CallawayCEm Resource

From: katmce@gmail.com on behalf of Kat Logan Smith [klogansmith@moenviron.org]
Sent: Tuesday, March 24, 2009 5:51 PM
To: CallawayCOLEIS Resource
Subject: Fwd: Docket No. 52-037; NRC-2008-0556
Attachments: 2009-03-24-Scoping Comments for Callaway-MCE.pdf

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From: **Kat Logan Smith** <klogansmith@moenviron.org>
Date: Tue, Mar 24, 2009 at 4:43 PM
Subject: Docket No. 52-037; NRC-2008-0556
To: Callaway.COLEIS@nrc.gov

Please see comments, attached.
Thank you for the opportunity to participate. I look forward to the draft EIS.
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Kathleen Logan Smith
Executive Director
Missouri Coalition for the Environment
6267 Delmar Blvd. Ste. 2E
St. Louis, MO 63130
www.moenviron.org
(314) 727-0600

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Kathleen Logan Smith
Executive Director
Missouri Coalition for the Environment
6267 Delmar Blvd. Ste. 2E
St. Louis, MO 63130
www.moenviron.org
(314) 727-0600

The Missouri Coalition for the Environment, a non-profit, non-partisan, 501(c)(3) state-level conservation organization, is a force for clean air, clean water, and clean energy in Missouri. Since 1969 we have educated and activated Missourians to protect the land we all love. With membership support, we have the strength and independence to win. Please join today at http://www.moenviron.org.

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Re: Docket No. 52-037; NRC-2008-0556
Callaway Plant Unit 2 Combined License Application

Scoping Comments for Callaway 2

On January 14, 2009, the Commission issued its Notice of Intent to Prepare an EIS and Conduct Scoping Process, published at 74 FR 4257.

These comments on the scope of the EIS are submitted on behalf of the Missouri Coalition for the Environment.

This process is premature because the NRC has not even certified a design for the Callaway II reactor. Asking the public to evaluate a proposed reactor design that does not yet exist is unrealistic. Expecting agencies to meaningfully evaluate impacts is equally ridiculous.

With no actual EPR plants in operation, or even constructed, what is the source of the ER's information about expected water usage, water loss, evaporation, leakage, etc? The EIS should evaluate the design basis for the activated corrosion products and the failed fuel fraction. Is the 1% failed fuel fraction design basis value reasonable? How are estimated tritium releases from the coolant system estimated when the plant design has not been finalized yet?

Radioactive waste storage and transportation
Because Yucca Mountain will not be available for spent fuel disposal from Callaway II and the low-level licensed radioactive waste storage site at Barnwell, South Carolina is now closed to Missouri wastes, the radioactive waste generated at Callaway I and Callaway II will need to be stored on-site for the foreseeable future. The EIS should assess the risks and costs of storage and monitoring for these wastes. The assessment must include the low-level wastes, the risks to construction workers, as well as the increased threat from inclement weather, earthquakes, or terrorist attacks. Estimating risks and costs of some non-existent, entirely hypothetical disposal option is not adequate.

Seismic effects
Eastern Missouri experienced tremors measured at 5.2 on the Richter scale on April 18, 2008 from a fault in eastern Illinois/western Indiana. The same quake caused significant destruction in Louisville, Kentucky. The EIS should evaluate the seismic impacts of an earthquake from a

mid-continent fault like the Wabash Valley Seismic Zone or the New Madrid on Callaway I and II, its water intake and cooling systems, and radioactive waste processing and storage systems.

The current Callaway I radioactive waste systems are designated as *nonseismic* (Callaway Plant Operating Lic. FSAR, Rev. 9, 6/86 p. 3.2-2). The Callaway II EIS should evaluate the seismic impacts of the construction of Callaway II on Callaway I, particularly the impacts of blasting on the site. What are the cumulative impacts of these smaller but more numerous vibrations on the radioactive waste storage, processsing and handling equipment, the water intakes, the reactor and spent fuel pool?

Safety

How will endangered communities be notified and evacuated in the case of a serious accident at the facility? What emergency plans are in place to address an accident at Callway I during the peak of construction on Callaway II when more traffic and people are on site?

What plans address evacuation of schools, nursing homes, universities, and cities in the event of an accident? Where is the nearest trauma center equipped to handle patients exposed to high doses of radioactivity? How many patient beds are available? How sufficient is staff training? How many of these are upwind and/or upstream of Callaway II?

How reliant is Callaway II on the ESWEMS pond for shutdown? Is the pond as "drought proof" as the collector wells as the ER claims? What measures are in place to ensure the pumps on the collector wells operate in the case of a power outage or a flood event? Are they sufficient?

With demand for nuclear power components growing globally, what vendors will be tapped to provide components for Callaway II? Will the plant be sourcing parts from countries with a shoddy quality control history like China, where countless junk items, baby formula and pet food poisonings indicate an institutionalized and pervasive disregard for public safety?

Water

The EIS should evaluate the upstream and downstream impacts of drawing the proposed quantities water from the Missouri River, because the river's surface water and its alluvial aquifer are the same water. This should include an evaluation of impacts of both flood, and drought. In this analysis, the climate change models for Missouri should be considered closely with the understanding that climate disruption predictions emphasize increasing spring and fall storm events (and flooding), and summer droughts which will reduce the river's flow. France has had to shut down its nuclear reactors during periods of prolonged drought and heat. What conditions would force similar shutdowns at Callaway I and II and how can they be mitigated? How will the wetlands be impacted when there is less water available? How will aquatic food chains be impacted? Wetlands must be independently evaluated. How will water fowl and terrestrial mammals dependent on the aquatic food supplies be impacted? The EIS should also consider how the other water well users in the region be impacted by this proposed massive withdrawal of water, particularly over time and in a new and unfamiliar climate regime.

The assumption that the collector wells will provide sufficient water flow despite surface flows must be examined and documented. The EIS must also consider the (often successful) efforts of upstream Missouri River states to retain and divert the river's water. Other major upstream users, including the Iatan 2 plant, must also be considered. If a reduced Missouri River flow forces even more mid-channel dredging of the river by the U.S. Army Corps of Engineers, what will be the direct, indirect, and cumulative impacts on the collector wells, particularly over the proposed operating 40-60 year life span of the reactor(s)? What will be the impact on water quality, including the physical properties of the river and its banks, if more mid-channel dredging occurs and the proposed water withdrawals are permitted?

If the pumping rate from the aquifer for Callaway 2 is a maximum of 34,305 gallons per minute, what is the cumulative pumping rate for Callaway 1 and 2?

The EIS should evaluate the direct, indirect, and cumulative impacts of the discharged waters (the combined effluent of Callaway I & II) on the biota of the river. The physical, chemical, radioactive, and thermal impacts of the discharge must be evaluated and the system designed to minimize negative impacts. What are the physical impacts on the river's channel from the discharge as it comes pouring from the pipe? How do these changes impact fish, invertebrates, birds, and mammals? What will the thermal pollution do to water quality? What are the impacts of chemical and radioactive pollutants?

There are 31 reactors in the Mississippi River watershed. The cumulative effects of discharges into the Missouri and Mississippi watershed should be considered.

The effect of the plant on impaired waters listed under sec. 303(d) of the Clean Water Act should be given more study than the assurance, in the Environmental Report Operating Impacts, p. 19, that Missouri Dept. of Natural Resources (DNR) will conduct further monitoring. The Missouri DNR has suffered from a lack of sufficient funding for its monitoring programs throughout its history which has had a negative impact on its ability to fully implement provisions of the Clean Water Act and therefore it cannot be assumed that these deficiencies will suddenly somehow be corrected because the evidence does not support that conclusion. In fact, budget woes suggest that funding improvements at DNR are out of reach.

What is the impact of high temperatures and high humidity on the reactor's cooling efficiencies? On a hot summer day with high humidity, what are the impacts on water discharge temperatures?

Air

The direct, indirect, and cumulative impacts of routine releases of non-filterable isotopes, including radioactive hydrogen, from the stack, vents, and buildings should be evaluated. The volume of such releases into the air is much greater than what is proposed for liquid releases. What are the cumulative impacts of weak-beta emitters over time? How could the buildings be pressurized to reduce routine emissions?

What is the impact of high temperatures and high humidity on the reactor's cooling efficiencies? On a hot summer day with high humidity, what are the impacts on ambient air temperatures?

Human Health

Pregnant women and growing children are known to be differently impacted by chemical contaminants than full-grown men. Fetuses are particularly susceptible at particular stages in their development to chemicals and metals. The impact from routine releases of radioactivity and other contaminants planned for the air and water must be evaluated for these sensitive populations.

How do the ALARA cost-benefit analysis reflect concern for sensitive populations like pregnant women and growing children?

Further, worker exposures and secondary exposures via workers to their children and spouses should be evaluated. While Callaway II is under construction, 5,000 construction workers will be exposed to routine releases from Callaway I. They may also be exposed to "skyshine"-gamma radiation that can penetrate building walls. What impact will these exposures have on them? How will those exposures endanger their families? What will be done to mitigate such exposures?

The Missouri River serves as a drinking water source for many communities, including the majority of St. Louis. With another nuclear plant discharging radioactive materials into the river, how safe is the river for drinking water? What technologies are employed downstream to detect radioactivity at water intakes? How effective are those technologies? What technologies can remove radioactive contaminants from drinking water and how can these be deployed at the necessary scale? How does colloidal transport of radioactive particles in the River enhance the mobility of the materials?

How will the health of nearby communities be impacted by exposure to tritium? What are the exposure pathways for this water-mimic? What are the inhalation risks? The ingestion risks from crops and backyard gardens? How are these risks different between populations with differing vulnerabilities, like pregnant women, children, or the elderly?

How many additional cancers and cancer deaths will be tolerated from Callway II routine releases of pollutants into the air and water? How is genetic damage from radioactive exposures measured? How will birth defects be monitored?

What are the cumulative impacts of exposure to radioactivity to human health? To ecosystems?

Wildlife

The field investigations for Callaway II represent 4-6 site visits over a barely 12-month period for an area spanning thousands of acres. From this snapshot in time and space, the ER draws broad conclusions about the biota. With a decades-long operating life and centuries long radioactive waste problem, the EIS should spend more than 12 months evaluating impacts on the

natural communities in the area. The EIS should fully evaluate the plants and animals impacted. Indicator species should be identified and ranked as "important" and should merit consideration. Why have certain species disappeared? Reproductive and health effects from Callaway related exposures should be ruled out before dismissing concerns.

The impact of emissions on insects that are often the bottom of the food chain, should not be disregarded. Many birds, mammals, reptiles, amphibians, and fish found in the area depend on them for food.

What are the impacts of tritium on aquatic ecosystems? To what extent does tritium accumulate in living organisms?

Monitoring well 2S is one of two identified with contamination from Strontium-90. What are the cumulative impacts of additional releases on this already compromised groundwater system?

The EIS should examine impacts to karst topography in the region. Caves to the west on Auxvasse Creek and to the north near Reform, Missouri suggests that there may be karst geology in the area, which would render many of the assumptions about the predictability and direction of groundwater flow and volumes incorrect. The extensive limestone in the area also suggest karst. Relationships between surface and groundwaters are much more complex in karst areas. It also suggests additional species of concern that could be impacted from Callaway operations and construction. Caves of Callaway County were documented by the Missouri Speleological Society in a 1959 publication.

Missouri is fortunate to be the home of many species of native mussels, many of which are threatened. As organisms that filter out contaminants, how will these sensitive species be impacted by construction and operations? How will waters in nearby creeks be impacted by Callaway construction and operations? To what extent would certain mussels serve as good indicator species?

During construction, how can site runoff be better managed? Are on-site systems sufficient to contain runoff from a rain event like the one that occurred in September 13-14, 2008 when the remnants of Hurricane Ike poured through Missouri? Most stormwater permits do not require containment for an event of that magnitude. What are the consequences of not preparing for such an unusual, but increasingly expected, storm?

Socioeconomic Impacts

The socioeconomic impacts of cleaner, safer, energy sources must be evaluated in this EIS, especially energy efficiency. Efficiency programs could have an immediate, widespread, and positive impact on Missouri's economy by employing more people, in more areas, for a longer period of time. Concurrent development of renewable technologies like wind and solar will add to the cumulative socioeconomic benefits. Missouri's voter-passed Renewable Electricity Standard requires investor-owned utilities to obtain 15% of their power from renewable sources by 2021. Studies suggest that Missouri has more than 700 manufacturing facilities that could be

enlisted to produce wind turbine components. The cumulative impact of widely deployed energy solutions must be evaluated against a single-source which carries with it exceptional burdens of waste storage and containment that will require our resources for centuries while providing power for a few short decades.

There are numerous vineyards of commercial significance within 50 miles of the site. Given their proximity and the quantities of radioactive gases emitted such as tritium which is a low energy beta emitter with a 12.3 year half-life and a tendency to behave chemically like water in living systems, what impacts can be expected overtime on these typically long-lived vines and the wines resulting from them? Is the important genetic integrity threatened? What is the cumulative impact over the 40-60 year operating lifespan on crops downwind? In the event of an accident, what damages could be expected and what compensation would be provided for the physical loss of a vineyard and the financial losses from a damaged regional reputation? Communities such as Augusta and Hermann rely on wineries and the Katy Trail for much of their tourist traffic. How would they be impacted from an accidental release?

What are the costs to communities of preparing their emergency response systems to address a nuclear disaster? Are there systems in place to use texting, ham radio, the internet, and auto-phone dialers to notify nearby communities?
What are the cumulative impacts on the Missouri River of Callaway's emissions and water withdrawals (along with all those also upstream) on commercial fishing operations in the Missouri River at all levels of the food chain?

Need for power
The ability of cleaner and safer energy sources to eliminate the need for new base load power should be thoroughly evaluated in the EIS.

Alternatives
Missouri ranks near the bottom in energy efficiency policy. Because of this, we have the most to gain from meaningful energy efficiency programs, which have never been seriously pursued here. When the cost of waste disposal, a single accident, and long-term monitoring are included in the equation, the benefits of efficiency and clean, safe energy sources outweigh the benefits of a single, high-risk nuclear reactor. How does Callaway II construction, operation, and waste management compare on a per kilowatt basis to alternatives? Renewables are already powering communities in Missouri and beyond. How does investing a similar amount of money in renewable energy sources compare?

Cost-benefit analysis
The EIS should evaluate the complete costs of the proposed plant, including waste storage, monitoring and disposal as long as it is necessary. The cost of additional cancers in workers and communities should be calculated as well for it is a cost that we will bear. Information about the ever increasing costs of the EPR plants that are under construction in France and Finland indicates that cost overruns are more of a certainty than a distant risk. Increasing competition for nuclear power plant components and few qualified vendors will only further drive up costs.

Global political instability, economic uncertainty in capital markets, and climbing fuel prices are also driving up costs of construction components. The EIS needs to realistically assess these costs.

Global warming
The EIS should evaluate the carbon footprint of Callaway II and, in addition to construction components (including steel, concrete, and activated charcoal), include the entire fuel cycle and the waste cycle in the calculation.

Thank you for your attention to these comments.

/s/Kathleen Logan Smith
Executive Director
Missouri Coalition for the Environment
6267 Delmar Blvd. Ste. 2E
St. Louis, MO 63130
(314) 727-9600
klogansmith@moenviron.org