

FILED  
March 15, 2019  
INDIANA UTILITY  
REGULATORY COMMISSION

STATE OF INDIANA  
INDIANA UTILITY REGULATORY COMMISSION

VERIFIED PETITION OF NORTHERN INDIANA PUBLIC )  
SERVICE COMPANY LLC FOR APPROVAL PURSUANT TO )  
IND. CODE §§ 8-1-2-42(a), 8-1-8.8-11, AND TO THE EXTENT )  
NECESSARY IND. CODE § 8-1-2.5-6, OF A RENEWABLE )  
ENERGY POWER PURCHASE AGREEMENT WITH JORDAN )  
CREEK WIND FARM LLC, INCLUDING TIMELY COST )  
RECOVERY. )


CAUSE NO. 45195

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR  
PUBLIC'S EXHIBIT NO. 1  
TESTIMONY OF OUCC WITNESS ANTHONY A. ALVAREZ

March 15, 2019

IURC  
PUBLIC'S 1  
EXHIBIT NO.                       
4-23-19  
DATE REPORTER

Respectfully submitted,

  
\_\_\_\_\_  
Thomas Haas  
Attorney No. 34983-29  
Deputy Consumer Counselor

OFFICIAL  
EXHIBITS

**TESTIMONY OF OUCC WITNESS ANTHONY A. ALVAREZ**  
**CAUSE NO. 45195**  
**NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC.**

**I. INTRODUCTION**

1   **Q:   Please state your name, business address, and employment capacity.**

2   A:   My name is Anthony A. Alvarez, and my business address is 115 West Washington  
3       Street, Suite 1500 South, Indianapolis, Indiana 46204. I am employed as a Utility  
4       Analyst in the Electric Division of the Indiana Office of Utility Consumer  
5       Counselor ("OUCC"). I describe my educational background and preparation for  
6       this filing in Appendix A to my testimony.

7   **Q:   Have you previously testified before the Indiana Utility Regulatory**  
8       **Commission ("Commission")?**

9   A:   Yes. I have testified in a number of cases before the Commission, including electric  
10       utility base rate cases; environmental and renewable energy PPA and tracker cases;  
11       Transmission, Distribution, and Storage System Improvement Charge ("TDSIC")  
12       cases; and applications for Certificates of Public Convenience and Necessity  
13       ("CPCN").

14   **Q:   What is the purpose of your testimony?**

15   A:   My testimony addresses Northern Indiana Public Service Company LLC.  
16       ("NIPSCO" or "Petitioner") request for approval of the Wind Energy Purchase  
17       Agreement ("Wind PPA") between NIPSCO and Jordan Creek Wind Farm LLC  
18       ("Jordan Creek") dated January 3, 2019. I review the Wind PPA contracted price.  
19       I discuss the generator interconnection, system impact studies, engineering, and  
20       technical issues related to this Cause. I recommend the Commission approve

1 NIPSCO's proposed Wind PPA with certain reporting requirements discussed in  
2 my testimony.

3 **Q: Please briefly summarize the results of your review.**

4 A: My review of NIPSCO's request concluded the following:

- 5 1. NIPSCO identified and included this wind project in its short-term action  
6 plan because it was one of the bids in the RFP in the lowest-priced tranche.  
7 The price NIPSCO contracted to pay for energy in the Wind PPA is in-line  
8 with the current national average of wind PPA prices.
- 9 2. The interconnection of Jordan Creek Wind Farm triggered network impacts  
10 on the PJM system with estimated system upgrade costs in excess of \$42  
11 million allocated to the wind farm. NIPSCO indicated Jordan Creek is  
12 responsible for paying these system upgrade costs.
- 13 3. Jordan Creek made multiple contemplated changes in the number,  
14 specification and configuration on the wind turbines between the period the  
15 Commission declined its jurisdiction and this proceeding. These changes  
16 may require Jordan Creek to secure a "non-substantive modification"  
17 determination from MISO before it can proceed with interconnection.  
18 Interconnection is integral to the Wind PPA between NIPSCO and Jordan  
19 Creek.
- 20 4. A regular report that shows the wind energy delivered on an hourly basis  
21 with system-specific "on-peak" and "off-peak" hours included, and  
22 curtailments indicated would help provide better understanding and long-  
23 term knowledge gain of the wind energy production characteristics specific  
24 to the Jordan Creek site. I recommend the Commission require NIPSCO to  
25 provide the OUCC and Commission with an annual report ("Jordan Creek  
26 Annual Wind Production Report") for a period of five (5) years from the  
27 date of Jordan Creek's commercial operation, as discussed in more detail  
28 later in my testimony.

29 **Q: What is NIPSCO proposing in this proceeding?**

30 A: NIPSCO seeks approval of a long-term Wind PPA contract with Jordan Creek for  
31 400 MW of expected installed capacity ("ICAP").<sup>1</sup> Jordan Creek was among the

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<sup>1</sup> (Redacted) Petitioner's Confidential Exhibit No. 2, Direct Testimony of Mr. Patrick N. Augustine, p. 4, Footnote #1: "Installed capacity or ICAP represents the nameplate capacity of a resource and the maximum amount of output that can be produced at any given time."

1 wind resources NIPSCO selected to include in its “preferred portfolio.”<sup>2</sup> NIPSCO  
2 claims the planned location of the Jordan Creek project is in the part of Indiana with  
3 “advantageous meteorological and diversity conditions.”<sup>3</sup> Moreover, NIPSCO  
4 stated that Jordan Creek performed an extensive transmission analysis and is the  
5 most mature among the wind resources selection, although Jordan Creek has  
6 potential shared interconnection costs associated with it.<sup>4</sup>

## II. WIND PPA CONTRACTED PRICE

7 **Q: Did you review the price NIPSCO contracted to pay for energy in the Wind**  
8 **PPA?**

9 A: Yes. I reviewed the Wind PPA contracted price, as well as the Request for Proposal  
10 (“RFP”) bids and short-term action plan identified in NIPSCO’s 2018 Integrated  
11 Resource Plan.

12 **Q: Do you have concerns with the Wind PPA contracted price?**

13 A: No, I do not. NIPSCO identified and included this wind project in its short-term  
14 action plan because it was one of the bids in the RFP in the lowest-priced tranche.<sup>5</sup>  
15 The PPA price is also in line with the current national average of wind PPA prices,  
16 which is between \$14 and \$47 per MWh.<sup>6</sup>

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<sup>2</sup> (Redacted) Petitioner’s Confidential Exhibit No. 1, Direct Testimony of Mr. Andrew Campbell, p. 4, line 1; and p. 6, lines 9 - 13. *See also* Mr. Augustine, Direct at 3, lines 11 – 18.

<sup>3</sup> Mr. Campbell, Direct at 7, lines 12 – 15.

<sup>4</sup> Petitioner’s Exhibit No. 3, Direct Testimony of Mr. Robert Lee, p. 25, lines 1 – 9.

<sup>5</sup> Mr. Augustine, Direct at 12, lines 1-15.

<sup>6</sup> *See* Lazard Levelized Cost of Energy, Version 2.0, p. 3, November 2018: *Levelized Cost of Energy Comparison—Sensitivity to U.S. Federal Tax Subsidies*. Website:

<https://www.lazard.com/media/450784/lazards-levelized-cost-of-energy-version-120-vfinal.pdf>. Accessed 03/13/2019.

### **III. PJM AFFECTED SYSTEM**

1   **Q: Did NIPSCO explain why Jordan Creek has potential shared interconnection**  
2   **costs associated with it?**

3   A: No. NIPSCO witness Mr. Robert Lee did not offer or discuss any information, or  
4   the source of the potential shared interconnection costs associated with Jordan  
5   Creek.<sup>7</sup> However, as part of due diligence, I reviewed the interconnection  
6   information provided by the Jordan Creek developer in Cause No. 44978  
7   (declination of jurisdiction case).<sup>8</sup> The interconnection information showed the  
8   Jordan Creek project affected the PJM system in multiple instances that contributed  
9   to contingency overloads or "Network Impacts."<sup>9</sup>

10   **Q: What are the potential results of unmitigated network impacts on other**  
11   **systems?**

12   A: Unmitigated network impacts threaten the delivery of the wind resource full energy  
13   output into the grid. In this case, although Jordan Creek will be in the MISO system,  
14   it will actually contribute to "Previously Identified Overloads" in the PJM system.<sup>10</sup>

15   **Q: What were the costs of network impact mitigations of the affected PJM**  
16   **network upgrades associated with the Jordan Creek project?**

17   A: PJM estimated and allocated Jordan Creek the costs of approximately \$42  
18   million.<sup>11</sup> However, NIPSCO indicated that it is not responsible for the PJM

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<sup>7</sup> *Id.* Pet. Exh. No. 3, p. 25, line 9.

<sup>8</sup> Cause No. 44978, Pet. Exh. 1, Petitioner's Attachment ZM-6 (Mr. Zachary Melda), Queue Project J515, System Impact Study Report.

<sup>9</sup> *Id.* Cause No. 44978, Pet. Exh. 1, Pet. Attach. ZM-6, Q #J515.

<sup>10</sup> See "Contribution to Previously Identified Overloads" section of the PJM System Impact Study in Cause No. 44978, Pet. Exh. 1, Pet. Attach. ZM-6, Q #J515.

<sup>11</sup> See MISO J351 & J515 Study in DPP 2016 February Central Area Study, Report No. R128-16, dated: 12/19/2016. See also Cause No. 44978, Pet. Exh. 1, Pet. Attach. ZM-6, Q #J515.

1 network upgrade costs. NIPSCO is only required to pay the PPA price for the term  
2 of the PPA.<sup>12</sup>

#### IV. JORDAN CREEK WIND TURBINES

3 **Q: Please discuss the changes to the wind turbines Jordan Creek planned to**  
4 **deploy.**

5 A: As discussed earlier, although the wind farm's planned capacity remains unchanged  
6 at 400 MW, Jordan Creek made material changes to the configuration,  
7 specification, and number of wind turbines in its offer to NIPSCO.<sup>13</sup> Originally, in  
8 Cause No. 44978, Jordan Creek planned to deploy 174 units of 2.3 MW wind  
9 turbines with 116-meter diameter rotor blades.<sup>14</sup> However, in its Initial Quarterly  
10 Report (in Cause No. 44978, dated January 19, 2018, p. 2), Jordan Creek informed  
11 the Commission that the wind farm "will use Vestas V110 2 MW turbines."<sup>15</sup>  
12 Meanwhile, in this Cause, the Wind PPA attached to Mr. Campbell testimony  
13 further identified a different set of wind turbines contemplated for the project.<sup>16</sup>  
14 From an electrical engineering perspective, these various sets of wind turbines are  
15 technically different from each other. For example, the Vestas V110 2 MW wind  
16 turbines use 110-meter rotor diameter blades (54-meter rotor blades) while the  
17 others use 116-meter or 127-meter rotor diameter blades.<sup>17</sup> In addition, as Jordan

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<sup>12</sup> Public's Attachment AAA-1. NIPSCO Response to OUCC DR Set 1.

<sup>13</sup> In this Cause, Jordan Creek will replace ninety percent (90%) of wind turbines with larger diameter rotors and higher capacity rated turbines. Only 10% of the wind turbines will remain as specified in the original declaration of jurisdiction case (Cause No. 44978).

<sup>14</sup> Cause No. 44978, Pet. Exh. 1, Mr. Melda at 3, para. 1 (Answer to Q8).

<sup>15</sup> Cause No. 45978, Jordan Creek Wind Farm LLC, Initial Quarterly Report dated January 19, 2018, p. 2. IURC Online Services Portal: <https://iurc.portal.in.gov/legal-case-details/?id=f350c086-f388-e711-8111-1458d04e9f68>. Accessed: 03/06/2019.

<sup>16</sup> Pet. Con. Attach. 1-B, Exh. A, Definitions

<sup>17</sup> See Vestas V110-2.0 MW technical specification. Website: [https://www.vestas.com/en/products/2-mw-platform/v110-2\\_0\\_mw#!at-a-glance](https://www.vestas.com/en/products/2-mw-platform/v110-2_0_mw#!at-a-glance). Accessed: 03/06/2019.

1 Creek makes changes to the manufacturers and nameplate capacities, it also  
2 changes the deployment number and configuration of the wind turbines.

3 **Q: Do these changes have an effect on Jordan Creek's Generator Interconnection**  
4 **Queue with MISO?**

5 A: Yes. Part of the MISO *Generation Interconnection Queue* process is the *Generator*  
6 *Modification Requests*, wherein the generator requests to make changes or  
7 modifications to its project plans included in the original interconnection study.  
8 MISO then makes a determination as to whether the changes or modifications made  
9 by the generator, after it completes the required interconnection studies, are "non-  
10 substantive" (or "substantive modification") with "no adverse impact" (or comment  
11 on the adverse impact of the modification).<sup>18</sup>

12 For example, in MISO Q#J316, a 150 MW wind farm in Dickey, North  
13 Dakota, NextEra, which owns Jordan Creek, made a generator modification request  
14 to MISO to change the GE 1.7 MW wind turbines originally included in the  
15 interconnection study with 68 Vestas V166 and 7 Vestas V110 wind turbines.  
16 NextEra received a "non-substantive modification" determination from MISO on  
17 November 8, 2017.<sup>19</sup> By this experience, NextEra understood MISO's generator

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<sup>18</sup> See MISO Generator Interconnection Queue Process, Generator Modification Requests. Website: [https://www.misoenergy.org/planning/generator-interconnection/GI\\_Queue/#](https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/#). Accessed: 03/06/2019.

<sup>19</sup> *Id.* MISO Gen. Mod. Requests.

modification process; it should then have made the necessary modification request and sought a determination from MISO for the Jordan Creek wind turbine changes.

**Q: Did Jordan Creek make a generator modification request to MISO?**

A: No, I am not aware of such request.

**Q: Do you have concerns you would like to bring to the Commission's attention regarding how a Generator Modification Request to MISO may affect the PPA between Jordan Creek and NIPSCO?**

A: Yes. If Jordan Creek issues a generator modification request for wind turbine changes to MISO, and MISO does not return a "non-substantive modification" determination, then MISO may not allow the interconnection to proceed. Interconnection is integral to the Wind PPA between NIPSCO and Jordan Creek.

#### **V. REPORTING REQUIREMENTS**

**Q: Does the OUCC recommend certain reporting requirements for the Wind PPA?**

A: Yes. To ensure that the wind project is progressing forward, the OUCC recommends NIPSCO provide the OUCC and the Commission the information NIPSCO receives from Jordan Creek under Article 4.1 (A) through (F) in the Wind PPA. In addition, the OUCC recommends NIPSCO provide an annual report showing the Jordan Creek Wind Farm wind energy production ("Jordan Creek Annual Wind Production Report"). A report that incorporates the attributes of wind energy production specific to the Jordan Creek site with the characteristics of NIPSCO's system load would help provide long-term knowledge gain and better understanding of the wind energy production in Indiana. This annual report shall include the following details:

(1) The actual wind energy delivered on an hourly basis; with



- 1 (2) The corresponding NIPSCO Summer and Winter On-Peak and Off-  
2 Peak delivery hours identified; and  
3 (3) Any and all curtailments, including specific dates, times, and reason for  
4 or cause of curtailment.  
5 (4) Provide the data and information of the preceding year annually for a  
6 period of five (5) years; with  
7 (5) The initial period commencing at the Commercial Operation Date  
8 ("COD") of the wind farm.

9 **Q: Do you expect that these reporting requirements would be burdensome to the**  
10 **utility?**

11 **A:** No. NIPSCO would provide information it already receives from Jordan Creek. In  
12 addition, the Jordan Creek Annual Wind Production Report simply aggregates the  
13 data and information already available to NIPSCO into one comprehensive report  
14 that will promote long-term knowledge and understanding of wind energy here in  
15 Indiana.

## **VI. RECOMMENDATIONS**

16 **Q: What do you recommend in this case?**

17 **A:** I recommend the Commission approve the Wind PPA with the reporting  
18 requirements discussed in this testimony.

19 **Q: Does this conclude your testimony?**

20 **A:** Yes.

## **APPENDIX A**

### **I. EDUCATIONAL BACKGROUND AND EXPERIENCE**

1    **Q:**    Please describe your educational background and experience.

2    A:    I hold an MBA from the University of the Philippines (“UP”), in Diliman, Quezon  
3           City, Philippines. I also hold a Bachelor’s Degree in Electrical Engineering from  
4           the University of Santo Tomas (“UST”), in Manila, Philippines.

5           I joined the OUCC in July 2009, and have completed the regulatory studies  
6           program at Michigan State University sponsored by the National Association of  
7           Regulatory Utility Commissioners (“NARUC”). I have also participated in other  
8           utility and renewable energy resources-related seminars, forums, and conferences.

9           Prior to joining the OUCC, I worked for the Manila Electric Company  
10          (“MERALCO”) in the Philippines as a Senior Project Engineer responsible for  
11          overall project and account management for large and medium industrial and  
12          commercial customers. I evaluated electrical plans, designed overhead and  
13          underground primary and secondary distribution lines and facilities, primary and  
14          secondary line revamps, extensions and upgrades with voltages up to 34.5 kV. I  
15          successfully completed the MERALCO Power Engineering Program, a two-year  
16          program designed for engineers in the power and electrical utility industry.

17   **Q:**    What did you do to prepare your testimony?

18   A:    I reviewed the petition, direct testimony and attached exhibits filed by NIPSCO in  
19          this Cause. I drafted and review responses to OUCC (informal) discovery requests  
20          issued in this Cause. I also reviewed the Jordan Creek Wind Farm Power Purchase

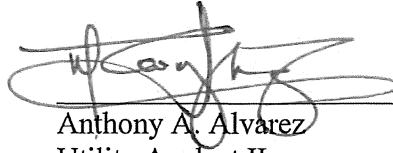
1 Agreement (“Jordan Creek Wind PPA”) and Commission Orders in a number of  
2 wind farm related dockets relevant to this proceeding including those in Cause Nos.  
3 43068, 43097, 43259, 43328, 43338, 43393, 43484, 43602, 44018, 43678, and  
4 44978.<sup>20</sup> I participated in meetings and discussions with OUCC staff and case team  
5 related to issues identified in this Cause.

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<sup>20</sup> IURC Final Order in Cause No. 43068 dated December 6, 2006, which addressed the declination of jurisdiction for the Benton County Wind Farm. IURC Final Order in Cause No. 43097 dated December 6, 2006, which addressed the PPA between Duke and the Benton County Wind Farm. IURC Final Order Cause No. 43259 dated December 5, 2007, which addressed the PPA between Vectren and the Benton County Wind Farm. IURC Final Order Cause No. 43328 dated November 28, 2007, which addressed the PPA between Fowler Ridge Wind Farm and Indiana & Michigan Power Company. IURC Final Order Cause No. 43338 dated November 20, 2007, which addressed the declination of jurisdiction for the Fowler Ridge Wind Farm. IURC Final Order in Cause No. 43393 dated July 24, 2008, which addressed the PPAs NIPSCO with Buffalo Ridge I LLC and Barton Windpower LLC. IURC Final Order Cause No. 43484 dated October 1, 2008, which addressed declination of jurisdiction for the Hoosier Wind Project. IURC Final Order Cause No. 43602 dated February 18, 2009, which addressed declination of jurisdiction for the Meadow Lake Wind Farm LLC project, Phase I. IURC Cause No. 44018 dated March 7, 2012, which addressed Indianapolis Power and Light's Renewable Energy Production (Rate REP). IURC Final Order Cause No. 43678 dated August 19, 2009, which addressed declination of jurisdiction for the Meadow Lake Wind Farm LLC project, Phase II. IURC Final Order in Cause No. 44978 dated December 20, 2017, which addressed the declination of jurisdiction for the Jordan Creek Wind Farm.

**AFFIRMATION**

I affirm, under the penalties for perjury, that the foregoing representations are true.

A handwritten signature in black ink, appearing to read 'Anthony A. Alvarez', is written over a horizontal line.

Anthony A. Alvarez  
Utility Analyst II  
Indiana Office of Utility Consumer Counselor

Cause No. 45195  
NIPSCO and Jordan Creek Wind Farm LLC

03/15/2019

Date

Cause No. 45195

Northern Indiana Public Service Company LLC's

Objections and Responses to

Indiana Office of Utility Consumer Counselor's Data Request Set No. 1

**OUCC Request 1-001:**

Please Refer to Cause No. 44978, Petitioner's Exhibit No. 1, Direct Testimony of NextEra witness Mr. Zachary Melda and Attachment ZM-6 (PJM's completed System Impact Study ("SIS") Report including Appendices 1, 2, and 3). As stated in the SIS, PJM evaluated the Jordan Creek Wind Farm as a "as a 400.0 MW (Capacity 0.0 MW) injection into the Cayuga 345 kV substation in the Duke Indiana area." The PJM SIS identified affected system elements on the PJM system and allocated costs to the Jordan Creek Wind Farm to upgrade or replace the overloaded elements. Will NIPSCO be responsible for the system upgrade costs, in any way, in this or any other proceeding, outside of the PPA price paid to the Jordan Creek Wind Farm?

**Objections:****Response:**

No. NIPSCO is only required to pay the PPA price for the term of the Jordan Creek PPA.

**CERTIFICATE OF SERVICE**

The undersigned hereby certified that a copy of the foregoing *Indiana Office of Utility Consumer Counselor Public's Exhibit No. 1 Testimony of OUCC Witness Anthony A. Alvarez* has been served upon the following counsel of record in the captioned proceeding by electronic service on March 15, 2019 to the following:

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