

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF DUKE ENERGY INDIANA, LLC FOR )  
THE APPROVAL OF A SOLAR-POWERED )  
GENERATING FACILITY AND BATTERY ENERGY )  
STORAGE FACILITY TO BE LOCATED AT CAMP )  
ATTERBURY ("CAMP ATTERBURY MICROGRID") )  
AND A BATTERY ENERGY STORAGE FACILITY TO )  
BE LOCATED IN NABB, INDIANA ("NABB BATTERY") )  
AS CLEAN ENERGY PROJECTS UNDER INDIANA )  
CODE 8-1-8.8; AUTHORIZATION FOR TIMELY )  
RECOVERY OF THE ASSOCIATED CONSTRUCTION )  
AND OPERATING EXPENSES THROUGH THE )  
COMPANY'S RENEWABLE ENERGY PROJECT RIDER )  
73; APPROVAL TO DEFER COSTS ASSOCIATED )  
WITH THE CAMP ATTERBURY MICROGRID AND )  
NABB BATTERY UNTIL SUCH COSTS ARE )  
REFLECTED IN DUKE ENERGY INDIANA, LLC'S )  
RATES AND CHARGES; AND APPROVAL OF A NEW )  
DEPRECIATION RATE SPECIFIC TO THE PROPOSED )  
CAMP ATTERBURY AND NABB BATTERY ENERGY )  
STORAGE FACILITIES )

CAUSE NO. 45002

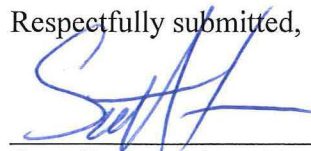
INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

TESTIMONY OF

ANTHONY A. ALVAREZ – PUBLIC'S EXHIBIT NO. 1

FEBRUARY 28, 2018

Respectfully submitted,



Scott Franson, Atty. No. 27839-49  
Deputy Consumer Counselor

Jesse James Atty. No. 29971-53  
Deputy Consumer Counselor

**TESTIMONY OF OUCC WITNESS ANTHONY A. ALVAREZ**  
**CAUSE NO. 45002**  
**DUKE ENERGY INDIANA, LLC**

**I. INTRODUCTION**

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

2   A:    My name is Anthony A. Alvarez, and my business address is 115 West  
3       Washington Street, Suite 1500 South, Indianapolis, Indiana 46204.

4   **Q:    By whom are you employed and in what capacity?**

5   A:    I am employed as a Utility Analyst in the Electric Division of the Indiana Office  
6       of Utility Consumer Counselor (“OUCC”). I describe my educational background  
7       and preparation for this filing in Appendix A to my testimony.

8   **Q:    Have you previously testified before the Indiana Utility Regulatory**  
9       **Commission (“Commission”)?**

10  A:    Yes. I have testified in a number of cases before the Commission, including  
11       electric utility base rate cases, environmental and solar tracker cases,  
12       Transmission, Distribution, and Storage System Improvement Charge cases, and  
13       applications for Certificates of Public Convenience and Necessity.

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

15  A:    This testimony presents my analysis of the proposed Camp Atterbury Microgrid  
16       and Nabb Battery projects (collectively “Projects”) as presented by Duke Energy  
17       Indiana, LLC (“DEI” or “Petitioner”) in this proceeding and as described in the  
18       testimony of Petitioner’s Witness Mr. Jonathan A. Landy.<sup>1</sup> Based on the OUCC’s

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<sup>1</sup> Petitioner’s Witness Mr. Jonathan A. Landy, Direct at 2, Lines 12 – 21.

1 review, the OUCC recommends the Commission approve the Projects proposed  
2 by DEI but with the following conditions:

- 3 1) require DEI to formalize and provide its operational and learning goals  
4 in a transparent and comprehensive plan to show how it will achieve  
5 such goals;
- 6 2) require DEI to report, update, and share, on an annual basis, the results  
7 of its operational knowledge and learning goals with the Commission,  
8 the OUCC, and other interested parties to demonstrate the operational  
9 benefits to DEI's customers and the State of Indiana (i.e. the  
10 Commission's Contemporary Issues Workshop); and
- 11 3) require DEI to cap the total project cost for the Camp Atterbury  
12 Microgrid project at \$14.5 million and the Nabb Battery project at \$9.1  
13 million.

14 The recommendation that the Commission approve the proposed projects will  
15 allow DEI to gain operational knowledge on how to successfully own, operate  
16 and integrate battery storage technology into its system.<sup>2</sup> The recommendation  
17 regarding reporting and goal setting relate to the newness of this technology on  
18 Petitioner's system. Moreover, our recommendation that the Commission cap  
19 DEI's total project costs will help minimize ratepayer risk and potential cost  
20 escalation.

## II. PROJECT ANALYSIS

21 **Q: Please describe DEI's proposed Camp Atterbury Microgrid project.**

22 **A:** I understand the Camp Atterbury Microgrid project includes distributed  
23 generation resources such as a solar-powered generating facility rated 2 MW<sub>AC</sub>/3  
24 MW<sub>DC</sub>, a battery energy storage facility rated 5 MW/5 MWh, and a microgrid  
25 infrastructure to electrically interconnect these facilities to the distribution system

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<sup>2</sup> Mr. Landy, Direct at 8, Lines 3 – 6.

1 serving Camp Atterbury.<sup>3</sup> Petitioner “views the solar facility and the battery  
2 energy storage system as a combined microgrid project.”<sup>4</sup> According to DEI, the  
3 project cost estimate includes four aspects: (1) equipment - solar panels, batteries,  
4 inverters and balance of plant components; (2) engineering and construction; (3)  
5 distribution interconnection; and (4) site control and communications  
6 infrastructure.<sup>5</sup>

7 **Q: Please describe DEI’s proposed Nabb Battery project.**

8 A: According to DEI, in 2016, it commissioned Doosan to complete a conceptual  
9 design study (“Doosan Study”) that identified and recommended the installation  
10 of an energy storage system at the Nabb Substation in the town of Nabb, Indiana.<sup>6</sup>  
11 The proposed Nabb Battery project included a battery energy storage facility rated  
12 5 MW/5 MWh and the electrical components and equipment needed to  
13 interconnect with the Nabb Substation. The project cost estimate includes: (1)  
14 equipment - batteries, inverters and balance of plant components; (2) engineering  
15 and construction; (3) distribution interconnection; and (4) site control and  
16 communications infrastructure.<sup>7</sup>

17 **Q: What standard has the legislature established that a clean energy project**  
18 **must meet in order to qualify for a grant of financial incentives?**

19 A: Ind. Code section 8-1-8.8-11(a) requires the Commission to encourage clean  
20 energy projects by granting financial incentives to clean energy projects the

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<sup>3</sup> Petitioner’s Witness Mr. Phillip Brandon Lane, Direct at 2, Lines 19 – 21 to Page 3, Lines 1 – 4.

<sup>4</sup> DEI’s response to OUCC Data Request Set 1.2.

<sup>5</sup> Mr. Lane, Direct at 4, Lines 17 – 22 to Page 5, Lines 1 – 2. *See also* Confidential Workpapers of Phillip Brandon Lane, Camp Atterbury Workpaper, “Duke Energy Summary of Cost for Camp Atterbury Microgrid” filed in this Cause.

<sup>6</sup> Mr. Landy, Direct at 6, Lines 18 – 22 to Page 7, Lines 1 – 3.

<sup>7</sup> *See* Confidential Workpapers of Phillip Brandon Lane, Confidential Revised Nabb Cost Break Outs 20171213, “Duke Energy Summary of Cost for NABB SUBSTATION” filed in this Cause.

1 Commission finds reasonable and necessary. DEI is seeking the timely recovery  
2 of costs as an incentive in this proceeding.

3 **Q: Do you believe DEI's proposed Nabb Battery project meets this standard?**

4 A: The Doosan Study detailed the costs and benefits associated with the proposed  
5 Nabb Battery project. The proposed Nabb Battery project will resolve a real  
6 reliability issue and "defer the need for a redundant 34.5 kV feeder."<sup>8</sup> For this  
7 reason and the operational knowledge that DEI will gain/achieve from this  
8 project, I am comfortable that the proposed Nabb Battery project meets the  
9 standard of reasonableness and necessity.

10 **Q: Do you believe DEI's proposed Camp Atterbury Microgrid project meets**  
11 **this standard?**

12 A: The support DEI provided for the "reasonable and necessary" standard in the  
13 statute for the Camp Atterbury Microgrid project is not as clear as the Nabb  
14 project. The project provides benefits to the Indiana National Guard base at  
15 Camp Atterbury, which benefits all citizens of Indiana. In addition, the proposed  
16 Camp Atterbury solar facility capacity corresponds to the solar generating  
17 capacity identified in DEI's most recent Integrated Resource Plan ("IRP").<sup>9</sup> With  
18 regard to the battery storage and microgrid components of the proposed project,  
19 DEI provided little support as to the benefits it would achieve for its customers  
20 relative to the project cost. Unlike the Nabb project, DEI did not commission a

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<sup>8</sup> Mr. Landy, Direct at 7, Lines 8 – 10.

<sup>9</sup> In DEI's 2015 IRP, it added 50 MW of solar generation, 20 MW in 2016, 20 MW in 2017, and 10 MW in 2020 as part of its preferred resource portfolio. See The Duke Energy Indiana 2015 Integrated Resource Plan, *Table 1-B*, p. 20, Public Version, Vol. 1, November 1, 2016. Filed with IURC: November 2, 2015. Website: [http://www.in.gov/iurc/files/2015\\_Duke\\_IRP\\_Report\\_Volumn\\_1\\_Public\\_Version.pdf](http://www.in.gov/iurc/files/2015_Duke_IRP_Report_Volumn_1_Public_Version.pdf). Accessed: 02/19/2018.

1 study for a conceptual design study to identify customer benefits. In general, the  
2 OUCC does not support ratepayers paying for projects that benefit a single  
3 customer. DEI did not provide support that the battery storage and microgrid  
4 project components benefits more than one customer. However, the Camp  
5 Atterbury project will provide additional operational knowledge and information  
6 to DEI regarding an integrated solar, battery energy storage, and microgrid  
7 facility. It will also provide DEI a better understanding of how microgrids work  
8 under a different configuration or installation and where implementation can be  
9 most beneficial for DEI's system and ratepayers. For these reasons, the OUCC  
10 recommends the Commission approve DEI's proposed Camp Atterbury Microgrid  
11 project, subject to the company developing and providing a transparent and  
12 comprehensive plan regarding its operational goals and future annual reporting  
13 requirements of information to the Commission, the OUCC, and other interested  
14 parties.

### III. COST ANALYSIS

15 **Q: Please discuss DEI's cost estimates for the projects.**

16 A: Petitioner's Witness Mr. Phillip Brandon Lane testified the overall estimate for  
17 the Camp Atterbury Microgrid project was approximately \$14.5 million and the  
18 cost estimate for the Nabb Battery project was approximately \$9.1 million.<sup>10</sup> Mr.  
19 Lane stated that each project cost estimate included a contingency amount of

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<sup>10</sup> Mr. Lane, Direct at 4, Lines 12 – 15.

1 approximately \$1.2 million.<sup>11</sup> However, DEI only provided cost summaries as  
2 support for the projects instead of a detailed cost break down.<sup>12</sup> The lack of a  
3 formalized project cost estimate exposes ratepayers to unnecessary risk and  
4 potential cost escalation through an unreasonable open-ended project preapproval  
5 request.<sup>13</sup> Therefore, my recommendation to place a cost cap on these Projects  
6 would minimize the preapproval risk that transfers to ratepayers.<sup>14</sup>

#### IV. PLAN AND REPORTING REQUIREMENTS

7 **Q: Please describe the comprehensive plan and reporting requirements you**  
8 **presented earlier.**

9 A: The OUCC's review shows that much of the justification for the Projects is based  
10 on "learning" about new technologies and developing operational knowledge.  
11 While still encouraging the adoption of the technologies (and these Projects in  
12 particular), the Commission should require DEI to formalize a comprehensive  
13 study plan that is transparent regarding the reporting and communication of  
14 knowledge gathered by DEI to the Commission, the OUCC, and other interested  
15 parties. To this end, the OUCC recommends the following:

16 1. Prior to the start of construction, DEI formalize, develop, and file with the  
17 Commission, under this Cause, a comprehensive study plan identifying the  
18 measurable goals and reporting requirements regarding the

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<sup>11</sup> *Id.* Mr. Lane, Direct at 4, Lines 12 – 15.

<sup>12</sup> *See* Confidential Workpapers of Phillip Brandon Lane, "Confidential Camp Atterbury Workpaper" and "Confidential Revised Nabb Cost Break Outs 20171213" filed in this Cause.

<sup>13</sup> *See* IURC Approved Orders in Cause No. 44511 dated February 4, 2015, and Cause No. 44909 dated August 16, 2017.

<sup>14</sup> *Id.*

1 implementation of batteries and microgrids at each of these two  
2 installations;

3 2. DEI work with other interested parties (i.e. Battery Innovation Center), to  
4 develop and implement a plan of study for the Projects. Those plans  
5 should include, at a minimum, testing of the installations in real-world  
6 situations so that the characteristics of these facilities can be understood in  
7 terms of where they are best utilized, implemented, and economically  
8 justified; and

9 3. DEI, in conjunction with other interested parties, presents the results of its  
10 studies in meetings, held annually (for at least 5 years).

11 **Q: Why is it important for DEI to share the results of the operations with other**  
12 **interested parties?**

13 A: While cost of these proposed installations may be small in comparison to DEI's  
14 overall rate base, the Projects are expensive "learning opportunities." Therefore, it  
15 is important that a formal study that shares information, as I have proposed here,  
16 be implemented so that the benefits of these learning opportunities can be  
17 provided to other interested parties.



**V. RECOMMENDATIONS**

1    **Q:    Please summarize the OUCC's recommendations.**

2    A:    The OUCC recommends approval of the Camp Atterbury Microgrid and Nabb  
3       Battery projects subject to the following conditions:

4       1) Require DEI to provide its operational and learning goals in a transparent and  
5       comprehensive plan to the Commission, the OUCC, and other interested  
6       parties;

7       2) Require DEI to provide annual updates and share the results of its operational  
8       goals with the Commission, the OUCC and other interested parties; and

9       3) Require DEI to cap the total project cost for the Camp Atterbury Microgrid  
10      project at \$14.5 million and the Nabb Battery project at \$9.1 million.

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

12   A:    Yes.

## APPENDIX A

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

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

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

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

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

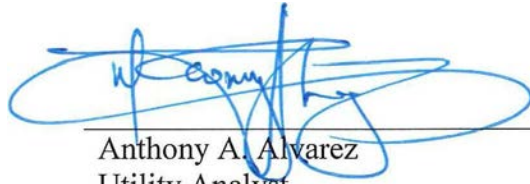
19    A:    I first reviewed the petition, direct testimony and attached exhibits filed by Duke  
20          Energy Indiana, LLC (“DEI” or “Petitioner”). I participated in technical

1 conferences with DEI technical staff and with OUCC case team pertaining to this  
2 Cause. Finally, I reviewed the following Commission Orders on similar utility  
3 scale projects related to solar, battery storage and grid technologies in Indiana:

- a. Cause No. 44734 (“Crane Solar Order”) issued on July 6, 2016, approving the Settlement Agreement and the reporting requirements for DEI’s 17 MW<sub>AC</sub>/24 MW<sub>DC</sub> Crane Solar Facility;
- b. Cause No. 44511 (“I&M Solar Order”) issued on February 4, 2015, approving the Indiana Michigan Power Company (“I&M”) Clean Energy Solar Pilot Project (“CESPP”) and the reporting requirements for approximately 16 MW of utility-owned solar PV generating facilities;
- c. I&M’s solar power trackers in Cause No. 44511 SPR-1 (“I&M SPR-1 Order”) issued on July 6, 2016, and Cause No. 44511 SPR-2 (“I&M SPR-2 Order”) issued on October 4, 2017; and
- d. Cause No. 44909 (“Vectren Solar/BESS Order”) issued on August 16, 2017, approving approximately 4.6 MW of solar generating facilities and approximately 4.4 MWh of battery energy storage projects.

## **AFFIRMATION**

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



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

February 28, 2018

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Date

Cause No. 45002

**CERTIFICATE OF SERVICE**

This is to certify that a copy of the ***OUCC TESTIMONY OF ANTHONY A. ALVAREZ*** has been served upon the following parties of record in the captioned proceeding by electronic service on February 28, 2018.

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