DIRECT TESTIMONY OF RICHARD KUNKEL
SENIOR EMISSIONS TRADER
ON BEHALF OF DUKE ENERGY INDIANA, LLC
CAUSE NO. 42061 ECR 35 BEFORE THE
INDIANA UTILITY REGULATORY COMMISSION

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Richard Kunkel and my business address is 526 South Church Street, Charlotte, NC 28202.

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

A. I work for Duke Energy Indiana, LLC ("Duke Energy Indiana," "Petitioner" or "Company"), as Senior Emissions Trader.

Q. WHAT ARE YOUR DUTIES AND RESPONSIBILITIES IN THIS POSITION?

A. As Senior Emissions Trader, I am responsible for optimizing emissions positions for all of the Duke Energy regulated jurisdictions.

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I received a Bachelor's Degree in Finance from Sam Houston State University in Huntsville, Texas. I am licensed as a C.P.A. in the state of Texas. I have over 30 years of energy trading experience including power, natural gas, fuel oil, emissions and recs. I've been managing the emissions portfolio for Duke Energy since 2014. I am responsible for SO_2 and NOx (both the Ozone Season and the Annual NOx programs) Emission Allowance ("EA") positions for Duke Energy Indiana, Duke Energy Kentucky, Duke Energy Carolinas, Duke Energy Progress and Duke Energy Florida as applicable

for the Cross State Air Pollution Rule ("CSAPR" or "Cross State Rule") and the Title IV Acid Rain program. Specifically, this includes maintaining enough allowances to meet the compliance requirements for the current year and forward years to ensure compliance, which may include the purchase and sale of EAs.

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

A. I will outline the status of the current SO_2 and NOx EA markets, required compliance for CSAPR and Title IV Acid Rain, and how Duke Energy Indiana participates in these markets.

II. CROSS STATE AIR POLLUTION RULE AND TITLE IV ACID RAIN PROGRAM

Q. WHAT IS THE CURRENT STATUS OF THE CSAPR RULE AND 2020 SO_2 AND NOx COMPLIANCE REQUIREMENTS?

A. CSAPR became effective on January 1, 2015. On September 9, 2016, the EPA published the CSAPR Seasonal NOx update rule, which beginning with the 2017 compliance period, created an Ozone season Group 2 allowance trading program which reduced the CSAPR Seasonal NOx allowance allocations for the 21 states remaining in the program.

On March 15, 2021, the EPA finalized the update to the Seasonal NOx rule effective with 2021 compliance that creates a new Group 3 trading program for Indiana, as well as 11 other states. This Group 3 update reduces the 2021 allocations for Duke Energy Indiana generating units by 40% as compared to 2020 allocations. The new allocations do not go into effect until 60 days after the rule is published in the Federal Register. The EPA is estimating that will happen on April 1, 2021. If that is the case, 2021 allocations will be reduced starting June 1, 2021, and May 2021 allocations would

be the same as under the prior rule. This would be a net reduction of 32% as compared to 2020 allocations, instead of the 40% that would have been the reduction if the rule was effective May 1, 2021. The rule goes on to reduce 2022 allocations by an additional 1% as compared to 2020 allocations. The Company has already met its 2020 CSAPR compliance requirements for all allowance types. Despite the reduced size of the 2021 allocation reductions for Seasonal NOx allowances, Duke Energy Indiana is currently projecting to have sufficient Group 3 Seasonal NOx CSAPR emission allowances, as well as SO_2 and Annual NOx allowances, in its inventory to cover 2021 compliance requirements. Duke Energy Indiana will continue to monitor the emission allowance forecasts throughout the year to determine if any purchases will be needed.

Q. PLEASE DESCRIBE THE MARKET FOR CSAPR SO_2 GROUP 1, CSAPR SEASONAL AND ANNUAL NOx, AND TITLE IV ACID RAIN SO_2 EMISSION ALLOWANCES AND THE STATUS OF 2020 COMPLIANCE REQUIREMENTS.

A. There has been limited observed activity for CSAPR SO_2 Group 1, annual NOx emission allowances, and Title IV Acid Rain SO_2 allowances. CSAPR Seasonal NOx allowances have traded actively since the EPA's update rule was published on October 30, 2020. This active trading was driven by two primary factors: 1) market participants buying for 2020 compliance; and 2) other market participants wanting to increase the size of their banked carryover allowances that will eventually be converted to 2021 Group 3 allowances. As a result, 2020 Seasonal NOx Group 2 allowances went from $70/ton on October 29, 2020 to $500/ton by late December 2020. The banked allowance conversion ratio for Seasonal NOx 2020 Group 2 into 2021 Group 3 allowances is estimated at

roughly eight to one. That means eight 2020 Group 2 allowances will convert to one 2021 Group 3 allowance. Based on early March 2021 indications, market prices for 2021 or earlier CSAPR SO_2 Group 1 allowances are approximately $1.00/ton, 2021 or earlier CSAPR Annual NOx allowances are approximately $2.00/ton, 2020 or earlier CSAPR Seasonal NOx Group 2 allowances are approximately $275.00/ton, 2021 CSAPR Seasonal NOx Group 3 allowances are $1,500/ton bid and $4,000/ton offer and Title IV Acid Rain SO_2 allowances are approximately $0.40/ton.

Duke Energy Indiana has compliance requirements for CSAPR SO_2 Group 1, CSAPR seasonal and annual NOx, and Title IV Acid Rain SO2 allowances. Duke Energy Indiana has completed its 2020 compliance requirements and based on current emission projections and inventory, expects to have enough emissions allowances for its 2021 compliance requirements and over the planning time horizon. Duke Energy Indiana will continue to monitor the emission allowance forecasts, inventories and position through the planning horizon and adjust as needed.

Q. PLEASE DESCRIBE THE TYPES OF TRANSACTIONS THAT OCCUR IN THE EA MARKET AND THOSE COMMONLY USED BY THE COMPANY.

A. Duke Energy Indiana typically executes transactions with other parties by using brokers who match buyers and sellers in the market. The types of transactions that take place in this market include purchases and sales of EAs for immediate delivery and payment; spread transactions, in which EAs for the same number of tons of different vintages are exchanged and any difference in market value is made up in a payment from one party to the other; cashless swaps of EAs of different vintages of the same type of EA or of one

commodity for another (*e.g. X* tons of NOx for *Y* tons of SO_2 EAs); purchases and sales of EAs for future delivery and payment (forward contracts), and call and put options. In addition, purchases and sales of EAs can be made using contracts on the Intercontinental Exchange. Historically, Duke Energy Indiana buys and sells for immediate delivery, and has also used forward contracts to purchase EAs. Currently, all the transactions executed involved physical EAs, and none of the Company's transactions have settled financially. All transactions were completed at the then current market price for that vintage of EAs.

Q. WHEN YOU PURCHASE OR SELL EMISSION ALLOWANCES, HOW DO YOU DETERMINE THE PRICE THE COMPANY WILL PAY OR RECEIVE?

A. Transactions are conducted at the prevailing market prices that exist at the time transactions are executed. Price discovery for market prices are gathered from broker quotes, publications that regularly report on EA prices, such as SNL Commodities, and electronic means such as Intercontinental Exchange.

Q. WHY IS IT NECESSARY FOR DUKE ENERGY INDIANA TO BE ABLE TO PARTICIPATE IN THE EMISSION ALLOWANCE MARKET?

A. The emission allowance markets were established to provide the Company and all participants in the EA markets the opportunity to optimize its existing inventory, manage cost risk, meet new compliance requirements, and ensure the ability to meet compliance requirements in an economic manner. Given the Company's existing fuel and power generation portfolios, as an example, the emission allowance markets allow the Company to buy emission allowances from the market if the number of allowances in existing

inventory is less than the forecasted emissions based on the economic management of the generation fleet.

Q. HOW DO YOU DETERMINE IF THE COMPANY HAS SUFFICIENT ALLOWANCES TO MEET THE COMPLIANCE REQUIREMENTS UNDER CSAPR?

A. The Company uses a sophisticated production costing model that forecasts emission burns, fuel burns, and purchased power based on various inputs. The forecast emission burns for the respective periods are compared to the amount of existing inventory and the number of allowance allocations provided by the EPA to determine if the Company has enough allowances to meet the compliance requirements for the respective NOx and SO_2 compliance programs for each period.

Q. PLEASE DESCRIBE THE MODEL REFERENCED ABOVE THAT YOU USE FOR FORECASTING.

A. The Company uses GenTrader, a third-party production costing model calibrated to the Duke Energy Indiana system for forecasting. All of Duke Energy Indiana's generating units are represented in the model with their key characteristics, such as capacity, fuel type, heat rate, forced outage rates, and emission (SO_2 and NOx) rates. Other inputs include fuel costs for each unit, the market value for EAs, the market price for power, and the Company's load forecast for native load customers. The model simulates the economic dispatch of the Company's generating fleet and projects purchases on an hourly basis to meet the forecasted load for current and future periods. For the time periods forecasted, the model calculates the amount and type of fuel that would be used, the

number of EAs consumed, and the amount of power generated and purchased to most economically serve our customers.

Importantly, the model recognizes and reflects the effects of the interrelationship and interaction of the various inputs on the operation of the Duke Energy Indiana system. As a simple example, all else equal, when the market price of power is lower, the model shows that some (relatively higher variable cost) generation units become uneconomic to dispatch, and those units that are still economic will dispatch for fewer hours due to the lower power price. Duke Energy Indiana strives to meet its native load customers' energy requirements by purchasing energy from the wholesale power market when such purchases are more economic than running our own generating units. In such situations, although the volumes of wholesale purchased power go up, the use of on-system fuel and EAs are reduced. Conversely, when the market price of power increases, more on-system generating units become economic to generate electricity, and those units run for more hours. In this situation, the Company consumes more fuel and EAs, uses more of its own generation to serve native load, and purchases less power from the market. On a forward-looking, hour-by-hour basis, the model calculates the Company usage of fuel, EAs, and power, and the Company's resulting position, *vis à vis* projected load requirements, with respect to each. Of course, the model is a tool, although a very good tool. Judgment must be applied to the output.

Q. DOES THIS MODEL DISTINGUISH BETWEEN NATIVE LOAD EA REQUIREMENTS AND EAs TO SUPPORT NON-NATIVE SALES?

A. Yes, it does, and we currently manage the inventories separately. We designate each EA purchase as native or non-native at the time of the transaction. Once a purchase is made for native load, those EAs remain with native load, and similarly for purchases made for non-native load. All zero cost allowances that the Company receives are maintained for the benefit of native load customers.

Q. YOU STATED ABOVE THAT YOU ARE RESPONSIBLE FOR DUKE ENERGY INDIANA'S EA POSITION. WHAT DO YOU MEAN BY THE TERM "POSITION"?

A. By position, I mean the overall balance of EAs in the company accounts after considering allocations provided by the EPA, existing inventory and emission usage based on forecasting and actual usage. For example, if the model calculates that the Company will consume 12,000 SO_2 EAs next month, and the Company has 15,000 SO_2 emission allowances, then the Company would be "long" 3,000 in SO_2 EAs. Similarly, if the model calculates that Duke Energy Indiana would consume 1,000 NOx EAs in the month of June, and the Company had an inventory of 800 NOx EAs, the Company would be "short" 200 NOx EAs. If the Company had exactly the number of EAs that the model calculated it would need for a given month, the position would be balanced or "flat" for that month. In addition, because EAs that do not have to be surrendered to the EPA are valid in later years, we also consider the Company's position in later years.

Q. HOW DOES THE IMPLEMENTATION OF THE CSAPR GROUP 3 SEASONAL NOx RULE AFFECT THE MANAGEMENT OF THE CSAPR EA POSITIONS FOR 2021?

A. Duke Energy Indiana expects to be in compliance for all emission obligations for 2021. These obligations include 2021 CSAPR Annual NOx, CSAPR Seasonal NOx Group 3, CSAPR SO_2 Group 1 and Title IV/Acid Rain SO_2 native load emissions.

The Company will continue to monitor its EA positions under CSAPR and Title IV/Acid Rain and look for ways to optimize its EA positions. Duke Energy Indiana will do so using the EA market to buy and sell EAs as needed, passing through to customers the gains or losses on sales in the normal course of business.

Q. DID DUKE ENERGY INDIANA BOOK ANY EMISSION ALLOWANCE GAINS OR LOSSES ASSOCIATED WITH THE BUYING AND SELLING OF EMISSION ALLOWANCES IN THE RECONCILIATION MONTHS OF JULY 2020 THROUGH AUGUST 2020 INCLUDED IN THIS PROCEEDING?

A. No. Duke Energy Indiana did not have market emissions allowance sales or purchase transactions during the reconciliation months.

Q. IN YOUR OPINION, HAVE THE COMPANY'S PURCHASES AND SALES OF NATIVE LOAD EAs FOR THE PERIOD BEEN CONDUCTED IN A REASONABLE MANNER?

A. Yes. Despite no transactions being booked during the two month reconciliation period, the ability to buy or sell EAs is an important part of managing the Company's environmental compliance costs and managing of risks. Duke Energy Indiana uses a sophisticated production costing and generation simulation model to forecast its required EAs, and purchases and sells EAs in an open and active market in an effort to provide

energy to our native load customers as economically as possible and obtain value for the customers.

Q. WHAT WILL THE COMPANY INCLUDE IN FUTURE ECRs RELATED TO EMISSION ALLOWANCES?

A. In the Company's most recent retail base rate case, Cause No. 45253, Duke Energy Indiana discontinued tracking native emission allowance consumption expense upon the implementation of new base rates. Duke Energy Indiana did reserve the right to seek tracking of emission allowances pursuant to Indiana statutes, rules and regulations in future proceedings, as it is possible new emission allowance regulations will be enacted or existing emission allowance expense may become more volatile in the future.

The Company will, however, include any gains or losses on the sale of native emission allowances in the consolidated Rider 62.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY IN THIS PROCEEDING?

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: 3-31-21

Richard M. Kunkel