O&M costs would likely increase relative to today's use of coal at Lake Road. If GMO opted to consider burning coal, environmental retrofits would increase the Variable O&M costs as well.

⁴⁹ Burns & McDonnell, "Lake Road MEGA Study." Draft date: March 5, 2013. Page 5-21.



⁵⁰ GMO Workpaper, “GMO Gen & Emissions Plan Summaries_Final.xlsx.” Worksheet “Generation – AICGA.”

Modeling

Choosing which plans to model

In preparing for IRP analyses and subsequent updates, KCP&L and GMO create a series of alternative resource plans, and then perform Monte Carlo analysis to determine the expected value of the Net Present Value of Revenue Requirements (NPVRR) for each of those plans. The analysis is limited to selecting the Preferred Plan from among the set of plans which KCP&L and GMO choose to study. This approach is problematic because it lacks optimization – the model is not used to identify the lowest cost resources. It is entirely possible that there are other resource plans which would comply with reliability and environmental requirements that have an even lower NPVRR than the plans studied by KCP&L and GMO. A systematic resource planning approach using optimization techniques can ensure that the least-cost plan is identified; an *ad hoc* collection of resource plans run through Monte Carlo analysis cannot.

Synapse has identified a number of plans which *may* have lower revenue requirements than those KCP&L and GMO modeled. This list is not intended to be comprehensive; additional plans may exist that *also* have lower revenue requirements. As stated earlier, the only way to be sure that the plan with the lowest NPVRR is included is to perform a more thorough resource planning optimization. Table 6 and Table 7 contain a number of plans KCP&L/GMO did not include in the IRP updates or appendices that should undergo the analysis KCP&L/GMO performed on plans published in the IRP update Total Revenue Requirement Table (KCP&L: Table 29; GMO: Table 35).⁵²

Table 6: Alternate KCP&L resource plans

| Plan Name | DSM Level | Retirement Assumption | Retirement Year |
|-----------|-----------|-----------------------|-----------------|
| ADEKA | RAP | Montrose-1 | 2016 |
| | | Montrose-2 | 2023 |
| | | Montrose-3 | 2023 |
| ADFKA | RAP | Montrose-1 | 2019 |
| | | Montrose-2 | 2021 |
| | | Montrose-3 | 2021 |
| ADHKA | RAP | Montrose-1 | 2016 |
| | | Montrose-2 | 2021 |
| | | Montrose-3 | 2021 |
| AIBKA | RAP | LaCygne-1 | 2015 |
| | | Montrose-1 | 2016 |
| | | Montrose-2 | 2016 |
| | | Montrose-3 | 2016 |

⁵¹ FERC Market Oversight, “Daily Average of SPP Real Time Prices – All Hours.” Available at: <http://www.ferc.gov/market-oversight/mkt-electric/spp/elec-spp-rto-pr.pdf>.

⁵² Kansas City Power & Light Company, “Integrated Resource Plan 2013 Annual Update.” June 2013, page 64. KCP&L Greater Missouri Operations Company (GMO), “Integrated Resource Plan 2013 Annual Update.” June 2013, page 63.

| Plan Name | DSM Level | Retirement Assumption | Retirement Year |
|-----------|-----------|-----------------------|-----------------|
| AIEKA | RAP | LaCygne-1 | 2015 |
| | | Montrose-1 | 2016 |
| | | Montrose-2 | 2023 |
| | | Montrose-3 | 2023 |
| AIFKA | RAP | LaCygne-1 | 2015 |
| | | Montrose-1 | 2019 |
| | | Montrose-2 | 2021 |
| | | Montrose-3 | 2021 |
| AIHKA | RAP | LaCygne-1 | 2015 |
| | | Montrose-1 | 2016 |
| | | Montrose-2 | 2021 |
| | | Montrose-3 | 2021 |

Note: The naming convention corresponds with the KCP&L naming convention for alternative resource plans. These plans all use CT additions (the fifth character in the name), but should also be modeled with CC additions.

Table 7: Alternate GMO resource plans

| Plan Name | DSM Level | Retirement Assumption | Retirement Year |
|-----------|-----------|------------------------------|-----------------|
| ADFGA | RAP | Sibley-1 | 2019 |
| | | Sibley-2 | 2019 |
| | | Sibley-3 | 2016 |
| ADDGA | RAP | Sibley-1 | 2023 |
| | | Sibley-2 | 2023 |
| | | Sibley-3 | 2016 |
| A#FGA | RAP | Sibley-1 | 2019 |
| | | Sibley-2 | 2019 |
| | | Sibley-3 | 2016 |
| | | Lake Road 4/6 | 2016 |
| A#DGA | RAP | Sibley-1 | 2023 |
| | | Sibley-2 | 2023 |
| | | Sibley-3 | 2016 |
| | | Lake Road 4/6 | 2016 |
| A#BGA | RAP | Sibley-1 | 2016 |
| | | Sibley-2 | 2016 |
| | | Sibley-3 | 2016 |
| | | Lake Road 4/6 | 2016 |
| A#FGA | RAP | Sibley-1 | 2019 |
| | | Sibley-2 | 2019 |
| | | Sibley-3 | 2016 |
| | | Convert to NG: Lake Road 4/6 | 2016* |
| A#DGA | RAP | Sibley-1 | 2023 |
| | | Sibley-2 | 2023 |
| | | Sibley-3 | 2016 |
| | | Convert to NG: Lake Road 4/6 | 2016* |



| Plan Name | DSM Level | Retirement Assumption | Retirement Year |
|-----------|-----------|---------------------------------|-----------------|
| A#BGA | RAP | Sibley-1 | 2016 |
| | | Sibley-2 | 2016 |
| | | Sibley-3 | 2016 |
| | | Convert to NG: Lake Road 4/6 | 2016* |
| A#FGA | RAP | Sibley-1 | 2019 |
| | | Sibley-2 | 2019 |
| | | Sibley-3 | 2016 |
| | | Convert to NG-FO: Lake Road 4/6 | 2016** |
| A#DGA | RAP | Sibley-1 | 2023 |
| | | Sibley-2 | 2023 |
| | | Sibley-3 | 2016 |
| | | Convert to NG-FO: Lake Road 4/6 | 2016** |
| A#BGA | RAP | Sibley-1 | 2016 |
| | | Sibley-2 | 2016 |
| | | Sibley-3 | 2016 |
| | | Convert to NG-FO: Lake Road 4/6 | 2016** |
| ADFGA | RAP | Sibley-1 | 2019 |
| | | Sibley-2 | 2019 |
| | | Convert to NG: Sibley-3 | 2016* |
| ADDGA | RAP | Sibley-1 | 2023 |
| | | Sibley-2 | 2023 |
| | | Convert to NG: Sibley-3 | 2016* |
| A#FGA | RAP | Sibley-1 | 2019 |
| | | Sibley-2 | 2019 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Lake Road 4/6 | 2016 |
| A#DGA | RAP | Sibley-1 | 2023 |
| | | Sibley-2 | 2023 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Lake Road 4/6 | 2016 |
| A#BGA | RAP | Sibley-1 | 2016 |
| | | Sibley-2 | 2016 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Lake Road 4/6 | 2016 |
| A#FGA | RAP | Sibley-1 | 2019 |
| | | Sibley-2 | 2019 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Convert to NG: Lake Road 4/6 | 2016* |
| A#DGA | RAP | Sibley-1 | 2023 |
| | | Sibley-2 | 2023 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Convert to NG: Lake Road 4/6 | 2016* |



| Plan Name | DSM Level | Retirement Assumption | Retirement Year |
|-----------|-----------|---------------------------------|-----------------|
| A#BGAB | RAP | Sibley-1 | 2016 |
| | | Sibley-2 | 2016 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Convert to NG: Lake Road 4/6 | 2016* |
| A#FGA | RAP | Sibley-1 | 2019 |
| | | Sibley-2 | 2019 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Convert to NG-FO: Lake Road 4/6 | 2016** |
| A#DGA | RAP | Sibley-1 | 2023 |
| | | Sibley-2 | 2023 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Convert to NG-FO: Lake Road 4/6 | 2016** |
| A#BGA | RAP | Sibley-1 | 2016 |
| | | Sibley-2 | 2016 |
| | | Convert to NG: Sibley-3 | 2016* |
| | | Convert to NG-FO: Lake Road 4/6 | 2016** |

*Note: # denotes no GMO naming convention for given set of retirement units, * denotes conversion to natural gas, ** denotes conversion to natural gas/fuel oil. The naming convention corresponds with the GMO naming convention for alternative resource plans. These plans all use CT additions (the fifth character in the name), but should also be modeled with CC additions as well.*

As shown in Table 6, KCP&L failed to consider retirement and retrofit decisions within the RAP DSM level or give serious consideration to retirement of Sibley 3 independent of Sibley 1 & 2. KCP&L/GMO might object that Table 6 contains a large number of plans to analyze, and that performing that level of analysis is overly burdensome. Because the difference in total cost of varying plans is in the millions (or tens or hundreds of millions) of dollars, the savings would likely surpass the cost of additional model runs and analysis should KCP&L/GMO find an even lower cost plan through more resource planning.

Furthermore, KCP&L and GMO failed to consider wind as a supply-side resource option. Instead of allowing the model to optimize the least-cost level of wind development that would be in compliance of Missouri and Kansas renewable standards, the companies merely selected capacity levels and years of implementation *a priori*. There is no cost-based justification for this decision, nor is there any evidence that KCP&L or GMO performed analysis of various retire-versus-retrofit plans with a different wind build-out scheme, beyond a single sensitivity in Appendix F doubling the RPS contribution.

Choosing Plans to Include in IRP Update

KCP&L and GMO did study a number of plans that were not included in the final IRP Update Total Revenue Requirement (NPVRR) tables.⁵³ For example, KCP&L's Appendix F contains six additional plans; GMO's Appendix F contains an additional five plans. Some of those plans are more appropriately called sensitivities – the companies tested the NPVRR if a fundamental input assumption were changed (e.g.,

⁵³ Ibid.

load loss contingency or a doubling of the renewable standard). However, both the KCP&L and GMO Appendix F documents contain resource plans that are calculated on the base assumptions of the main document *and contain a lower cost than any plan listed in the main document*. KCP&L's Appendix F contains plan ADBKA, which has an NPVRR of \$20,722 million – a full \$75 million less than the least cost plan appearing in Table 34 of the KCP&L 2013 IRP Update.⁵⁴ GMO's Appendix F contains plan AEFGA, which has an NPVRR equal to \$11,691 million; this plan is \$12 million less than the least cost plan appearing in GMO's IRP Update's Table 29.⁵⁵ Supporting discussion in the respective 2013 IRP Updates indicates KCP&L and GMO believe it is not in the ratepayers' best interest to implement the least-cost plan found by the company. However, publishing the least-cost plan in Appendix F marginalizes low-cost plans that merit significant consideration.

Selecting the Optimal Individual Plan

Code 4 CSR 240-22.010-(2)(B) states that “minimization of the present worth of long-run utility costs [is to be] the primary selection criterion in choosing the preferred resource plan, subject to the constraints in subsection (2)(C).” Both KCP&L and GMO acknowledge that their preferred plans are not those with the minimum present worth of long-run utility costs, but neither KCP&L nor GMO adequately demonstrate that a different resource plan was in the best interest of ratepayers.

KCP&L acknowledges that “the Preferred Plan was not the lowest cost plan from a Net Present Value of Revenue Requirement (NPVRR) perspective as a higher amount of DSM would reduce the NPVRR.”⁵⁶ The company justifies this sub-optimal plan with a concern about near-term rate shock, ignoring that the Preferred Plan has a larger rate shock than the plan KCP&L identifies as the least-cost plan, albeit five years later (see Table 2).

GMO also acknowledges that “the Preferred Plan was not the lowest cost plan from a Net Present Value of Revenue Requirement (NPVRR) perspective.”⁵⁷ Despite that the lowest cost plan GMO discovered calls for the retirement of Lake Road 4/6, GMO seeks to continue operating the unit indefinitely as a natural gas and fuel oil fired unit. The company's justification is that it would “only take a small increase in the assumed cost of capacity” to make the least-cost plan more costly. It is reasonable to consider the risk of fluctuating market prices, but GMO's conclusion is not defended with any substantial analysis, nor does it appear that GMO considered that a small *decrease* in the assumed cost of capacity would make its sub-optimal choice even more expensive as compared to the least-cost plan. A more robust analysis would test this conclusion quantitatively, analyzing the cost of capacity in its sensitivity analysis along with assumptions for fuel prices, carbon, and demand level. While adding another variable to the full complement of runs may be burdensome, at the very least demonstrating its impact on NPVRR with a smaller number of runs would be valuable.

⁵⁴ Kansas City Power & Light Company, “Integrated Resource Plan 2013 Annual Update.” June 2013. Appendix F, page 2.

⁵⁵ KCP&L Greater Missouri Operations Company (GMO), “Integrated Resource Plan 2013 Annual Update.” June 2013, Appendix F, page 2.

⁵⁶ Kansas City Power & Light Company, “Integrated Resource Plan 2013 Annual Update.” June 2013. Page 92.

⁵⁷ KCP&L Greater Missouri Operations Company (GMO), “Integrated Resource Plan 2013 Annual Update.” June 2013. Page 91.

Selecting Co-optimized Plan

Both the KCP&L and GMO 2013 IRP Updates seek to find a co-optimized plan – that is, the best plan should KCP&L and GMO optimize their resources as one set of shared assets. This approach has the potential to save ratepayers money, because a co-optimized plan may allow for better use of resources, e.g., operating lower cost resources more frequently and deferring the construction or acquisition of new generating resources for a year or more. A co-optimized plan must have the same or less cost than that of its component sub-plans.

Each co-optimized plan detailed by KCP&L and GMO can be sub-divided into its distinct KCP&L and GMO parts. Specifically, the DSM level, units selected for retirement, and corresponding retirement years of the combined-company plans listed in the Overview of Combined Company Resource Plans table can be mapped to specific KCP&L and GMO plans.⁵⁸ KCP&L and GMO designed the combined company plans this way, stating that “they reflect combinations of several of the lowest NPVRR plans on a stand-alone company basis.”⁵⁹ For example, combined company plan FIECA is made up of KCP&L’s FDHKA and GMO’s plan AICGA, the two Preferred Plans. Appropriately, KCP&L/GMO modeled the combined company plans “under the same 27 scenarios analyzed for the standalone companies,” including electricity market prices, fuel prices, allowance prices, etc.

Because both the stand-alone KCP&L and the stand-alone GMO plans meet reliability and renewable generation requirements, the combined plan can never cost more than the sum of the stand-alone plans when modeled with the same input assumptions, precisely because it would always be possible for the resource planning exercise to split the resources into the two sub-components (in this case, KCP&L and GMO) and optimize them separately. It is possible, however, that the combined plan allows additional generation construction be deferred as a result of superior cooperation, resulting in combined plan savings as compared to the sum of NPVRRs of the individual components of the plan.

Table 8 compares the combined and stand-alone costs of the five combined company resource plans included in the IRP update found in KCP&L 2013 IRP Update Tables 43 and 44, KCP&L 2013 IRP Update Tables 29 - 34, and GMO 2013 IRP Update Tables 24 - 29.

⁵⁸ Kansas City Power & Light Company, “Integrated Resource Plan 2013 Annual Update.” June 2013. Page 74, table 43.

⁵⁹ Ibid., p. 73.

Table 8: Combined and stand-alone costs of company resource plans

| | (A) | | (B) | | (C) | | (D) | | (E) | |
|------------------------|--------------|---------------------|--------------|---------------------|--------------|---------------------|--------------|---------------------|--------------|---------------------|
| | FIECA | | FIFCA | | FIHCA | | FIICA | | FRECA | |
| | Name | NPVRR (\$mm) | Name | NPVRR (\$mm) | Name | NPVRR (\$mm) | Name | NPVRR (\$mm) | Name | NPVRR (\$mm) |
| Combined Plan | FIECA | \$32,513 | FIFCA | \$32,676 | FIHCA | \$32,516 | FIICA | \$32,564 | FRECA | \$32,500 |
| KCP&L Plan | KDHKA | \$20,797 | FDBKA | \$20,799 | FDFKA | \$20,806 | FDDKA | \$20,832 | FDHKA | \$20,797 |
| GMO Plan | AICGA | \$11,703 | AICGA | \$11,703 | AICGA | \$11,703 | AICGA | \$11,703 | AEFGA | \$11,690 |
| Total | | \$32,500 | | \$32,502 | | \$32,509 | | \$32,535 | | \$32,487 |
| Additional Cost | | \$13 | | \$174 | | \$7 | | \$29 | | \$13 |

Notice that according to KCP&L/GMO, the Combined Plan has additional cost for all five plans studied. KCP&L/GMO have calculated that all five combined plans studied (FIECA, FIFCA, FIHCA, FIICA, and FRECA) have a rather peculiar outcome: implementing the KCP&L and GMO plans side by side cost *more* than implementing them separately—between \$7 million (Table 8 (C)) and \$174 million more (Table 8 (B)). This suggests a substantial and pervasive problem with the KCP&L and GMO model itself. The combined plan savings should always be zero or positive – there can never be a financial penalty for building two correctly modeled, feasible, compliant plans side-by-side. Yet, according to KCP&L and GMO, every time they are to build two distinct plans side by side, the companies will have to spend millions of dollars more than they would have to spend to build each company’s plan separately. While KCP&L and GMO present the combined company plan as an exercise, this error calls into question the veracity of KCP&L and GMO’s NPVRR outcomes across the entire IRP update.

Impacts on Fossil Units

Above we identified several issues and concerns with KCP&L and GMO’s 2013 IRP Updates. These issues may materially impact the retrofit/retirement NPVRR for all plans, including the Preferred Plans. Here we summarize a number of concerns regarding the Montrose, LaCygne, Sibley, and Lake Road plants.

LaCygne 1 & 2

LaCygne 1 is already the most expensive unit in terms of dispatch cost, with LaCygne 2 not far behind, according to Table 65 of the KCP&L 2013 IRP Update. As long-lived units, these plants are vulnerable to any future regulations on greenhouse gas emissions, including New Source Performance Standards. They are also vulnerable to any increases in the assumed costs of retrofit equipment between now and the time of retrofit, as all of these units are projected to need cooling towers. Because of LaCygne’s high dispatch costs, high retrofit costs, declining capacity factors in future years, and KCP&L’s energy surplus for many hours of the year, a comprehensive resource analysis using appropriate commodity prices, DSM levels, and environmental compliance scheduling and costs might have found that the retirement of LaCygne 1 was the appropriate future. As noted above, however, KCP&L did not conduct this analysis.

Montrose 1, 2, 3

The KCP&L Preferred Plan maintains Montrose 2 & 3 in service until 2021. Substantial environmental and non-environmental capital expenditures are necessary to allow operations. Gas prices in KCP&L’s middle case forecast remain below \$**_** per MMBtu throughout this period, implying that market prices for energy will also stay low. Similar to LaCygne 1, these units are among KCP&L’s higher cost units, and could be effectively replaced with market purchases.⁶⁰

Future environmental regulations are a serious risk for Montrose. If CSAPR is reinstated by the Supreme Court, SO₂ emissions from Montrose will not be in compliance. If compliance with Effluent Limitation

⁶⁰ GMO’s Sibley 1&2 and Lake Road 4/6 units are also more expensive.

Guidelines or CCR regulations is required at Montrose in 2019 rather than the company's assumed 2021 retirement date, Montrose may not have a legal way of managing its coal ash and ash pond discharges. New Source Performance Standards for existing sources under the Clean Air Act Section 111, to be proposed in 2014 and finalized in 2015, would certainly affect Montrose based on its high CO₂ emissions rate. All three of these scenarios have a substantial possibility of occurring before Montrose station is closed in 2021.

KCP&L proposes changing the source of coal burned at Montrose, but does not disclose if that switch would entail a one-time or ongoing adjustment in fuel costs at Montrose, nor how those fuel cost changes are modeled.

KCP&L itself demonstrated in its modeling that retirement of all three Montrose units in 2016, coupled with the RAP DSM plan, was the lowest cost plan—\$75 million less than the plan with less DSM that kept Montrose in service until 2021.

Sibley 1, 2

The GMO Preferred Plan maintains Sibley 1 & 2 in service until 2019. Capital expenditures required for these units are smaller than for Montrose, largely because station-level expenditures benefit Sibley 3, which is modeled as retrofitted and used throughout the study period. Sibley is vulnerable to environmental regulations similar to Montrose, though to a somewhat lesser extent due to the earlier retirement date. That these units are at the same site as a unit that will be maintained in service beyond the study period may allow for site-level averaging of emissions, although SO₂ and CO₂ performance at Sibley 3 are not substantially better than Sibley 1 & 2.

Sibley 3

In the near term, GMO's Preferred Plan treats Sibley 3 similarly to Sibley 1 & 2, with ACI and ESP upgrades planned to comply with MATS. In the long term, the plan includes major upgrades at Sibley 3 to allow the unit to stay in use throughout the study period. These major upgrades include a ** _____ investment in a scrubber and baghouse. Sibley 3 is also at risk for non-compliance for SO₂ emissions under a reinstated version of CSAPR before 2020.

Very few scenarios in GMO's modeling considered *not* retiring this plant, and the lack of information released by the company makes it impossible to determine if new generation or market purchases could adequately and economically replace Sibley 3. The only plan published in the GMO IRP 2013 Update that retired Sibley 3 used a 2016 retirement year, the same year as Sibley 1 & 2. This simultaneous retirement necessitates a substantial investment in new capacity that might be mitigated by retiring Sibley 3 in a different year than the other Sibley units.

Lake Road 4/6

While the conversion of Lake Road 4/6 to gas and oil mitigates some risks, others remain. The need for cooling towers going forward presents a very real risk of increasing costs that must be recovered. We

remain concerned about the high projected levels of operation of this unit after it has been converted, despite the very poor heat rate. The lowest cost GMO plan suggests retirement rather than conversion.

Additional Concerns

The following concerns, identified earlier in this memo, may materially impact decisions related to all of the plants discussed above:

- CO₂ prices: The use of ** _____ ** as the low case unreasonably discounts the possibility of any future regulations placed on carbon dioxide emissions. Even if Congress cannot agree on a comprehensive climate policy, there is a continued push to limit CO₂ emissions; e.g., through New Source Performance Standards for Existing Sources. The companies' projection of a 25 percent chance of a ** _____ ** CO₂ price over the next twenty years inappropriately favors high-emission plans when calculating NPVRR.
- Erroneous NPVRR calculations: Combined-company modeling in the IRP updates is more expensive than the relevant individual plans, despite the fact that both stand-alone plans meet individual reliability and renewable generation requirements. That the combined plans are more expensive than the sum of their parts calls into question the NPVRR calculations themselves. By statute NPVRR is the primary metric for plan comparison; the NPVRR calculation must be reliable and well understood.
- Off-system sales revenue: KCP&L's resource plans all produce far more annual energy than required by KCP&L's customers. The IRP updates do not include the breakdown of off-system sales revenue between shareholders and ratepayers, nor do the updates make explicit how this sharing agreement is modeled. The decision to invest ratepayer money in units used primarily for off-system sales is an investment with a level of risk appropriate for shareholders, but perhaps not for ratepayers.
- DSM: KCP&L's decision to use the MEEIA-RAP DSM forecast rather than the RAP forecast has not been adequately justified. RAP DSM results in savings of \$75 million. KCP&L argues that the near-term program costs of RAP DSM will result in excessive rate impacts; however, the MEEIA-RAP plan has even higher annual rate impacts by 2020. Moreover, the MEEIA-RAP plan will require capital expenditures at the Montrose plant that the company did not include in the 2016 rate calculation spreadsheet that it presented to Commission Staff comparing the two plans. KCP&L's nearsighted approach will harm KCP&L's ratepayers, who will still be customers in 2020.

Attachment B



August 9, 2013

VIA E-MAIL

Marisol Miller
Regulatory Affairs
Kansas City Power & Light
Marisol.Miller@kcpl.com

Re: *In re: 2013 IRP Updates for Kansas City Power & Light Company and KCP&L Greater Missouri Operations Company, Case Nos. EO-2013-0537 & 0538 (Mo. Pub. Serv. Comm'n)*

Dear Ms. Miller,

I write on behalf of Sierra Club regarding the above-captioned matters. As you know, intervenor comments on the Integrated Resource Plan (“IRP”) updates for Kansas City Power & Light Company (“KCP&L”) and KCP&L Greater Missouri Operations Company (“GMO”) are due on August 21, 2013. After review of the companies’ IRP update filings, along with the workpapers and other supporting information provided to stakeholders to date, Sierra Club has identified a number of areas where a lack of information prevents us from fully evaluating whether deficiencies and concerns that Sierra Club raised with the 2012 KCP&L IRP have been adequately addressed in the companies’ 2013 update filings, as directed by the Commission in its December 19, 2012 order. In the hope that we can resolve some of these issues before filing our formal comments with the Commission, Sierra Club respectfully requests that KCP&L and GMO provide the following information to stakeholders in advance of the comment deadline:

1. **MEGA Study.** In paragraph 8.24.2 of the KCP&L 2013 IRP update, the company states that “[f]uture potential environmental updates have been studied by Burns and McDonnell and are incorporated into the 2013 Annual Update.” During discussions around the 2012 KCP&L IRP, the company promised to provide a copy of this study (known as the “MEGA study”) to stakeholders, but a copy of this study has never been provided to Sierra Club. Please provide a copy of the Burns and McDonnell study relied on in the 2013 IRP update.
2. **Off-System Sales Information.** In paragraph 8.24.14 of the KCP&L 2013 IRP update, the company states that “plan results include [off-system] sales.” This statement is not sufficient to address Sierra Club’s unresolved deficiency with the 2012 KCP&L IRP, which is that the amount of off-system sales revenue that was modeled for each resource plan was not provided, nor were the assumptions used in the modeling as to how that revenue would be allocated between ratepayers and company shareholders. Please provide this information with respect to the resources plans in both the KCP&L and GMO 2013 IRP updates.

3. **Clarification of RAP vs. MEEIA RAP Projected Rate Impact Calculation.** Please explain why the “RAP vs. MEEIA RAP Projected Rate Impact Calculation” provided as an attachment to the KCP&L 2013 Annual Update Summary Report does not include any capital expenditures on Montrose Units 2 and 3 in its calculation of the rate impact of KCP&L’s preferred plan. Because KCP&L’s preferred plan would require capital expenditures on those two units to continue operating them until 2021, whereas the alternative resource plan involving RAP level DSM expenditures would not require capital expenditures at Montrose Units 2 and 3, the rate impact of those capital expenditures at Montrose Units 2 and 3 should also be included in the spreadsheet, in order to present a full and fair comparison of the two alternative resource plans.
4. **Generating Station Capital Costs for the Years 2014-2017.** Tables 16 through 27 of the KCP&L 2013 IRP update filing and Tables 16 through 22 of the GMO 2013 IRP update filing provide long-term capital plan information for the years 2018-2032 for the Montrose, LaCygne, Lake Road, and Sibley generating stations. Please provide equivalent information for the years 2014 through 2017.
5. **Clarification of LaCygne Capital Costs.** Page 2 of the KCP&L 2013 Annual Update Summary Report provides LaCygne Station environmental retrofit costs by year. Please clarify whether, for the purposes of the analysis in the KCP&L 2013 IRP update, the environmental retrofit costs for LaCygne for the year 2013 were treated as costs that had already been incurred or were treated as future costs that were modeled with respect to any alternative resource plan in which LaCygne would continue to operate.
6. **Clarification of why GMO Plan AEFGA Was Excluded.** Please explain why GMO alternative resource plan AEFGA, which was included in some of the analysis in GMO’s 2013 IRP update filing (including being incorporated into combined company plan FRECA) was excluded from final analysis as a stand-alone company plan and instead listed in Appendix F of GMO’s 2013 IRP update filing. Please provide workpapers associated with GMO’s evaluation of this plan.
7. **Explanation of Discrepancies between Combined and Individual Company Plans.** Table 44 of the KCP&L 2103 IRP update provides the “Combined Company Total Revenue Requirement” for five combined company alternative resource plans. Please explain why plans FIECA, FIFCA, FIHCA, and FIICA appear to have greater revenue requirements than the sum of the two individual company resource plans that they combine. In particular, please explain why there is a \$168 million difference between the FIECA and FIFCA plans when the difference between the equivalent KCP&L resource plans (as shown in Table 34) is only \$1.8 million and there appears to be no difference in the GMO resource plans between those two combined company plans.
8. **Explanation of Discrepancies between Different DSM Workpapers.** The workpapers provided by KCP&L and GMO appear to report different megawatt values in different places for DSM under RAP and MAP scenarios. Please explain why their appear to be discrepancies between the “Forecast of Capacity Balance” spreadsheets for individual alternative resource plans and the values reported in Appendices B and L. Please also

Letter to Marisol Miller, KCP&L Regulatory Affairs
August 9, 2013

explain whether any of these values are consistent with the megawatt values projected for RAP and MAP DSM in the draft Navigant potential study, and to the extent that they are not, why not.

In light of the approaching intervenor comment deadline, Sierra Club respectfully requests that this information be provided no later than close of business on Friday, August 16, 2013. Thank you in advance for your consideration of this request.

Sincerely,

A handwritten signature in blue ink, appearing to read 'TCmar', with a horizontal line extending to the right.

Thomas Cmar
Earthjustice
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Counsel for Sierra Club

CC: stakeholder meeting participants (via email)