TESTIMONY OF OWEN R. SCHWARTZ
MANAGER, ENVIRONMENTAL SERVICES
DUKE ENERGY BUSINESS SERVICES LLC
ON BEHALF OF DUKE ENERGY INDIANA, LLC
CAUSE NO. 45749 BEFORE THE
INDIANA UTILITY REGULATORY COMMISSION

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Owen R. Schwartz, and my business address is 1000 East Main Street, Plainfield, Indiana.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC, a service company affiliate of Duke Energy Indiana, LLC ("Duke Energy Indiana" or "Company") and a subsidiary of Duke Energy Corporation ("Duke Energy"), as Manager, Environmental Services.

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I have a Bachelor's of Science degree in geological sciences from Indiana University with minors in business and biology. I have been employed by Duke Energy for 13 years in the environmental services group, focusing on Coal Combustion Residual ("CCR") issues. Prior to being employed by Duke Energy, I was employed by two Indiana environmental consulting firms for a combined nine years, focusing on soil and groundwater investigation and remediation.

Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AND RESPONSIBILITIES AS MANAGER, ENVIRONMENTAL SERVICES.

A. My duties and the duties of the employees I manage include environmental CCR and related groundwater compliance for Indiana coal-fired generating stations, as well as being the Duke Energy Indiana point of contact for Indiana Department of Environmental Management ("IDEM") regulators that deal with CCR.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to (1) describe and explain the U.S. Environmental Protection Agency's ("EPA") Coal Combustion Residuals ("CCR") standards and requirements; (2) explain how these standards and requirements impact Duke Energy Indiana's generating units; and (3) detail how the EPA's CCR Rule is a federally mandated requirement, as set forth in Indiana Code 8-1-8.4. I will also provide an overview of the Resource Conservation and Recovery Act ("RCRA"), another EPA regulation impacting the Company's federally mandated compliance projects.

II. BACKGROUND

Q. PLEASE DESCRIBE THE POWER PRODUCTION CYCLE AND KEY TERMINOLOGY AS IT PERTAINS TO THE CCR RULE.

A. At issue in this proceeding is the generation and management of solid byproducts from the coal combustion process. Coal is a naturally occurring material that contains both combustible (generally forming a gas) and non-combustible (generally forming a solid) products when burned. The combustible products generally form gases that exit the generating plant stack into the air, and which have been the subject of numerous other environmental regulations and compliance investment by the Company over the years. The solid products of coal combustion, including products that are generated through the

processes of some types of environmental controls, such as flue gas desulfurization, have historically been referred to as coal combustion products or coal combustion byproducts, and are referred to by the EPA as "coal combustion residuals." This includes ash and synthetic gypsum, for example.

The ash generated in a boiler is typically removed from the process in multiple locations, including:

- From the bottom of the furnace section of the boiler: known as "bottom ash"
- From the economizer section of the boiler: known as "economizer ash" and, when combined with bottom ash, typically accounts for about 20% of the total ash production
- From the flue gas particulate control device, usually an electrostatic precipitator or baghouse: known as "flyash" and typically accounts for about 80% of the total ash production

Bottom ash is generally a very inert, course material, whereas flyash is made up of very fine particles. Economizer ash is typically a mix of fine and course particles. All three forms are collected in hoppers within the boiler or particulate control device, and then conveyed away from the unit using various means.

Historically, ash has been conveyed using water through a device known as a hydroveyer, which creates an air suction on the bottom of the hoppers to extract the ash. The ash then mixes with the water and flows by gravity to an ash surface impoundment (this is called ash "wet sluicing"). Generally, an ash surface impoundment is a large constructed area where the velocity of the water sluicing the ash is slowed such that the

ash settles out by gravity and is accumulated. The sluice water – now free of ash – is then discharged, or in some cases recirculated. Ash surface impoundments (also commonly known as ash ponds or ash basins) also serve as key components of a facility's overall water treatment process, and typically receive multiple streams of water besides ash sluice water (such as storm water drains, landfill leachate, and station process water).

Q. HOW DOES THE CCR RULE APPLY TO THESE PROCESSES?

A. The numerous stringent requirements of the CCR Rule impact the Company's ability to use CCR surface impoundments to receive ash and treat plant waste water streams. The CCR Rule required Duke Energy Indiana to convert its CCR handling systems to dry ash handling via submerged flight conveyors and to implement lined retention basins to ensure compliance. These projects were previously approved in Cause No. 44765.

As my testimony below describes, many of the Company's surface impoundments have triggered closure and must be closed in accordance with the CCR Rule and IDEM requirements. All surface impoundments and ash management areas will be closed in accordance with applicable standards.

III. THE CCR RULE

Q. PLEASE DESCRIBE THE CCR RULE.

A. The Resource Conservation and Recovery Act ("RCRA") provides the EPA with the authority to regulate coal combustion residuals. The EPA promulgated the CCR Rule in 2015 under Subtitle D of RCRA, meaning that coal combustion residuals are regulated as non-hazardous waste. The CCR Rule was self-implementing when originally finalized, meaning owners and operators of CCR units must comply without any additional action

by a state or federal regulator; however, in 2016, Congress passed, and the President signed, the Water Infrastructure Improvements for the Nation ("WIIN") Act, giving the EPA direct enforcement authority and allowing states to submit permit program applications for regulating CCR units to the EPA for its approval. Under the WIIN Act, subject to the availability of appropriations specifically provided to carry out a program, the EPA must implement a federal CCR permit program in states that determine not to implement a state CCR permit program. The Fiscal Year 2018 and 2019 Omnibus Appropriations Acts provided appropriations to EPA to develop and implement a federal permit program for the regulation of CCR in such states. Until an approved state or federal CCR permit program is established, the CCR Rule remains self-implementing, and CCR units must remain in compliance with the CCR Rule's minimum national criteria.

In 2016, the Indiana Environmental Rules Board adopted an emergency rule incorporating the CCR Rule requirements into Indiana Code. In 2017, IDEM adopted an amendment to Indiana's Solid Waste Management Plan describing IDEM's plan to update Indiana's regulations for regulating CCR disposal facilities to standards equivalent to the EPA's CCR Rule. IDEM has initiated a rulemaking to propose additional changes to the Indiana CCR standards, offer compliance alternatives and flexibility, while meeting the federal CCR standards, and establish a permit program for CCR units. IDEM's rulemaking remains underway as of the date of this testimony.

Q. PLEASE DESCRIBE HOW THE CCR RULE APPLIES TO DUKE ENERGY INDIANA GENERATING FACILITIES.

A. The CCR Rule applies to all coal combustion residuals generated by electric utilities and independent power producers. It applies to owners and operators of all new and existing coal combustion residual landfills, including any lateral expansions thereof, and all new and existing surface impoundments, again including any lateral expansions thereof, that dispose of or otherwise engage in solid waste management of coal combustion residuals. Specifically, existing landfills and surface impoundments that were receiving waste on the effective date of the rule (October 19, 2015) are covered under the regulation. Existing surface impoundments not receiving waste on the effective date of the rule, but still containing water, are considered "inactive." Inactive impoundments have the same requirements as active impoundments, but with extended timelines for compliance.

Compliance requirements include location restrictions, impoundment design criteria, operating criteria, groundwater monitoring and corrective action, closure and post-closure care and recordkeeping, notification and posting of information to the internet.

Under the CCR Rule, there are certain events that may cause a CCR unit to trigger closure. For example, if an existing, unlined CCR surface impoundment cannot demonstrate compliance with one of the location restrictions or structural integrity or safety factors. Certain of Duke Energy Indiana's surface impoundments triggered closure as a result of location restrictions and structural integrity and safety factor assessments. Notices of Intent to Close were then posted to the station operating record within thirty days of the flows to the impoundments being ceased. Specifically, Gallagher Primary Pond, Gibson North Ash Pond, and Cayuga Primary Ash Settling Pond and Lined Ash

Disposal Area were each required to close as a result of not meeting the factors specified by the CCR Rule. Gallagher Ash Pond A had to undertake remediation activities to bring it into compliance with the structural integrity and safety factor requirements by October 17, 2016.

In addition to the location restrictions, CCR units may also trigger closure requirements by exceeding an applicable groundwater standard based on CCR Rule-required sampling. Specifically, Wabash River Ash Pond A, Wabash River Ash Pond B, and Wabash River Secondary Setting Pond triggered groundwater standards. Finally, CCR units may also be required to initiate closure whenever a landfill or surface impoundment receives its last known quantity of coal combustion residuals and any other facility water streams managed by the landfill or surface impoundment have been removed. Generally speaking, when a generating facility retires, or a CCR unit is no longer used, the requirements for closure will take effect.

Duke Energy Indiana posted Notices of Intent to Close for certain facilities based on their receiving their last known quantities of CCR and station water – Cayuga Secondary Ash Settling Pond, Gallagher Secondary Settling Pond, Gibson North Settling Basin, Gibson East Ash Pond Settling Basin, and Gibson South Settling Basin.

Q. HAVE THERE BEEN ANY REVISIONS RELATED TO THE CCR RULE?

A. Yes. The EPA has revised the CCR Rule to change certain deadlines. Among other things, the EPA rule extended to October 31, 2020, two key closure-related deadlines applicable to coal ash units: (1) the deadline to cease receipt of coal ash in response to the detection of a leak from an unlined impoundment, and (2) the deadline to cease receipt of

coal ash in a surface impoundment that fails to meet the uppermost aquifer location restriction.

After the Federal CCR Rule was published in 2015, the EPA proposed additional revisions to the CCR Rule to address various court orders. Some of the proposed revisions have been finalized while the remainder continue through the rulemaking process. In any event, Duke Energy Indiana does not anticipate that these rule changes will materially alter the Company's CCR compliance plan schedule.

Q. HOW MUCH TIME DOES THE CCR RULE ALLOW FOR THE PROCESS OF COMPLETING CLOSURE OF A SURFACE IMPOUNDMENT?

A. Absent extenuating circumstances, the CCR Rule requires that closure be complete within five years of its initiation. However, depending on the size of the surface impoundment and other factors that may be beyond an owner/operator's control, the CCR Rule allows for the demonstration of the need for extensions of time to complete closure. If a surface impoundment is less than or equal to forty acres in area, a single two-year extension is available, for a maximum closure duration of seven years. If a surface impoundment is greater than forty acres in area, up to five two-year extensions are available, for a maximum potential closure duration of fifteen years.

Q. IS THE UTILITY STILL RESPONSIBLE FOR A SURFACE IMPOUNDMENT OR LANDFILL AFTER CLOSURE IS COMPLETE?

A. Yes. For affected surface impoundments and landfills undergoing closure via closure in place, the post-closure monitoring and care period is entered after closure is complete. During this period, the owner/operator of the facility is responsible for maintaining the

integrity and effectiveness of the final cover system, the leachate collection and removal system (if present), and the groundwater monitoring system. That includes making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover. The leachate collection and removal system must be maintained and operated (if present), and the groundwater must continue to be sampled and monitored. If future groundwater sampling and analysis demonstrate an impact from the waste management unit, then additional remedial actions could be required.

Q. WHAT IS THE DURATION OF THE POST-CLOSURE CARE AND MONITORING PERIOD?

A. The default post-closure care period is thirty (30) years. However, if at the end of this period the owner or operator of the CCR unit has not achieved the applicable groundwater protection standards, the owner or operator must continue to conduct post-closure care until such standards have been achieved.

Q. HAVE CLOSURE PLANS FOR DUKE ENERGY INDIANA'S ASH MANAGEMENT AREAS BEEN SUBMITTED TO IDEM?

A. Yes, both Closure and Post Closure Plans have been submitted to IDEM for all of the Duke Energy Indiana surface impoundments. All of the surface impoundments have been approved for closure by IDEM except for the original Edwardsport Closure Plan, which remains under review by IDEM as of the date of this testimony. Duke Energy Indiana withdrew its Closure Plans for Gallagher North Ash Pond and Primary Pond Ash Fill in April 2022, and intends to submit slightly revised Closure Plans in November

2022. Duke Energy Indiana will report on the progress of those revised Closure Plans before IDEM in its ECR filings. As Mr. Hill's testimony explains, the closure work already undertaken at both Gallagher North Ash Pond and the Primary Pond Ash Fill will remain part of the revised Closure Plans for these surface impoundments – the Company plans to propose that a slurry wall be installed to control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate or contaminated run-off to the ground or surface waters or to the atmosphere, as interpreted by IDEM to be required under the CCR rule. To the extent that any Federal CCR Rule compliance issues are identified involving the proposed slurry wall during the permitting process, those issues will be properly addressed with IDEM. It is Duke Energy Indiana's intent that these minor revisions will resolve both the Hoosier Environmental Council's litigation regarding Gallagher, and the EPA's January 2022 letter. The Company proposes to update the Commission and parties on the revised Gallagher Closure Plans in its semi-annual ECR proceedings.

IV. RCRA AND IDEM REGULATIONS

Q. WHAT IS THE RESOURCE CONSERVATION AND RECOVERY ACT?

A. Although I am not a lawyer, my job requires review and analysis of environmental rules and regulations, so I will explain my general understanding of the various rules and regulations impacting the coal ash closure activities discussed in this proceeding. The Resource Conservation and Recovery Act ("RCRA") establishes a nationwide system of solid waste management and control. Subtitle D of the Act is dedicated to non-hazardous

solid waste requirements, and Subtitle C focuses on hazardous solid waste. Solid waste includes solids, liquids and gases and must be discarded to be considered waste.

Q. PLEASE EXPLAIN HOW INDIANA'S REQUIREMENTS FOR ADDRESSING AND CLOSING COAL ASH MANAGEMENT AREAS NOT SUBJECT TO THE CCR RULE RELATE TO FEDERAL LAW.

A. The connection to federal law is simple, although as discussed below, its history is somewhat lengthy. The Indiana solid waste management laws are part of a federally mandated and federally approved "solid waste management plan" that was required pursuant to a U.S. Congressional Act—the Federal RCRA. Duke Energy Indiana's actions to address the final closure of historic ash management areas at the former Dresser Station, Noblesville Station, and the repurposed Edwardsport Station are being conducted in compliance with the state law and accompanying regulations, which are in turn required by Federal law and were explicitly reviewed and approved by U.S. EPA. Similarly, when Duke Energy Indiana implemented its approved closure plan for Gibson Station's East Ash Pond, the purpose of the closure plan was to comply with state regulations that are required by Federal law and were explicitly reviewed and approved by U.S. EPA.

Q. CAN YOU PROVIDE SOME ADDITIONAL INFORMATION ABOUT THE DEVELOPMENT OF INDIANA'S EPA-APPROVED REGULATIONS RELATED TO SOLID WASTE MANAGEMENT AND COAL ASH?

A. In 1965, Indiana passed the Solid Waste Disposal Act "to authorize counties, cities and towns to establish, acquire, construct, install, operate and maintain certain facilities for

the collection and disposal of refuse and to declare open dumps to be inimical to human health." Ind. Code § 19-2-1-1 (1965).

In 1976, the United States Congress passed RCRA, which among other things, required "[w]ithin one year of October 21, 1976, and from time to time thereafter, the Administrator shall . . . develop and publish suggested guidelines for solid waste management." 42 U.S.C. § 6907(a). Those guidelines were required to "**provide minimum criteria** to be used by the States **to define those solid waste management practices which constitute the open dumping** of solid waste or hazardous waste and are to be prohibited under [RCRA]." 42 U.S.C. § 6907(a)(3) (emphasis added). As required, U.S. EPA then promulgated regulations that directed the States to submit "solid waste management plans" for federal approval and established minimum criteria for such plans, such as a prohibition on open dumping. *See, e.g.*, 40 C.F.R. 256.20.[1] Indiana submitted its solid waste management plan ("SWMP") for federal approval on September 30, 1980. After providing a lengthy overview of the legal framework in Indiana at the time for regulating solid waste, Indiana's SWMP asserted that Indiana's existing solid waste laws satisfied the minimum federal criteria for solid waste management plans, and requested that the proposed SWMP should, therefore, be approved. Specifically, Indiana's SWMP stated, "In general, the existing State regulatory program designed to control all solid waste disposal practices is sufficiently broad. The Environmental Management Board, as

[1] "In order to comply with sections 4003 (2) and (3), the State plan shall assure that the State has adequate legal authority to prohibit the establishment of new open dumps and to close or upgrade existing open dumps. The prohibition of the establishment of new open dumps shall take effect no later than six months after the date of promulgation of the criteria or on the date of approval of the State plan, whichever is later."

the lead solid waste management agency for the State, has sufficient legal authority to prohibit open dumping and to regulate all disposal practices. The Board has properly exercised that authority and promulgated administrative rules and regulations to administer the State's solid waste management program." Indiana SWMP, at 20 (Sept. 30, 1980).

Therefore, Indiana relied on its SWMP (Ind. Code § 13-7-4-1) to demonstrate compliance with the minimum federal criteria (40 C.F.R § 256.20). It was also slightly amended and recodified to eventually become the Indiana Code relied upon by IDEM to regulate Duke Energy Indiana's non-CCR Rule-regulated ash management areas as "open dumps."

V. CONCLUSION

Q. IS COMPLIANCE WITH THE CCR, RCRA AND IDEM RULES MANDATORY FOR DUKE ENERGY INDIANA?

A. Yes, compliance with the CCR, RCRA and IDEM rules is mandatory. Even though the state of Indiana is implementing the RCRA requirements through its solid waste management rules, those requirements from IDEM are also mandatory.

Q. WHAT IS YOUR UNDERSTANDING OF INDIANA CODE 8-1-8.4 – THE FEDERAL MANDATE STATUTE?

A. My understanding is that Indiana Code 8-1-8.4 - the federal mandate statute – allows energy utilities to recover the costs of projects that are undertaken in compliance with a federal mandate.

Q. ARE YOU FAMILIAR WITH THE DEFINITION OF A "FEDERALLY MANDATED REQUIREMENT" IN THE FEDERAL MANDATE STATUTE AS IT APPLIES TO THIS CASE?

A. Yes. The statute states that "federally mandated requirement" means a requirement that the Indiana Utility Regulatory Commission ("Commission") determines is imposed on an energy utility by the federal government in connection with: (1) the Federal Clean Air Act; (2) the Federal Water Pollution Control Act (commonly known as the Clean Water Act); (3) the Federal Resource Conservation and Recovery Act; (4) the Federal Toxic Substances Control Act; (5) requirements relating to a license issued by the U.S. Nuclear Regulatory Commission to operate a nuclear energy production or generating facility; or (6) any other law, order, or regulation administered or issued by the U.S. Environmental Protection Agency, the U.S. Department of Transportation, the FERC, or the U.S. Department of Energy. Ind. Code § 8-1-8.4-5.

As the CCR Rule was promulgated under RCRA, I believe it meets the definition of a "federally mandated requirement." Similarly, the CCR compliance projects proposed by the Company in this proceeding meet the definition of a "compliance project" as they are being undertaken and relate to the direct or indirect compliance with one or more federally mandated requirements – in this case, the CCR Rule. Additionally, IDEM's solid waste management plan allows the State to demonstrate how CCR units will be regulated in Indiana, including how Indiana intends its state requirements to relate to the federal regulations, making the Company's projects related to the direct or indirect compliance with a "federally mandated requirement." Therefore, the proposed

compliance projects mandated by IDEM also meet the definition of "compliance projects."

Q. DOES THIS CONCLUDE YOUR PREFILED DIRECT TESTIMONY?

A. Yes, it does.

VERIFICATION

I hereby verify under the penalties of perjury that the foregoing representations are true to the best of my knowledge, information and belief.

Signed: _____ Dated: 7-19-2022

Owen R. Schwartz