FILED JULY 24, 2019 INDIANA UTILITY REGULATORY COMMISSION

#### **STATE OF INDIANA**

#### INDIANA UTILITY REGULATORY COMMISSION

VERIFIED PETITION OF) INDIANAPOLIS POWER & LIGHT ) COMPANY FOR APPROVAL OF IPL'S ) TDSIC PLAN FOR ELIGIBLE **CAUSE NO. 45264** TRANSMISSION, DISTRIBUTION, AND ) STORAGE SYSTEM IMPROVEMENTS ) PURSUANT TO IND. CODE § 8-1-39-10. )

#### PETITIONER'S SUBMISSION OF DIRECT TESTIMONY OF BARRY J. BENTLEY

Indianapolis Power & Light Company ("IPL" or "Petitioner"), by counsel, hereby

submits the direct testimony and attachments of Barry J. Bentley.

Respectfully submitted,

Peresa Morton Nyhart (Atty/No. 14044-49) Lauren M. Box (Atty. No. 32521-49) BARNES & THORNBURG LLP 11 South Meridian Street Indianapolis, Indiana 46204 Nyhart Phone: (317) 231-7716 Box Phone: (317) 231-7289 Fax: (317) 231-7433 Nyhart Email: tnyhart@btlaw.com Box Email: Lauren.Box@btlaw.com

Attorneys for Petitioner Indianapolis Power & Light Company

#### **CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a copy of the foregoing was served this 24th day of July, 2019, by email transmission, hand delivery or United States Mail, first class, postage prepaid to:

William I. Fine Abby R. Gray Indiana Office of Utility Consumer Counselor Office of Utility Consumer Counselor 115 West Washington Street, Suite 1500 South Indianapolis, Indiana 46204 <u>infomgt@oucc.in.gov</u> <u>wfine@oucc.in.gov</u> <u>agray@oucc.in.gov</u> Joseph P. Rompala Todd A. Richardson LEWIS & KAPPES, P.C. One American Square, Suite 2500 Indianapolis, IN 46282-0003 JRompala@Lewis-Kappes.com TRichardson@lewis-kappes.com

Courtesy copy to: ETennant@lewis-kappes.com

Lauren M. Box

Teresa Morton Nyhart (No. 14044-49) Lauren M. Box (Atty. No. 32521-49) Barnes & Thornburg LLP 11 South Meridian Street Indianapolis, Indiana 46204 Nyhart Telephone: (317) 231-7716 Box Phone: (317) 231-7289 Fax: (317) 231-7433 Nyhart Email: tnyhart@btlaw.com Box Email: Lauren.Box@btlaw.com

ATTORNEYS FOR APPLICANT INDIANAPOLIS POWER & LIGHT COMPANY

#### **VERIFIED DIRECT TESTIMONY**

OF

**BARRY J. BENTLEY** 

#### **ON BEHALF OF**

#### **INDIANAPOLIS POWER & LIGHT COMPANY**

SPONSORING IPL ATTACHMENTS BJB-1 AND BJB-2

#### VERIFIED DIRECT TESTIMONY OF BARRY J. BENTLEY ON BEHALF OF INDIANAPOLIS POWER & LIGHT COMPANY

1	Q1.	Please state your name, position and business address.
2	A1.	My name is Barry J. Bentley. I am AES US Vice President, US Utilities Operations, which
3		includes Indianapolis Power & Light Company ("IPL" or "Company"). My business
4		address is One Monument Circle, Indianapolis, Indiana 46204.

#### 5 Q2. Please briefly describe your duties as AES US Vice President, US Utilities Operations.

A2. In this position, my principal responsibilities include transmission and distribution
planning, engineering, construction, operations and asset management for AES' US
Utilities Operations, including IPL.

#### 9 Q3. Please briefly describe your educational and professional background.

A3. I hold a Bachelor of Science degree in Electrical Engineering from Purdue University. I
 have attended several management courses from the University of Michigan, the
 University of Virginia, Darden School of Business and the McDonough School of Business
 at Georgetown University.

14 **Q4.** Please summarize your prior work experience.

A4. Including my Cooperative Engineering assignments while attending Purdue University, I
 have been employed at IPL for over 35 years. My experience includes positions of
 increasing responsibility in the areas of power generation, transmission and distribution,
 customer service, supply chain, corporate venture capital, fuel supply, and energy
 dispatching and marketing. I began my career with IPL in 1984 as a Cooperative

1 Engineering student while attending Purdue University. In 1988, I became a full-time 2 employee, working as an engineer in Power Production. In 1990, I became Supervisor, 3 Instrument Electrical at the H. T. Pritchard Generation Station. In 1992, I moved to 4 Supervisor, Maintenance for all electrical and mechanical maintenance at the Pritchard 5 Plant. Between 1993 and 1998, I was Supervisor and then Director, System Operation, 6 responsible for the operation of the transmission system and dispatching of generation 7 assets. In 1999, I became Manager, Bulk Power, which included responsibility and 8 oversight of the planning, engineering, operations, and maintenance for all IPL 9 transmission and substation assets. In 2000, I was promoted to Principal in IPL's Corporate 10 Venturing Group. In 2002, I was promoted to the Director, Demand Coordination, 11 responsible for strategic account management for IPL's top 300 retail customers. In 2003, 12 I transitioned to the Director, Supply Coordination and later to the Vice President, Fuel and 13 Energy supply, responsible for energy dispatching, wholesale sales, and fuel procurement for IPL's generation fleet. In 2008, I transitioned from the generation side of the business 14 15 to the Vice President, Power Delivery, in IPL's electric delivery organization. My 16 responsibilities included the planning, construction, operation, and maintenance of IPL's 17 transmission and distribution ("T&D") system. In 2011, I assumed the position of Senior 18 Vice President, Customer Operations; and in 2014 I was appointed to my current position 19 of AES US Vice President, leading T&D utilities operations for both Dayton Power & 20 Light and IPL.

# Q5. Are you familiar with IPL's Petition in this proceeding and the relief that it seeks? A5. Yes.

#### Q6. What is the purpose of your testimony in this proceeding?

2 A6. My testimony: a) provides an overview of IPL and the energy delivery system used to serve our customers; b) introduces IPL's Transmission Distribution Storage System 3 4 Improvement Charge ("TDSIC") Plan ("TDSIC Plan" or "Plan"); c) explains that the 5 estimated costs of the eligible improvements included in the Plan are justified by incremental benefits attributable to the Plan; d) summarizes why the proposed 6 7 infrastructure investment and implementation schedule are reasonable and necessary; and 8 e) discusses how the public convenience and necessity requires, or will require, the eligible 9 improvements included in the TDSIC Plan.

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**07**.

#### Please identify your attachments and IPL's workpapers.

- 11 A7. Yes. I am sponsoring or co-sponsoring:
- 12

• <u>IPL Attachment BJB-1</u>, which is a copy of the Petition in this Cause; and

IPL Attachment BJB-2, which is a copy of the IPL TDSIC Plan including
 attached appendices. I co-sponsor this attachment with other IPL witnesses
 as indicated in the case-in-chief index included with IPL's Petition. Certain
 appendices included with the IPL TDSIC Plan are confidential (Appendix
 8.7 – 8.10).

# Also, IPL submitted workpapers to support the IPL TDSIC Plan including numerous electronic spreadsheets including the confidential cost estimates and modeling results. IPL Witnesses Shields, De Stigter and Williams further identify their respective workpapers.

Q8. Were these attachments prepared or assembled by you or under your direction or
 supervision?

3 A8. Yes.

# 4 Q9. Please provide an overview of what is included in <u>IPL Attachment BJB-2</u>, which you 5 identify above as the IPL TDSIC Plan.

6 A9. To facilitate review, IPL compiled its proposal in one document titled the "IPL TDSIC 7 Plan" and the appendices attached thereto. As shown by the table of contents included 8 with the Plan, this document provides relevant background, summarizes the Plan and 9 includes a narrative discussion of each TDSIC Plan Project. This document explains how 10 the Plan was developed and assessed, including the risk modeling and the risk reduction 11 benefit monetization analysis. The TDSIC Plan discusses IPL's use of independent 12 engineering firms to assist and validate our planning effort. The TDSIC Plan also explains 13 how the cost estimates were developed. As a general matter, IPL is presenting Class 2 14 cost estimates for many of the proposed Projects for Plan Years 1 and 2. As discussed by IPL Witness Shields, Class 3 and Class 4 estimates were developed for the remaining 15 16 projects. Mr. Shields also addresses IPL's proposal to update estimates through the annual 17 Plan update filings. The TDSIC Plan includes numerous appendices, including the Burns 18 & McDonnell Risk Model Report, Black & Veatch's Cost Estimate Review and Validation 19 Report created from their review of IPL's cost estimates, Black & Veatch's report on their 20 technical review of the Burns & McDonnell Risk Model, the Burns & McDonnell Risk 21 Reduction Benefit Monetization Report, and the Economic Impact Assessment prepared 22 by the Indiana Business Research Center, Kelly School of Business, Indiana University.

#### I. **OVERVIEW OF IPL ENERGY DELIVERY SYSTEM**

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#### Please generally describe IPL and its service territory. **O10**.

3 A10. IPL provides retail electric service to approximately 500,000 residential, commercial, and 4 industrial customers located principally in and near the City of Indianapolis, Indiana, and 5 in portions of the following ten Central Indiana counties: Boone, Hamilton, Hancock, 6 Hendricks, Johnson, Marion, Morgan, Owen, Putnam and Shelby Counties. IPL takes 7 pride in providing reliable service to our customers.

#### 8 011. Please generally describe IPL's transmission system.

9 A11. The IPL transmission system consists of approximately 458 circuit miles of lines at 10 345,000 volts ("345 kV"), 408 circuit miles of line at 138,000 volts ("138 kV") and 11 associated substations. There is a 345 kV ring around Marion County with multiple lines 12 that interconnect into the ring at four different locations. Inside of the 345 kV ring is a 13 138-kV ring/grid. These two rings are connected through 345 kV to 138 kV auto 14 transformers at six locations. This allows power to flow from the 345 kV transmission 15 system to the 138 kV system. IPL has generation connected to the 345 kV system at the 16 Petersburg ("Pete") Generating Station and generation connected to the 138 kV system at 17 Harding Street Station ("HSS"), Eagle Valley ("EV") Station, and the Georgetown 18 Generating Station.

19 The IPL transmission system operates as part of a larger integrated network system, 20 commonly referred to as the Eastern Interconnection. The IPL transmission system is 21 directly connected to the transmission systems of Indiana Michigan Power Company ("AEP"), Vectren Corporation ("Vectren"), Hoosier Energy Rural Electric Cooperative, 22

Inc. ("HE"), and the electric system jointly owned by Duke Energy Indiana ("Duke"),
 Indiana Municipal Power Agency and Wabash Valley Power Association, Inc.

Through the interconnections with these other utilities, power can flow into and out of the IPL transmission system. The IPL transmission system is connected at both the 345 kV and 138 kV level with the other utilities. At the Petersburg Generation Station there are 345 kV level interconnections with Duke and AEP and 138 kV level interconnections with Duke, Vectren, and HE. In the Indianapolis area, IPL's transmission system has two 345 kV level interconnections with Duke and AEP and 138 kV level interconnections with Duke, Vectren, and HE. In the Indianapolis area, IPL's transmission system has two 345 by level interconnections with Duke and AEP and 138 kV level interconnections with Duke.

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#### Q12. Please generally describe IPL's distribution system.

11 A12. The distribution system consists of 4,961 circuit miles of underground primary and 12 secondary cables and 6,110 circuit miles of overhead primary and secondary wire. 13 Underground street lighting facilities include 773 circuit miles of underground cable. Also 14 included in the system are 138 substations. Depending on the voltage levels at the substation, some substations may be considered both a bulk power substation and a 15 16 distribution substation. There are 73 bulk power substations and 117 distribution 17 substations; 52 substations are considered both bulk power and distribution substations. 18 IPL uses a Secondary Network System to serve the City of Indianapolis Central Business 19 District, sometimes also referred to as the "Mile Square." A unique feature of the 20 Secondary Network System is the loss of a single component, such as a primary feeder or 21 a network transformer, typically will not result in any customer losing power.

#### II. <u>TDSIC PLAN OVERVIEW</u>

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#### Please provide an overview of IPL's TDSIC Plan. 2 Q13. 3 A13. IPL has developed a 7-Year TDSIC Plan that focuses on improving service for customers 4 in a cost-conscious manner through projects that also modernize IPL's system and support 5 economic development. The TDSIC Plan also addresses grid resiliency. A hardened and 6 resilient grid can better withstand the impact of weather and is easier to restore when 7 outages inevitably occur. The TDSIC Plan provides a structured and proactive means for 8 capital investment of \$1.2 billion over the Plan period as follows:



Figure 1 – IPL TDSIC Plan Capital Costs by Plan Year





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Project Type	2020	2021	2022	2023	2024	2025	2026	7-Year Total
Age & Condition Projects								
Circuit Rebuilds	\$ 27.2	\$ 25.3	\$ 45.8	\$ 52.8	\$ 47.8	\$ 49.9	\$ 49.9	\$ 298.7
Substation Assets Replacement	\$ 16.7	\$ 27.0	\$ 39.9	\$ 39.2	\$ 34.5	\$ 44.3	\$ 46.5	\$ 248.1
XLPE Cable Replacement	\$ 12.2	\$ 11.8	\$ 12.5	\$ 12.4	\$ 12.3	\$ 12.8	\$ 12.3	\$ 86.2
4 kV Conversion	\$ 19.7	\$ 13.8	\$ 15.4	\$ 15.5	\$ 7.6	\$ 12.4	\$ 7.5	\$ 92.0
Tap Reliability Improvement Projects	\$ 10.9	\$ 10.4	\$ 10.6	\$ 10.8	\$ 11.0	\$ 11.3	\$ 11.5	\$ 76.5
Meter Replacement	\$ 10.7	\$ 11.0	\$ 11.2	\$ 11.4	\$ 11.6	\$ -	\$ -	\$ 55.9
CBD Secondary Network Upgrades	\$ 4.6	\$ 5.9	\$ 5.3	\$ 5.9	\$ 5.0	\$ 5.9	\$ 6.4	\$ 39.0
Static Wire Performance Improvement	\$ 4.8	\$ 6.9	\$ 9.5	\$ 11.2	\$ 11.5	\$ 10.7	\$ 7.6	\$ 62.1
Remote End - Breaker Relay/Upgrades	\$ 3.0	\$ 2.0	\$ 5.6	\$ 1.6	\$ 6.2	\$ 3.1	\$ 6.4	\$ 28.0
Pole Replacements	\$ 3.3	\$ 3.3	\$ 3.4	\$ 3.5	\$ 3.5	\$ 3.6	\$ 3.7	\$ 24.2
Steel Tower Life Extension	\$ 1.1	\$ 1.1	\$ 1.1	\$ 0.9	\$ -	\$ -	\$ -	\$ 4.2
Age & Condition Projects Total	\$114.2	\$118.6	\$160.3	\$165.1	\$151.0	\$153.9	\$151.8	\$ 1,015.0
Deliverability Projects								
Distribution Automation	\$ 18.8	\$ 19.2	\$ 13.6	\$ 13.9	\$ 14.2	\$ 14.5	\$ 14.8	\$ 109.0
Substation Design Upgrades	\$ 3.8	\$ 16.2	\$ 15.8	\$ 32.9	\$ 6.3	\$ 16.8	\$ 2.6	\$ 94.5
Deliverability Projects Total	\$ 22.6	\$ 35.4	\$ 29.5	\$ 46.8	\$ 20.5	\$ 31.3	\$ 17.4	\$ 203.5
Total Capital Costs	\$136.8	\$154.0	\$189.7	\$212.0	\$171.5	\$185.2	\$169.2	\$ 1,218.5
Amount of Transmission	\$ 22.4	\$ 27.6	\$ 33.7	\$ 36.4	\$ 33.6	\$ 29.3	\$ 30.6	\$ 213.7
Amount of Distribution	\$114.4	\$126.4	\$156.0	\$175.5	\$137.9	\$155.9	\$138.6	\$ 1,004.7
Total Capital Costs	\$136.8	\$154.0	\$189.7	\$212.0	\$171.5	\$185.2	\$ 169.2	\$ 1,218.5

A copy of the IPL TDSIC Plan is set forth in <u>IPL Attachment BJB-2</u>. Table 2 above is included in Chapter 2 of the TDSIC Plan and additional details are provided in Appendix 8.7 of the IPL TDSIC Plan. The TDSIC Plan describes the proposed improvements and discusses the detailed cost estimates for all seven Plan years.<sup>1</sup> In developing the Plan, IPL was able to take advantage of the Company's asset management plan as well as the Company's experience with its T&D assets, knowledge of the T&D system needs and negotiated contract costs.

<sup>&</sup>lt;sup>1</sup> See TDSIC Plan Chapters 2 through 6 and associated Appendices for further information.

#### Q14. Why is IPL proposing the seven-year TDSIC Plan?

2 IPL is proposing the TDSIC Plan to replace aging infrastructure, automate and modernize A14. 3 our energy delivery system, to improve system reliability and resiliency for the benefit of 4 our customers, and to improve public and employee safety. The TDSIC Statute provides 5 utilities like IPL an opportunity to use a systematic approach to address the aging 6 infrastructure and capital needs of the energy delivery system. Systematic investment in 7 IPL's energy delivery system allows IPL to better utilize capital dollars, realize economies of scale, and promote efficiency through better planning of workflow and resources, all of 8 9 which benefits customers.

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#### III. <u>INCREMENTAL TDSIC PLAN BENEFITS</u>

# Q15. Are the estimated costs of the eligible improvements included in the IPL TDSIC Plan justified by incremental benefits attributable to the Plan?

Yes. IPL's TDSIC Plan aligns with the TDSIC Statute as the Projects are undertaken for 13 A15. 14 the purpose of safety, reliability, system modernization and support of economic 15 development. The estimated cost of the improvements included in the IPL TDSIC Plan 16 are justified by incremental benefits attributable to the Plan. More specifically, the seven 17 Projects that lend themselves to monetization, when viewed as part of a total portfolio, will 18 provide a net benefit (i.e.; total escalated nominal benefits less the total escalated nominal 19 cost of the Plan) of \$939 million to IPL's customers over a 20-year period. This is 20 discussed in Section 3 of the IPL TDSIC Plan (attached hereto as IPL Attachment BJB-2) 21 and supported by the Burns & McDonnell Risk Reduction Benefit Monetization Report 22 presented by IPL Witness De Stigter (Appendix 8.11 to IPL TDSIC Plan).

1 There are also a host of qualitative benefits, introduced in TDSIC Plan Section 3 (TDSIC 2 Benefits) and expanded upon in the TDSIC Plan Section 6 (TDSIC Project Narratives) that 3 combined with these quantifiable benefits, clearly meets the intent of the TDSIC Statute. Furthermore, without these improvements IPL's T&D system will face increasing levels 4 5 of risk, and an erosion in overall grid integrity and reliability, which will be difficult to 6 correct. The Risk Model developed by the Burns & McDonnell and the IPL team shows a system risk reduction of approximately 36.6 percent over the seven-year TDSIC Plan 7 period.<sup>2</sup> In other words, by implementing the Plan, total T&D system asset risk is 8 9 significantly reduced.

# Q16. In your opinion, does full value of IPL's TDSIC Plan exceed the \$939 million net benefit reflected in IPL's monetization analysis?

A16. Yes. As discussed in Section 3 of the TDSIC Plan, the net monetized benefit only captures
part of the value of seven of IPL's thirteen planned projects. Though quantifying savings
is important, IPL holds firm to the notion that the Plan provides benefits, both quantitative
and qualitative, that far exceed these calculations.

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#### IV. <u>IMPLEMENTATION</u>

#### 17 Q17. When will IPL commence implementation of the Plan?

A17. IPL will begin to implement the Plan Projects August 1, 2019 and ramp up to full Project
 implementation in 2020 upon receipt of Commission approval of the Plan. This gradual
 build up allows us to undertake preconstruction work, such as permit acquisition and site

<sup>&</sup>lt;sup>2</sup> See IPL Witness De Stigter's direct testimony (QA 23) and the Risk Model Report included with IPL TDSIC Plan as Appendix 8.3; see also IPL Witness Williams direct testimony (QA 27).

preparation. Most importantly, the August 1<sup>st</sup> implementation date allows IPL to secure
 the contract labor necessary to execute the Plan in a timely and efficient manner.

3 In developing this implementation plan we recognized the high demand for experienced 4 labor across the country and the need for specialized skills causes resource constraints. 5 Currently, our experienced contract labor resources have multiple opportunities in other parts of the country. In order to maintain the appropriate contractor labor prior to full 6 Project implementation in 2020, IPL found it necessary to advance the scheduling of 7 8 certain work to secure these contractors. The mere potential for a significant volume of 9 work in IPL's service area in 2020 is not sufficient to secure the labor resources needed for 10 the efficient implementation of the seven-year TDSIC Plan. Furthermore, in order to 11 implement the Plan in a timely manner, it is necessary to undertake certain pre-construction 12 and initiate limited project construction. Contract labor is scheduled to be used for this 13 work. Consequently, IPL has taken steps to secure the necessary contract labor resources 14 through a competitive solicitation process and will use these resources to implement the 15 TDSIC projects. Approximately \$18 million of the Year 1 Plan cost is allocated for this 16 2019 build-up field work and this cost is appropriately included for recovery through the ratemaking process together with the balance of the Plan costs. 17

18 Issuing the competitive solicitation for contract labor resources allowed IPL to improve the 19 quality of the cost estimates and risk modeling presented in this Cause.<sup>3</sup> Given the current 20 market conditions, this approach is prudent as it also positions the Company to fully 21 implement the Plan in a timely and efficient manner if it is approved.

<sup>&</sup>lt;sup>3</sup> See IPL Witness Shields (QA 24); IPL Witness De Stigter (QA 23).

#### V. PUBLIC CONVENIENCE AND NECESSITY

# Q18. Please discuss how the public convenience and necessity requires, or will require, the eligible improvements included in the TDSIC Plan.

A18. There is a reasonable and apparent need for the Plan. While IPL's customers have
benefitted from a reliable system, additional investment is necessary to maintain reliability
and modernize service.

7 The TDSIC Plan and attached appendices identify what Projects will be undertaken, when 8 they will be undertaken and why these Projects are necessary and beneficial. Many of the 9 TDSIC Projects are designed to improve the safe and reliable functioning of the system, 10 through the planned replacement and modernization of aging electric system components, 11 which, if not undertaken, would likely result in more frequent or extended outages for 12 customers or otherwise impair the resiliency of the system. The planned replacement of 13 infrastructure that has or is reaching the end of its useful life hardens the energy delivery 14 system and minimizes emergency restoration. Modernizing the electric system enhances 15 system operation and control, enables customers to have access to more information to 16 manage their usage, and lays the foundation for new technologies to be deployed in the future. The improved operation and reliability of IPL's energy delivery system safeguards 17 18 public and employee safety, improves the customer experience and fosters economic 19 development in the communities IPL serves. Therefore, IPL's proposed TDSIC Plan is 20 fitted or suited to the public need.

### VI. <u>CONCLUSION</u>

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2	Q19.	What is your overall recommendation to the Commission?
3	A19.	Many of IPL's systems are at, or near the end of, their expected life spans. Major
4		investment in the updating and modernization of IPL's energy delivery system
5		infrastructure is necessary to bring these systems up to date and prepare them for future
6		demands. IPL's TDSIC Plan Projects deliver reliability, resiliency, efficiency, customer
7		experience and other benefits. In addition, the Plan schedules these projects in an orderly,
8		cost-effective and manageable construction schedule. It is my opinion that the IPL TDSIC
9		Plan meets the requirements of Ind. Code § 8-1-39 and advances the statute's purpose. I
10		would ask the Commission to issue an order approving the IPL TDSIC Plan.
11	Q20.	Does this conclude your prepared verified direct testimony?

12 A20. Yes.

#### VERIFICATION

I, Barry J. Bentley, AES US Vice President, US Utilities Operations, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

Dated: July <u>23</u>, 2019

Port Barry J. Bentley

### Attachment BJB-1

[Verified Petition – Not Duplicated Herein]

### Attachment BJB-2

[IPL TDSIC Plan – Filed Separately]