

**APPENDIX 4E NARRATIVE DISCUSSION OF ENVIRONMENTAL
POLLUTANTS AND FUTURE CHANGES IN ENVIRONMENTAL LAWS,
REGULATIONS, OR STANDARDS**



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In accordance with 4 CSR 240-22.040(2)(B), this section identifies a list of environmental pollutants for which additional environmental laws or regulations may be imposed at some point within the planning horizon. Environmental laws or regulations may impact air emissions, water discharges, or disposal of materials generated. The following sections summarize pollutants which could result in compliance costs that could have a significant impact on utility rates.

SECTION 1: AIR IMPACTS

1.1 NATIONAL AMBIENT AIR QUALITY STANDARDS

The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These commonly found air pollutants (also known as "criteria pollutants") are particulate matter (PM), ground-level ozone, carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), and lead. The EPA calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels. The set of limits based on human health is called primary standards. Another set of limits intended to prevent environmental and property damage is called secondary standards.ⁱ

1.2 PARTICULATE MATTER

The EPA revised the air quality standards for PM in 2006. The 2006 standards tightened the 24-hour fine particle standard from 65 micrograms per cubic meter (µg/m³) to 35 µg/m³, and retained the annual fine particle standard at 15 µg/m³. The EPA retained the existing 24-hour PM₁₀ standard of 150 µg/m³ but revoked the annual PM₁₀ standard. The Kansas City area is in attainment of the standard.

The CAA requires the EPA to review the latest scientific information and standards every five years. Before new standards are established, policy decisions undergo rigorous review by the scientific community, industry, public

interest groups, the general public and the Clean Air Scientific Advisory Committee (CASAC).ⁱⁱ

The EPA's proposed revisions to the PM standard are expected this year. Non-attainment of a revised standard could ultimately result in regulations requiring additional PM reduction technologies, emission limits or both on fossil-fueled units. PM_{2.5} may also require additional NO_x and SO₂ control as precursors.

1.3 OZONE

Ground-level or "bad" ozone is not emitted directly into the air, but is created by chemical reactions between NO_x and volatile organic compounds (VOC) in the presence of sunlight. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of NO_x and VOC.ⁱⁱⁱ

On March 12, 2008, the EPA significantly strengthened the NAAQS for ground-level ozone. The EPA's final rule revises both ozone standards: the primary standard, designed to protect human health; and the secondary standard, designed to protect welfare (such as vegetation and crops). The existing primary and secondary standards, set in 1997, are identical: an 8-hour standard of 0.08 parts per million (ppm). (In practice, because of rounding, an area meets the standard if ozone levels are 0.084 ppm or lower.)

The EPA set the primary standard to a level of 0.075 ppm. The EPA also strengthened the secondary 8-hour ozone standard to the level of 0.075 ppm making it identical to the revised primary standard.^{iv}

On December 9, 2011, the EPA indicated that it intends to designate the Kansas City area as unclassifiable/attainment of the standard.^v

Future non-attainment of a revised standard could ultimately result in regulations requiring additional NO_x reduction technologies, emission limits or both on fossil-fueled units.

1.4 CARBON MONOXIDE

On August 12, 2011, the EPA issued a decision to retain the existing NAAQS for CO.^{vi}

The Kansas City area is in attainment of the standard. Future non-attainment of a revised standard could ultimately result in regulations requiring additional CO reduction technologies, emission limits or both on fossil-fueled units.

1.5 SULFUR DIOXIDE AND NITROGEN OXIDES (ACID RAIN PROGRAM)

The overall goal of the Acid Rain Program (ARP) is to achieve significant environmental and public health benefits through reductions in emissions of SO₂ and NO_x—the primary causes of acid rain.^{vii}

The ARP set a goal of reducing annual SO₂ emissions by 10 million tons below 1980 levels. To achieve these reductions, the law required a two-phase tightening of the restrictions placed on fossil fuel-fired power plants.

Phase I began in 1995 and affected mostly coal-burning electric utility plants located in 21 eastern and midwestern states. Emissions data indicate that 1995 SO₂ emissions at these units nationwide were reduced by almost 40 percent below their required level.

Phase II, which began in the year 2000, tightened the annual emissions limits imposed on these large, higher emitting plants and also set restrictions on smaller, cleaner plants fired by coal, oil, and gas.

The ARP also called for a 2 million ton reduction in NO_x emissions by the year 2000. A significant portion of this reduction has been achieved by coal-fired utility boilers installing low NO_x burner technologies to meet new emissions standards.^{viii}

1.6 NITROGEN DIOXIDE

On January 22, 2010, the EPA strengthened the health-based NAAQS for nitrogen dioxide (NO₂). The EPA set a new 1-hour NO₂ standard at the level of 100 parts per billion (ppb).

On January 20, 2012, based on the most recent air quality monitoring data, the EPA has determined that no area in the country is violating the 2010 national air quality standards for NO₂. These areas have been designated as unclassifiable/attainment.^{ix}

Future non-attainment of a revised standard could ultimately result in regulations requiring additional NO_x reduction technologies, emission limits or both on fossil-fueled units.

1.7 SULFUR DIOXIDE

On June 2, 2010, the EPA strengthened the primary NAAQS for SO₂. The EPA revised the primary SO₂ standard by establishing a new 1-hour standard at a level of 75 ppb. The EPA revoked the two existing primary standards of 140 ppb evaluated over 24-hours, and 30 ppb evaluated over an entire year.

In addition to revising the SO₂ primary standard and finalizing associated ambient air quality monitoring requirements, the EPA is providing initial guidance on its plan for implementing the new 1-hour SO₂ standard. The EPA plans to use refined dispersion modeling to determine if areas with sources that have the potential to cause or contribute to a violation of the new SO₂ standard can comply with the standard. Dispersion modeling simulates how air pollutants spread throughout the atmosphere and is used to estimate the concentration of air pollutants from sources such as industrial plants or highways.

The EPA intends to complete designations within two years of promulgation of the revised SO₂ standard (June 2012).

The EPA anticipates initially designating areas based on 2008-2010 monitoring data, or refined dispersion modeling results if provided by the state. Areas which violate the standard would be designated as “nonattainment”. Areas that have both monitoring data and appropriate refined modeling results showing no violations would be designated as “attainment.” All other areas would be designated as “unclassifiable.”

States with areas designated nonattainment in 2012 would need to submit state implementation plans (SIPs) to the EPA by early 2014 outlining actions that will be taken to meet the standards as expeditiously as possible, but no later than August 2017.

For all other areas, states would need to submit to the EPA “maintenance” or infrastructure SIPs by June 2013, 3 years following the promulgation of the new SO₂ standard. The EPA expects these state plans would: demonstrate, through refined air quality modeling, that all sources contributing to monitored and modeled violations of the new standard, or that have the potential to cause or contribute to a violation, will be sufficiently controlled to ensure timely attainment and maintenance of the new SO₂ standard; account for SO₂ reductions that would result from compliance with national and regional regulations, including emissions controls for electric utilities and industrial boilers; and include as necessary, enforceable emissions limitations, timetables for compliance, and appropriate testing/reporting to assure compliance.

The EPA believes that these areas should plan to demonstrate attainment and maintenance of the standard as expeditiously as possible, but no later than August 2017, the date nonattainment areas must meet the standard.^x

1.8 CLEAN AIR INTERSTATE RULE

On March 10, 2005, The EPA issued the Clean Air Interstate Rule (CAIR), a rule that reduced air pollution that moves across state boundaries. CAIR permanently capped emissions of SO₂ and NO_x in the eastern United States.

When fully implemented, CAIR will reduce SO₂ emissions in these states by over 70 percent and NO_x emissions by over 60 percent from 2003 levels.^{xi}

Through the use of the cap-and-trade approach, CAIR achieves substantial reductions of SO₂ and NO_x emissions and will assist the eastern U.S. meet EPA's protective air quality standards for ozone or fine particles. SO₂ and NO_x contribute to the formation of fine particles and NO_x contributes to the formation of ground-level ozone.

CAIR covers 28 eastern states and the District of Columbia. States must achieve the required emission reductions using one of two compliance options: 1) meet the state's emission budget by requiring power plants to participate in an EPA-administered interstate cap and trade system that caps emissions in two stages, or 2) meet an individual state emissions budget through measures of the state's choosing.

CAIR provides a Federal framework requiring states to reduce emissions of SO₂ and NO_x. The EPA anticipates that states will achieve this primarily by reducing emissions from the power generation sector. The CAA requires that states meet the new national, health-based air quality standards for ozone and PM_{2.5} standards by requiring reductions from many types of sources. Some areas may need to take additional local actions. CAIR reductions will lessen the need for additional local controls.

On July 11, 2008, the D.C. Circuit Court of Appeals vacated the CAIR in its entirety and sent it back to the EPA to promulgate a rule that is consistent with its opinion. On December 23, 2008, the Court issued an order remanding the CAIR to the EPA instead of vacating the rule. This means that CAIR remained in place. The Court did not place the EPA on a schedule for the remand rulemaking but indicated it was not an indefinite stay of the effectiveness of this court's decision.^{xii}

KCP&L generation units comply with CAIR by obtaining adequate allowances by trading internally within the Company or externally with other companies.

1.9 CROSS-STATE AIR POLLUTION RULE

On July 6, 2011, the EPA finalized the Cross-State Air Pollution Rule (CSAPR) which requires eastern and central states to significantly improve air quality by reducing power plant emissions that cross state lines and contribute to ground-level ozone and fine particle pollution in other states.

In a separate but related regulatory action, the EPA also issued a supplemental notice of proposed rulemaking to require six states: Iowa, Kansas, Michigan, Missouri, Oklahoma, and Wisconsin to make summertime NO_x reductions under the CSAPR ozone-season control program.

On December 15, 2011, the EPA finalized a supplemental rule that includes five additional states - Iowa, Michigan, Missouri, Oklahoma, and Wisconsin - in the ozone season NO_x program in the CSAPR. The EPA has concluded that these five states plus Kansas significantly contribute to nonattainment and/or interference with maintenance of the 1997 ozone NAAQS in other states. Kansas will be reviewed for inclusion in the CSAPR ozone season NO_x program at a later date.

On February 7, 2012, the EPA issued two sets of minor adjustments to the CSAPR. These final rules maintain the significant health benefits of CSAPR, while making minor technical adjustments based on the latest and best data to ensure a smooth transition for utilities. The adjustments provide flexibility to states by increasing budgets in seventeen states and easing limits on market-based compliance options.

On December 30, 2011, the United States Court of Appeals for the D.C. Circuit issued its ruling to stay the CSAPR pending judicial review. The court's decision is not a decision on the merits of the rule. The EPA is ensuring the transition back to the CAIR occurs as seamlessly as possible.^{xiii}

The CSAPR is complex and KCP&L is evaluating its impacts. The Company projects that they may not be allocated sufficient SO₂ or NO_x emissions allowances to cover the currently expected operations when the rule becomes effective. Any shortfall in allocated allowances is anticipated to be addressed through a combination of permissible allowance trading, installing additional emission control equipment, changes in plant processes, or purchasing additional power in the wholesale market.

1.10 REGIONAL HAZE

On June 15, 2005, the EPA finalized amendments to the July 1999 regional haze rule. These amendments apply to the provisions of the regional haze rule that require emission controls known as best available retrofit technology, or BART, for industrial facilities emitting air pollutants that reduce visibility by causing or contributing to regional haze.

The pollutants that reduce visibility include PM_{2.5}, and compounds which contribute to PM_{2.5} formation, such as NO_x, SO₂, and under certain conditions volatile organic compounds, and ammonia.

The BART requirements of the regional haze rule apply to facilities built between 1962 and 1977 that have the potential to emit more than 250 tons a year of visibility-impairing pollution. Those facilities fall into 26 categories, including utility and industrial boilers, and large industrial plants such as pulp mills, refineries and smelters.

Under the 1999 regional haze rule, states are required to set periodic goals for improving visibility in the 156 natural areas. As states work to reach these goals, they must develop regional haze implementation plans that contain enforceable measures and strategies for reducing visibility-impairing pollution.^{xiv}

On November 9, 2011, the EPA issued a schedule to act on more than 40 state regional haze implementation plans. On December 27, 2012, the EPA approved a the Kansas regional haze implementation plan, submitted by the Kansas

Department of Health and Environment (KDHE) on October 26, 2009, that addresses regional haze for the first implementation period. On February 28, 2012, the EPA is proposed a limited approval of the Missouri regional haze implementation plan submitted by the Missouri Department of Natural Resources (MDNR) on August 5, 2009, that addresses regional haze for the first implementation period.

On December 23, 2011, the EPA proposed to approve the trading program in the CSAPR as an alternative to determining source-by-source BART. This would allow states in the CSAPR region to substitute participation in CSAPR for source-specific BART for sulfur dioxide and/or nitrogen oxides emissions from power plants.

KCP&L is currently installing emission controls at its La Cygne Generating Station to comply with the BART requirements. Future BART progress goals could result in additional SO₂, NO_x and PM controls or reduction technologies on fossil-fired units.^{xv}

1.11 LEAD

On October 15, 2008, the EPA substantially strengthened the NAAQS for lead. The EPA revised the level of the primary standard from 1.5 µg/m³, to 0.15 µg/m³, measured as total suspended particulates (TSP). The EPA revised the secondary standard to be identical in all respects to the primary standard.^{xvi}

The Kansas City area is in attainment of the standard. Non-attainment of a revised standard could ultimately result in regulations requiring additional lead reduction technologies, emission limits or both on coal units.

1.12 CARBON DIOXIDE

On December 7, 2009, Administrator Lisa Jackson signed a final action, under Section 202(a) of the Clean Air Act, finding that six key well-mixed greenhouse gases constitute a threat to public health and welfare, and that the combined

emissions from motor vehicles cause and contribute to the climate change problem.

On May 13, 2010, the EPA issued a final rule that establishes thresholds for greenhouse gas (GHG) emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities will be required to obtain PSD and title V permits. Facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters — power plants, refineries, and cement production facilities.^{xvii}

1.13 MERCURY AND AIR TOXICS STANDARDS

On December 20, 2000, the EPA made a determination that it was appropriate and necessary to regulate coal- and oil-fired electrical generating units (EGUs) under CAA section 112 and added such units to the CAA section 112(c) list (112 list) of source categories that must be regulated. On January 30, 2004, the EPA proposed section 112 standards for Hg emissions from coal-fired EGUs and nickel emissions from oil-fired EGUs, and, in the alternative, proposed to remove EGUs from the section 112 list based on a finding that it was neither appropriate nor necessary to regulate EGUs under this section of the CAA. At that time, the EPA also proposed to regulate mercury from coal-fired EGUs under CAA section 111. On March 29, 2005, the EPA issued a final revision of the appropriate and necessary finding for coal- and oil-fired EGUs and removed such units from the section 112 list. The EPA never finalized the proposed section 112 standards for Hg and Ni, but did finalize the regulation under section 111 to reduce mercury emissions from coal-fired EGUs. On February 8, 2008, the D.C. Circuit vacated both the 2005 Action to remove EGUs from the section 112 list and the section 111 rule to limit mercury emissions.

The removal of EGUs from the 112 list was challenged in court. On February 8, 2008, the United States Court of Appeals determined that the EPA violated the CAA by removing EGUs from the 112 list. As a result, EGUs remain a CAA section 112(c) listed source category.

In response to the D.C. Circuit Court's vacatur, on March 16, 2011, the EPA proposed section 112 air toxics standards for all coal- and oil-fired EGUs that reflect the application of the maximum achievable control technology (MACT) consistent with the requirements of the CAA.

On February 27, 2006, the EPA promulgated amendments to the new source performance standards (NSPS) for PM, SO₂, and NO_x contained in the standards of performance for EGUs. The EPA was subsequently sued on the amendments and on September 2, 2009 was granted a voluntary remand without vacatur of the 2006 amendments. The final revisions to the NSPS are in response to that voluntary remand.

On December 16, 2011, the EPA signed a rule to reduce emissions of toxic air pollutants from power plants. Specifically, these mercury and air toxics standards (MATS) for power plants will reduce emissions from new and existing coal and oil-fired electric EGUs.

The EPA also signed revisions to the NSPS for fossil-fuel-fired EGUs. This NSPS revises the standards that new coal- and oil-fired power plants must meet for PM, SO₂, and NO_x.

MATS will reduce emissions of heavy metals, including mercury (Hg), arsenic (As), chromium (Cr), and nickel (Ni); and acid gases, including hydrochloric acid (HCl) and hydrofluoric acid (HF). These toxic air pollutants, also known as hazardous air pollutants or air toxics.

Existing sources generally will have up to 4 years if they need it to comply with MATS. This includes the 3 years provided to all sources by the CAA. The EPA's analysis continues to demonstrate that this will be sufficient time for most, if not

all, sources to comply. Under the CAA, state permitting authorities can also grant an additional year as needed for technology installation. The EPA expects this option to be broadly available.

For all existing and new coal-fired EGUs, the rule establishes numerical emission limits for mercury, PM (a surrogate for toxic non-mercury metals), and HCl (a surrogate for all toxic acid gases).

The standards set work practices, instead of numerical limits, to limit emissions of organic air toxics, including dioxin/furan, from existing and new coal- and oil-fired power plants.

Because dioxins and furans form as a result of inefficient combustion, the work practice standards require an annual performance test program for each unit that includes inspection, adjustment, and/or maintenance and repairs to ensure optimal combustion.

Compliance strategies available to power plants to meet the emission limits include wet and dry scrubbers, dry sorbent injection systems, activated carbon injection systems, and fabric filters.

The revisions to the NSPS for fossil-fuel-fired EGUs include revised numerical emission limits for PM, SO₂, and NO_x.^{xviii}

SECTION 2: POTENTIAL FUTURE REGULATED POLLUTANTS:

2.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR INDUSTRIAL BOILERS

The CAA requires the EPA to develop rules to reduce air toxics emissions from categories of facilities that emit one or more of 187 listed toxic air pollutants.

These rules require the application of emissions limits based on maximum achievable control technology. The EPA identified industrial boilers, commercial and institutional boilers, and process heaters as categories of major sources for which emission standards must be developed. The schedule for completing this rule is part of a court order, which requires the EPA Administrator to complete a final rule by February 21, 2011.

On September 13, 2004, the EPA promulgated national emission standards for hazardous air pollutants for new and existing industrial/commercial/ institutional boilers and process heaters. On June 19, 2007, the United States Court of Appeals for the District of Columbia Circuit vacated and remanded the 2004 standards because it vacated in the same decision an EPA definitional rule that included units combusting solid waste for energy recovery as boilers instead of as incinerators.

On February 21, 2011, the EPA finalized a rule that will reduce emissions of toxic air pollutants from new and existing industrial, commercial, and institutional boilers and process heaters at major source facilities. A major source facility emits or has the potential to emit 10 or more tons per year (tpy) of any single air toxic or 25 tpy or more of any combination of air toxics.

The final rule will reduce emissions of a number of toxic air pollutants including mercury, other metals, and organic air toxics, which include polycyclic organic matter (POM) and dioxins.

The final rule establishes numeric emission limits for all other existing and new industrial boilers and process heaters located at major sources (including those that burn coal and biomass). The final rule establishes emission limits for: mercury, dioxin, PM (as a surrogate for non-mercury metals), HCl (as a surrogate for acid gases), and CO (as a surrogate for non-dioxin organic air toxics).^{xix}

On May 18, 2011, the EPA published a notice delaying the effective date of the industrial boiler rule until the completion of the recently announced reconsideration or the completion of litigation on the rule, whichever is earlier.

On December 23, 2011, the EPA published the Industrial Boiler MACT reconsideration proposal. On January 9, 2012, the U.S. District Court for the DC Circuit vacated the EPA's May 18, 2011, notice that delayed the effective dates of the Industrial Boiler MACT rule. On February 7, 2012, the EPA issued a No Action Assurance Letter to establish that we will exercise our enforcement discretion to not pursue enforcement action for violations of certain notification deadlines in the final Industrial Boiler rule. The EPA intends to issue the final reconsideration rule prior to any of the compliance dates for existing sources.^{xx}

2.2 GREENHOUSE GAS NEW SOURCE PERFORMANCE STANDARDS

New source performance standards have been established since the 1970s for various industrial sources of air pollution that significantly endanger public health and welfare. Each NSPS must be reviewed at least every eight years and if appropriate, revised.

In addition to the NSPS requirements established for new and modified sources, for pollutants not regulated under other parts of the CAA, the EPA must establish emission guidelines that States use to develop plans for reducing emissions from existing sources. The guidelines include targets based on demonstrated controls, emission reductions, costs and expected timeframes for installation and compliance, and can be less stringent than the requirements imposed on new

sources. Under existing EPA regulations, States must submit their plans to the EPA within nine months after the guidelines' publication unless the EPA sets a different schedule. States have the ability to apply less stringent standards or longer compliance schedules if they demonstrate that following the federal guidelines is unreasonably cost-prohibitive, physically impossible, or that there are other factors that reasonably preclude meeting the guidelines. States may also impose more stringent standards or shorter compliance schedules.

In September 2007, the EPA took a remand of its February 2006 final decision not to set GHG standards for boilers. This schedule provides a measured and sensible path forward that will allow the agency to address GHG pollution that threatens the health and welfare of Americans, and contributes to climate change. These standards are part of the EPA's approach to addressing GHG from the largest industrial emissions sources.

On December 23, 2010, the EPA entered into a settlement agreement to issue rules that will address greenhouse gas emissions from certain fossil fuel-fired EGUs. For natural gas, oil, and coal-fired EGUs: these rules would establish NSPS for new and modified EGUs and emission guidelines for existing EGUs. Under the agreement, the EPA would commit to issuing proposed regulations by July 26, 2011, which has not occurred, and final regulations by May 26, 2012.^{xxi}

2.3 MULTI-POLLUTANT IMPACTS

Future EPA revisions to NSPS could require near PSD limits for new units or major modifications of fossil-fired units. Future multi-pollutant legislation or regulations could require additional control technology or reduced emissions at all fossil-fired units. Legislation possibilities include criteria pollutants, HAPs, or CO₂ emission reductions. Regulation possibilities include a regulatory response to criteria pollutants, HAPs, or CO₂ emission reductions without thresholds.

SECTION 3: WATER IMPACTS

3.1 CLEAN WATER ACT SECTION 316(A) THERMAL DISCHARGE REGULATIONS OR POLICY

KCP&L's river stations current National Pollutant Discharge Elimination System (NPDES) permit have expired. KCP&L submitted a renewal application within the required timeframe. The current permits remain in effect until MDNR issues new NPDES permit.

The MDNR has placed a hold on the issuance of Missouri River NPDES permits based on a discussions between MDNR and EPA on thermal discharges to the Missouri River. The permits generally define a specific limit, i.e., exceedance, for thermal discharge in btu/day based on a state Water Quality Standard (WQS) discharge temperature of 90°F. However, the MDNR permit defines a violation in thermal discharge based on a complex formula involving discharge temperature, river volume, etc. It is this difference between exceedance and violation that is the basis for the discussion between has EPA and MDNR. KCP&L's river plants comply with the calculated limits as defined in the permit.

Future regulations or policy could be issued that restricts thermal discharges requiring alternative cooling technologies to be installed at coal fired units using once through cooling.

3.2 CLEAN WATER ACT SECTION 316(B) FISH IMPINGEMENT REGULATIONS

Section 316(b) of the Clean Water Act (CWA) requires that NPDES permits for facilities with cooling water intake structures ensure that the location, design, construction, and capacity of the structures reflect the best technology available to minimize harmful impacts on the environment. The withdrawal of cooling water by facilities removes aquatic organisms from waters of the United States each year, including fish, fish larvae and eggs, crustaceans, shellfish, sea turtles,

marine mammals and other aquatic life. Most impacts are to early life stages of fish and shellfish through impingement and entrainment.

Under a consent decree with environmental organizations, the EPA divided the section 316(b) rulemaking into three phases. Existing large electric-generating facilities were addressed in Phase II in February 2004. Existing small electric-generating and all manufacturing facilities were addressed in Phase III (June 2006). However, Phase II and the existing facility portion of Phase III were remanded to the EPA for reconsideration as a result of legal proceedings. This proposal combines Phases II and III into one rule, and provides a holistic approach to protecting aquatic life impacted by cooling water intakes.

On April 20, 2011, the EPA proposed standards under the CWA to follow through on a November 2010 settlement agreement with environmental groups whereby the EPA agreed to issue regulations to reduce injury and death of fish and other aquatic life caused by cooling water intake structures existing at power plants and factories. These facilities pull in large volumes of cooling water from lakes, rivers, estuaries or oceans to cool their machinery. By setting flexible technology standards, the EPA's common sense proposal would greatly reduce damage to ecosystems while accommodating site-specific circumstances and providing cost effective options.

There are three components to the proposed regulation. First, existing facilities that withdraw at least 25 percent of their water from an adjacent waterbody exclusively for cooling purposes and have a design intake flow of greater than 2 million gallons per day (MGD) would be subject to an upper limit on how many fish can be killed by being pinned against intake screens or other parts at the facility (impingement). The facility would determine which technology would be best suited to meeting this limit. Alternately, the facility could reduce their intake velocity to 0.5 feet per second. At this rate, most of the fish can swim away from the cooling water intake of the facility.

Second, existing facilities that withdraw very large amounts of water--at least 125 million gallons per day--would be required to conduct studies to help their permitting authority determine whether and what site-specific controls, if any, would be required to reduce the number of aquatic organisms sucked into cooling water systems (entrainment).

Third, new units that add electrical generation capacity at an existing facility would be required to add technology that is equivalent to closed-cycle cooling (continually recycles and cools the water so that minimal water needs to be withdrawn from an adjacent waterbody). This can be done by incorporating a closed-cycle system into the design of the new unit, or by making other design changes equivalent to the reductions associated with closed-cycle cooling.^{xxii}

The EPA is anticipated to finalize section 316(b) regulations this year which could severely restrict cooling water inlet structures potentially requiring closed cycle cooling technologies instead.

3.3 STEAM ELECTRIC POWER GENERATING EFFLUENT GUIDELINES

Based on the findings from the EPA's multi-year study of the steam electric power generating industry, the EPA plans to review the current effluent guidelines for this industry. The EPA's decision to review the current effluent guidelines is largely driven by the high level of toxic-weighted pollutant discharges from coal fired power plants and the expectation that these discharges will increase significantly in the next few years as new air pollution controls are installed. Over the course of the study, the EPA identified technologies that can significantly reduce these pollutant discharges.

The EPA's decision to proceed with a rulemaking was announced on September 15, 2009. The EPA reviewed wastewater discharges from power plants and the treatment technologies available to reduce pollutant discharges, which demonstrated the need to update the current effluent guidelines.^{xxiii}

The EPA plans to propose a rulemaking for the steam electric power generating industry in July 2012 and take final action by January 2014. Proposed effluent guidelines regarding settling or holding ponds discharges could require compliance with lower standards or elimination of pond usage.

3.4 ZEBRA MUSSEL INFESTATION

KCP&L has been monitoring for zebra mussels at our generation facilities since 1993. The stations take samples from the lakes and the Missouri River that are analyzed for the presence of zebra mussel veligers, the immature stage of their life cycle. We also visually inspect the equipment. Zebra mussels have been found at several locations along the Missouri River in the Kansas City area including our generation stations. A significant zebra mussel infestation could cause operational changes to the stations.

3.5 TOTAL MAXIMUM DAILY LOADS

A Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its quality is affected. Under the CWA Section 303(d) requires states to list impaired waters for which the necessary pollution controls have not yet been required and for which a TMDL study has not been written. The state is required to develop a TMDL for all waters on the 303(d) list. Each TMDL document will include allocations of the acceptable load for all sources of the pollutant. It will also include an implementation plan to identify how the load will be reduced to a level that will protect water quality.

If a water body is determined to be impaired, a watershed management plan will be developed that will include the TMDL calculation. Missouri has established acceptable standards for drinking water, fishing, swimming, aquatic life and other designated uses. Waters that don't meet these standards are placed on the 303(d) list.

A stream is considered impaired when it fails to meet Water Quality Standards established by the Clean Water Commission. Section 303(d) of the federal Clean Water Act requires states to identify and list all impaired waters. The list is revised and updated every two years. After studying the scientific data, waters are added or subtracted from the list depending on the status of their health. Once a TMDL is assigned to a water body, a facility's NPDES permit on renewal will incorporate the TMDL. TMDL that will impact our facilities include temperature, mercury, TSS or example.

The 2010 303(d) list does not list the Missouri River as impaired. The 2010 303(d) list included the Missouri River for bacteria.^{xxiv}

A thermal TMDL could also be applied in the future. Future TMDL standards for containments in discharges could restrict these discharges requiring equipment be installed to minimize or control the discharge. Future effluent limitations regarding settling or holding ponds discharges could require compliance with lower standards or elimination of pond usage. Future storm water effluent limitations on storm water discharge could require storm water settling basins be constructed to comply with the standards.

SECTION 4: WASTE MATERIAL IMPACTS

4.1 POLYCHLORINATED BIPHENYLS

KCP&L has been removing polychlorinated biphenyls (PCB's) from our systems since 1980. It is estimated that our distribution system has less than five percent of the transformers with 50 to 500 ppm PCB's. Typically, we find the distribution contaminated equipment when it comes out of service. No contaminated equipment is put back into service but is disposed.

PCB phase-out initiatives are occurring abroad and in the United States. While the current PCB regulations in the United States do not mandate phase-out, the EPA completed a PCB advanced notice of proposed rulemaking (ANPRM) in 2010 which may have been influenced by international phase-out efforts. In particular, a Canadian rule establishing mandatory phase-out dates for PCB-containing equipment has the potential to influence the EPA's rulemaking.

The most important aspect of the increased regulation for KCP&L would be the necessity of inventorying all our PCB containing equipment. An inventory would require a walk down of our distribution system and testing of all devices that could contain PCB's.

4.2 COAL COMBUSTION RESIDUALS

Coal Combustion Residuals (CCRs) are currently considered exempt wastes under an amendment to the Resource Conservation and Recovery Act (RCRA). They are residues from the combustion of coal in power plants and captured by pollution control technologies, like scrubbers. Potential environmental concerns from coal ash pertain to pollution from impoundment and landfills leaching into ground water and structural failures of impoundments, like that which occurred at the Tennessee Valley Authority's plant in Kingston, Tennessee. The need for national management criteria was emphasized by the December 2008 spill of CCRs from a surface impoundment near Kingston, Tennessee.

On June 21, 2010, the EPA proposed to regulate for the first time CCRs to address the risks from the disposal of the wastes generated by electric utilities and independent power producers. The EPA is considering two possible options for the management of coal ash for public comment. Both options fall under the RCRA. Under the first proposal, the EPA would list these residuals as special wastes subject to regulation under subtitle C of RCRA, when destined for disposal in landfills or surface impoundments. Under the second proposal, the EPA would regulate coal ash under subtitle D of RCRA, the section for non-hazardous wastes.^{xxv}

Future regulations or legislation could require existing landfills to be closed and replaced with new landfills designed to more stringent standards. Future regulations or legislation could require the existing use of mine reclamation for disposal of combustion waste products to be eliminated or designed to more stringent standards. Future regulations or legislation could require existing ash handling ponds to be closed and replaced with dry ash handling or disposal. Future regulations or legislation could require beneficial use of combustion waste products to be eliminated or limited requiring landfill disposal.

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- ⁱ <http://www.epa.gov/air/urbanair/6poll.html>
- ⁱⁱ <http://www.epa.gov/air/particlepollution/standards.html>
- ⁱⁱⁱ <http://www.epa.gov/air/ozonepollution/basic.html>
- ^{iv} http://www.epa.gov/air/ozonepollution/pdfs/2008_03_factsheet.pdf
- ^v <http://www.epa.gov/ozonedesignations/2008standards/rec/region7R.htm>
- ^{vi} <http://www.epa.gov/airquality/carbonmonoxide/actions.html#aug11>
- ^{vii} <http://www.epa.gov/airmarkets/progsregs/arp/index.html>
- ^{viii} <http://www.epa.gov/airmarkets/progsregs/arp/basic.html>
- ^{ix} <http://www.epa.gov/airquality/nitrogenoxides/designations/regs.html>
- ^x <http://www.epa.gov/airquality/sulfurdioxide/pdfs/20100602fs.pdf>
- ^{xi} <http://www.epa.gov/cair/>
- ^{xii} <http://www.epa.gov/cair/basic.html>
- ^{xiii} <http://www.epa.gov/crossstaterule/actions.html>
- ^{xiv} http://www.epa.gov/air/visibility/fs_2005_6_15.html
- ^{xv} <http://www.epa.gov/visibility/actions.html>
- ^{xvi} <http://www.epa.gov/air/lead/pdfs/20081015pbfactsheet.pdf>
- ^{xvii} <http://www.epa.gov/climatechange/initiatives/index.html>
- ^{xviii} <http://www.epa.gov/airquality/powerplanttoxics/pdfs/20111221MATSummaryfs.pdf>
- ^{xix} http://www.epa.gov/ttn/atw/boiler/major_final_fs.pdf
- ^{xx} <http://www.epa.gov/ttn/atw/boiler/boilerpg.html#DOC>
- ^{xxi} <http://www.epa.gov/airquality/ghgsettlement.html>

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http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/upload/factsheet_proposed.pdf

xxiii http://water.epa.gov/scitech/wastetech/guide/steam_index.cfm

xxiv <http://www.dnr.mo.gov/env/wpp/waterquality/303d.htm>

xxv <http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/ccr-rule/index.htm#proposed>