



**DIANE V. DENTON**  
Director  
Environmental & Energy Policy  
526 S. Church Street  
EC12K  
Charlotte, NC 28202  
Tel: 704-382-8598  
[diane.denton@duke-energy.com](mailto:diane.denton@duke-energy.com)

September 4, 2015

Howard Shelanski, Administrator  
Office of Information and Regulatory Affairs  
Office of Management and Budget  
725 17th Street NW  
Washington, DC 20503

Subject: Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category (RIN: 2040-AF14)

Dear Administrator Shelanski:

Duke Energy Business Services, LLC (Duke Energy), on behalf of Duke Energy Carolinas, LLC, Duke Energy Indiana, Inc., Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., Duke Energy Florida, Inc., and Duke Energy Progress, Inc. is writing to you to express our concerns regarding the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category (RIN: 2040-AF14) currently under review by the Office of Information and Regulatory Affairs (OIRA). Duke Energy is the largest electric power holding company in the United States with more than 51,400 megawatts of generating capacity. We serve 7.3 million U.S. electric customers located in the Carolinas, the Midwest and Florida. Duke Energy supplies reliable and affordable electricity from a diverse mix of coal, nuclear, natural gas, oil, hydroelectric, and renewable resources. As such, the outcome of this rulemaking proceeding is very important to Duke Energy and its customers.

As a member of the Utility Water Act Group (UWAG)<sup>1</sup>, Duke Energy participated in meetings between UWAG and OIRA on August 6 and 12, 2015 in which concerns regarding the proposed flue gas desulfurization (FGD) limits and bottom ash transport water limits were discussed. Duke Energy supports the proposed UWAG alternative approaches for those limits, but would also like to express concerns with the rule that have not been previously discussed. These additional concerns are related to:

1. Limits for Integrated Gasification Combined Cycle (IGCC) Wastewater
2. Anti-circumvention Measures
3. Sufficiently Sensitive Measures
4. Fixation as a zero liquid discharge system

Duke Energy previously communicated these concerns to EPA as part of the comments on the proposed rule submitted by Duke Energy on September 19, 2013.

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<sup>1</sup> The Utility Water Act Group is a voluntary, ad hoc, non-profit, unincorporated group of 198 individual energy companies, which own and operate over fifty percent of the nation's total generating capacity. Duke Energy is a UWAG member, as are the Edison Electric Institute (EEI), the American Public Power Association (APPA), and the National Rural Electric Cooperative Association (NRECA).

## 1. Limits on IGCC Wastewater

There is an extremely limited data set on wastewater from IGCC facilities. Only four IGCC facilities are located in the U.S., with one – the Kemper Station – not yet fully operational. The designs and byproducts of these facilities are significantly different. Duke Energy believes that EPA cannot properly establish limits for the IGCC waste stream subcategory in this rulemaking based on such limited data. Further, because there only four facilities in the U.S., it is unnecessary to establish national effluent guidelines at this time. Duke Energy, therefore, requests the IGCC waste stream subcategory be removed in the final rule.

EPA proposed to include gasification wastewater from IGCC facilities as a new waste stream subcategory within the rule. For IGCC wastewater, EPA proposed the following limits:

Parameter	Daily Max.	30-day average
Arsenic (µg/L)	4	N/A
Mercury (ng/L)	1.76	1.29
Selenium (µg/L)	453	227
Total Dissolved Solids (TDS) (mg/L)	38	22

Under the proposed rule, these limits applied to all wastewater from all sources at an IGCC operation except those for which specific limitations are otherwise established.

In Duke Energy's comments on the proposed rule, we recommended that EPA reserve setting effluent limitation guidelines for IGCC wastewater for a later rulemaking for the following reasons:

### Extremely limited data for IGCC stations

The proposed limits are based on very sparse data incorporating the performance of the only two IGCC systems (Wabash River Combined Cycle Plant (Wabash River) and Polk Power Station (Polk)) in operation within the United States at the time of the proposed rule's development. The data set was comprised of only four samples from each of the two plants. Moreover, for each of the two plants, the four samples were taken on four days within a single calendar month. From this already limited data set, EPA discarded the arsenic and mercury data from the Wabash River facility for use in the statistical analysis and limitation development. As a result, the effluent sample results for arsenic and mercury are limited to a single calendar month (and actually a single four consecutive-day period) from a single plant.

### IGCC Facilities Have Significant Differences in Design

Currently, there are only four IGCC facilities located in the United States, with the Kemper Station not yet fully operational. These facilities have significant differences in their design and the byproducts they produce, both of which affect the composition of the wastewater. As an example, the three stations currently in service (Duke Energy's Edwardsport, in addition to Wabash River and the Polk Power Station) burn a different blend of fuel (e.g. pet coke, pet coke/coal blend, and coal), which can result in variability

of constituents and concentrations in the grey water system. Additionally, these stations generate different commercial byproducts: for example, Polk produces sulfuric acid, while the Edwardsport IGCC produces elemental sulfur. Even EPA acknowledged that the two facilities used in their evaluation, Polk and Wabash River, “operate slightly different processes, [and] they are not the same waste streams at both plants.”<sup>2</sup>

Duke Energy’s Edwardsport IGCC facility is the newest plant in the country with state-of-the-art technology. However, since the Edwardsport facility was not yet in operation at the time EPA collected the data that was subsequently used to establish the limits for arsenic, mercury, selenium and TDS, any relevant influent/effluent and operational data were not incorporated into the proposed limits. Upon commencement of operation of the Edwardsport IGCC facility, effluent data was collected as required by the National Pollutant Discharge Elimination Systems (NPDES) permit. This data is presented in the following table. Based on this initial data collection effort, Edwardsport may be challenged to meet the mercury limits for the IGCC waste stream subcategory, if the rule is finalized as proposed. It is also important to note, due to analytical variability and potential sample contamination, any sample collected from any source may be challenged to meet the extremely low mercury limits presented in the proposed rule.

**Edwardsport Outfall 501 (Greywater Treatment Effluent)**

<b>Sample date</b>	<b>Arsenic, ug/l</b>	<b>Selenium, ug/l</b>	<b>Mercury, ng/l</b>
5/9/2013	<0.06	7	
5/23/2013	<0.06	0.2	
6/6/2013	<6	<0.2	
6/13/2013	<6	<0.2	
7/22/2013			<b>2.08</b>
7/24/2013	2	4	
7/31/2013	<0.6	<0.2	
8/2/2013	<0.6	<0.2	
8/8/2013			<b>9.58</b>
8/25/2013	<b>15</b>	<0.2	
9/5/2013	<0.06	<0.2	
9/25/2013	<0.06	<0.2	
10/3/2013			<b>2.53</b>
10/8/2013	<0.6	<0.2	
10/17/2013	<0.6	<0.2	

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<sup>2</sup> 78 Fed. Reg. at 34484

## 2. Anti-Circumvention Measures

EPA proposed to add provisions to the regulations that would prevent facilities from, in EPA's terminology, "circumventing" the newly proposed effluent limitations and standards for wastewaters containing coal combustion residual (CCR) constituents. These would require facilities to (1) demonstrate compliance before using the waste stream in another plant process or mixing the waste stream with another waste stream; and (2) not transfer effluent with a zero-discharge standard to another process with less stringent requirements. Both of these provisions are contrary to EPA's goal of encouraging centralized waste treatment systems. Further, these provisions will discourage recycling and reuse of treated wastewater.

### Centralized Waste Treatment Systems

EPA stated in its 1980 Steam Electric Technical Development Document that "consolidation of waste streams to a centralized treatment system is permitted and encouraged." The 1974 preamble to the steam electric guidelines says much the same thing: "It is also recognized by EPA that, due to the economies of scale, combining similar waste streams for treatment to remove the same pollutants is generally less costly than separate treatment of these waste streams. The employment of cost-saving alternatives in meeting the effluent limitations should not be discouraged." If steam electric utilities are prohibited from co-mingling waste streams prior to treatment, multiple waste treatment systems may have to be built, one for FGD wastewater, one for chemical/non-chemical metal cleaning wastewater, one for low volume wastewater, etc. Duke Energy believes the condition to demonstrate compliance prior to mixing with other waste streams is counterproductive to EPA's goals and should be removed in the final rule, especially if the model treatment technology includes the same components for different waste streams. This would be the case for chemical metal cleaning wastewater and FGD wastewater, as the model technologies for both of these waste streams are expected to include similar physical/ chemical treatment.

### Recycling and Reuse of Treated Wastewater

If the anti-circumvention measures are finalized as proposed, there will be no incentive to recycle or reuse treated wastewater. For example, Duke Energy's Edwardsport facility rarely discharges wastewater from the grey water system. This water is recycled within the cooling towers and is only discharged when the unit goes offline. Under a strict interpretation of the anti-circumvention measures, this water must meet the IGCC limits prior to mixing with any other waste stream, which completely discourages recycling of wastewater. In addition, under a no discharge limit of bottom ash transport water, the anti-circumvention measures prevent treated bottom ash transport water to be used as FGD scrubber make-up water. Allowing reuse of bottom ash transport water as scrubber makeup water would be an effective management practice for maintaining a bottom ash recycling system, while effectively treating any metals in the bottom ash transport system through the FGD wastewater treatment system. Recycling of wastewater would reduce the amount of water withdrawn for FGD scrubber make-up water.

EPA's proposed anti-circumvention measures are in direct contradiction of the centralized waste treatment goal and discourage reuse and recycling of water. As a result, the anti-circumvention language should be removed in the final rule. If EPA is concerned utilities will not install the model technology for the waste stream, these concerns can be addressed on an individual permit basis as opposed to establishing national requirements that discourage water conservation.

### **3. Sufficiently Sensitive Methods**

EPA proposed to include a requirement for utilities to use "sufficiently sensitive analytical methods." While Duke Energy understands EPA's rationale to include this provision in the proposed rule (i.e., to minimize undetected exceedances of the limits) the language is unnecessary as it is duplicative of EPA's final Sufficiently Sensitive Methods rulemaking (79 Fed. Reg. 49,001 (August 19, 2014)), which was finalized almost a year after the close of the comment period on this rule. Including specific provisions requiring sufficiently sensitive methods in the steam electric ELG while at the same time EPA has promulgated a separate, comprehensive Sufficiently Sensitive Methods rule could cause confusion and lead to conflicting requirements, especially for FGD wastewater.

Obtaining accurate data from FGD wastewater samples is subject to numerous variables that include different sampling methods, sample preservation procedures, types of analytical instruments, lab procedures and varying degrees of lab experience. These issues were acknowledged in the memorandum from James A. Hanlon to Water Division Directors, Regions 1-10, "National Pollutant Discharge Elimination System (NPDES) Permitting of Wastewater Discharges from Flue Gas Desulfurization (FGD) and Coal Combustion Residuals (CCR) Impoundments at Steam Electric Power Plants" (June 7, 2010). In addition, the EPA approved analytical method for metals, Method 200.8, as written, is not sufficiently detailed to analyze the FGD matrix and to detect to the levels of the proposed limits.

As currently drafted, the language in the proposed rule is inconsistent with the Sufficiently Sensitive Methods rule. Unlike the Sufficiently Sensitive Methods rule, the proposed "sufficiently sensitive" provision is not limited to 40 CFR Part 136-approved methods. Thus, the proposed provision could require the use of unapproved analytical methods that have not undergone EPA's validation process and may be unreliable since there are few, if any, approved methods capable of measuring at the low regulatory limits proposed in the rule. The proposed "sufficiently sensitive" provision could be interpreted as allowing or even encouraging the use of unapproved analytical methods in contradiction to the Sufficiently Sensitive Methods rule.

Duke Energy contends that compliance sampling should be based on reliable and well-defined analytical methods and EPA should remove the requirement to use "sufficiently sensitive analytical methods" from the rule, or at a minimum clarify the final rule only authorizes the use of analytical methods approved under 40 CFR Part 136 consistent with the final Sufficiently Sensitive Methods rule.

#### **4. Fixation as Zero Liquid Discharge**

Fixation is an effective way to treat and dispose of FGD wastewater. Fixation involves the mixing of lime, fly ash and FGD wastewater with FGD solids (calcium sulfite) separated from the purged slurry to form a cement-like substrate. Through pozzolanic reactions that occur in the mixture, dissolved solids, metals and chlorides in the FGD wastewater are bound in the cement-like substrate, which would be disposed of in a landfill. This approach to fixating waste is useful for landfill disposal due to forming a near-impermeable mass, which resists liquefaction, thereby minimizing the leaching of constituents. This treatment option is suitable for stations with an inhibited oxidation FGD scrubber, which does not produce saleable gypsum. For stations that choose to install a fixation system, these systems are very effective at treating FGD wastewater and result in no discharge.

EPA Region I evaluated fixation as a best available technology in support of the reissuance of a NPDES permit for Merrimack Station (Permit No. NH0001465). In EPA's Steam Electric Power Generating Point Source Category: Final Detailed Study Report, a case study for Ohio Power Company's General James M. Gavin Plant was presented as an example of a zero discharge system for FGD wastewater. This treatment system is similar to the fixation process in which a cementitious material is generated and placed in a landfill.

It is essential EPA acknowledge fixation in the final rule as an effective treatment system and clearly state this treatment system results in zero liquid discharge of FGD wastewater. This is necessary to avoid misinterpretation by state environmental regulatory agencies during implementation of the rule.

Thank you for reviewing our concerns on the rule. As stated previously, the outcome of this rulemaking proceeding is very important to Duke Energy and its customers.

Should you have any further questions regarding these concerns, please contact Jennifer Stenger at [Jennifer.Stenger@duke-energy.com](mailto:Jennifer.Stenger@duke-energy.com) (727-826-5628) or Nathan Craig at [Nathan.Craig@duke-energy.com](mailto:Nathan.Craig@duke-energy.com) (704-382-9622). We also welcome an opportunity to meet with OIRA to further discuss these concerns.

Sincerely,



Diane V. Denton  
Director of Environmental and Energy Policy

cc:

Dominic J. Mancini, Deputy Administrator  
Jim Laity, Branch Chief  
Vlad Dorjets, Desk Officer