Ameren Missouri Environmental Compliance Strategies

Environmental Regulation Drivers – Air Quality

- Cross State Air Pollution Rule (Power plant SO2 / NOx control program)
  - Supreme Court accepted EPA petition; Oral argument December 2013; Decision June 2014
  - EPA will need to take action in response to Supreme Court decision
  - CAIR remains in place until a replacement is finalized
- National Ambient Air Quality Standards (NAAQS)
  - Ozone: Attainment with 2006 standard (75 ppb) by 2020; St. Louis area is marginal
    EPA plans to lower the standard (60 – 70 ppb) attainment by 2022
  - Fine Particulate: In attainment with standard based on current information
  - Sulfur Dioxide: Herculaneum area nonattainment area effective October 4, 2013
- Mercury and Air Toxics Standards
  - Compliance starts April 2015 with possible 1-year extensions
  - Ameren granted 1-year extension for Meramec and Labadie units

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Environmental Regulation Drivers – Greenhouse Gases

- Obama Climate Action Plan June 2013
  - Regulation of Greenhouse Gases by the EPA
  - Sets schedule for regulations for new and existing sources
- New Source Performance Standards (NSPS)
  - Re-proposed NSPS for new sources released September 20, 2013; Final rule 2014
  - EPA developing guidance to states for existing sources; Proposal June 2014; Final June 2015; State plan June 2016
  - EPA “listening sessions” in progress

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Environmental Regulation Drivers – Water Quality

- Clean Water Act 316(b) – Cooling Water Intake Structure Biological Impacts
  - Proposed rule in 2011
  - Issuance of final rule postponed to November 2013
  - Studies required to determine impacts on aquatic life
  - Structure modifications to mitigate adverse impacts
- Steam Electric Effluent Limitation Guidelines
  - Proposed rule May 2013; comment period ended September 20
  - Final rule May 2014
  - Compliance 2017 to 2022
  - Dry ash handling; water cannot be used for ash transport
  - EPA linking rule to Coal Combustion Residuals

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Environmental Regulation Drivers – Coal Combustion Residuals

- Proposal June 2010; Final rule still not released; expect sometime in 2014
- Will likely require closure of existing ash ponds
- Link to proposed Effluent Limitation Guidelines
- Dry ash handling and landfills are preferred approach
- Groundwater monitoring of existing ash ponds will be required
- EPA hinting at nonhazardous determination

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Cross State Air Pollution Rule (CSAPR)

Compliance plans for SO_2

- Burn ultra-low sulfur coal starting in 2012
- Bank SO2 credits
- Evaluate additional ultra low sulfur fuel purchases vs. emissions control equipment for compliance in 2018 and beyond

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Cross State Air Pollution Rule (CSAPR)

Compliance options for NOx

- Aggressive tuning of existing units
- Additional SOFA modifications on Labadie Units 1 & 3 @ $4-6M per unit (Units 2 & 4 complete)
- NOx credit purchases and/or swap of SO2 for NOx credits
- Unit de-rates or reductions in generation
- Operate Selective Non-Catalytic Reduction (SNCR) equipment with Over Fired Air (OFA) staging at Sioux plant $2.5-7.5M annually
- Selective Catalytic Reduction (SCR) installation on both Sioux units $200-300M
- Meramec 3 SNCR installation $7-9M
- Meramec 4 SNCR with new Low-NOx burners $9-11M

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Mercury and Air Toxics (MATS)

Compliance options for MATS

- Electrostatic precipitator (ESP) upgrades for PM control at Labadie and Meramec by 4/16/2016 ($225-300M)
- Activated Carbon Injection (ACI) for Hg control at Rush Island by 4/16/15, Labadie and Meramec by 4/16/16 ($40-50M with yearly expenses of $20-30M)
- Fuel additive at Sioux for Hg control by 4/16/15 ($2-3M with yearly expenses of $2-3M)
- PM, HCL, and Hg Continuous Emission Monitors (CEM) on all plants by 1/1/15 ($10-20M)

Note: At this time it is anticipated that no HCl control equipment will be required.

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Ameren Missouri Summary

- **316(a)** Thermal studies likely required for Labadie during term of next NPDES permit estimated at $350K to $600K. If cooling towers required estimate $185M - $400M.
- **316(b)** requires biological studies at all energy centers estimated at $500K per plant. Cost to comply could range for $10M - $20M per plant for fish friendly traveling screens with fish return systems. Cooling towers retrofits are not beyond the realm of possibility, but not likely.
- **CSAPR SO2** requirements can be achieved through 2017 by the purchase of ultra-low sulfur coal.
- **CSAPR NOx** requirements can be achieved through a combination of LNB/OFA installations, aggressive NOx tuning and operation of RRI/SNCR systems at Sioux. Credits may also be bought or traded.
- **MATS** will require additional equipment installation by 4/16/2015 at Rush Island and Sioux and 4/16/2016 at Labadie and Meramec with conceptual capital cost estimates of $275-375M and yearly expense estimate of $22-33M.

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