Missouri Public Service Commission

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December 1, 2014

The Honorable Gina McCarthy
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Ave, NW.
Washington D.C. 20460

Re: Missouri Public Service Commission's Comments on the Clean Power Plan Proposed Rule under Section 111(d) of the Clean Air Act, Docket ID:EPA-HQ-OAR-2013-0602

Dear Administrator McCarthy:

The Missouri Public Service Commission (MoPSC), respectfully submits this letter and the attached comments to articulate its position on the Clean Power Plan Proposed Rule developed under Section 111(d) of the Clean Air Act (CAA), 42 U.S.C. §7411.

The MoPSC, through regulation of Missouri's investor owned utilities (IOUs), ensures safe and adequate service at just and reasonable rates. The MoPSC is the state agency responsible for setting rates for the IOUs, for administering the Missouri Renewable Energy Standard (RES), Mo. Rev. Stat. § 393.1020 to 393.1030, and the Missouri Energy and Efficiency Investment Act (MEEIA), Mo. Rev. Stat. § 393.1075, as well as ensuring resource adequacy through the MoPSC's integrated resource planning process, 4 CSR 240-22.010 to 240-22.080.

The MoPSC offers these comments to provide suggestions aimed at improving the rule and to express some concerns with the proposed rule. These concerns include: the ability to reach the interim goal; the ability to improve heat rate efficiencies of thermoelectric generating units; and the ability of the existing interstate pipeline to handle increased capacity associated with new natural gas combined cycle (NGCC) generation. These comments also provide the MoPSC's analysis related to complying with renewable energy standards and demand-side energy efficiency program guidelines; a discussion of questions that need to be addressed when considering a regional or multi-state approach; transmission issues; providing credit for coal

plant retirements; and the ability of efficiencies achieved in the water sector that reduce carbon emissions to be credited for state compliance.

To meet the EPA interim goal, Missouri would need to develop a state compliance plan taking into account the time needed to finance, permit, construct or commission new generation. The MoPSC notes that the interim goal does not adequately take into account potential delays in timing due to right-of-way obtainment or construction of new pipelines, transmission or generation facilities, which may be needed to achieve the interim goal. Additionally, accelerated construction to meet aggressive goals may ultimately result in unintended stranded resources.

In response to MoPSC questions, Missouri's investor-owned electric utilities (IOUs) and the Association of Missouri Electric Cooperatives, Inc. (AMEC) indicate that the six percent power plant efficiency is not achievable in part because investments in heat rate efficiency have already been made. Missouri's IOUs estimate that a further heat rate improvement of 1-1.73 percent may be achievable. The EPA should clarify whether the six percent heat rate efficiency goal is a relative increase in efficiency or an absolute increase in efficiency.

Increasing the utilization of NGCC units to seventy percent presents challenges. For instance, natural gas pipelines serving Missouri were designed for winter heating load. These comments question whether existing pipelines have the capacity to serve winter natural gas heating load while simultaneously providing natural gas capacity to off-set displaced coal-fired generation. The cost and timing of constructing additional pipeline capacity to serve new demand should be taken into account in drafting the final rule.

Many of Missouri's existing renewable projects were developed in response to the Missouri RES. The proposed rule, however, does not provide an opportunity for a state to receive credit for pre-2012 renewable energy projects. The MoPSC requests that the final rule allow states to receive credit for early adoption of renewable projects undertaken to meet state renewable portfolio standards, as well as credit for incremental improvements in nuclear and hydropower generation from existing facilities as an option for compliance with state goals.

The most recent IOU integrated resource plans and potential studies assert that the EPA's assumption that a 1.5 percent annual incremental savings rate is unattainable unless Missouri IOUs can meet the maximum achievable potential analysis, which by definition, is the hypothetical upper limit of achievable potential; while MEEIA is measured relative to realistic achievable potential, which establishes a realistic target for demand-side savings that a utility can expect to achieve. AMEC expresses the same concerns noting that in rural areas, energy programs have never achieved a cumulative impact of over 1 percent on an annual basis.

Many Missouri electric utilities own electric generating units that are not located in Missouri and this important geographic element should be acknowledged in the rules as it will be a factor in regional carbon emissions compliance. The regional carbon emissions compliance approach leads to many questions, as discussed in the attached comments that require clarification in the final rules. Additionally, Missouri IOUs participate in two RTOs both of which have indicated that additional transmission resources will be needed for their members'

states to comply with the proposed rule. The RTOs have existing processes for the development of regional transmission projects and the MoPSC urges the EPA to be conscious of these processes when drafting the final rule.

Missouri's IOUs have identified several coal-fired power plants for retirement in the next two decades regardless of the adoption of the proposed rule. Retirement of coal-fired generation will result in some amount of corresponding reduction in CO_2 emissions. Therefore, the MoPSC recommends the final rule include a means of capturing the emission off-set for retirement of coal plants.

About two to four percent of the total energy used in the United States is used by water and waste water systems. This equals approximately 187 million MWh per year. Improving water pump and motor efficiency from the existing average of 55 percent to the optimal efficiency of 80 percent would save significant amounts of energy. Such an approach in meeting the state specific goals should be considered by the EPA.

As demonstrated by the attached comments, there are still many issues that need to be addressed before a final rule can be published. To the extent there are any proven flaws in the EPA analyses and assumptions, the EPA should be willing to recalculate the associated state or regional goal(s). More time is likely needed to develop a plan that is mindful of the resource requirements and costs associated with implementation.

In submitting these comments, the MoPSC is not offering an opinion regarding the legality of the EPA's authority to promulgate rules under Section 111(d). Further, nothing in these comments binds the MoPSC in its decisions in any future proceeding. Finally, nothing in these comments binds any other Missouri state agency.

Sincerely,

Robert S. Kenney
Chairman

Stephen M. Stoll
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William P. Kenney
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AA

Enclosures (1)

cc: Sara Parker Pauley, Director
Missouri Department of Natural Resources
Lewis Mills, Director
Missouri Department of Economic Development, Division of Energy
Karl Brooks, Regional Administrator, Region 7
U.S. Environmental Protection Agency

Exhibit 206 NP

Missouri Public Service Commission

Comments on the Environmental Protection Agency "Emission Guidelines for Existing Stationary Sources: Electric Generating Units"

December 1, 2014

GM-5
5/23

Technical Contacts

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Commissioner Scott Rupp voted no on the comments due to his objection to the proposed rule.

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I. Introduction

On June 2, 2014, the Environmental Protection Agency (EPA) released its "Emission Guidelines for Existing Stationary Sources: Electric Generating Units" (proposed rules), proposing guidelines for states to follow in developing plans to address greenhouse gas emissions from existing fossil fuel-fired electric generating units (EGUs). The Missouri Public Service Commission (MoPSC) would like to take this opportunity to thank the EPA for the "broad range of options available to states, including flexibility in timing requirements both for plan submission and compliance deadlines under those plans".[1]

On August 18, 2014, the MoPSC held a workshop and posed several questions to stakeholders related to the potential impacts of the EPA's proposed rules.[2] These comments present a synopsis of issues that were raised in the workshop and subsequent filings, which are of utmost importance to the MoPSC and the State of Missouri, including concerns related to the interim goal; the ability to improve heat rate efficiencies without further clarification; the ability of the existing interstate pipeline to handle increased capacity associated with new natural gas combined cycle (NGCC) generation; concerns related to complying with renewable energy standards and demand-side energy efficiency programs; a discussion of questions that need to be addressed when considering a regional/multi-state approach; transmission issues; and providing credit for coal plant retirements. While the comments may appear to address some aspects of the proposed rules in a vacuum, the MoPSC is cognizant that the EPA has provided flexibility to states in how the various building blocks are used in developing a state plan.

II. Interim goal

The EPA "recognizes that, with many measures, states can achieve emission reductions in the short-term, though the full effects of implementation of other measures, such as demand-side energy efficiency (EE) programs and the addition of renewable energy (RE) generating capacity, can take longer. Thus, the EPA is proposing interim goals that states must meet beginning in 2020. The proposed interim goals would apply over a 2020-2029 phase-in period."[3] In reality, the interim goal is unrealistic. If individual state plan approval is anticipated in June 2017, or perhaps even June 2018 if the state receives an extension, it will be very difficult for states to begin meeting the interim goal in 2020, even if the proposed rule anticipates the interim goal being averaged over 10 years.

The EPA states that "Of the four building blocks considered by the EPA in developing state goals, only the first block, heat rate improvements, involves capital investments at the affected EGUs which, if mandated in a state rule, might give rise to remaining useful life

[1] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34832 (proposed June 18, 2014).
[2] *See, generally,* Docket No. EW-2012-0065, *In the Matter of an Investigation of the Cost to Missouri's Electric Utilities Resulting from Compliance with Federal Environmental Regulations,* accessible at https://www.efis.psc.mo.gov/mpsc
[3] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34837 (proposed June 18, 2014).

considerations at a particular facility. The other building blocks – re-dispatch among affected sources, addition of new generating capacity, and improvement in end-use energy efficiency – do not generally involve capital investments by the owner/operator at the affected EGU".[4] As further discussed throughout these comments, to meet the EPA goals, a state must take into consideration the time needed to finance, permit, construct or commission new generation. The interim goal does not allow for delays in timing due to right-of-way obtainment or construction of new pipelines, transmission or generation facilities as more specifically discussed in these comments.

The EPA notes that timing flexibility, such as that provided with the interim goals, allows states to develop plans that will help states achieve a number of goals including addressing concerns about stranded assets.[5] Yet, in order to effectively meet a state's goals under the proposed timeline, it will be necessary to re-dispatch affected sources or add new generating capacity. Accelerated construction to meet aggressive goals may ultimately result in unintended stranded resources.

III. Building Block 1

In response to MoPSC questions, Missouri's investor-owned electric utilities (IOUs) and the Association of Missouri Electric Cooperatives, Inc. (AMEC) indicate the 6 percent power plant efficiency as reflected in Building Block 1 is not achievable. The IOUs and AMEC have already implemented efficiency improvements. For instance, Ameren Missouri (Ameren) indicates that since 1998 it has upgraded at least one of the steam turbines on 9 of the 12 units in its fleet and the entire turbine train has been replaced on all eight of its largest units. However, projects completed prior to 2012 will not be counted toward the 6 percent heat rate reduction. Ameren estimates that an additional 1-1.5 percent heat rate improvement could be achieved.[6] The Empire District Electric Company (Empire) recently completed efficiency projects for a total heat rate improvement of 4.45 percent. Empire estimates it can achieve another 1.73 percent heat rate reduction.[7] Kansas City Power & Light Company and KCP&L Greater Missouri Operations Company (collectively, KCP&L) identified 35 projects that would decrease the heat rate at its coal-fired generating units, for a total heat rate reduction of 1.6 percent.[8]

On December 16, 2011, the EPA signed the Mercury and Air Toxics Standards (MATS) to reduce emissions of toxic air pollutants from power plants. Compliance with MATS can be accomplished through technologies such as wet and dry scrubbers, dry sorbent injection systems, activated carbon injection systems and fabric filters. These additional plant controls increase plant heat rates that will offset some portion of the heat rate improvements required by the proposed rule.

[4] *Id*. at 34926.
[5] *Id.* at 34897.
[6] Stakeholder Questions – Ameren Missouri Response, Pages 2-3. Case No. EW-2012-0065. August 25, 2014.
[7] Empire's Response to Order Directing Response to Certain Questions, Non-Proprietary Version, Page 1. Case No. EW-2012-0065. August 26, 2014.
[8] Kansas City Power & Light Company and KCP&L Greater Missouri Operations Company's Response to Commission Orders, Exhibit 1 Page 1. Case No. EW-2012-0065. August 25, 2014.

Sierra Club, in its reply to various stakeholder responses, indicates, "the utilities may confuse a relative increase in efficiency with an absolute increase in efficiency", providing the following example.

> An increase in efficiency from 36% to 39% is a relative increase of about 8% (3/36), but an absolute increase of only 3% (39-36). EPA's Building Block 1 refers to a 6% increase in the heat rate of an affected unit, and therefore requires only a relative 6% improvement and an absolute improvement of slightly over 2%. Associating Building Block 1 with an absolute 6% efficiency improvement, as some utilities may be doing, exaggerates the reductions projected assumed under that Block.[9]

While it appears questionable whether Missouri utilities can meet the anticipated heat rate reductions given the efficiency projects already completed on Missouri's coal-fired fleet, it is clear there is confusion related to Building Block 1. At a minimum, Building Block 1 requires clarification in the final rules as to whether the heat rate reduction percentage is "relative" or "absolute".

IV. Building Block 2

Building Block 2 necessitates that coal-fired steam generation and oil/gas-fired steam generation in each state be displaced by increasing generation from existing natural gas combined cycle capacity toward a 70 percent target utilization rate.[10] Natural gas-fired combined-cycle turbines are supplied by fairly large diameter pipelines that have inlet pressures of several hundred pounds. It is estimated that "[a] new 1000 MW combined-cycle gas-fired unit that operates all 24 hours in a day will burn 168,000 MMBtu per day."[11] To put the capacity concerns in perspective, 168,000 MMBtu per day exceeds the daily peak pipeline capacity contracted by Ameren to serve central Missouri communities and is approximately 25 percent of Laclede Gas Company-St. Louis Division's contracted interstate pipeline capacity for a cold winter day. (Appendix A is a map depicting natural gas pipelines in Missouri.)

It is important to examine the potential risks associated with an increased dependence on natural gas. Unlike coal and fuel oil, natural gas is not typically stored on site. As a result, real-time delivery of natural gas through a network of pipelines and bulk storage is critical for Building Block 2. Other states along interstate transmission pipelines presumably would also need additional capacity to meet Building Block 2. For instance, along the Panhandle Eastern Pipe Line, extra capacity may not only be needed to meet the capacity of new natural gas-fired power plants in Missouri, but also new capacity in Kansas, Illinois, Indiana, Ohio and Michigan.

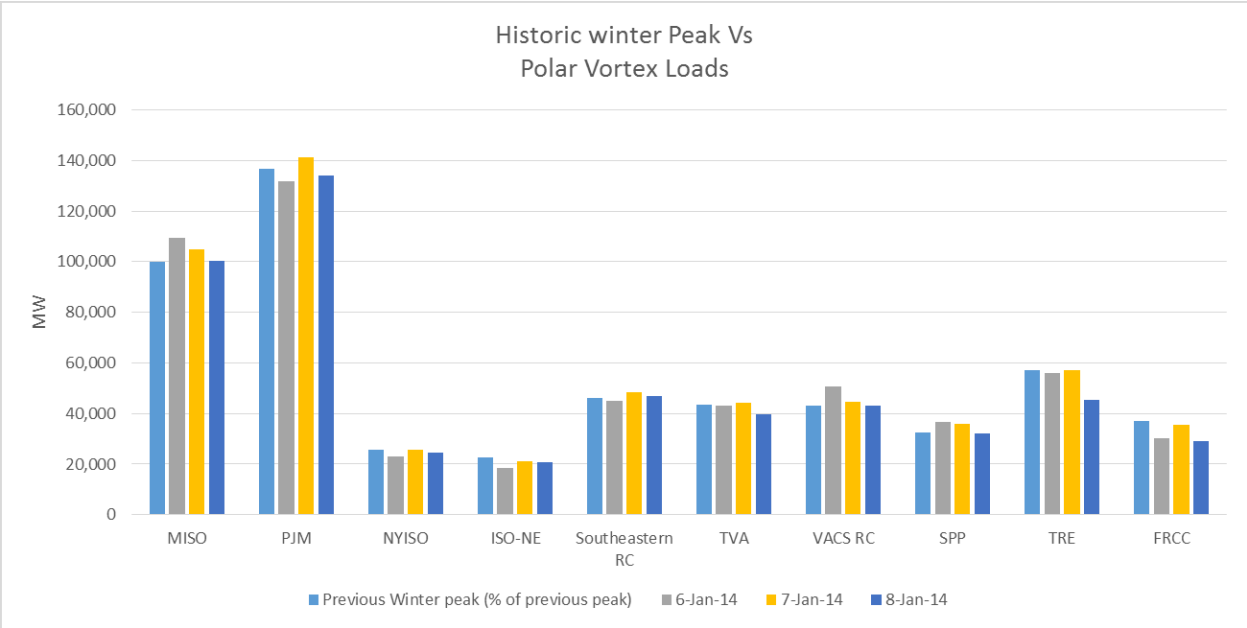
[9] Sierra Club's Response to Various Stakeholders' Comments, Pages 1-2. Case No. EW-2012-0065. September 16, 2014.
[10] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34851 (proposed June 18, 2014).
[11] Aspen Environmental Group. Implications of Greater Reliance on Natural Gas for Electricity Generation -Aspen Environmental Group. Pages 6-7.
www.publicpower.org/files/PDFs/ImplicationsOfGreaterRelianceOnNGforElectricityGeneration.pdf

Missouri IOUs operate in the Regional Transmission Organizations/Independent System Operators (RTOs) of the MidContinent Independent System Operators (MISO), Southwest Power Pool (SPP). Missouri rural electric cooperatives operate in Associated Electric Cooperative, Inc. (AECI). The RTO/AECI construct provides for reliability in the transmission network and compensates utilities for economic dispatch of energy. The proposed rules will change the dispatch of generating units by replacing economic generating resources with less economic resources potentially causing higher market clearing prices. Replacing economical dispatch with 70 percent NGCC could result in additional costs and could affect the reliability of the national electric grid. SPP suggests a comprehensive and independent analysis of the impacts of the proposed rules on the reliability of the nation's electric grid.[12] The MoPSC supports this recommendation.

In addition, natural gas pipelines serving Missouri were designed for winter heating load. They do not have the capacity to serve winter natural gas heating load while simultaneously providing natural gas capacity to off-set displaced coal-fired generation. During the winter of 2014, the Midwest, South Central and East Coast regions of North America experienced extreme cold weather conditions known as the polar vortex. The extreme temperatures had a drastic impact on load, with many of the reliability coordinators (i.e., SPP and MISO) reporting record or near record winter peak demands.

As demonstrated by the following graph, system operators had many challenging decisions due to lost capacity from extreme weather conditions exceeding the design of generating units and from lost fuel due to the lack of natural gas transportation. Demand for natural gas increased, resulting in a significant amount of gas-fired generation being unavailable due to curtailments.

[12] Supplemental Responsive Comments of Southwest Power Pool, Inc. Exhibit A. Case No. EW-2012-0065. October 13, 2014.

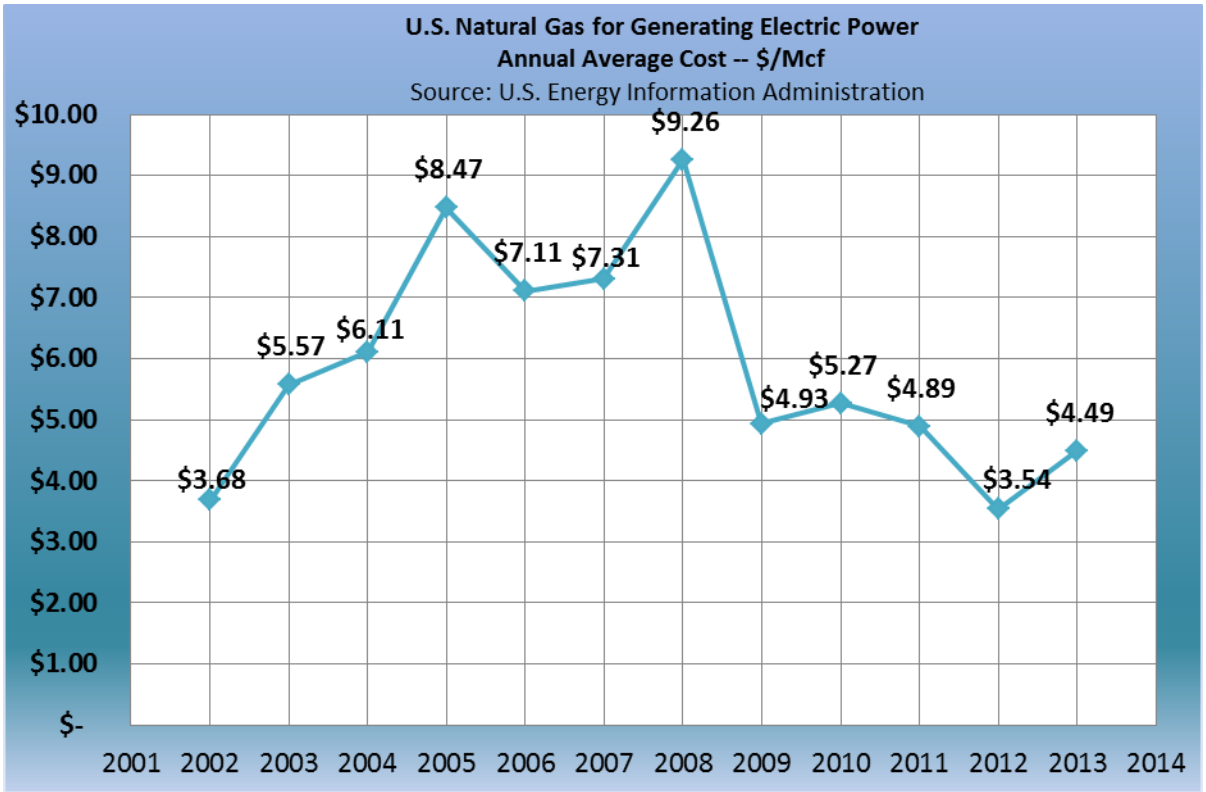


Historic All-Time Winter Peaks vs. Polar Vortex Loads[13]

In the GHG Abatement Measures Technical Support Document[14], the EPA discusses natural gas prices noting that advances in the production of natural gas have helped to reduce natural gas prices, using 2011/2012 in the analysis supporting the proposed rules. As demonstrated by the following chart, 2012 is not representative of natural gas prices, and is in fact represents the lowest price year in the past 12 years. The MoPSC recommends the EPA either select an earlier year where prices were higher or use an average of multiple years to capture the variability in natural gas prices.

[13] *See:* http://www.nerc.com/pa/rrm/January%202014%20Polar%20Vortex%20Review/Polar_Vortex_Review_29_Sept_2014_Final.pdf (vii)

[14] *See:* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-ghg-abatement-measures.pdf



V. Building Block 3

The EPA anticipates that Building Block 3 will reduce CO_2 emissions at all affected EGUs by expanding the amount of lower-carbon generating capacity. According to the EPA, this can be accomplished by completing all nuclear units under construction, avoiding retirement of about six percent of existing nuclear capacity and increasing renewable generation capacity consistent with state renewable portfolio standards.[15]

[15] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34851 (proposed June 18, 2014).

Missouri's Renewable Energy Standard (MoRES), Mo. Rev. Stat. §§ 393.1020 to 393.1030, includes a requirement for all IOUs to generate or purchase electricity generated from renewable energy resources.[16] The MoRES states, "[a]ny renewable mandate required by law shall not raise the retail rates charged to the customers of electric retail suppliers by an average of more than one percent in any year, and all the costs associated with any such renewable mandate shall be recoverable in the retail rates charged by the electric supplier. Solar rebates shall be included in the one percent rate cap provided for in this section."[17]

Many of Missouri's existing renewable projects were developed in response to the MoRES; yet the proposed rules do not provide an opportunity for a state to receive credit for pre-2012 renewable energy projects. Further, the MoRES places a limitation such that any renewable mandate shall not raise IOU retail rates by an average of more than one percent in any year, and all the costs associated with such mandate shall be recoverable in the retail rates of that IOU. The final rules should be cognizant of state mandates that may conflict or cause inconsistencies with federal mandates.

The EPA is proposing that a state be allowed to account for all CO_2 emission reductions from renewable energy measures implemented by the state, whether they occur in the state or in other states.[18] The MoPSC supports this approach. Missouri IOUs have entered into 15 and 20 year agreements to purchase wind from Northeast Iowa and Kansas.[19] Renewables purchased from another state to meet Missouri demand, which are paid for by Missouri ratepayers, should count toward Missouri CO_2 emission reduction.

The EPA acknowledges that state renewable portfolio standards (RPS) requirements allow for interstate trading of RE attributes through the existence of renewable energy credits (RECs) and is seeking comment on how to avoid double counting emission reductions using this approach. The MoRES allows such REC trading as a means of state compliance. One method of compliance would be a system where emission reduction credits are tied to the RECs traded among states.

[16] The portfolio requirement provides that electricity from renewable energy resources constitutes the following portions of each electric utility's sales:

> (1) No less than two percent for calendar years 2011 through 2013;
> (2) No less than five percent for calendar years 2014 through 2017;
> (3) No less than ten percent for calendar years 2018 through 2020; and
> (4) No less than fifteen percent in each calendar year beginning in 2021.
>
> At least two percent of each portfolio requirement is required to be derived from solar energy, unless exempted from this requirement.
>
> A regulated utility may comply with the standard in whole or in part by purchasing renewable energy credits (RECs). Each kilowatt-hour of eligible energy generated in Missouri counts as 1.25 kilowatt-hours for purposes of compliance with the RES.

[17] *See* Mo. Rev. Stat § 393.1045.

[18] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34922 (proposed June 18, 2014).

[19] *See:* http://psc.mo.gov/Electric/Renewable_Energy_Standard_Compliance_Reports.

The EPA also notes that, "[n]uclear generating capacity facilitates CO_2 emission reductions at fossil fuel-fired EGUs by providing carbon-free generation that can replace generation at those EGUs"[20], yet no net credit is given for the remaining useful life of the Callaway Energy Center (Callaway), presumably because "the generation from [this] unit is currently helping to avoid CO_2 emissions from fossil fuel-fired EGUs."[21] In its comments, Ameren indicated it does not believe Callaway is "at risk" for closure.[22] The EPA should allow a percentage of nuclear generation to be used in meeting a state's goal for CO_2 emission reduction. Ameren estimates that if, under the proposed rule methodology, Callaway does not achieve a 90 percent capacity factor, Missouri will necessarily be required to meet its goals from other building blocks.[23]

The National Association of Regulatory Utility Commissioners (NARUC), at its 2014 Annual Meeting, passed a resolution urging the EPA, "to the extent it regulates carbon from existing power plants under Section 111(d) of the Clean Air Act" to adopt final rules that: "1) will encourage States to preserve, life-extend, and expand existing nuclear generation; and 2) remove the generic approximately 6 percent at-risk nuclear and nuclear under construction from the calculation of State-specific emissions targets" and indicate "that States may include in compliance plans and thus receive emissions credit related to all output of new nuclear capacity (including uprates of existing plants) that begins operating after the issuance date of the proposed rule."[24] The MoPSC supports this recommendation.

Similarly, hydropower generation is excluded from the 2012 generation baseline because including "large amounts of existing hydropower generation could distort regional targets that are later applied to states lacking that existing hydropower capacity."[25] The MoPSC suggests that states should be allowed to consider incremental improvements in nuclear and hydropower generation from existing facilities as an option for compliance with state goals.

VI. Building Block 4

To estimate the potential CO_2 reductions at affected EGUs that could be supported by implementation of Building Block 4, the EPA developed a "best practices" demand-side energy efficiency scenario, which "represents a feasible policy scenario showing the reductions in fossil fuel-fired electricity generation resulting from accelerated use of energy efficiency…consistent with a level of performance that has already been achieved or required by policies…of the

[20] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34870 (proposed June 18, 2014).
[21] *Id* at 34858.
[22] Ameren has filed for a 20-year license extension from the Nuclear Regulatory Commission, which would extend the operation of Callaway through 2044.
[23] Stakeholder Questions – Ameren Missouri Response, Page 7. Case No. EW-2012-0065. August 25, 2014.
[24] *Resolution Recognizing the Importance of Nuclear Power in Meeting Greenhouse Gas Goals*. Sponsored by the Committee on Electricity. Recommended by the NARUC Board of Directors on November 18, 2014. Adopted by the NARUC Committee of the Whole November 19, 2014.
[25] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34867 (proposed June 18, 2014).

leading states."[26] The "leading states" have either achieved, or have policies that will lead them to achieve annual incremental savings rates of at least 1.5 percent; therefore, the EPA determined the 1.5 percent annual incremental savings rate was a reasonable estimate of the energy efficiency policy that can be achieved at reasonable costs by all states.[27]

> The Missouri Energy Efficiency Investment Act (MEEIA), Mo. Rev. Stat. § 393.1075, provides:
> 3. It shall be the policy of the state to value demand-side investments equal to traditional investments in supply and delivery infrastructure and allow recovery of all reasonable and prudent costs of delivering cost-effective demand-side programs. In support of this policy, the commission shall:
>
> (1) Provide timely cost recovery for utilities;
> (2) Ensure that utility financial incentives are aligned with helping customers use energy more efficiently and in a manner that sustains or enhances utility customers' incentives to use energy more efficiently; and
> (3) Provide timely earnings opportunities associated with cost-effective measurable and verifiable efficiency savings.

It should be noted that MEEIA is voluntary, not mandatory, and only applies to IOUs. There is an expectation that an IOU's demand-side programs can achieve a goal of all cost-effective demand-side savings.[28]

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[26] *Id* at 34872.
[27] *Id.*
[28]
> 1. For 2012: three-tenths percent (0.3%) of total annual energy and one percent (1.0%) of annual peak demand;
> 2. For 2013: eight-tenths percent (0.8%) of total annual energy and two percent (2.0%) of annual peak demand;
> 3. For 2014: one-and-five-tenths percent (1.5%) of total annual energy and three percent (3.0%) of annual peak demand;
> 4. For 2015: two-and-four-tenths percent (2.4%) of total annual energy and four percent (4.0%) of annual peak demand;
> 5. For 2016: three-and-five-tenths percent (3.5%) of total annual energy and five percent (5.0%) of annual peak demand;
> 6. For 2017: four-and-eight-tenths percent (4.8%) of total annual energy and six percent (6.0%) of annual peak demand;
> 7. For 2018: six-and-three-tenths percent (6.3%) of total annual energy and seven percent (7.0%) of annual peak demand;
> 8. For 2019: eight percent (8.0%) of total annual energy and eight percent (8.0%) of annual peak demand; and
> 9. For 2020 and for subsequent years, unless additional energy savings and demand savings goals are established by the commission: nine-and-nine-tenths percent (9.9%) of total annual energy and nine percent (9.0%) of annual peak demand for 2020, and then increasing by one-and-nine-tenths percent (1.9%) of total annual energy and by one percent (1.0%) of annual peak demand each year after 2020.

See: Rule 4 CSR 240-20.094(2).

The IOUs are required to submit triennial integrated resource plans (IRPs) with annual updates, that include the principles by which potential demand-side resource options shall be developed and analyzed for cost effectiveness, with a goal of achieving all cost-effective demand-side savings. In addition, when an IOU files for approval of demand-side programs, the IOU must provide a current market potential study which uses primary data and analysis for the utility's service area. Although not subject to MEEIA or the Commission's IRP rules, Missouri cooperatives provide energy efficiency programs designed to meet the needs of their membership. In 2008, AMEC launched its "Take Control and Save Program," which to date has resulted in a projected lifetime kilowatt-hour savings of approximately 1,096,086, 235 kWh.[29] A review of the most recent IRPs and potential studies indicates the EPA's assumption that a 1.5 percent annual incremental savings rate is aggressive unless Missouri IOUs can meet the maximum achievable potential (MAP) analysis. Maximum achievable potential, by definition, is the ***hypothetical upper limit*** of achievable potential; while MEEIA is measured relative to realistic achievable potential which establishes a realistic target for demand-side savings that a utility can expect to achieve.[30] AMEC expresses the same concerns noting that in rural areas, energy programs have never achieved a cumulative impact of over 1 percent on an annual basis.[31]

The EPA requests comment on whether industrial combined heat and power (CHP) approaches warrant consideration as a potential way to avoid affected EGU emissions. The IOUs, in their potential studies, have completed an analysis of CHP. As an example, the KCP&L potential study identified 60 candidate customers for CHP, including customers in the chemicals, food, healthcare, and industrial sectors.[32] The MoPSC recommends CHP be included as a viable option to reduce CO_2 emissions and state credit should include energy savings from CHP projects.

MEEIA also provides opportunity for customers to "opt-out" of IOU demand-side programs when certain criteria are met.[33] The MoPSC suggests that final rules provide flexibility for states to receive credit for non-utility efforts toward reducing CO_2 emissions.

The proposed rule indicates the EPA intends to provide guidance for evaluation, monitoring and verification (EM&V) of renewable energy and demand-side energy efficiency programs and measures. The EPA is requesting comment on whether minimum EM&V requirements could be developed for RE and demand-side EE measures and programs where a

[29] Response of Missouri's Rural Electric Cooperatives, Page 11. Case No. EW-2012-0065. August 26, 2014.
[30] *See:* Rule 4 CSR 240-3.164(2)(A).
[31] Reply Comments of Missouri's Rural Electric Cooperatives, Page 2. Case No. Ew-2012-0065. September 16, 2014.
[32] Direct Testimony of Kim Winslow, Schedule KHS-5, Page 100. Case No. EO-2014-0095. January 7, 2014.
[33] *See:* Rule 4 CSR 240-20.094(6)(A): 1. The customer has one or more accounts within the service territory of the electrical corporation that has a demand of five thousand kilowatts or more; 2. The customer operates an interstate pipeline pumping station, regardless of size; or 3. The customer has accounts within the service territory of the electrical corporation that have, in aggregate, a demand of two thousand five hundred kilowatts or more, and the customer has a comprehensive demand-side or energy efficiency program and can demonstrate an achievement of savings at least equal to those expected from utility-provided programs.

substantial base of experience has been established nationally for the evaluation of measure and program outcomes.[34] As the EPA notes, regardless of the evaluation approach, state public utility commissions or energy efficiency program administrators strive to strike a balance between the transaction costs of EM&V activities (i.e., expense, time and resources) and the reliability, validity and usefulness of the estimated energy savings results.[35] These same principles should apply to EM&V for state compliance plans. Developing minimum EM&V requirements for those programs where outcomes are well-established provides an opportunity to minimize resources expended on EM&V, allowing efforts to concentrate on areas for programs that are less established such as building codes, and programs that alter consumer behavior.

VII. Regional/multi-state approach

Many Missouri electric utilities own electric generating units that are not located in Missouri and this important geographic element should be acknowledged in the rules as it will be a factor in regional carbon emissions. The EPA is proposing that states participating in a multi-state plan submit a single, joint plan on behalf of all the participating states. The individual state performance goals would be replaced with an equivalent multi-state performance goal.[36] This approach leads to many questions that require clarification in the final rules.

Who is responsible for ensuring reliability among the region?

A regional approach to reliability is already established through the RTO construct. As such, the MoPSC suggests the RTO should be responsible for ensuring reliability among the region. Missouri utilities operate in MISO, SPP and AECI. It is not clear how a regional approach will work in a state with multiple operating organizations. The MoPSC suggests it may be more reasonable to allow a state such as Missouri, which has differing organizational participation structures, to develop multiple state plans applicable to meet the requirements of the different regions of the state; thus, aligning the responsibilities of reliability with the applicable RTO structure.

Who is responsible for enforcement of the regional/multi-state goal?

The state environmental agency and the state public utility commission are the entities with experience and knowledge of enforcement at the state level. Therefore, the MoPSC suggests an alliance of each region's state agencies would be best equipped to enforce compliance with regional/multi-state goals.

[34] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34921 (proposed June 18, 2014).
[35] *See:* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-state-plan-considerations.pdf
[36] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34851 (proposed June 18, 2014).

How will a regional or multi-state approach work if some states meet the multi-state performance goal and other states do not meet the performance goal? Are all states penalized? Do the other states in the multi-state approach have to "pick up the slack"?

Although designed as a regional/multi-state approach, the MoPSC suggests that states be held individually accountable for compliance with each state's achievements, or lack thereof, toward contributing to the regional goal. However, a process should be in place to allow for modification of over- and under-compliance with the regional goals allowing states to "share" accomplishments toward the regional goal.

How do states incorporate a RES across borders when different states have different renewable portfolio requirements?

In the proposed rule, the EPA noted "renewable resource potential varies regionally"[37] and, as a result of this assumption, divided the states into six regions when developing the best practices scenarios. Since renewable generation is subject to metering, it should be rather easy to identify the source of generation and, presumably, the EPA's pre-defined grouping would enhance the regions ability to incorporate a RES across borders. However, as previously mentioned, Missouri utilities operate in MISO, SPP and AECI so simply dividing states into regions may not be sufficient. The MoPSC suggests it may be more reasonable to allow a state such as Missouri, to develop multiple state plans combining states in the same organizational participation structure into a region.

It should be noted that, for Missouri, regional compliance is further complicated since the MoRES is subject to the one percent retail rate impact previously discussed.

How do you count EE across borders?

One of the challenges with measuring CO_2 emission reduction associated with energy efficiency is determining the amount of the avoided MWh from the specific program and then quantifying that amount as an emission reduction. As the EPA notes in the draft rules, states already have measurement and verification processes in place. Those processes could be defined through regional protocols designed to measure the impacts of energy efficiency savings at the regional level.

Do states share costs for new plants/upgrades in the region that are designed to meet the regional/multi-state goal?

The MoPSC suggests cost of compliance should apply to all electric customers across the region. If new plants/upgrades in the region are designed to meet the regional-multi-state goal, a portion of the costs associated with those plants/upgrades should be apportioned to each state relative to the contribution the plant/upgrade provides to the corresponding state goal.

[37] *Id* at 34866.

Is there an opportunity for arbitrage between states with different rate structures?

To avoid arbitrage opportunities between states with different rate structures, RTO dispatch formulas will likely need to be revised. However, opportunities for arbitrage may not be limited to regional/multi-state approaches, but also individual state plans. For instance, there may be an opportunity for resource shuffling by importing low-cost renewable resources to replace high CO_2 resources. The MoPSC suggests final rules be drafted to specifically discourage such examples of arbitrage.

VIII. Transmission

MISO and SPP completed analyses on the impact of the proposed rules on their respective regions. MISO's findings indicate that compliance costs in the MISO footprint could be reduced by approximately $3 billion annually by using a regional (MISO-wide) approach to CO_2 emission reductions. MISO also determined that, while compliance might be achieved using the proposed building blocks, other actions, such as building new gas generation, may reduce compliance costs. The MISO study also determined that the most cost-effective means to comply with the proposed rules may be to retire more coal generation than was originally planned to retire under other EPA regulations, such as MATS.[38]

SPP performed a transmission system impact evaluation, first assuming available unused electric generation capacity that currently exists would be used to replace projected retired capacity; and second assuming projected EGU retirements would be replaced by increased output of existing generation and new generation capacity modeled according to resource planning information used in SPP's 10-year transmission planning assessment. The evaluation indicated the SPP region will experience numerous thermal overloads and low voltage occurrences under both scenarios. If assumed EGU retirements were to occur absent corresponding transmission and generation infrastructure improvements, the electric grid would suffer extreme reactive deficiencies, exposing it to widespread reliability risks. The second scenario demonstrated that even with generation capacity added to replace EGU retirements, additional transmission infrastructure will be needed to maintain reliability.[39]

SPP indicates that in its region, as many as eight years have been required to study, plan and construct new transmission facilities. Compliance with the proposed rules becomes an issue if new transmission facilities are required to meet capacity. Capital and financing needs, technical and logistical needs, site permitting and land lease agreement requirements are all issues or constraints that need to be addressed prior to any construction, whether it is construction of additional transmission lines, pipelines or generation facilities.

[38] *See:* https://www.misoenergy.org/Library/Repository/Communication%20Material/EPA%20Regulations/MISOEPACO2EmissionReductionAnalysis.pdf

[39] *See:* Supplemental Responsive Comments of Southwest Power Pool, Inc. Exhibit A. Case No. Ew-2012-0065. October 13, 2014.

IX. Coal retirements

Through the Missouri IRP process, the IOUs choose the preferred resource plan[40] that will "provide the public with energy services that are safe, reliable, and efficient, at just and reasonable rates, in compliance will all legal mandates, and in a manner that serves the public interest and is consistent with state energy and environmental policies". Part of the IRP planning process is to identify potential plant retirements over the planning cycle. Ameren's IRP identifies approximately one-third of its coal-fired generating capacity (1,808 MW) that will be retired in the next 20 years. KCP&L identifies retirements of 170 MW in 2016, 195 MW by 2019 and 340 MW in 2021, partially attributable to current or proposed environmental regulations including MATS, Ozone National Ambient Air Quality Standards (NAAQS), Particulate Matter NAAQS, SO_2, NAAQS Clean Water Act Section 316(a) and (b), Effluent Guidelines and Coal Combustion Product Rule. Empire recently retired one coal unit and has plans to retire another 104 MW in mid-2016. Retirement of coal-fired generation will result in some amount of corresponding reduction in CO_2 emissions. Therefore, the MoPSC recommends the final rules include a means of capturing the emission off-set for retirement of coal plants.

X. Energy/Water Nexus

The energy/water nexus provides an additional opportunity for CO_2 emission reductions not contemplated in the proposed rules. About 2-4 percent of the total energy used in the United States is used by water and waste water systems. This equates to approximately 187 million MWh per year.[41] The following chart gives the percentage break down of energy used in delivering safe and reliable water and wastewater services to the public.

ENERGY USED FOR WATER TREATMENT AND DELIVERY	
Ground Water Utility	
Well Pumping	33%
Chlorination	1%
Booster Pumping	66%
Surface Water Utility	
Raw Water Pumping	9%
Treatment	5%
Finished Water Pumping	86%

[42]

It is estimated that improving water pump and motor efficiency from the existing average of 55 percent to the optimal efficiency of 80 percent would save enough electricity to light up

[40] 4 CSR 240-22
[41] American Water Company comments in response to the proposed rules. (EPA-HQ-OAR-2013-0602). November 4, 2014.
[42] "It's Not Just a 'Nexus' – Energizing Water-Energy Integration". Aldie Warnock, Senior Vice President, External Affairs, Communications and Public Policy, American Water. The National Association of Water Companies. October 2014.

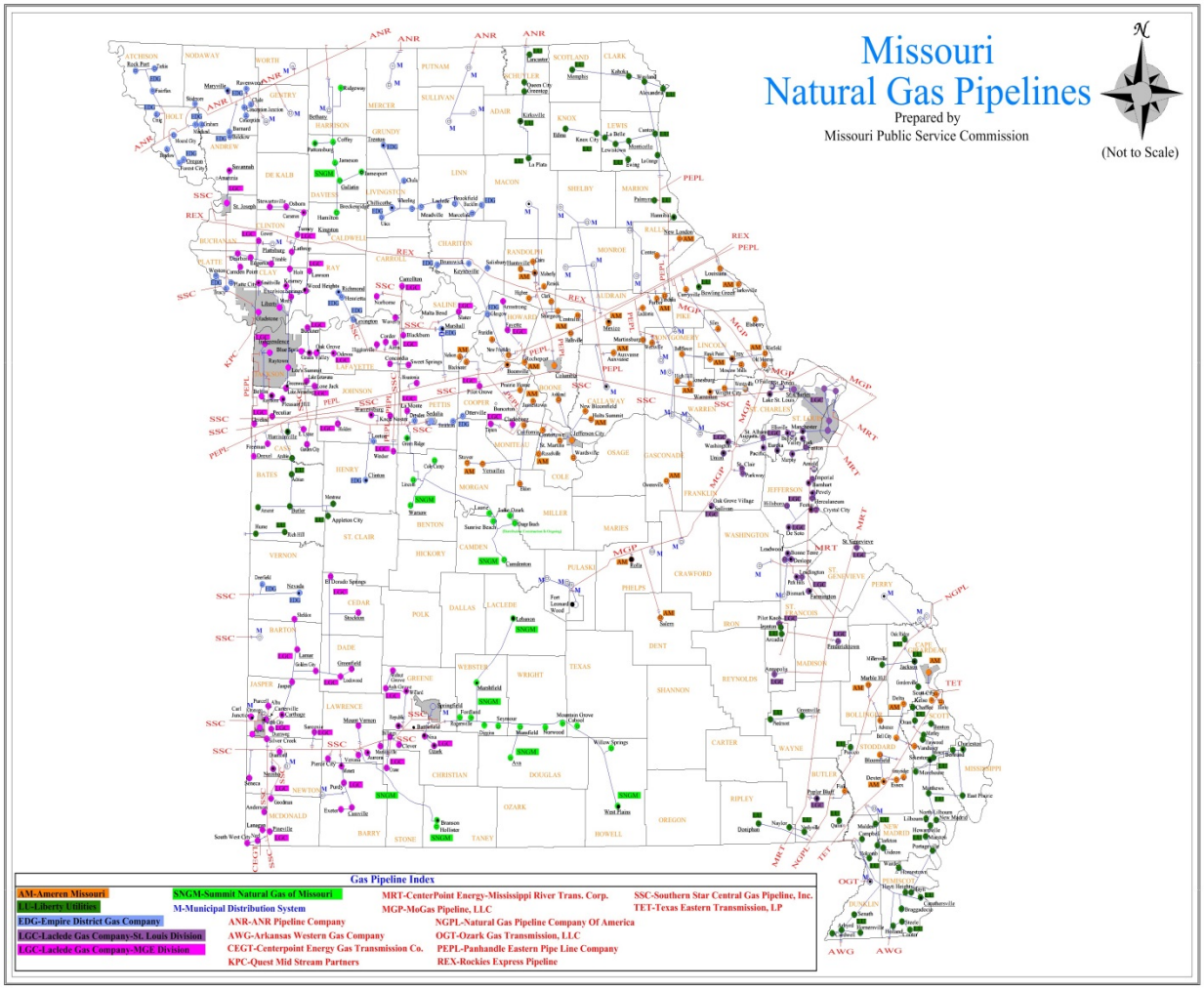
Chicago for over 2 years, enabling the permanent retirement of seven coal-fired plants.[43] Over the last four years, American Water has replaced or refurbished 140 water pumps with more energy efficient pumps. American Water estimates the more efficient pumps will result in energy savings of 12 million kWh per year, for a reduction in CO_2 of 18 million pounds per year.[44] Missouri American Water Company estimates that if it replaced all of its pumps and motors in its St. Louis County system with 10 percent more efficient pumps and motors; it would reduce its carbon footprint by about 13,000 tons per year.[45]

NARUC, at its 2014 Annual Meeting, passed a *Resolution Regarding the Water-Energy Nexus*, which ended, "**RESOLVED**, That, as the EPA moves forward with its proposed rules for reducing carbon emissions from existing stationary sources, NARUC recommends that States be provided maximum flexibility to support energy efficiency measures stemming from the water-energy nexus and to incorporate those efforts, and their positive impacts on the environment, into any compliance plan that might emerge."[46] The MoPSC supports this recommendation. These are quantifiable emission reductions that should be included in the final rules and captured through state plans.

XI. Conclusion

In conclusion, the MoPSC acknowledges the significant efforts the EPA has undertaken to draft proposed rules that provide the states the flexibility and latitude to draft state compliance plans. As demonstrated by these comments, there are still many issues that need to be addressed before a final rule can be published. To the extent there are any proven flaws in the EPA analyses and assumptions, the EPA should be willing to recalculate the associated state or regional goal(s). More time is likely needed to develop a plan that is mindful of the resource requirements and costs associated with implementation.

[43] *Id.*
[44] *Id.*
[45] Energy-Water Nexus comments to Missouri Comprehensive State Energy Plan Steering Committee Meeting. Missouri American Water Company. October 23, 2014.
[46] *Resolution Regarding the Water-Energy Nexus*. Sponsored by the Committees on Energy Resources and the Environment, Gas, and Water. Recommended by the NARUC Board of Directors November 18, 2014. Adopted by the NARUC Committee of the Whole November 19, 2014.


Missouri
Natural Gas Pipelines
Prepared by
Missouri Public Service Commission
(Not to Scale)
Gas Pipeline Index
AM-Ameren Missouri
LU-Liberty Utilities
EDG-Empire District Gas Company
LGC-Laclede Gas Company-St. Louis Division
LGC-Laclede Gas Company-MGE Division
SNGM-Summit Natural Gas of Missouri
M-Municipal Distribution System
ANR-ANR Pipeline Company
AWG-Arkansas Western Gas Company
CEGT-Centerpoint Energy Gas Transmission Co.
KPC-Quest Mid Stream Partners
MRT-CenterPoint Energy-Mississippi River Trans. Corp.
MGP-MoGas Pipeline, LLC
NGPL-Natural Gas Pipeline Company Of America
OGT-Ozark Gas Transmission, LLC
PEPL-Panhandle Eastern Pipe Line Company
REX-Rockies Express Pipeline
SSC-Southern Star Central Gas Pipeline, Inc.
TET-Texas Eastern Transmission, LP

Appendix A