REBUTTAL TESTIMONY OF JONATHAN A. LANDY
DIRECTOR, RENEWABLE BUSINESS DEVELOPMENT
DUKE ENERGY BUSINESS SERVICES, LLC
ON BEHALF OF DUKE ENERGY INDIANA, LLC
CAUSE NO. 45253
BEFORE THE INDIANA UTILITY REGULATORY COMMISSION

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jonathan A. Landy and my business address is 400 South Tryon Street, Charlotte, North Carolina.

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

A. I am employed by Duke Energy Business Services, LLC, an affiliate of Duke Energy Indiana, LLC ("Duke Energy Indiana," "Petitioner," or "Company") as a Director, Renewable Business Development.

Q. DID YOU PROVIDE DIRECT TESTIMONY IN THIS PROCEEDING?

A. No, I did not.

Q. ARE YOU ADOPTING ANOTHER WITNESS'S DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes, I am. Company witness, Mr. Andrew Ritch, is scheduled to leave Duke Energy in early January 2020 and I am adopting his direct testimony.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. My testimony responds to the testimony of two Office of the Utility Consumer Counselor ("OUCC") witnesses: Mr. Anthony Alvarez and Mr. John Haselden. I will discuss the

Company's proposed battery project at the NSA Crane facility in response to Mr. Alvarez and the proposed Tippecanoe and B-Line solar facilities in response to Mr. Haselden.

Q. PLEASE PROVIDE YOUR HIGH-LEVEL REACTION TO THE OUCC'S POSITION REGARDING THESE PROPOSED SOLAR AND MICROGRID FACILITIES.

A. It's disappointing that the OUCC has chosen to oppose the type of smaller, more distributed energy investments that moderately increase both solar and battery storage on the Company's system, with a correspondingly moderate rate impact on customers. We are proud to work with our customers on finding solutions to their need for increased energy security, their desire for increasing renewable energy in Indiana, and to support an innovative low-income housing project, all while providing useful energy and ancillary services that benefit all customers.

II. CRANE BATTERY PROJECT

Q. ARE YOU FAMILIAR WITH MR. ALVAREZ'S TESTIMONY?

A. I have read the portion of it that relates to the proposed Crane Battery project.

Q. WHAT IS YOUR UNDERSTANDING OF HIS POSITION?

A. My understanding of Mr. Alvarez's testimony is that he believes that: (1) the Crane Microgrid is not a "real" microgrid; (2) the proposed battery project will not provide the stated operational and financial benefits to customers; (3) no lessons learned will be gained from this proposed battery project; (4) the battery project may explode; (5) the Company has not secured corporate management approval for this battery project and (6)

the proposed battery project is not in the best interest of customers. I will address each of these positions in my testimony.

Q. WHAT INVESTMENT DOES DUKE ENERGY INDIANA SEEK TO RECOVER IN THIS PROCEEDING?

A. The Company is only seeking to recover the proposed battery energy storage system ("BESS") - as recommended in the Crane Microgrid Feasibility Study - during this proceeding. Any additional investments recommended in the study will be funded separately and are not included in the project cost estimate provided in the Company's direct testimony. It's also important to note that the Company is not proposing a "solar . . . interconnection" project as part of the Crane Battery project, which was stated several times throughout Mr. Alvarez's testimony.[1]

Q. WHAT WAS THE PURPOSE OF THE MICROGRID FEASIBILITY STUDY, WHICH WAS PERFORMED AS PART OF DUKE ENERGY INDIANA'S CONSTRUCTION OF THE CRANE SOLAR FACILITY APPROVED IN CAUSE NO. 44734?

A. The purpose of the study was to "study the feasibility of incorporating future grid-tied energy storage technologies to maintain electric service for critical loads during a significant regional outage event." The proposed Crane Battery project achieves the study's purpose. The Department of the Navy and Duke Energy Indiana also recognize

[1] Alvarez testimony, page 37 lines 9 and 10.

the importance of leveraging energy storage technologies to enhance energy resilience as intermittent resources and threats like cyber-attacks become more prevalent.

Q. WHAT DID THE STUDY FIND?

A. As stated in the direct testimony I will be adopting, the Crane Microgrid Feasibility Study served as a guide for Duke Energy Indiana and the Department of the Navy to develop a project plan to support additional energy infrastructure at NSA Crane, which will provide both bulk system and local reliability benefits. The study identified new load shedding infrastructure, generation and storage assets, and control and communications infrastructure required to meet the study team's goals and objectives. Of note, the study recommends the addition of a new BESS to be coupled with the existing 17 MWac Crane Solar Facility owned by the Company as well as new diesel generators. Again, the Company is only seeking recovery of the BESS during this proceeding.

Q. UNDER THE SETTLEMENT AGREEMENT IN THE CRANE SOLAR PROCEEDING, DUKE ENERGY INDIANA WAS TO PROVIDE THE OUCC WITH A COPY OF THE MICROGRID FEASIBILITY STUDY WHEN IT WAS COMPLETED. DID THIS OCCUR?

A. Yes, it did. Under the Settlement Agreement, the Company agreed to "provide the OUCC a copy of the final report on the feasibility study assessing energy security options at NSA Crane, including the possible integration of new and existing distributed energy resources, control and communications equipment, and other facilities or equipment at

the site. Within sixty (60) days of submitting that report, Duke also agrees to meet with the OUCC to discuss the results of the feasibility study, unless the OUCC determines that such a meeting is not required after reviewing the Company's final report." The final report was completed on August 30, 2018 and delivered to the OUCC on September 5, 2018.

Q. DID THE OUCC MEET WITH DUKE TO DISCUSS THE FEASIBILITY STUDY AFTER REVIEWING THE FEASIBILITY STUDY?

A. No. Although Duke Energy Indiana offered to meet with the OUCC after sending them the study, there was no response received by the Company to its offer to meet.

Q. MR. ALVAREZ STATES THAT THE PROPOSED CRANE MICROGRID IS NOT A "REAL" MICROGRID. PLEASE RESPOND.

A. Most experienced microgrid developers are aware that the definition of a "real" microgrid varies throughout the industry and can be found when describing custom configurations of multiple distributed energy technologies and protection and control schemes as well as single, conventional backup generator projects. The various definitions and types of microgrids deployed today and under development, each having unique characteristics, can admittedly create confusion. In my opinion, the common theme and most important characteristic for microgrids is their ability, regardless of the level of automation, to intentionally disconnect from and reconnect to the bulk electric system while still maintaining a specified level of electric service to the targeted area. This is also referred to as "islanding" from the grid.

While the Company is only seeking recovery for the BESS in this proceeding and no additional microgrid-related components, I will attempt to explain how the proposed Crane Microgrid in the study is, in fact, a real microgrid by referencing the same microgrid definition cited by Mr. Alvarez. The Department of Energy ("DOE") defines a microgrid as "a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that act[s] as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island mode."

Q. DOESN'T THE CRANE MICROGRID INCLUDE ALL OF THOSE COMPONENTS?

A. Yes, the Crane microgrid, as described in the feasibility study, includes all of those components, including: a group of interconnected loads, multiple distributed energy resources, a well-defined boundary, multiple types of distributed energy resources and loads that can act as a single controllable entity with respect to the grid when coordinated properly by multiple asset owners, and the ability to island from the bulk electric system.

Q. MR. ALVAREZ STATES THAT DUKE ENERGY INDIANA WILL NOT OWN, CONTROL OR OPERATE THE PROPOSED CRANE MICROGRID. IS THAT ACCURATE?

A. No, it is not. Duke Energy Indiana will own, control and operate the existing solar array and the energy storage assets, as well as all transmission-level delivery and protection and control equipment required. These are significant components of the Crane

microgrid. Additionally, operating the microgrid without the BESS would require the curtailment of solar and additional diesel fuel, which contradicts the goals and objectives of the study. NSA Crane owns the distribution system and of course its loads. The cost of additional infrastructure on NSA Crane's distribution system needed to island would be paid for by NSA Crane through their own contract vehicles or potentially recovered through an "Excess Facilities" charge or other approved recovery mechanism.

Q. DOES IT MATTER THAT THERE WILL BE DIFFERENT OWNERS OF DIFFERENT PARTS OF THE CRANE MICROGRID?

A. No. This is common throughout the industry and fully aligns with the DOE's definition of a microgrid referenced above. For example, the Camp Atterbury Microgrid, currently under construction and approved in Cause No. 45002, includes multiple owners. The solar and battery projects and distribution infrastructure are owned and operated by the Company while the loads are owned and managed by the customer. Coordination will be required by both parties when the microgrid is in island-mode. While most existing microgrids are fully customer-owned, utilities have become increasingly involved in microgrid development and operation, and new ownership models are evolving to accommodate customer needs and project characteristics.

Q. WILL THIS DIFFERENT OWNERSHIP MEAN THAT THE MICROGRID WILL NOT ISLAND?

A. No. It will, however, require coordination between Duke Energy Indiana system operator and Navy utility personnel, and the coordinated operation of both Navy-owned and

Duke-owned generating assets and electrical infrastructure. NSA Crane owns its distribution system and will be responsible for segmenting its critical loads to gain maximum value from the microgrid. The unique characteristics and configuration of the project provide an opportunity to capture additional lessons learned that can be applied to future microgrids.

Q. MR. ALVAREZ CLAIMS THAT THE PROPOSED PROJECT WILL NOT ENHANCE RELIABILITY OF SERVICE TO CUSTOMERS. IS THIS ACCURATE?

A. No, it is not. Along with maintaining electrical service to NSA Crane's critical loads during a regional outage event, the battery will also enable Duke Energy Indiana to intentionally island the Naval base's loads, thus reducing the base's reliance on the bulk electric system to prevent customer outages during emergency situations when there are capacity issues.

Q. MR. ALVAREZ ALSO CLAIMED THAT THE BATTERY PORTION OF THE CRANE MICROGRID WILL NOT BE DISPATCHED BY MISO. IS THIS ACCURATE?

A. No, it is not. The battery will be qualified as a Midcontinent Independent System Operator ("MISO") resource just like Duke Energy Indiana's other generation and storage assets such as the batteries at Camp Atterbury and Nabb. Similarly, it was inaccurate for Mr. Alvarez to state that the battery will not provide ancillary services. The proposed battery at NSA Crane will provide ancillary services and be compensated

by MISO for those services. More specifically, it is anticipated that the project will be classified as a Stored Energy Resource (SER), which is capable of supplying regulating reserves in the MISO Energy and Operating Reserve Markets.

As FERC Order 841 is implemented, additional revenue sources could become available for the project and other similar projects in the MISO market. Order 841 specifically requires each regional transmission organization ("RTO") and independent system operator ("ISO") to revise its tariff to establish a participation model consisting of market rules that recognizes the physical and operational characteristics of electric storage resources and facilitates their participation in the RTO/ISO markets. The Company is also engaged with other MISO stakeholders to better understand the opportunities and challenges to include a battery storage device in the MISO Transmission Expansion Planning ("MTEP") process as a transmission solution to an identified transmission problem. Experience with transmission-tied projects, like the proposed Crane Battery, will help inform this issue.

Q. MR. ALVAREZ TESTIFIES THAT THE BATTERY WILL NOT BENEFIT CRANE WHEN IT IS OPERATED IN GRID-TIED MODE. IS THIS CORRECT?

A. No, it is not correct. Benefits, including MISO revenues, of the battery will flow through the Company's fuel clause and regional transmission organization riders to Duke Energy Indiana's customers – including NSA Crane – when grid-tied like Duke Energy Indiana's other generation and storage assets.

Q. MR. ALVAREZ CLAIMS THAT THERE WILL BE NO LESSONS LEARNED THAT CAN BE GAINED FROM THIS PROPOSED MICROGRID. IS THIS A TRUE STATEMENT?

A. No, it is not true. Lessons learned from this project will be unique given the interconnection to the transmission system, the MISO generation interconnection application process, multiple owners of the infrastructure within the microgrid, and coupling with existing solar versus new solar facilities. The Nabb and Camp Atterbury projects are interconnected to the distribution system, which involves different planning processes, standard operating procedures, and policies than transmission-tied projects. Siting this project allows the Company to leverage existing interconnection capacity and land availability to deploy a transmission-tied battery at a relatively low cost and impact to customers.

Q. MR. LANDY, AT ONE POINT IN MR. ALVAREZ'S TESTIMONY, HE STATES THAT THE PROPOSED BATTERY MIGHT EXPLODE. PLEASE RESPOND.

A. The Company is well-aware of the inherent risks associated with delivering energy to our customers and communities. This is why modest investments in alternative technologies are critical for continuing to provide service that is not only safe but also affordable, reliable, and increasingly clean. Worldwide manufacturing capacity for lithium-ion batteries now stands at 302.2 gigawatt-hours, and plants with another 603.8 GWh are

planned to open within the next five years, according to Bloomberg.[2] A majority of this capacity will be installed in electric vehicles and consumer products, such as cell phones and laptops. Stationary storage investments in the United States also continue to grow. Market participants continue to develop and implement best-in-class safety standards to support growing customer demands.

Moreover, the battery energy storage system referenced by Mr. Alvarez in Paradise, Arizona is a battery system that utilizes different manufacturers and integration methods than what Duke Energy Indiana uses at its batteries currently under construction and will use at Crane. All Duke Energy BESS installations will be equipped with both fire prevention and detection equipment as well as physical barriers where needed, going above and beyond the basic safety requirements. The Company continues to engage with fire safety experts and utility peers to be certain that the equipment used in our battery energy storage systems is the safest commercially available in the market today.

Q. MR. ALVAREZ STATES THAT DUKE ENERGY INDIANA HAS NOT SECURED CORPORATE MANAGEMENT APPROVAL FOR THIS PROJECT. PLEASE RESPOND.

A. It is standard Company practice to identify and describe risk factors when requesting corporate funding. One of the uncertainties for this project at the time of the rate case filing related to interconnection feasibility. MISO typically has jurisdiction over the

[2] https://www.bloomberg.com/news/articles/2019-04-03/battery-reality-there-s-nothing-better-than-lithium-ion-coming-soon

interconnection queue for transmission-tied projects in Indiana. The Company decided to request corporate funding approval for the Crane Battery after receiving feedback from MISO that the project can in-fact interconnect to the grid. The study results were not available at the time of the rate case filing; however, recent preliminary results suggest the project can interconnect as planned. Therefore, Duke Energy Indiana plans to request corporate funding approval by early 2020 in support of a Q4 2020 in-service date. This highlights the ability for battery storage to be deployed relatively quickly following funding approval, one of the many advantages of leveraging these types of technologies.

Regardless of the timing of corporate funding approval, the Crane Battery project is included in the Company's capital plan and highlighted in other key corporate planning documents, including the Company's recent IRP. The project was included in multiple IRP scenarios and is aligned with the feedback received during several stakeholder workshops. The Company's plans to deploy a 5 MW battery in 2020 is clear.

Q. MR. ALVAREZ ALSO ALLEGES THAT THE PROPOSED CRANE MICROGRID IS "FACED WITH NO ACTUAL QUANTIFIABLE OPERATIONAL BENEFITS OR PROSPECTIVE REVENUES TO OFFSET COSTS, THE SOLAR AND BESS INTERCONNECTION PROJECTS ARE BAD DEALS FOR CUSTOMERS." PLEASE RESPOND.

A. First, as previously stated, Duke Energy Indiana is not proposing a "solar . . . interconnection" project as part of the Crane Battery project. Second, as the direct testimony has already explained, there are both operational benefits and prospective

revenues associated with the proposed project. Lessons learned from this moderate investment will undoubtedly prove valuable as the Company considers much larger transmission-tied battery projects in the future, where costs are significantly increased for projects that may approach several hundred megawatts. It also should not be overlooked that enhancing the reliability of service to NSA Crane also enhances national security, benefiting all Duke Energy Indiana customers. As such, I disagree that this project is a "bad deal" for our customers. Please also see Petitioner's Exhibit 52-A for a letter from the Battery Innovation Center supporting this proposed project.

III. TIPPECANOE AND B-LINE SOLAR PROJECTS

Q. ARE YOU FAMILIAR WITH MR. HASELDEN'S TESTIMONY IN THIS PROCEEDING?

A. Yes, I have read the portion of it that discusses the Company's proposed Tippecanoe and B-Line solar projects.

Q. MR. HASELDEN STATES THAT HE IS OPPOSED TO BOTH OF THE COMPANY'S PROPOSED PROJECTS BECAUSE THEY ARE "SMALL, EXPENSIVE SOLAR PROJECTS THAT PRIMARILY BENEFIT SPECIFIC LOCALIZED CUSTOMERS." PLEASE RESPOND.

A. First of all, these projects will be connected to the Company's distribution system and will reduce the amount of Duke Energy Indiana load, directly serving a portion of customer demand. By doing so, the additional solar generation will offset other sources of energy that would have been allocated to serve native load, either generation operated

by the Company or energy purchased to meet native load requirements. Any Solar Renewable Energy Credits created by the projects will be sold in the market and any net proceeds received will be flowed back to customers. Second, these investments are quite small, with a modest rate impact to customers. Mr. Haselden chose to look at these projects only on a levelized cost of energy basis, which of course makes them look less cost-effective than a larger, utility scale solar project that would encumber a significant amount of rural land or a natural gas combined cycle project. As with the proposed Crane Battery, these are moderate investments made with an eye toward partnering with our customers and toward diversifying the Company's generation portfolio and increasing our investment in distributed generation. The B-Line Solar project is the Company's first distributed energy project investment on a customer site that creatively utilizes a parking lot to generate energy in an urban location. To compare its levelized cost of energy to a utility scale solar project is not reasonable. As I'll explain, there are other considerations for the Commission.

Q. MR. HASELDEN NEXT STATES THAT THESE PROPOSED PROJECTS DO NO MORE TO HELP THE COMPANY TAKE INCREMENTAL STEPS TOWARD PROVIDING CUSTOMERS WITH CLEAN RENEWABLE ENERGY AND TOWARD DIVERSIFYING ITS GENERATION PORTFOLIO THAN WOULD "A SINGLE SOLAR PANEL ERECTED BY DEI ANYWHERE IN ITS TERRITORY." WHAT WAS YOUR REACTION TO THAT STATEMENT?

A. I clearly disagree. According to the Solar Energy Industry Association, the number of homes powered by 1 MW of solar varies from state to state, depending on the hours of sun each day among other factors. Even so, they estimate that the number of homes on average powered by 1 MW of solar power is 180. With these two projects, Duke Energy Indiana is proposing to build more than one megawatt and so will be able to power more homes than 180 with its Tippecanoe and B-Line solar projects. I think that being able to power that many homes with solar power should be considered as Duke Energy Indiana taking incremental steps to providing its customers with distributed, clean renewable energy and diversifying its generation portfolio.

Investments such as the Tippecanoe and B-Line solar projects are exactly the type of smaller steps that are appreciated by the majority of our customers as we plan to transition Indiana's generation mix steadily over time to rely less on coal, and more on cleaner means of producing electricity. Duke Energy Indiana in recent years has invested in its first utility scale solar project at NSA Crane, refurbished its Markland Hydroelectric Facility, making it more efficient and allowing it to run another 60 years, and proposed three new battery energy storage systems. As our older coal-fired assets begin to retire over the next twenty years, the Company will be faced with decisions on how to replace those assets. Smaller investments in batteries and solar now will only help the Company and its stakeholders make those larger decisions in the near future.

Q. MR. HASELDEN NEXT POSITS THAT THESE INVESTMENTS WERE REALLY ONLY DONE FOR "IMAGE BUILDING PURPOSES." IS THAT TRUE?

A. No. Mr. Haselden's opinion is incorrect. Working with our customers on these types of projects is part of what Duke Energy Indiana is all about – providing service. Building generating assets that provide capacity and energy to the grid to benefit all Indiana customers (even if small distributed renewable assets) are far from image building – it's the core of our business.

Q. MR. HASELDEN NEXT COMPLAINS THAT DUKE ENERGY INDIANA CANNOT YET TAKE ADVANTAGE OF THE FEDERAL INVESTMENT TAX CREDIT DUE TO ITS CURRENT TAX POSITION. PLEASE RESPOND.

A. While Duke Energy Indiana is not currently able to utilize any investment tax credits ("ITCs") on these renewable projects, the Company forecasts it will be in a tax position to begin utilizing the credits as early as 2025. Solar ITCs have a 20-year carryforward, which means the Company has 20 years from the initial year the ITC is earned to be able to utilize it. The Company will share the full ITC benefits with customers over the lives of the associated renewable projects, as soon as the Company can utilize the ITCs. Mr. Haselden's testimony mischaracterizes the impact of the delay on customers by implying that customers will receive the full ITC benefit in the initial year the Company can utilize. Instead, the delay essentially results in customers receiving the same amount of benefit but over a shorter period of time beginning when the Company can first utilize the

ITC and stopping at the end of the useful life of the asset. This dramatically reduces the negative impact upon customers from any delay in utilization.

Q. THE OUCC COMPARES THE LEVELIZED COST OF ENERGY OF THE TIPPECANOE AND B-LINE SOLAR PROJECTS TO UTILITY SCALE SOLAR PROJECTS. IS THIS A FAIR COMPARISON?

A. No, it is not. Levelized cost of ownership excludes any comparison to the specific generation resources benefits, size or operational characteristics. I suspect they are trying to compare the cost of this project on an LCOE $/MWh basis to market capacity and energy from MISO or some other source such as a large scale solar project or purchased power agreement. This might be somewhat appropriate for a large-scale generation asset. The LCOEs for the referenced utility-scale solar projects having an LCOE in the $35/40 range are simply different types of projects than the Tippecanoe or B-Line solar projects. The projects with those low LCOE numbers are much larger in scale, transmission connected, typically sited in more rural areas that encompass large tracts of land (often hundreds of acres). Tippecanoe and B-Line solar projects are examples of distributed energy projects that are tied to distribution lines in more developed, suburban/urban locations. These facilities, while smaller in scale, utilize less land, are sited closer to customer load and do assist in providing all Duke Energy Indiana customers clean, renewable energy.

Duke Energy Indiana appreciates diversity in its generation mix, which can mean more than just fuel type. Adding smaller, distributed energy projects also benefit our

system and our customers. Limiting the consideration to only LCOE ignores these other factors and would result in only larger centralized generation being built.

Q. MR. HASELDEN COMPLAINS ABOUT THE DESIGN OF THE TIPPECANOE SOLAR PROJECT, STATING THAT IT DOES NOT HAVE THE MOST EFFICIENT PANEL DESIGN AVAILABLE IN THE MARKET TODAY. PLEASE EXPLAIN THE REASON BEHIND THE PROJECT'S DESIGN.

A. All solar projects are designed based on site characteristics, production assumptions and financial cost. This is no different than the assessment of solar racking options for Tippecanoe. For the Tippecanoe solar project, a fixed tilt solar array was selected in the design primarily due to site characteristics and cost. As mentioned by Mr. Haselden, the site is relatively small and has a triangular shape with curved sides. Tracking systems require more rectangular shaped areas to be constructed and operate efficiently. The construction costs of tracking systems increase significantly for smaller capacity systems while fixed tilt systems tend to scale more effectively. Tracking systems are complex and require more frequent maintenance and additional training is needed for personnel. When the interconnection application was filed for this site, there was no plan for dedicated maintenance crew and the work could not be included in a larger program for tracking system maintenance in the vicinity, the simpler fixed tilt racking system was determined to be the better option. Duke Energy does install tracking systems at projects where the technology is best suited for the application. It was determined that this project would not see a significant net benefit from a tracking system.

Q. IS THE LAND LEASE FOR THE TIPPECANOE SOLAR PROJECT REALLY FOR "UNDEVELOPABLE LAND," THUS MAKING THIS LEASE SOMEHOW A POOR DEAL FOR CUSTOMERS AND A GOOD DEAL FOR THE PURDUE RESEARCH FOUNDATION ("PRF")?

A. No. This site is suitable for a small solar site as it does not require parking, did not require permanent access roads, or other infrastructure. It is flat, relatively easy to interconnect, was free of significant vegetation (trees), had minimal environmental constraints, and has limited public access which makes it suitable for solar development. Whether the site is "non-developable" from a commercial real estate perspective is of no consequence; the site is ideally suited for small scale solar development.

Seemingly there is a suggestion by Mr. Haselden that PRF is receiving a windfall in revenue for this small site, which is erroneous. Similar to the B-line project, this project is a true public/private partnership that supports PRF's mission of supporting discovery and learning at Purdue University, benefits all of Duke Energy Indiana's customers in advancing green, sustainable energy on an underutilized property, and provides access to data from an active, local solar generation facility for research purposes.

In addition, the annual lease payment for this site is nominal. **<< BEGIN CONFIDENTIAL>>** [redacted] **<< END CONFIDENTIAL>>** is reasonable.

Q. MR. HASELDEN ALSO ARGUES THAT "THERE IS NOTHING INNOVATIVE" ABOUT THE COMPANY'S PROPOSED B-LINE HEIGHTS SOLAR PROJECT. PLEASE RESPOND.

A. While the technology of a solar canopy is not innovative on its own merit in terms of it being considered an emerging technology, the innovation is in the collaborative working environment and Public/Private Partnership between the City, Pedcor (the affordable housing developer) and Duke Energy Indiana to find creative ways to add solar in an urban area by utilizing an affordable housing location for solar with grid benefits. Please see Petitioner's Exhibit 52-B for a letter explaining more about the background of this project.

IV. CONCLUSION

Q. DO YOU HAVE ANY FINAL THOUGHTS ON THE OUCC'S POSITION REGARDING DUKE ENERGY INDIANA'S PROPOSED RENEWABLE AND STORAGE PROJECTS?

A. Yes. The Commission should disregard the OUCC's recommendations and instead support moderate investments in new technologies in Indiana. While Duke Energy Indiana is not proposing drastic changes to its generation mix, it does believe that it is good public policy to support investments in renewables and storage in a way that minimizes the impact on customer rates, while also trying to capture the benefits of these newer forms of generation and transmission supporting assets. This is only the third battery energy storage system that Duke Energy Indiana has proposed to construct, and

the third solar generation proposal. Duke Energy Indiana is proposing small investments in distributed resources – not large centralized generation and not a complete overhaul of its entire generation system. We believe this path is prudent and reasonable and provides a good balance of diversifying our system while also minimizing the impact to customer rates.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

Battery Innovation Center
7970 S. Energy Drive
Newberry, IN, USA
(812)863-2424

November 13th, 2019

Dr. Zachary Kuznar
Managing Director
Duke Energy
526 S Church St, Charlotte, NC 28202

Dear Dr. Kuznar,

It is our pleasure to support your Duke Energy's development of the NSWC Crane Battery System and associated coupling to the solar facility. This installation is a valuable service on the MISO network and even more importantly a critical piece of base infrastructure. This installation ensures the resiliency and reliability of our war fighter and peacekeeper by ensuring key operation during an outage.

The Battery Innovation Center (BIC; Newberry IN) was founded in 2013 with a mission to provide advanced industry capability in the energy sector, and promote the rapid development, evaluation, and commercialization of safe, reliable, cost effective, and lightweight energy storage systems for industry, DoD, DoE, and academia partners. The BIC is a critical affiliate of DOE's Energy Storage Hub, staying engaged on new and emerging technology breakthroughs that drive the marketplace in energy storage. The BIC is also a U.S. Department of Commerce - Economic Development Administration (EDA) Proof of Concept Center, assigned via the EDA i6 Challenge, focused on the development of new and emerging technologies in the energy storage technical area for rapid market commercialization and defense department deployment. The BIC is a standup of DOE's Energy Storage Hub, staying engaged on new and emerging technology breakthroughs that drive the marketplace in energy storage.

At the BIC, we seek to accelerate battery technology innovations by providing access to the entire spectrum of research and development through to commercialization, including low volume through production. We offer a state-of-the-art, 40,000 square foot facility with direct connections to partner research and manufacturing facilities. This structure provides essential elements to our offerings in basic and applied research, elementary cell concept design, cell research and development, cell manufacturing; elements of electronic control systems, pack system engineering, testing and certification, low volume energy storage product manufacturing; and a range of field and support services. Achieving our mission involves close collaboration with a range of different partners, including Duke Energy and NSWC Crane.

As a local resource and asset to NSWC Crane and critical partner of Duke Energy, BIC will be able to provide necessary support, evaluation, experience, validation, and connections in the energy storage systems market which will allow us to work together to accelerate this program.

Sincerely,

Ben M. Wrightsman
President & CEO

ESN
ENERGY SYSTEMS NETWORK
111 Monument Circle, Suite 1800 Indianapolis, Indiana 46204 | (t) 317.532.4774

November 25, 2019

To Whom it May Concern:

We are pleased to write in strong support of Duke Energy's filing to the Indiana Utility Regulatory Commission (IURC) with respect to supporting the solar installation at the B-Line Heights affordable housing development in Bloomington, Ind.

Energy Systems Network (ESN) is a non-profit initiative of the Central Indiana Corporate Partnership focused on growing the clean energy technology sector through collaborative, industry-driven projects and initiatives. The Moving Forward program, developed in conjunction with the Indiana Housing and Community Development Authority (IHCDA), is a program that creates energy efficient affordable housing with integrated transportation solutions for low- to moderate income families. The program, in its fifth year, has allowed for the ongoing development of six new construction properties and over 30 USDA rural development properties to be rehabilitated and retrofitted. This has resulted in over $100 million of investment in affordable housing across the state of Indiana.

B-Line Heights is one of the first developments in the Moving Forward program. Given a core tenet of Moving Forward is developing a sustainable built environment – with an eye toward net-zero energy – ESN is very much in support of Duke Energy's request for cost recovery to incorporate solar energy into the B-Line Heights property. Beyond the environmental benefits of integrating renewable energy, B-Line Heights can also serve as a model to the Bloomington community and others of how renewables can be leveraged in support of affordable housing, as well as the importance of embracing renewables and supporting our communities' overall health and quality of living for its residents. This is firmly in line with ESN's organizational philosophy, and we strongly hope you will consider Duke Energy's request.

Sincerely,

Paul J. Mitchell
President & CEO
Energy Systems Network

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: _____

Jonathan A. Landy

Dated: 12-4-2019