

**BEFORE**

**THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Duke Energy Ohio, ) Case No. 13-0900-EL-ECP  
Inc. Environmental Control Plan )

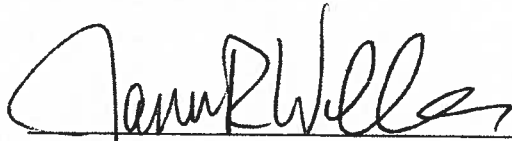
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**DUKE ENERGY OHIO, INC.'S ENVIRONMENTAL CONTROL PLAN**

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Pursuant to Section 4901:1-41-03 of the Ohio Administrative Code, Duke Energy Ohio, Inc. hereby submits the attached Environmental Control Plan.

Respectfully submitted,



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**CERTIFICATE OF SERVICE**

I certify that a copy of the foregoing has been served via electronic mail this 12<sup>th</sup> day of April, 2013 upon the following:

Scott J. Nally, Director  
Ohio Environmental Protection Agency  
50 West Town Street, Suite 700  
Columbus, Ohio 43215

A handwritten signature in black ink, appearing to read "James R. Wells", written over a horizontal line.

James R. Wells  
Associate General Counsel  
Duke Energy

**Duke Energy Ohio, Inc.**  
**Environmental Control Plan**  
**April 15, 2013**

## **Air Quality**

Duke Energy Ohio, Inc. (Duke Energy Ohio) is required to comply with numerous state and federal air emission regulations. In addition to current programs and regulatory requirements, several new regulations are in various stages of implementation and development that will impact operations at Duke Energy Ohio in the coming years. Some of the major rules include:

### **SO<sub>2</sub> and NO<sub>x</sub> Interstate Transport Rulemakings**

The US Environmental Protection Agency (EPA) finalized its Clean Air Interstate Rule (CAIR) in May 2005. The CAIR limits total annual and summertime NO<sub>x</sub> emissions and annual SO<sub>2</sub> emissions from electric generating facilities across the Eastern U.S. through a two-phased cap-and-trade program. In December 2008, the D.C. Circuit issued a decision remanding the CAIR to the EPA, allowing CAIR to remain in effect until EPA developed new regulations.

In August 2010, EPA published a proposed replacement rule for CAIR, known as the Cross State Air Pollution Rule (CSAPR). The CSAPR was finalized in August 2011, and vacated by the D.C. Circuit in August 2012. In its decision, the court directed EPA to continue to implement the CAIR until it develops a viable replacement rule. Phase II of the CAIR, which has tighter emission caps for SO<sub>2</sub> and NO<sub>x</sub>, takes effect January 1, 2015 if EPA hasn't adopted a replacement rule by that date. Any future EPA rule intended to replace the CAIR and CSAPR is likely to incorporate the more stringent ozone and fine particulate matter NAAQS in effect since the CSAPR was developed.

### **Mercury and Air Toxics Standards**

The EPA finalized the Mercury and Air Toxics Standards (MATS) rule in February 2012. The rule established emission limits for mercury, non-mercury metals, and acid gases from coal-

fired and oil-fired steam electric generating units. The compliance date for the rule is April 16, 2015. States can grant sources up to one additional year on a case-by-case basis to comply if a source cannot install controls by April 2015. The rule is being litigated in the D.C. Circuit. A court decision is not expected before late 2013 or early 2014. The rule is likely to require retirement of Duke Energy Ohio's Beckjord units rather than install controls to comply.

## **National Ambient Air Quality Standards (NAAQS)**

### **8 Hour Ozone Standard**

In March 2008, the EPA revised the 8 hour ozone standard by lowering it from 84 to 75 parts per billion (ppb). In September 2009, EPA announced a decision to reconsider the 75 ppb standard in response to a court challenge from environmental groups and their own belief that a lower standard was justified. In September 2011, the EPA announced that it would not complete its reconsideration of the 75 ppb standard. Instead, EPA would implement the 75 ppb standard while it completed its normal 5-year review of that standard. The EPA is projecting that it will issue a proposed rule to revise the 75 ppb ozone standard in January 2014.

The EPA has designated several counties in the Cincinnati area as marginal nonattainment areas for the 75 ppb standard. These areas will have until December 31, 2015 to attain the 75 ppb standard. The EPA has projected that it will issue a proposed rule addressing a range of implementation requirements for the 75 ppb standard. It is unknown if this implementation rule will result in emission reduction requirements at any Duke Energy generating facilities in Ohio.

### **Fine Particle Standard**

In late 2012 the EPA revised the annual fine particle (PM<sub>2.5</sub>) NAAQS from 15 to 12 micrograms per cubic meter. Final area designations and classifications are expected in

December 2014. Areas designated as moderate nonattainment areas will have a 2021 attainment date. It is not known at this time if the revised standard will have any impact on Duke Energy Ohio facilities.

### **SO<sub>2</sub> Standard**

In June 2010 the EPA finalized a 1-hour SO<sub>2</sub> standard at the level of 75 parts per billion (ppb). The EPA intends to make area designations in June 2013. The EPA plans to designate a small area around Duke Energy Ohio's Beckjord station a nonattainment area. The Ohio EPA will be required to submit a state implementation plan by the end of 2014 that will bring the area into attainment by 2018. The MATS rule is likely to require the retirement of Duke Energy Ohio's Beckjord units by April 2015 rather than install controls to comply with the MATS rule.

### **Greenhouse Gas Regulation**

In May 2010 the EPA finalized what is commonly referred to as the Tailoring Rule. Under the Tailoring Rule, Prevention of Significant Deterioration (PSD) permitting for CO<sub>2</sub>e applies to a modification at an existing major stationary source where the modification would result in a net emissions increase of at least 75,000 tons/year CO<sub>2</sub>e. Being subject to PSD permitting requirements for CO<sub>2</sub>e will require a Best Available Control Technology (BACT) analysis and the application of BACT for GHGs. BACT will be determined by the state permitting authority. Since it is not known if, or when, a Duke Energy Ohio generating unit might undertake a modification that triggers PSD permitting requirements for GHGs and exactly what might constitute BACT, the potential implications of this regulatory requirement are unknown.

In April 2012 the EPA proposed a CO<sub>2</sub> new source performance standard for new coal-

fired electric generating units and new combined cycle electric generating units. Specifically, the EPA proposed a fuel neutral CO<sub>2</sub> emission rate limit of 1,000 lbs/MWh. It is not known when the EPA will finalize the rule or what the requirements of the final rule will be.

The EPA is expected at some time to propose and finalize emission guidelines for regulating CO<sub>2</sub> emissions from existing electric generating units. The Ohio EPA will use those guidelines to establish the actual regulatory program that would apply to existing sources. It is not known when the EPA will propose or finalize emission guidelines, when the Ohio EPA will develop its regulatory program, or what the requirements of such a program might be.

Duke Energy Ohio does not expect the U.S. Congress to pass federal climate change legislation limiting CO<sub>2</sub> emissions or otherwise setting a price on CO<sub>2</sub> emissions through a mechanism such as a tax in 2013 or 2014.

### **CO<sub>2</sub> Control Planning**

A key to significantly reducing CO<sub>2</sub> emissions from electricity generation is to develop and deploy new low- and zero-emitting generation technologies. Duke Energy is pursuing the deployment and demonstration of new energy efficiency programs, renewable generation, advanced nuclear and integrated gasification combined cycle (IGCC) technologies for power generation. Deploying these projects will contribute significantly to Duke Energy's ability to manage its climate change regulatory risk. Ohio is positioned well for a carbon constrained future due to the passage of Senate Bill 221. Senate Bill 221 when fully implemented in 2025 has an energy efficiency requirement of 22%, 12.5% renewable energy requirement and an additional 12.5% advanced energy requirement that can be served with additional renewables, nuclear or IGCC.

One of the most significant technologies for reducing/avoiding future CO<sub>2</sub> emissions

from electricity generation is nuclear power. Today, Duke Energy operates eleven nuclear units with over 10,000 megawatts of generating capacity. Duke Energy's nuclear generation program, which began with the first unit commencing operation in 1971, has been a tremendous success for the company, its customers, and its shareholders. Duke Energy has received 20-year extensions to the operating licenses for all eleven units from the U.S. Nuclear Regulatory Commission (NRC), which means that this essential non-CO<sub>2</sub> emitting generation will be operating and helping to mitigate Duke Energy's climate change regulatory risk for many years to come. Expanding the use of nuclear power is essential for reducing future CO<sub>2</sub> emissions from electricity generation in the U.S. Duke Energy has submitted an application for a Construction and Operating License (COL) to the Nuclear Regulatory Commission for a new approximately 2200 megawatt 2-unit nuclear-powered generating facility in Cherokee County, South Carolina and a new approximately 2200 megawatt 2-unit nuclear powered generating facility in Levy County, Florida. While submitting the COL application does not commit Duke Energy to build the facilities, it does keep the nuclear option available to Duke Energy as a potential significant climate change risk mitigation option. Not only is having the nuclear option available in the future critical for U.S. energy security, but also, if significant reductions in greenhouse gas emissions are mandated, new nuclear power plants must be a key part of the U.S. and Duke Energy strategy for achieving those reductions.

The continued use of coal, the most abundant domestic energy resource in the U.S., also plays a key role in Duke Energy's strategy to manage climate change regulatory risk. New low CO<sub>2</sub> emitting coal-based technologies must be developed and demonstrated to facilitate the continued use of coal in a carbon constrained world. Duke Energy is building a 618 MW state-of-the-art IGCC electric generating unit at its Edwardsport, Indiana site that will replace



pulverized coal generating units constructed in the late 1940's and early 1950's. The new plant will begin commercial operation in 2013. IGCC technology gasifies solid fuels, typically coal, and uses the gas to fuel high-efficiency combined-cycle turbines to generate electricity. IGCC technology holds tremendous potential for the future as it can serve as a platform for being able to cost-effectively capture CO<sub>2</sub> emissions from coal-fired generation. Once captured, the CO<sub>2</sub> can be stored underground in appropriate geologic formations instead of being released to the atmosphere. Duke Energy's Edwardsport IGCC facility is located in a region where the geology holds significant promise for being able to store a large quantity of CO<sub>2</sub>. IGCC technology has the potential to allow for the continued use of the country's vast coal reserves to help meet the country's future energy needs while significantly reducing CO<sub>2</sub> emissions. Therefore, development and demonstration of IGCC technology is a key part of a Duke Energy overall strategy for mitigating potential climate change regulatory risk.

Duke Energy is helping advance the demonstration of geologic CO<sub>2</sub> storage technology through its participation in three of the U.S. Department of Energy's (DOE) Regional Carbon Sequestration Partnership. For example, as a member of the Midwest Regional Carbon Sequestration Partnership, Duke Energy is helping demonstrate the technical feasibility and cost-effectiveness of sequestering CO<sub>2</sub> in geologic formations in the Midwest, identify gaps and necessary regulations to support commercial deployment of the technology, and evaluate life-cycle storage options according to environmental risk, measurement, monitoring and verification protocols, public acceptance and value-added benefits. Duke Energy is hosting a geologic CO<sub>2</sub> storage demonstration project at its East Bend Station electric generating facility in Kentucky to help characterize the potential sequestration opportunities in the region. The demonstration project involved injecting approximately 1,000 tons of CO<sub>2</sub> into the Mt. Simon deep saline

reservoir – considered one of the largest and highest potential saline aquifers for CO<sub>2</sub> storage in the United States. Duke Energy's project at East Bend Station, actually the first project to inject CO<sub>2</sub> into the Mt. Simon, was a great success. Once more projects have demonstrated the viability of geologic storage of CO<sub>2</sub>, it can be added to the list of technology options available to Duke Energy to help it manage future climate change regulatory risk. Duke Energy's Sustainability Report (<http://www.duke-energy.com/sustainability/sustainability-reports.asp>) contains the company's Sustainability Plan, which includes corporate goals to reduce CO<sub>2</sub> emissions from our generating fleet by 17% from 2005 levels by 2020, and to reduce the carbon intensity of our generation fleet from 1.28 pounds of CO<sub>2</sub> per kwh to 0.94 pounds of CO<sub>2</sub> per kwh in 2020.

## **Water Quality**

### **CWA 316(b) Cooling Water Intake Structures**

Federal regulations in Section 316(b) of the Clean Water Act may necessitate cooling water intake modifications for existing facilities to minimize impingement and entrainment of aquatic organisms.

EPA published its proposed cooling water intake structures rule on April 20, 2011. The proposed rule establishes mortality reduction requirements due to both fish impingement and entrainment and advances one preferred approach and three alternatives. The EPA's preferred approach establishes aquatic protection requirements for existing facilities and new on-site generation that are defined as existing facilities with a design intake flow of 2 million gallons per day (MGD) or more from rivers, streams, lakes, reservoirs, estuaries, oceans, or other U.S. waters and utilizing at least 25% of the water withdrawn for cooling purposes. Based on the preferred approach, most, if not all of the Duke Energy Ohio coal-fired facilities are likely affected

sources. Additional sources, including some combined-cycle combustion turbine facilities, may also be impacted, at least for impingement intake modifications, due to the 2 MGD design intake flow threshold.

In order to comply with impingement requirements, modified traveling intake screens with fish handling and return systems are a likely retrofit. EPA proposed a strict definition of closed-cycle cooling and closed-cycle cooling systems. However, the proposed rule does not mandate closed-cycle cooling at all sites. Site specific evaluations to determine the best technology available to address entrainment are required to be conducted and closed-cycle cooling and fine mesh screens must be evaluated. EPA published a Notice of Data Availability (NODA) in mid-2012 to solicit comments on “preapproved technologies” to address impingement and other compliance alternatives along with addressing new “benefits” information from a previous survey.

The current EPA settlement agreement calls for the EPA to finalize the 316(b) rule in June 2013. If the rule is finalized as proposed, initial submittals, station details, study plans, etc, for some facilities would be due in the March/April 2014 timeframe. If required, modifications to the intakes to comply with the impingement requirements could be required as early as mid to late 2016. Within the proposed rule, EPA did not provide a compliance deadline for meeting the entrainment requirements.

At this time, the impacts this rule may have on Duke Energy Ohio’s generating units are not certain.

#### **Steam Electric Effluent Limitation Guidelines**

In September 2009, EPA announced plans to revise the steam electric effluent limitation guidelines, which are federally established, technology-based effluent limits based on the

capability of the best technology available. The primary focus of the revised regulation is coal-fired generation, thus the major areas likely to be impacted are FGD wastewater treatment systems and ash handling systems. The EPA may set limits based on the performance of certain FGD wastewater treatment technologies for the industry and may require dry ash handling systems for both fly ash and bottom ash to be installed. EPA may also set limits on landfill leachate, possibly requiring leachate to be routed to a treatment system prior to it discharging to an ash basin or through an outfall. The current EPA settlement agreement calls for the EPA to propose the revised steam electric effluent limitation guidelines by April 2013, and finalize the guidelines by May 2014.

After the final rulemaking, effluent guideline requirements will be included in a station's NPDES permit renewals. Thus requirements to comply with NPDES permit conditions may begin as early as mid-2017 for some facilities.

## **Waste Issues**

### **Coal Combustion Residuals**

Following TVA's Kingston ash dike failure in December 2008, EPA began an effort to assess the integrity of ash dikes nationwide and to begin developing a rule to manage coal combustion residuals (CCRs). CCRs include fly ash, bottom ash and Flue Gas Desulfurization byproducts (gypsum). In June 2010, EPA published its proposed rule regarding CCRs. The proposed rule offers two options 1) a hazardous waste classification under RCRA Subtitle C, and 2) a non-hazardous waste classification under RCRA Subtitle D, along with dam safety and alternative rules. Both options would require strict new requirements regarding the handling, disposal and potential re-use ability of CCRs. The proposal will likely result in more conversions to dry handling of ash, more landfills, closure of existing ash ponds and the addition

of new wastewater treatment systems. EPA's regulatory classification of CCRs as hazardous or non-hazardous will be critical in developing plans for handling CCRs in the future.

Deadlines to comply with a final regulation are generally expected to fall in the 2018 to 2022 timeframe. EPA may not issue a final CCR rule until 2014 or later.

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

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**in**

**Case No(s). 13-0900-EL-ECP**

Summary: Notice Notice of filing of Duke Energy Ohio's Environmental Control Plan electronically filed by Ms. Lisa A DeMarcus-Eyckmans on behalf of Duke Energy Ohio