

**REBUTTAL TESTIMONY OF  
JAMES S. NORTHRUP  
DIRECTOR, WHOLESALE AND RENEWABLES ANALYTICS  
DUKE ENERGY BUSINESS SERVICES LLC  
ON BEHALF OF DUKE ENERGY INDIANA, INC.  
CAUSE NO. 44578 BEFORE THE  
INDIANA UTILITY REGULATORY COMMISSION**

**I. INTRODUCTION**

1

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is James S. Northrup and my business address is 400 South Tryon Street,  
4 Charlotte, North Carolina 28202.

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

6 A. I am employed as Director, Wholesale and Renewables Analytics by Duke Energy  
7 Business Services LLC. Duke Energy Business Services LLC is a service company  
8 affiliate of Duke Energy Indiana, Inc. ("Duke Energy Indiana" or "Company"). Duke  
9 Energy Indiana is a wholly owned, indirect subsidiary of Duke Energy Corporation.

10 **Q. ARE YOU THE SAME JAMES S. NORTHRUP THAT PRESENTED DIRECT**  
11 **TESTIMONY IN THIS CAUSE, IDENTIFIED AS PETITIONER'S EXHIBIT A?**

12 A. Yes, I am.

13 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS**  
14 **PROCEEDING?**

15 A. The purpose of my Rebuttal Testimony is to further clarify and discuss issues raised in  
16 the Testimony of the Industrial Group and the Office of Utility Consumer Counselor

**JAMES S. NORTHRUP**

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1 (“OUCC”) regarding the four (4) proposed solar Power Purchase Agreements (“PPAs”)  
2 totaling twenty (20) MWs.

3 **II. REBUTTAL TO OUCC TESTIMONY**

4 **Q. HOW DO YOU RESPOND TO THE OUCC’S REQUESTS THAT DUKE**  
5 **ENERGY INDIANA FILE AN INITIAL SOLAR PROJECT REPORT FOR EACH**  
6 **OF THE FOUR (4) SOLAR PPAS AND SUBSEQUENT ANNUAL UPDATES?**

7 A. Duke Energy Indiana agrees to provide general annual status project reports for the  
8 proposed solar facilities, subject to appropriate protections. This information will be  
9 provided to the OUCC including: 1) project status; 2) annual MWH generation; 3) annual  
10 capacity factors; and 4) any issues that have had material impacts on the annual operation  
11 and generation of the four (4) solar facilities.

12 **III. REBUTTAL TO THE INDUSTRIAL GROUP’S TESTIMONY**

13 **Q. IN REGARD TO THE INDUSTRIAL GROUP’S TESTIMONY, THEY EXPRESS**  
14 **CONCERNS THAT THE DRIVER OF THIS CAUSE OF ACTION IS BASED**  
15 **SOLELY ON DUKE ENERGY INDIANA’S OBLIGATIONS UNDER A**  
16 **SETTLEMENT AGREEMENT AND; THEREFORE, DUKE ENERGY**  
17 **INDIANA’S RATE PAYERS SHOULD NOT BE RESPONSIBLE FOR THE**  
18 **ADDITIONAL COSTS OF THIS PROJECT. HOW DO YOU RESPOND TO THE**  
19 **THIS CONCERN?**

20 A. I disagree. Customers will benefit from the addition of these solar resources as an  
21 additional source of generation. As stated in my Direct Testimony, Duke Energy Indiana  
22 pursued the addition of cost effective solar resources to expand and diversify the

1 Company's generation portfolio with emission-free renewable solar energy. Adding new  
2 solar generation will allow the Company to gain experience in contracting and operating  
3 utility scale solar facilities on its distribution facilities in Indiana and increase customer  
4 awareness of the opportunity for "home grown" renewable energy at long-term stable  
5 prices to meet a portion of its energy consumption needs. Although securing solar  
6 resources also enables the Company to comply with the Edwardsport Station Air Permit  
7 Settlement, Duke Energy Indiana customers benefit from the addition of these solar  
8 resources because the solar PPAs are economical for customers as compared to not  
9 having the PPAs included in the generation resource portfolio. The economic analysis  
10 performed, as discussed in my Direct Testimony, demonstrated that the present value of  
11 savings to customers from these projects is positive without even considering the  
12 potential value of the Renewable Energy Credits ("RECs") to Duke Energy Indiana  
13 customers.

14 **Q. THE INDUSTRIAL GROUP IS ALSO CONCERNED THAT DUKE ENERGY**  
15 **INDIANA HAS NOT DEMONSTRATED THE NEED FOR ADDITIONAL**  
16 **CAPACITY. HOW DO YOU RESPOND TO THIS CONCERN?**

17 A. The Duke Energy Indiana 2013 Integrated Resource Plan ("IRP") represents future  
18 annual customer capacity needs at a single point in time. The 2013 IRP indicated that  
19 additional capacity resources could be added beginning in 2018, as customer energy  
20 needs grow and generation capacity retirements take place. In fact, six hundred and  
21 sixteen (616) MWs of coal generation from Wabash River Units 2-6 will be retired or  
22 suspended in April of 2016, due to new environmental regulations. The proposed solar

1 PPA contracts will provide twenty (20) years of long-term capacity beginning in 2016.

2 The 2013 IRP calls for the addition of more than 2,000 MWs of new capacity resources  
3 to meet customer needs during this same twenty-year period. There is a clear system  
4 need for the capacity that these long term PPAs provide.

5 **Q. THE INDUSTRIAL GROUP TESTIFIED THAT DUKE ENERGY INDIANA'S**  
6 **IRP, COMPLETED IN 2013, DID NOT CALL FOR THE ADDITION OF ANY**  
7 **SOLAR CAPACITY UNTIL 2018; THEREFORE, SOLAR PROJECTS ARE NOT**  
8 **REASONABLE OR NECESSARY AT THIS TIME. HOW DO YOU RESPOND?**

9 A. Duke Energy Indiana's 2013 IRP called for the addition of sixty (60) MWs of solar  
10 resource beginning in 2018, to align with the IRP assumption that a state and federal  
11 Renewable Portfolio Standards ("RPS") would be implemented. This scenario assumed  
12 an initial minimum level of solar mandate of approximately one percent (1%) of total  
13 sales by 2020, and rising thereafter (approximately twenty (20) MWs to seventy (70)  
14 MWs per year). Although no state or federal mandates are in place at this time, the  
15 proposed twenty (20) MWs of solar PPAs represent a small first step toward diversifying  
16 the Company's generation portfolio with emission-free renewable solar energy. Given  
17 the impending retirement or suspension of the Wabash River Generating Units, the  
18 timing of the long-term solar PPAs fits nicely into the Company's long term resource  
19 planning.

20 **Q. THE INDUSTRIAL GROUP REQUESTS THAT DUKE ENERGY INDIANA**  
21 **DEFER SOLAR PURCHASES UNTIL IT HAS A NEED FOR CAPACITY AND**

1           **PRESENTS AN ECONOMIC ANALYSIS SHOWING IT IS A LEAST COST**  
2           **OPTION. HOW DO YOU RESPOND?**

3    A.    The proposed four (4) solar PPA contracts will provide long-term capacity for the PPA  
4           term of twenty (20) years during a period that the Company anticipates will require  
5           significant resource capacity additions due to increasing customer energy needs and  
6           normal generation capacity retirements, due to both the age of the units and new  
7           environmental regulations. The 2016 commercial operation dates for the proposed solar  
8           resources will allow Duke Energy Indiana customers to take full advantage of lower costs  
9           from Federal tax incentives that are included in the PPA pricing. Solar resources that  
10          become operational prior to the end of 2016 can take advantage of Federal tax benefits  
11          from the Investment Tax Credit for renewable resources, allowing a thirty percent (30%)  
12          credit, as compared to resources that come on-line after that being limited to a ten percent  
13          (10%) credit.

14                 Further, as discussed previously, the four (4) attractively priced PPAs, selected  
15                 from over forty-nine (49) proposals in the Request for Proposal ("RFP"), enable Duke  
16                 Energy Indiana customers to receive positive savings from the addition of these solar  
17                 projects, as compared to not having the PPAs included in the generation resource  
18                 portfolio, without even considering potential additional revenues from sales of solar  
19                 RECs. In short, the PPAs have been demonstrated as cost effective additions to the Duke  
20                 Energy Indiana supply portfolio.

21    **Q.    THE INDUSTRIAL GROUP TESTIFIED THAT DUKE ENERGY INDIANA**  
22           **DOES NOT NEED ADDITIONAL EXPERIENCE WITH SOLAR AS DUKE**

1           **ENERGY CAROLINAS HAS INDICATED THAT IT IS CONCERNED WITH**  
2           **HAVING TOO MUCH SOLAR CAPACITY AND DUKE ENERGY**  
3           **RENEWABLES, A SUBSIDIARY, HAS EXPERIENCE WITH SOLAR**  
4           **CAPACITY. HOW DO YOU RESPOND?**

5    A.    Mr. Phillips seems to believe that the respective Indiana and Carolinas electrical systems  
6           and their operating conditions are identical. There are significant differences between the  
7           two regions concerning the electrical transmission and distribution equipment and  
8           configurations, generation portfolios, the MISO Regional Transmission Organization  
9           operating procedures, and expected solar generation performance. Duke Energy's  
10          experience with renewables in the Carolinas has emphasized the importance of gaining  
11          experience with the unique interactions between solar and the respective electrical  
12          distribution systems, to ensure customer energy delivery reliability can be adequately  
13          maintained. Adding these proposed solar facilities, will allow Duke Energy Indiana to  
14          gain the necessary experience in planning and operating large scale solar facilities on its  
15          electrical distribution facilities to maintain customer energy delivery reliability in  
16          anticipation of expected future Indiana solar customer facility additions.

17                 In addition, to clarify Mr. Phillips' statement that North Carolina has indicated  
18                 that it is concerned with having too much solar capacity on the Carolinas system, Duke  
19                 Energy Carolinas has testified that increasing levels of solar penetration can result in  
20                 increased operating costs to integrate higher levels of solar capacity on its electrical  
21                 system. Gaining experience in Indiana with integrating the four (4) proposed solar PPAs  
22                 with its electrical system will assist Duke Energy Indiana in developing a better

1 understanding of the potential for similar increased costs of operations for higher levels  
2 of solar penetration.

3 **Q. HOW DO YOU RESPOND TO THE INDUSTRIAL GROUP'S CONCERN THAT**  
4 **THE 2013 IRP AND YOUR DIRECT TESTIMONY DO NOT HAVE THE SAME**  
5 **CALCULATIONS FOR EQUIVALENT CAPACITY?**

6 A. For my Direct Testimony, I used the methodology specified by the Midcontinent  
7 Independent System Operator ("MISO") from the most recent Resource Adequacy  
8 Business Practice Manual (dated September 1, 2014) for new intermittent resources, such  
9 as solar, to calculate the expected equivalent annual capacity. Specifically, the hourly net  
10 output in MWs for hours 1500 – 1700 EST for the months of June, July, and August is  
11 used to estimate the equivalent annual capacity value for intermittent solar capacity  
12 resources. The equivalent annual capacity value for the twenty (20) MWs of nameplate  
13 solar contracts, using the MISO methodology, resulted in assigning approximately  
14 fourteen (14) MWs for the combined solar contracts or seventy percent (70%) of  
15 nameplate capacity. Future Indiana IRPs will incorporate the latest information and  
16 guidance available for capacity planning for intermittent resources, such as solar, as  
17 additional experience is gained with the operation of solar resources.

18 **IV. CONCLUSION**

19 **Q. IN YOUR OPINION, ARE THE FOUR (4) SOLAR PPAS BEING PROPOSED**  
20 **FOR THE COMMISSION'S CONSIDERATION REASONABLE AND**  
21 **NECESSARY?**

1 A. Yes. Securing these four (4) solar PPA projects provides Duke Energy Indiana customers  
2 the opportunity to participate in the development and consumption of locally produced,  
3 economical, clean solar energy. Adding new solar generation will also allow the  
4 Company to gain experience in operating large scale solar on it system and provide  
5 sustainable renewable energy and capacity over the next twenty (20) years at long-term  
6 stable prices. These four (4) proposed PPAs, selected from a comprehensive open market  
7 RFP solicitation, represent the most cost-effective solar projects available in the  
8 marketplace and provide Indiana customers an economical opportunity to advance clean  
9 emission free solar energy.

10 **Q. DOES THIS CONCLUDE YOUR PREPARED REBUTTAL TESTIMONY AT**  
11 **THIS TIME?**

12 A. Yes.



**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: James S. Northrup  
James S. Northrup

Dated: 4/28/2015