BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of an Investigation of the Cost to Missouri's Electric Utilities Resulting from Compliance with Federal Environmental Regulations	)))	**File No. EW-2012-0065**

REPLY COMMENTS OF PEABODY ENERGY COMPANY

I. INTRODUCTION

The comments filed by stakeholders to the Missouri Public Service Commission (PSC or Commission) have properly addressed the Commission's questions regarding EPA's proposed carbon reduction mandate for Missouri. As set forth below, Peabody Energy Company (Peabody) believes that the comments filed by Missouri's utilities provide the most compelling information available regarding EPA's four building blocks and other general questions asked by the PSC.

Missing from this discussion is recognition of the fundamental importance of low cost coal electricity to Missouri, this nation, and the world. The availability and affordability of electricity is directly correlated with economic development and life expectancy. The continued availability of affordable electricity is dependent on coal:

> "Coal will be central to economic modernization in the developing world, where most energy supply will be built in the next three decades… Coal is not going away…. [R]eliable energy is a correlative of economic growth and human development." - Armond Cohen, Executive Director, Clean Air Task Force, 2013

Coal powers over 40% of global electricity, and here in Missouri is responsible for meeting over 80% of consumer electric needs. Fatih Birol, the Chief Economist of the International Energy Agency, recently noted that "[t]he importance of coal in the global energy mix is now the highest since 1971… the fuel underpinning the rapid industrialization of emerging economies, helping to raise living standards and lift hundreds of millions of people out of poverty."[1]

[1] http://cornerstonemag.net/coals-role-in-the-global-energy-mix-treading-water-or-full-steam-ahead/.

Fifteen percent of Missourians are below the poverty level, which is above the national average.[2] As noted by the Association of Missouri Electric Cooperatives, of over one million rural electric customers in Missouri: 40 percent report a gross income of less than $50,000 a year, and 16 percent of these make less than 5,000 annually; and one-third of seniors earn less than $25,000 a year. The attached presentation of Dr. Frank Clemente, "U.S. Energy Poverty: Energy Inequality and Social Justice," illustrates the increased poverty that will result from increased energy costs:

> "Climate change initiatives requiring expanded use of high cost, natural gas would increase the cost of energy to the point that per-capita income and employment rates would decrease ….increased mortality rates would result from decreased household income and increased unemployment." - Dr. Harvey Brenner, Johns Hopkins University[3]

The issue here is the continued advancement of the *human environment*, a concept recognized since the "Declaration of the United Nations Conference on the Human Environment" issued in 1972, and reaffirmed to this day:

- 1972 --- "Of all things in the world, people are the most precious. It is the people that propel social progress, create social wealth, develop science and technology." (United Nations, Stockholm)
- 1992 --- "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life." (World Health Organization, Rio)
- 2012 --- "Eradicating poverty is the greatest global challenge facing the world today and an indispensable requirement for sustainable development. In this regard we are committed to freeing humanity from poverty and hunger as a matter of urgency." (United Nations, Rio)

Likewise, the National Environmental Policy Act (NEPA) recognizes at 40 C.F.R. § 1508 that, when "economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment." The Missouri Commission should consider the economic and social effects of the EPA's plan on Missouri residents, farmers and businesses.

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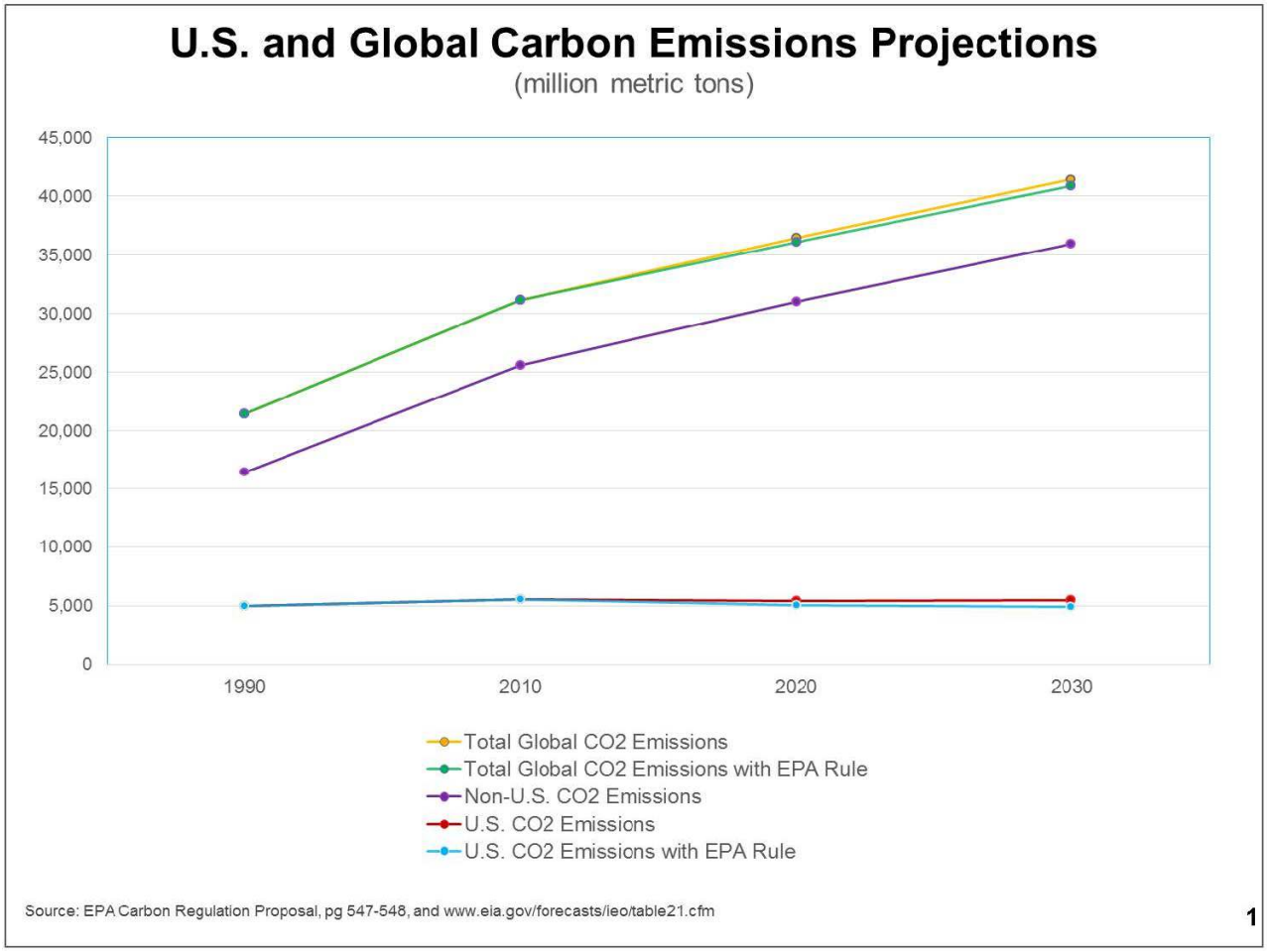
[2] *See* http://quickfacts.census.gov/qfd/states/29000.html.
[3] *See* Attachment B, slide 4, Harvey Brenner, Johns Hopkins University, *Air & Waste Management Association*, November 2005.

As noted in Peabody's initial comments in this proceeding, Missouri law sets forth the Commission's charge to ensure safe and adequate service at just and reasonable rates. Missouri utilities in their comments also have asserted a strong desire to keep rates affordable while maintaining reliable electric service. EPA's proposed guidelines stand these priorities on their head, subservient to a carbon reduction goal that by EPA's own modeling would reduce warming by one-fiftieth of one degree.[4] The following illustrates what the EPA's proposed carbon reduction guidelines would "accomplish":



As can be seen in the comments of Missouri's utilities, the cost of such a trifling carbon reduction will be rate hikes, lost prosperity, and serious reliability concerns.

[4] *See* http://americaspower.org/sites/default/files/Climate%20Effects%20Issue%20Paper%20June%202014.pdf.

While EPA's proposed carbon reduction guidelines ignore the human environment in terms of cost, reliability, and decreased standard of living, the federal Clean Air Act (CAA) and Missouri law do not. The PSC heeds the clear language of Section 111(d) of the federal Clean Air Act (CAA) and Missouri House Bill 1631 (HB 1631) by recognizing Missouri primacy in setting legally-enforceable emission standards based on factors such as cost and feasibility. To be sure, EPA has the authority to identify the best "at-the-unit" system of emission reduction for existing fossil-fuel EGUs under Section 111(d). However, State Implementation Plans (SIPs) are acceptable under federal law where the state sets feasible, cost-effective performance standards that existing fossil-fuel EGUs can achieve, accounting for the "remaining useful life" of the generator and "other factors," such as the unit's necessity in providing reliable electric services to consumers and the availability of other resources. 42 U.S.C. § 7411(d)(1)(B). Missouri law enacts this cooperative federalist model in HB 1631, consistent with the Clean Air Act. In attempting to regulate outside the fence, EPA's proposal not only exceeds the scope of federal law, but also conflicts with Missouri law.

Missouri utilities filed comments that it is not possible to meet EPA's inside-the-fence building block of 6 percent heat rate improvements to coal EGUs (Building Block 1). Therefore, an inside-the-fence analysis – as required by HB 1631 – yields a carbon standard considerably less than the sum of carbon reductions EPA assumed was achievable based on *four* building blocks. Such a carbon standard is entirely consistent with federal law as well, as the U.S. Constitution Supremacy Clause.

Under Missouri law implementing the CAA, the Missouri regulatory focus is on coal plant efficiency. An EPA federal implementation plan (FIP) that attempts to regulate outside the fence would be outside the scope of EPA authority under the CAA and inconsistent with Missouri law under HB 1631.

II. THE KNOWLEDGE AND EXPERIENCE OF MISSOURI'S UTILITIES SHOULD BE RESPECTED

Peabody believes that the comments filed with the Commission by utilities operating in the State of Missouri are authoritative. Missouri utilities, including rural electric cooperatives, best understand the electric generating units (EGUs) they operate, their service territory and customers, and the reality of EPA's proposed CO_2 emission guidelines in terms of feasibility, cost and reliability. With few exceptions, Missouri utilities have expressed that the EPA's assumptions concerning coal EGU heat rate improvements, increased natural gas combined cycle (NGCC) dispatch, renewable energy, and demand-side load reduction are divorced from reality. Either the EPA assumptions are not feasible or the cost is so great that Missouri electric customers would be saddled with massive rate increases. Beyond cost and feasibility, many utilities and one RTO have voiced serious reliability concerns associated with the EPA plan.

Peabody advocates that the Commission listen to those entities that actually run electric systems and understand their costs, system capacity needs, and customer preferences. Against this backdrop of real world experience applied to facts on the ground stands literature cited by EPA and the Sierra Club. In Attachment A Peabody sets forth a comparison of what Missouri's utilities are saying versus the Sierra Club. As the Commission considers the comments filed by each party, it should ask why any rural electric utility or investor owned utility would have reason to provide inaccurate answers to the Commission's questions. Utilities that are already regulated by the PSC must come before the Commission for cost recovery/rate increases and to answer for any reliability issues, so they have every incentive to provide accurate information. REAs are structured to provide reliable, low cost power, so they also want to provide sound data regarding how EPA's proposed carbon cap affects their members. If it were as easy and costless as Sierra Club and EPA represent to implement the proposed rule, the utilities would say so. As shown in Attachment A, they did no such thing.

Peabody will let the comments of Missouri utilities speak for themselves on the achievability of the EPA's four building block assumptions and the cost of implementing EPA's proposed rule. The issue of reliability merits further discussion, as set forth below.

III. RELIABILITY

The Commission should ensure that Missouri electric customers continue to receive reliable service. Indeed, Ameren Missouri, AMEC, Empire and KCP&L/GMO all agree that the rule's potential reliability implications are paramount:

- ***Ameren Missouri:*** "Mandating or forcing uneconomical dispatch of gas-fired generation in an RTO can cause market distortions and significantly increase customer costs and may cause reliability issues."[5] Moreover, pointing to EPA's estimated 30-50 GW of additional coal plant retirements, Ameren Missouri states: "the loss of such a significant amount of retirements already announced due to other regulations and market conditions can, and most likely will impact reliability of the transmission system and lead to generation capacity shortages… In addition, forcing unneeded generation where not required to meet load or congestion relief can cause reliability issues."[6]

- ***AMEC (Rural Coops)*:** "EPA overestimate[s] the capacity factor of renewable generation in their model and in the establishment of state emission rates."[7] To address its concerns, AMEC recommends the final rule include a "regulatory safety valve based on rate increases beyond a specific level and a certification from the NERC that the realignment of resources in identified service areas or RTOs do not present real and present danger of reliability failures."[8]

- ***Empire*:** EPA's proposal raises reliability concerns "as utilities will have to take units offline to modify or even retire units altogether to meet the new regulations. This could result in power shortage in the region."[9] "Too much reliance on natural gas does create additional risks since there is not an inventory of fuel at the Electric Generating Unit (EGU). There will be events which cause deliverability issues and in some cases shortage of the commodity due to circumstances of risk that exist today."[10]

- ***KCP&L/GMO*:** "[T]he proposed Clean Power Plan could create reliability concerns," and "significant additional analysis is needed."[11]

[5] Ameren Missouri Comments at 9.
[6] *Id* at 12.
[7] AMEC Comments at 9.
[8] *Id* at 14 (emphasis in original).
[9] *Id* at 9.
[10] Empire Comments at 2.
[11] KPCL Comments at 10-11.

The best way for utilities to provide reliable and cost-effective electricity year-round is to ensure utilities can maintain a diverse supply portfolio. According to EIA, retiring baseload capacity, while managing an increasingly variable energy mix, is the "central challenge" of electric reliability in the coming decades.[12] With increased penetration of renewables, grid managers are forced to back-off and cycle down baseload generation, thereby putting more stress on generating assets and forcing the grid to operate in a way for which it was not designed.[13] Similarly, NERC has repeatedly found that over-reliance on natural gas for generating capacity can amplify the bulk power system's exposure to interruptions in gas supply and delivery.[14]

Certain stakeholders argue for dramatic increases in renewable energy sources to Missouri utilities' portfolios while dodging almost entirely the issue of assuring electric system reliability. For example, Sierra Club argues in its comments against the use of dispatchable resources such as coal, natural gas ("new natural gas combined cycle generation is not an acceptable compliance strategy"[15]), and nuclear ("expensive and potentially dangerous"[16]) generation plants. The problem is, as stated by KCP&L at page 7 of its comments, "[r]enewable generation cannot be substituted for traditional dispatchable resources on a MW for MW basis." While traditional resources are dispatchable on demand, most renewable resources are not. Every utility and regional transmission organization (RTO) must meet its reserve margin requirement – the added amount of resources that must be available to meet demand at peak load conditions, as set by the North American Electric Reliability Corporation (NERC) and overseen by the Federal Energy Regulatory Commission

[12] Satisfying new demand from population and economic growth can also challenge reliability but EIA predicts that electricity demand will increase by less than 1 percent per year by 2040. EIA, Annual Energy Outlook 2014 (Early Release) 14 (2014).
[13] *Id*, and NERC & California Independent System Operator, 2013 Special Reliability Assessment 14 (2013); *Accord* N. Kumar Et Al., National Renewable Energy Laboratory, Power Plant Cycling Costs iv (2012).
[14] North American Electric Reliability Corporation, 2011 Special Reliability Assessment: A Primer of the Natural Gas and Electric Power Interdependency in the United States, December 2011; *and see* North American Electric Reliability Corporation, 2013 Special Reliability Assessment: Accommodating an Increased Dependence on Natural Gas for Electric Power Phase II: A Vulnerability and Scenario Assessment for the North American Bulk Power System (May 2013).
[15] Sierra Club Comments at 16.
[16] Sierra Club Comments at footnote 8.

(FERC). In Missouri, the planning reserve margin requirement is 14.8% for the Midcontinent Independent System Operator, Inc. (MISO), and 13.6% for the Southwest Power Pool (SPP).[17] SPP provided a presentation to the Missouri PSC last month and stated that, due to planned retirements, by 2020 the reserve margin for the SPP footprint will be at 5 percent; and by 2024 it will be at *negative* 3.8 percent.[18] Further, SPP expects "equipment overloads, low voltages, and dynamic stability issues will result from EPA-assumed fossil fuel generator retirements," and "EPA's assumed retirements will result in approximately 4.5 GW and 10 GW of new generation being needed by 2020 and 2024, respectively, to comply with SPP's minimum reserve margin requirements."[19]

The Commission should not exacerbate this serious reliability issue by turning away from dispatchable resources such as coal and toward wind and solar energy or demand-side load reduction. The nameplate capacity of wind energy is routinely discounted by 85 to 90 percent or more when it comes to meeting reserve margin. ERCOT, for example, currently discounts the installed capacity of wind by 91.3% to establish its capacity value in its reserve margin accounting.[20] In 2010, the National Renewable Energy Laboratory found that wind generation resources it studied were found to have capacity values in the range of 10 to 15 percent, stating: "Wind plant energy output tends to be higher during winter and spring seasons, and during nighttime hours, which is contrary to system peak load periods. Hence, the capacity value is low relative to the plant rating."[21] Similarly, although PV solar plants were found to have capacity values in the range of 25 to 30 percent, PV solar output "tends to decline in the late afternoon and

[17] *See* http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2014SRA.pdf.
[18] *See* SPP PPT at slide 10.
[19] *See* SPP PPT at slide 15.
[20] *See* http://www.ercot.com/content/gridinfo/resource/2014/mktanalysis/Brattle_ERCOT_Resource_Adequacy_Review_2012-06-01.pdf at 19.
[21] *See* http://www.nrel.gov/docs/fy10osti/47434.pdf at 372.

early evening when peak load hours often occur."[22] Certain stakeholders advocate energy efficiency (EE) in the form of load reduction. However, as noted by Empire in its comments at page 4, "Utilities cannot guarantee EE savings, as it takes customer participation, and in many cases some level of financial investment from customers. Therefore, EE savings are not as predictable as other resources." Unpredictable savings cannot be counted on to meet demand at peak load conditions.

Sierra Club claims that the implementation of new environmental rules "has never actually produced any reliability concerns."[23] This disregards that many of EPA's most impactful rules on the country's power sector – Greenhouse Gas New Source Performance Standards for New Units, Coal Ash regulations, National Ambient Air Quality ozone standards, and most notably, the Mercury and Air Toxics Standards (MATS) – have not yet taken full effect. In 2012, for instance, First Energy Corp. scheduled three coal plants for closure rendered uneconomic by EPA's MATS.[24] However, PJM refused to allow these plants to close, having determined the 885 MW of power generated by these plants was essential for electric reliability. And, according to MISO, "[r]eliability in the Midwest will be severely challenged throughout the implementation period of the proposed [EPA] rules…[i]n order for MISO to meet its reliability obligations, generator outage requests will be denied in order to maintain adequate supplies.[25]

One need only look to the events of last winter to forecast the ramifications of additional coal plant closures on the electric system. The 2014 polar vortex resulted in at least 50,000 MW of power plant outages.[26] During that time, American Electric Power ran ***89 percent*** of its generators

[22] *See id*.
[23] Sierra Club Comments at 19.
[24] EPA estimates MATS will result in 4.7 GW of coal-fired capacity retirements by 2015.
[25] *See* Midwest Independent Transmission System Operator, *Comments of the Midwest Independent Transmission System Operator*, FERC Reliability Technical Conference Docket No. AD12-1-000, 2 (November 22, 2011).
[26] FERC, FERC Staff Updates Commission on Recent Weather Effects on the Bulk Power System 12 (2014) *available at* http://www.ferc.gov/legal/staff-reports/2014/01-16-14-bulk-power.pdf.

that have been scheduled for shutdown primarily due to the MATS rule.[27] More broadly speaking, PJM lost nearly a quarter of its electricity capacity during the polar vortex, which according to PJM, "highlight[s] a potentially significant reliability issue."[28] PJM stated that "a comparable rate of generator outages in the winter of 2015/2016, coupled with extremely cold temperatures and coal retirements, would likely prevent PJM from meeting its peak load requirements."[29]

Coal retirements and increased reliance by the power sector on natural gas and renewables are inextricably linked to price spikes and reliability issues. According to ICF International, during this past winter's polar vortex, many independent system operators "were forced to issue emergency alerts and call reserves or reduce voltage. This raises the question as to whether the system operated reasonably well under extreme circumstances, or alternatively, whether changes in the resource mix with coal retirements, increased reliance on natural gas … may be inadvertently compromising grid reliability and/or resulting in very high prices that might be avoided."[30]

KCP&L stated in its comments that pipelines serving Missouri are not designed to simultaneously serve winter heat load and displaced coal-fired generation.[31] EPA's proposed rule would greatly exacerbate these reliability deficiencies by forcing the premature closure of inexpensive baseload plants. The upgrades necessary to accommodate EPA's 70 percent NGCC dispatch assumption are not feasible without substantial and expensive expansion of gas pipeline infrastructure and storage.[32] According to Southwest Power Pool, the "[t]ransmission infrastructure needed to mitigate reliability issues and to support interconnection and delivery of new generation will likely not be available by the time it is needed to facilitate compliance with the EPA's

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[27] *See* http://www.intelligentutility.com/article/14/05/utility2utility-american-electric-power.
[28] *Winter Blackouts Could hit Midwest, Mid-Atlantic, regional grid operator warns*, Washington Examiner, Zach Coleman (August 27, 2014).
[29] *Id*.
[30] ICF International, *Polar Vortex Energy Pricing Implications – Commercial Opportunities and System Reliability*, January 2014.
[31] *See* KCP&L PowerPoint (PPT) at slide 4, available at the Commission's website at: https://www.efis.psc.mo.gov/mpsc/Filing_Submission/DocketSheet/docket_sheet.asp?caseno=EW-2012-0065&pagename=case_filing_submission_FList.asp.
[32] *See id.* at slide 4.

regulations."[33] Such infrastructure also will not be available by the time it is needed to support the capacity and electric reliability needs of the state of Missouri.

IV. CONCLUSION

The Missouri PSC's highest calling is to ensure safe and adequate electric service at just and reasonable rates. The EPA's proposed carbon rules betray these principles by advocating for the replacement of inexpensive baseload plants with unpredictable and costly intermittent resources and demand response. The Commission should heed the comments of the Missouri utilities in this proceeding and the citizens of Missouri by setting reasonable carbon standards consistent with the Clean Air Act and House Bill 1631.

Dated this 16th day of September, 2014.

Respectfully Submitted,

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[33] *See* SPP PPT at slide 15, available at the Commission's website at: https://www.efis.psc.mo.gov/mpsc/Filing_Submission/DocketSheet/docket_sheet.asp?caseno=EW-2012-0065&pagename=case_filing_submission_FList.asp.

CERTIFICATE OF SERVICE

I hereby certify that I have this 16th day of September, 2014, copies of the foregoing pleading were served electronically through the Public Service Commission's e-filing system and by prepaid U.S. mail upon the parties identified in the PSC service list:

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