

Missouri Public Service Commission  
Environmental Regulations Overview

**August 18, 2014** Staff Workshop

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

Kansas City Power & Light Company (KCP&L) And KCP&L  
Greater Missouri Operations Company (GMO) Response To Order  
Directing Response To Certain Questions

# Summary of Initial Area of Concerns Regarding the Proposed Clean Power Plan

- Authority to regulate
- Timeline concerns
- Best System of Emission Reduction assumptions
- Renewable energy and energy efficiency treatment
- Interstate issues

# I. Building Block 1-Reduce CO<sub>2</sub> Emission by 6% due to Heat Rate Improvements

- Specific projects that would decrease the heat rate at coal-fired generating units.
- Only at generating units that would remain in service over the compliance period.
- In total could reduce coal plant heat rate by potentially 1.6%.
- Do not expect that a 6% remaining coal fleet heat rate improvement is reasonably achievable.

## II. Building Block 2-Re-dispatch Generation to Combined Cycle (NGCC)

- Natural gas transmission constraints in Missouri.
- Southern Star Central Gas serves five natural gas electric generating stations, assuming no other demand on the line segment, the line does not have sufficient capacity to serve the flows of all of these units.
- Pipelines serving Missouri were not designed to simultaneously serve winter heat load and displaced coal-fired generation.
- A pipeline upgrade of the magnitude necessary to support the EPA's target could be substantial.

# III. Building Block 3-Increase Generation from Zero and Low-emitting Sources

## Wind

- Using wind additions as an example, adding 1.5 million MWhs of new renewable generation equates to approximately 400 MW of wind capacity at a cost of about \$650-\$700 million.
- It is possible for the solar, wind and biomass additions to be achieved in Missouri by 2020, but planning would need to begin post haste and it would be costly.

# III. Building Block 3-Increase Generation from Zero and Low-emitting Sources

## Wind

- Our long-term resource planning has evaluated the potential for CO<sub>2</sub> emission regulations on its resource decisions for many years. In part, this has led the Companies to add significant wind resources to the supply portfolio. Given the cost-effectiveness of Kansas wind resources, the great majority of the current and planned wind additions are located in Kansas.

KCP&L owns the following wind generation in Kansas:

- Spearville-1 - 100.5 MW in Ford County operational since 2006
- Spearville-2 - 48.0 MW in Ford County operational since 2010

# III. Building Block 3-Increase Generation from Zero and Low-emitting Sources

## Wind

KCP&L and GMO have long-term purchase power agreements for the following wind generation in Kansas:

- Gray County - 60 MW in Gray County since 2001
- Cimarron-II - 131.1 MW in Gray County since 2012
- Ensign - 98.9 MW in Gray County since 2012
- Spearville-3 - 100.8 MW in Ford County since 2012
- Waverly - 200 MW in Coffey County starting in 2015
- Slate Creek - 150 MW in Sumner County starting in 2015

# III. Building Block 3-Increase Generation from Zero and Low-emitting Sources

## Wind

- These Kansas based resources are allocated to our Kansas and Missouri customers based on demand of the customer's in the two states. We currently do not transfer renewable energy credits (RECs) because the generation fulfills the customer's demand.
- A reasonable system of credit for our renewable energy generation to comply with the proposed Clean Power Plan should be developed to allow compliance across state lines (similar to RECs) without double counting the renewable energy credit. We believe multi-state coordination opportunities between Kansas and Missouri should also be investigated to address this resource allocation.



# III. Building Block 3-Increase Generation from Zero and Low-emitting Sources

## At Risk Nuclear

- The EPA included 5.8% of Callaway Energy Center's potential generation at an assumed 90% capacity factor.
- Should Callaway, in any given year, generate less energy than the EPA assumption, the state would need to offset any shortfall.
- Likewise, EPA included 5.8% of Wolf Creek's potential generation at an assumed 90% capacity factor in calculating Kansas emission rate targets.

# III. Building Block 3-Increase Generation from Zero and Low-emitting Sources

## Nuclear Generation

- In general, EPA's treatment of nuclear generation does not raise as significant concerns for Missouri or Kansas as compared to other states constructing new nuclear generation.
- While nuclear, wind and hydro generation can all be considered zero-emitting resources, EPA has treated them differently under the Clean Power Plan.
- For example, all wind generated energy can be included in a state's compliance plan, where only 5.8% of nuclear generation can be included.

## IV. Building Block 4-Increase Cumulative Benefits of Energy Efficiency Programs

- Based on the KCP&L IRP Annual Updated filed in March 2014, KCP&L anticipates it will be just short of the 1.5% incremental energy efficiency (EE) growth target.
- While the GMO IRP Annual Updated filed in March 2014 anticipates it can just exceed the 1.5% incremental EE growth target, it is not expected to be sustainable.
- Although, based on the programs projections, the cumulative EE projections may exceed the 9.92% cumulative target in 2030.
- This is based on current estimates of our Demand Side Management (DSM) program performance and are subject to change.

## IV. Building Block 4-Increase Cumulative Benefits of Energy Efficiency Programs

- Based on information from the KCP&L and GMO IRP's completed in 2014, the 8.7 million MWh of avoidable generation attributable to EE appears achievable for the state.
- The KCP&L and GMO IRP's included approximately 2.8 million MWh of EE in 2030.
- According to the Missouri Statewide DSM Market Potential Study economic potential is estimated at 23.4 million MWh by 2020.
- This estimate seems aggressive when compared to our potential study.

## V. General Questions

### Heat Rate Improvement

- KCP&L is always trying to maintain or improve the heat rate of our units. We do not believe the additional proposed heat rate improvement is generally available for all generating units.
- EPA determined in the proposed Clean Power Plan that a six percent improvement in the heat rate of existing coal-based power plants could be achieved at reasonable cost.
- KCP&L is also concerned about how New Source Review would be addressed for any heat rate improvement projects that the state implementation would require of the utility.

# V. General Questions

## NGCC Increased Utilization

- In the proposed Clean Power Plan, EPA recognized some challenges to increasing NGCC utilization, primarily infrastructure and system considerations.
- EPA apparently assumes that natural gas pipeline capacity will be expanded to meet all electric sector needs.
- The dynamics between electric generation, wholesale markets and the natural gas and pipeline industries are much more complex than described in the proposed rule.

# V. General Questions

## Renewable Energy

- In developing the baseline and target renewable energy generation levels, EPA used hypothetical renewable energy standards (RES) requirements.
- EPA needs to look at the entire electricity generation and distribution system and how the pieces inter-relate to each other.
- Renewable generation cannot be substituted for traditional dispatchable resources on a MW for MW basis.
- The effect of renewables on wholesale markets can change the cost and market dynamics on which EPA appears to rely.

# V. General Questions

## Customer Energy Efficiency

- EPA assumes each state currently below the 1.5% annual energy savings rate can increase its incremental energy savings levels by 0.2% per year.
- EPA assumed that states would start ramping up EE programs in 2017 in order to reach the target annual EE savings rate no later than 2025.
- On a national basis, it is not known if the 1.5% annual increase is reasonable, achievable and sustainable.
- EPA acknowledges that this level of performance has not been sustained nationwide previously.



## V. General Questions

### Statewide Goal for Missouri Achievable

- While KCP&L has not analyzed Missouri's ability to meet the EPA established goals, KCP&L anticipates being able to meet an equivalent goal for KCP&L and GMO.
- This "equivalent goal" is based on KCP&L and GMO meeting the same percentage reduction in emission rates as the EPA established for the state (21.3% adjusted).
- One of the critical assumptions made in the initial compliance evaluation is that wind resources in Kansas that serve Missouri retail load would be used to meet the Missouri goal.

## V. General Questions

### Rate-based or Mass-based Standard

- KCP&L continues to evaluate the advantages and disadvantages of a rate-based standard and a mass-based standard.
- Some of the details required to complete that evaluation will not be available until the states develop their plans.
- At this time, KCP&L is not yet ready to support either standard and suggests that EPA provide flexibility for the states to make that determination in the state plans.

# V. General Questions

## Rate-based Standard

- Compliance flexibility through averaging among affected sources or the use of tradable credits for EE and RE.
- Credits could be used to adjust a generating unit's CO<sub>2</sub> emission rate.
- EE and RE would become enforceable components of a state plan.
- A rate-based standard could be implemented state-by-state, employ multi-state averaging, or use a trading program.
- A rate-based standard facilitates additional generation additions as customer demand increases but needs to appropriately address generation retirements.

# V. General Questions

## Mass-based Standard

- Accomplished either as an individual limit on CO<sub>2</sub> tons emitted from an affected unit or a finite CO<sub>2</sub> emission budget for a group of affected units implemented through trading.
- EE could be complementary to the enforceable state plan and not required to be included as enforceable measures in a state plan.
- A mass-based standard directly accounts for generation retirement but does not support generation additions as customer demand increases.

## V. General Questions

### State Compliance Plan – RES/EE Compliance

- The Company believes that the federal enforcement issue will need to be considered carefully by the Commission.
- The EPA will likely require that emission reductions are federally enforceable and that it has authority to enforce the standards in any state plan, including standards that may be based on state legislation.

## V. General Questions

### Steps Taken to Satisfying EPA Building Blocks

- KCP&L and GMO have purchased or entered into long-term power purchase agreements for wind facilities.
- By 2020, it is anticipated that these wind facilities will produce over 4.2 Million MWhs of renewable energy annually.
- Additionally, through the Energy Efficiency programs that KCP&L and GMO have initiated through MEEIA filings, it is anticipated that greater than 1.4 Million MWhs will be conserved annually by 2020.

## V. General Questions

### Independent System Operator's Dispatch of the Affected Generation

- The proposed Clean Power Plan's compliance impact on an Independent System Operator's (ISO) control over generation dispatch will ultimately depend on each state's plan and any associated changes to the ISO's market rules.
- A state may choose to exclusively employ Blocks 3 (renewable energy) and Block 4 (energy efficiency) for compliance that may not be significantly impacted by an ISO's current dispatch logic.
- However, a state implementation plan that incorporates Block 2 (combined cycle dispatch) has the potential to be greatly impacted by an ISO's dispatch decisions.

# V. General Questions

## Proposed Clean Power Plan Impact on Reliability

- The proposed Clean Power Plan could create reliability concerns.
- Because the proposed Clean Power Plan has the potential to fundamentally change the nation's resource mix and because it puts compliance on the state, there could potentially be a reduction of electricity trade among states and regions.
- Given the limited reliability assessment done by the EPA, (focused on one year (2020), and used a model that does not address intra-regional transmission constraints) significant additional analysis is needed.
- The Southwest Power Pool (SPP) has started a reliability analysis.



## V. General Questions

### Impact of HB 1631 on Implementation of the Clean Power Plan

- KCP&L continues to evaluate the relationship between the proposed Clean Power Plan and HB 1631. We have not yet developed a perspective; although, it can yet be developed during the comment period, finalization, and implementation of the rule.

## V. General Questions

### Most Cost-effective Way to Meet the 21% Reduction

- The proposed rule will undoubtedly change before it is finalized and each state would need to develop a plan to meet whatever final rule is promulgated, significant uncertainty remains as to what the final rules will ultimately require.
- Given a reasonable set of assumptions it appears that KCP&L and GMO can effectively meet the interim and final targets with little change to our current long-term resource plans.
- KCP&L and GMO current plans include several factors that help drive compliance: New wind resources under contract; significant DSM efforts; and potential coal plant retirements.

## V. General Questions

### *Comment on the Proposed Clean Power Plan*

- KCP&L has not yet developed or submitted comments on the proposed rule to EPA.
- KCP&L plans on responding to the proposed Clean Power Plan both individually and through various associations.

## V. General Questions

### Missouri Partnering with Other States on a Multi-state Plan

- While KCP&L has only begun to understand the challenges associated with participation in a multi-state plan, one concern regards the ability to develop a plan with the agreement of all participating states within the timeline allowed by EPA in the proposed Clean Power Plan.
- EPA does not address how it would determine which states were responsible for the failure of a multi-state plan to achieve the region's target emission rate and, therefore, could be subject to an enforcement action.
- KCP&L may support a multi-state plan if it favorably addresses our concern regarding the treatment of out of state renewable resources in meeting the compliance targets in Missouri.

# V. General Questions

## Crediting RE Generation and Trading Across State Lines

- Renewable generation should be credited to the state where the load it was built to serve is located.
- For example, all GMO wind resources used to meet GMO's Missouri RES compliance needs are located in Kansas.
- As such, GMO's wind resource should be used to meet Missouri's emission rate targets under the proposed Clean Power Plan.
- A major concern is with the uncertainty around the treatment of renewable resources in meeting a state's compliance targets.

## V. General Questions

### Appropriate Method of Crediting EE/RE Programs Under a Rate-based Approach

- At this point in KCP&L's evaluation of the proposed rule, the preferred method for crediting RE/EE programs under a rate-based approach is to add RE generation and EE avoided energy to the denominator.
- This approach much simpler and avoids the challenges in determining the avoided emission reductions from RE and EE programs.

## V. General Questions

### EPA Presumptive or State-Based Goals

- KCP&L's interpretation of section 111(d) is that states must submit plans that establish standards of performance for any existing source for any air pollutant.
- KCP&L believes that section 111(d) provides the state not EPA the authority to develop standards for affected sources in that state.
- KCP&L would prefer that the states develop the standards for the affected sources.

## V. General Questions

### National Guidelines for Performing EM&V in Order to Credit EE/RE

- "Guidelines" developed nationally could be acceptable as long as they were generally written to provide policy direction on how to conduct evaluation, measurement and verification (EMV).
- National guidelines could be overly burdensome and difficult to administer if any changes or consideration were needed for change.
- KCP&L's preference would be to have state guidelines that were agreed upon with input by the utilities and managed at the state level.



# Current Estimate of Capital Expenditures

- ❑ Current estimate of capital expenditures (exclusive of Allowance for Funds Used During Construction (AFUDC) and property taxes) to comply with current final environmental regulations where the timing is certain is approximately \$700 million.
  - The actual cost of compliance with any existing, proposed or future laws and regulations may be significantly different from the cost estimate provided.
  - Current estimate of approximately \$700 million of capital expenditures reflects costs to install environmental equipment at KCP&L's La Cygne Nos. 1 and 2 by June 2015 to comply with the Best Available Retrofit Technology (BART) rule and environmental upgrades at other coal-fired generating units through 2016 to comply with the Mercury and Air Toxics Standards (MATS) rule.
  - In September 2011, KCP&L commenced construction of the La Cygne projects and at June 30, 2014, had incurred approximately \$433 million of cash capital expenditures, which is included in the approximate \$700 million estimate above.
  
- ❑ Other capital projects at coal-fired generating units for compliance with the Clean Air Act and Clean Water Act based on proposed or final environmental regulations with implementation plans not yet finalized where the timing is uncertain could be approximately \$600 million to \$800 million.
  - These other projects are not included in the approximately \$700 million estimated cost of compliance discussed above.