REBUTTAL TESTIMONY OF J. BRADLEY DANIEL
DIRECTOR, GENERATION DISPATCH AND OPERATIONS
DUKE ENERGY CAROLINAS, LLC
ON BEHALF OF DUKE ENERGY INDIANA, LLC
CAUSE NO. 38707-FAC133 BEFORE THE
INDIANA UTILITY REGULATORY COMMISSION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is J. Bradley Daniel, and my business address is 526 South Church Street, Charlotte, NC 28202.

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

A. I am employed by Duke Energy Carolinas, LLC ("Duke Energy Carolinas") as Director, Generation Dispatch and Operations in the Fuels and Systems Optimization Department. Duke Energy Carolinas is a utility affiliate of Duke Energy Indiana.

Q. ARE YOU THE SAME J. BRADLEY DANIEL WHO SPONSORED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to the testimony and recommendations filed by Messrs. Eckert and Guerrettaz on behalf of the Indiana Office of Utility Consumer Counselor ("OUCC") and Mr. Gorman on behalf of the Duke Industrial Group ("IG"). First, I respond to the recommendation that the Commission continue to require Duke Energy Indiana to file in its next FAC

justification for the use of coal increment/ decrement pricing. I also address the potential issue the OUCC has with the analysis the Company performs to justify the supply offer adder. Finally, I respond to the testimony of Mr. Gorman regarding Duke Energy Indiana's operation of Edwardsport, and his allegation that Duke Energy Indiana has not demonstrated that it has made reasonable efforts to provide fuel at the lowest possible price.

Q. MR. DANIEL, HAVE YOU READ THE TESTIMONY OF MESSRS. ECKERT AND GUERRETTAZ?

A. Yes, I have.

Q. HOW DO YOU RESPOND TO THEIR RECOMMENDATIONS?

A. As to the OUCC recommendation that the Commission require Duke Energy Indiana to "file testimony, schedules and workpapers to justify any actual need for, or use of, coal increment/decrement pricing" (Eckert, pg. 10), the Company is willing to file testimony and produce an exhibit providing justification for any actual need for, or use of, coal increment[1]/decrement pricing, similar to what was filed in this or prior proceedings. However, showing the impact of the increment on the FAC factor requires several layers of assumptions and is not feasible.

[1] In my direct testimony, reference is made to a supply offer adjustment (pp. 17-13) to explain the adjustments that Duke Energy Indiana is making to the offers at Gibson units 1-5 and Cayuga units 1-2. The OUCC uses the terms "increment" and "adder," and I will use the terms "increment" and "adder" for consistency purposes.

Q. PLEASE EXPLAIN WHY IT IS NOT FEASIBLE TO QUANTIFY THE IMPACT OF THE INCREMENT ON THE FAC FACTOR.

A. Estimating the costs and/or impacts associated with the application of the increment to generation offers comes with a host of limitations and complications and requires a myriad of assumptions. First, there is not a way to know how the Midcontinent Independent System Operator (MISO) would have committed or dispatched generating units any differently in either the day-ahead or real-time market due to the increment because there is no way to know whether an increment has direct impact on MISO Locational Marginal Prices. Second, there is no way to assume MISO would have cleared or deployed ancillary services any differently. Third, while there is no way to know for sure, other market participants are likely taking similar actions, which complicates the assumptions for overall impact even further. Additionally, Duke Energy Indiana does not have access to MISO's optimization software that makes commitment and dispatch decisions and performs pricing calculations and therefore cannot assess other market participant actions. Finally, this calculation would also have to assume a future replacement market price for coal that was not consumed and not utilize the current weighted average or contract price of delivered coal. For these reasons, Duke Energy Indiana is unable to state with any level of certainty the increment impact on its customers in current or future periods.

Q. IN THE DIRECT TESTIMONY OF MR. GUERRETTAZ, REFERENCE IS MADE TO A POTENTIAL ISSUE WITH THE ANALYSIS DUKE

ENERGY INDIANA PERFORMS TO JUSTIFY THE ADDER. PLEASE RESPOND.

A. I would like to address and clarify the potential issue the OUCC may have with the analysis. Mr. Guerrettaz finds issue with the Company's weekly analysis that it uses to determine the adder and the supply offer. (OUCC Guerrettaz, p. 10). Mr. Guerrettaz asserts that "Duke shows in each run that if an adder was not implemented, its inventory automatically went to zero." (OUCC Guerrettaz, p. 11). I would like to clarify that the weekly analysis Mr. Guerrettaz refers to is utilized to determine what, if any, need there is for a price offer adjustment. The analysis continues to show that with up-to-date power and natural gas prices and up-to-date coal delivery constraints, an adder is necessary to avoid coal inventory from dropping to unreliable levels and ultimately to zero. In the case that power and natural gas prices decline and/or delivery constraints alleviate, the analysis could show the ability to retain reliable fuel inventory with no adder, though that is not the case as this time. Therefore, the statement that "if an adder was not implemented, its inventory automatically went to zero" is not factually correct. *Id.* A more accurate assessment of the analysis would be that "if an adder was not implemented, based on up-to-date information, coal inventory would drop to unreliable levels and ultimately to zero."

Secondly, the OUCC believes Duke Energy Indiana's minimum inventory amount is higher than MISO's requirement and references PJM Interconnection LLC's (PJM) policy to be notified when inventory balances reach 10 days. While

these statements are true, the implication of these statements regarding potential issues with the analysis is that Duke Energy Indiana is modeling too conservative of a minimum inventory for its analysis to justify the use of the adder. As described in my direct testimony, Company personnel believes modeling the offer adjustment to bound coal inventory levels between a minimum of **<CONFIDENTIAL>** [redacted] **<CONFIDENTIAL>** days and maximum of **<CONFIDENTIAL>** [redacted] **<CONFIDENTIAL>** days full load burn inventory at Gibson and Cayuga stations provides economic and reliable balance of coal inventory management. The Company uses this minimum inventory target for planning and procurement purposes and therefore utilizes the same approach in its modeling and analysis.

Duke Energy Indiana does not believe it would be prudent to tie Company inventory management to MISO (or PJM) inventory requirements because the minimum inventory notifications are emergency in nature. For instance, under PJM's 10-day rule, PJM may request a generator be placed into emergency status when inventory balances reach 10 days until inventory can be rebuilt to 21 days. MISO's business practices are not as specific as to its minimum inventory requirement. This being said, planning and modeling to emergency status levels increases the risk of higher cost mitigations in the market, including de-committing generation units and increasing reliance on purchase power should coal inventories be drawn down to RTO emergency notification levels.

Q. MR. DANIEL, HAVE YOU READ THE TESTIMONY OF MR. GORMAN?

A. Yes, I have.

Q. HOW DO YOU RESPOND TO HIS CONCERN OVER DUKE ENERGY INDIANA'S OPERATION OF EDWARDSPORT?

A. First, let me disagree with Mr. Gorman's assertion that Duke Energy Indiana does not adequately evaluate running Edwardsport on natural gas instead of coal. Specifically, as addressed in my direct testimony, to maintain winter fuel reliability at Cayuga units 1 and 2, the Company was able to utilize the dual fuel capability at Edwardsport IGCC and adjust coal shipments between Edwardsport and Cayuga to help meet winter inventory targets and maintain a reliable amount of coal inventory throughout the winter. The Company operated Edwardsport on one gasifier and supplemented the station with natural gas from the time period of December 17, 2021 to March 21, 2022. This operational configuration had its intended effect in helping restore reliable coal inventory at Cayuga units 1 and 2, as addressed in the rebuttal testimony of Mr. Shultz. Because Edwardsport was more economic to run on coal versus natural gas and the short-term reliability need had been met, Edwardsport returned to two gasifier operation on March 21, 2022. Other than as needed for other operational reasons, such as during gasifier maintenance, the unit has operated on coal as the primary resource since March 21, 2022.

As far as whether to continue to operate Edwardsport longer term on natural gas, there are several issues with Mr. Gorman's assumptions in determining whether to operate Edwardsport on natural gas versus coal. First,

Mr. Gorman states that "if Edwardsport were not using coal, then Duke Energy Indiana could reduce its reliance on the coal supply offer adjustment." (Gorman, p. 12). This is not necessarily the case. Duke Energy Indiana does not utilize an offer adjustment at Edwardsport and, even though there was action taken to allocate deliveries from Edwardsport to Cayuga, that action was intended to help ensure Cayuga maintained reliable fuel supply through the winter of 2022. Further action was not necessary because Cayuga station was able to build inventory to reliable levels throughout the FAC period without allocating deliveries from Edwardsport. The flexibility to allocate deliveries from Edwardsport to Gibson station does not exist because only Norfolk Southern railroad accesses Gibson station; therefore, Gibson station cannot access coal allocated to Edwardsport.

Because Edwardsport can operate without an offer adjustment, operating the station on coal remains the most economic solution for customers. As gas prices have increased throughout the FAC period and into the summer, the benefit and prudence of running Edwardsport on natural gas versus coal has decreased even further. Finally, because there is limited benefit to Cayuga station, and in the case of Gibson station, no benefit of allocating coal deliveries from Edwardsport, it is not accurate that Duke Energy Indiana could reduce its reliance on the coal supply offer adjustment to the benefit of its customers if Edwardsport was run on natural gas instead of coal.

Q. HOW DO YOU RESPOND TO MR. GORMAN'S ASSERTION THAT DUKE ENERGY INDIANA HAS NOT ADEQUATELY EVALUATED BENEFITS OF RUNNING EDWARDSPORT ON NATURAL GAS LONGER TERM?

A. Company personnel continuously engage in a planning process designed to minimize the total customer cost by maximizing each unit's economic value with an objective to supply electricity to customers generally using the most cost-efficient resources available, recognizing and subject to any operational limits, environmental considerations and fuel supply constraints affecting the generation and transmission facilities available to supply that electricity. In the case of Edwardsport, several factors must be evaluated over time to determine the primary fuel with which to operate the station. These factors include, but are not necessarily limited to, the price of natural gas compared to the price of coal, availability and transport of natural gas to run the plant solely on natural gas, the increase in Nitrogen Oxide ("NOx") emission rate on natural gas versus syngas, and unit megawatt capability on natural gas versus coal. Consideration of these key economic factors during the FAC period indicates that operating the unit on coal is substantially more economically beneficial to customers than operating the unit on natural gas. Table 1 below compares key economic factors the Company evaluates during each FAC period when determining whether to operate Edwardsport on coal versus natural gas. These factors as shown in the table include: 1) the unit capability in Megawatts when running on coal versus solely

on natural gas; 2) the cost of fuel in $/ MMBtu when operating on coal versus solely on natural gas; 3) the NOx emission rate in pound/ MMBtu when operating on coal versus solely on natural gas; 4) the $/ MWh NOx dispatch component when operating on coal versus solely on natural gas; and 5) the full load average $/ MWh cost to operate the unit on coal versus solely on natural gas. As the table shows, for the FAC period, it was substantially more economic to operate the plant on coal versus solely on natural gas.

Table 1

	March	
	Coal	Gas
MW Capability	618	541
$/ Mmbtu Fuel Price	$2.29	$4.98
NOx Emission Rate (lb/ mmbtu)	0.06	0.09
$/ MWh NOx Dispatch Component	$0.00	$0.00
Average Cost $/ Mwh	$28.06	$43.93

	April	
	Coal	Gas
MW Capability	605	487
$/ Mmbtu Fuel Price	$2.42	$6.81
NOx Emission Rate (lb/ mmbtu)	0.06	0.09
$/ MWh NOx Dispatch Component	$0.00	$0.00
Average Cost $/ Mwh	$29.61	$58.93

	May	
	Coal	Gas
MW Capability	605	487
$/ Mmbtu Fuel Price	$2.42	$8.20
NOx Emission Rate (lb/ mmbtu)	0.05	0.09
$/ MWh NOx Dispatch Component	$5.51	$7.99
Average Cost $/ Mwh	$29.61	$72.97

The table above is not an exhaustive list of the factors the Company evaluates when operating Edwardsport on coal versus solely on natural gas. Consideration

must also be given to the fact that the station's gasifiers and other gasification systems have an approximate 14-day cycle time. Thus, if the gasifiers are brought offline, the unit would be unavailable on coal for this period, impacting the ability of the station to respond to a volatile natural gas price environment. Also, cycling the station on and off syngas could negatively impact the station's equivalent forced outage rate, which would impact the station's energy value in the market, as well as future capacity value. In addition, the station is permitted by the Indiana Department of Environmental Management in a manner as to operate on coal as a primary fuel instead of natural gas. Should there be an economic consideration to operate the plant on natural gas longer-term, such permits would also have to be taken into consideration. Based on these factors and considerations, I believe the Company adequately evaluates the issues raised by Mr. Gorman.

Q. DO YOU BELIEVE THAT DUKE ENERGY INDIANA HAS DEMONSTRATED IT HAS MADE REASONABLE EFFORTS TO PROVIDE FUEL AT THE LOWEST POSSIBLE PRICE?

A. Yes, I believe that Duke Energy Indiana supplies electricity to its customers using the most cost-efficient resources available, recognizing and subject to any operational limits, environmental considerations and fuel supply constraints affecting the generation and transmission facilities available to supply that electricity. Given the constrained fuel supply environment, Duke Energy Indiana took reasonable action to maintain a reliable amount of coal inventory while

utilizing the most cost-efficient solution for customers to retain fuel security and reduce the potential impact of purchase power in future periods. As stated in my FAC 130 direct testimony, as spot and future commodity prices continued to increase through the summer of 2021, the Company's coal inventory at Gibson station was projected to drop to low levels. To alleviate declining inventory and retain fuel security, the Company determined it to be in the best interest of customers to stem the decrease in inventory. The Company implemented the price adjustment at Gibson station in August 2021 and then Cayuga in October 2021. The Company also made spot market coal purchases during that time to maintain reliable supply, as the rebuttal testimony of Mr. Shultz explains. As testified to in my FAC 131 direct testimony, spot and future natural gas and power prices continued to rise and remained strong through the FAC 131 period, and coal burn projections remained strong as a result. These factors, combined with continued constraints in the coal supply and transportation market, continued the need for the adjustment to supply offers to MISO. Those factors have not alleviated through 2022 and the Company continues to implement the price offer adjustment as a reasonable cost-efficient solution while maintaining fuel security.

Q. WHY IS THE USE OF A PRICE ADJUSTMENT IN THE BEST INTEREST OF THE COMPANY'S CUSTOMERS?

A. At the point in time the price adjustment was implemented, if the Company took no action, coal inventories would have decreased to unreliable levels, putting fuel security for the 2021 winter peaking season at risk during a time when power

prices were forecasted to be higher than current power prices. At any point in time since initially implementing the price adjustment, taking no action would have reduced coal inventories to unreliable levels and would have likely resulted in more expensive and higher risk options to solve the problem, meaning higher costs than necessary to Duke Energy Indiana's customers. For example, had Duke Energy Indiana taken no action with a price offer adjustment during the FAC 133 period, coal inventory levels would have dropped below a reliable level, meaning for the summer 2022 period, customers would have been more exposed to higher purchase power costs and increased risk of mitigation measures taken by MISO to reduce demand if the Company's coal generation were not available to generate. Because Duke Energy Indiana was able to conserve some coal, and more economically and reliably balance its inventory, Duke Energy Indiana was able to generate electricity using coal and utilize purchased power to balance its customers' needs instead of relying solely on purchased power during the summer. Said another way, using an offer adjustment means that some coal can be conserved at a cost that is less expensive and less risky than future mitigation steps might otherwise be. Finally, the price offer adjustment also allows for the Company to meet its objective function and maintain reliable coal inventory levels for the winter peaking season, which is typically the most constrained fuel delivery season. Because of these factors, utilizing a price offer adjustment in the current constrained environment is in the best interest of customers from a fuel security standpoint as well as an economic standpoint.

Q. DO YOU HAVE ANY OTHER RESPONSE TO MR. GORMAN'S COMMENTS?

A. Yes. Mr. Gorman refers to the Company's lack of reasonable efforts to provide fuel at the "lowest possible price." (Gorman, pg. 9). First, the Company strives to minimize the costs to its customers by maximizing each generating unit's economic value while managing operational limits, environmental considerations and fuel supply constraints that affect the generation and transmission facilities available to supply electricity. Mr. Gorman's assertions do not fairly address the complexity of portfolio management when it comes to managing a myriad of market constraints in a prudent way to generate or purchase power to serve its retail customers at the lowest fuel cost reasonably possible. The Company has prudently managed its fuel inventory risk, paying particular attention to ensuring supply for the winter peaking season when fuel supplies can be the most constrained. The Company has shown that the utilization of the price offer adjustment is a prudent and objective method to economically optimize a constrained resource, in this case coal inventory. Failing to take mitigation measures as the Company has taken to ensure reliable fuel supply could result in even more exposure to purchased power. This would not be in the best interest of customers as it exposes the customer to more volatility and risk versus the approach the Company is using – utilizing a price offer adjustment to manage coal supply constraints in each period to achieve reliable fuel supply in upcoming periods, especially winter. In this manner, the Company believes it is reasonably

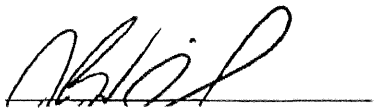
managing its objective to generate or purchase power to serve its retail customers at the lowest fuel cost reasonably possible.

Q. DOES THIS CONCLUDE YOUR REBUTTAL 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: 

J. Bradley Daniel

Dated: September 9, 2022